Bakhvi HPP

Climate Strategy for Bakhvi 1 Hydropower Plant

2025

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Abbreviations	Definition
HPP	Hydro Power Plant
LLC	Limited Liability Company
MW	Megawatt
GWh	Gigawatt-Hour
kV	Kilovolt
CCEH	Caucasus Clean Energy Holding
IFC	International Financial Corporation
EIB	European Investment Bank
EU	European Union
GHG	Greenhouse Gas
CCRM	Climate Change Risk Management
RCP	Representative Concentration Pathway
ESG	Environmental, Social, and Governance
TCFD	Task Force on Climate-Related Financial Disclosures
NDC	Nationally Determined Contribution
ESMS	Environmental and Social Management System
EIA	Environmental Impact Assessment
LEDS	Low-Emission Development Strategy
MER	Monitoring Evaluation, and Reporting

Climate Strategy of Bakhvi 1 HPP

1. Executive Summary

CCEH Hydro VI LLC (the "Company") is a company developing the Bakhvi 1 hydro power plant in Guria, region of Georgia. Bakhvi 1 HPP involves the construction and operation of a 10.9 MW run-of-the river hydroelectric power plant on the Bakhvistskali River, located within the Ozurgeti Municipality. Investors of the company include Caucasus Clean Energy Holding (CCEH), Austrian Investment Fund ILAG, and other field-specific investors from Austria and Georgia. CCEH's investors comprise well-known financial institutions from America and European countries (including European Investment Bank [EIB], Dutch Development Bank [FMO], Austrian Development Bank [OeEB], etc.). ILAG holds diverse business interests across several Western countries.

Bakhvi 1 HPP is being under construction on a section of the Bakhvistskali River spanning elevations between 1,735 meters and 1,383 meters above sea level. The headworks is situated approximately 250 meters downstream from the confluence of the Bakhvistskali and Baisura Rivers. The flood intake structure will be located at an elevation of 1,731.70 meters, and the HPP building is positioned at an elevation of 1,383.0 meters.

Bakhvi 1 HPP consists of a headworks structure, a pressure pipeline system, and an above-ground power plant building that will house the necessary mechanical and electrical equipment for electricity generation. The installed capacity of the power plant is 10.9 MW, with a design flow rate of 4.0 m^3/s.

CCEH Hydro VI LLC conducts its operations in compliance with the environmental and social management standards set by international financial institutions, including the IFC and EIB.

The climate strategy of Bakhvi 1 HPP outlines the HPP's long-term vision to contribute to Georgia's clean energy future while fully integration climate resilience, emissions management, biodiversity protection, and strong governance. Designed in line with international good practise, the strategy sets out how Bakhvi 1 HPP will minimize its climate footprint, adapt to emerging climate risks, and report transparently to regulators, investors, and communities. It serves as a reference framework for sustainable hydropower development over the next decade.

<u>Bakhvi 1 HPP's importance in national energy decarbonization</u>

Bakhvi 1 HPP is a 10.9 MW run-of-river hydropower plant located in Guria, expected to generate around 48 GWh of renewable electricity annually. This contribution plays a dual role in Georgia's energy system: increasing renewable generation capacity and displacing fossil fuels such as natural gas and oil, which still make up part of the country's power supply.

By integrating into Georgia's growing renewable portfolio, Bakhvi 1 HPP directly supports the country's strategy to diversify its energy mix, reduce carbon intensity, and improve security of supply. It also contributes to meeting the commitments set out in Georgia's Low Emission Development Strategy [1]and aligns with global frameworks such as Paris Agreement[2] and the EU Green Deal Principles[3]. In this sense, Bakhvi 1 HPP is more than a local energy source - it is part of Georgia's wider climate course.

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1 *Georgia's Low Emission Development Strategy (LEDS) outlines the country's long-term pathway toward reducing greenhouse gas emissions while supporting sustainable economic growth. It sets sector-specific targets, promotes renewable energy development, and aligns national climate actions with Georgia's commitments under the Paris Agreement.*

2 *The Paris Agreement, adopted in 2015 under the United Nations Framework Convention on Climate Change (UNFCCC), is a legally binding international treaty that aims to limit global warming to well below 2°C above pre-industrial levels, while pursuing efforts to restrict the increase to 1.5°C. It requires countries to submit and update their nationally determined contributions (NDCs) and to strengthen climate action over time.*

3 *The European Green Deal, launched in 2019, is the European Union's strategic framework for achieving climate neutrality by 2050. Its principles include decarbonizing the energy system, promoting circular economy practices, protecting biodiversity, and ensuring a just transition that supports economic growth and social inclusion while reducing greenhouse gas emissions.*

Commitment to managing Scope 1, Scope 2, and Scope 3 emissions during construction, and minimizing emissions during the operational phase

The Climate Strategy applies a lifecycle approach to greenhouse gas (GHG) emissions management across all phases of the HPP lifecycle:

- **Construction Phase**: Emissions arise from several sources, including Scope 1 (fuel used by on-site machinery), Scope 2 (electricity consumed during construction), and Scope 3 (all indirect ghg emissions occurring across the value chain and not included in Scope 2). To minimize these, Bakhvi 1 HPP has implemented energy-efficient construction methods, regular equipment maintenance, optimized transport logistics, and preference for local materials and suppliers where feasible;
- **Operational Phase**: Once operational, Bakhvi 1 HPP will operate with near-zero direct emissions, since hydropower does not require fuel combustion. Only minor Scope 2 emissions will result from auxiliary electricity use, while Scope 3 will remain limited and monitored through sustainable procurement practices;
- **Avoided Emissions**: The plant will also calculate and report the carbon emissions it prevents by replacing fossil-based electricity. Over its lifetime, Bakhvi 1 is expected to avoid the release of tens of thousands of tons of CO_2-equivalent, demonstrating its contribution to decarbonization in line with international climate finance standards.

This full-cycle approach ensures that the HPP not only reduces operational emissions but also demonstrates responsible management of its temporary construction footprint.

Key climate risks, adaption responses, and biodiversity monitoring approach

The Climate Change Risk Management (CCRM)[4] for Bakhvi 1 HPP evaluates potential long-term impacts on the Bakhvistskali River basin using the Representative Concentration Pathway (RCP6.0) climate scenario. This scenario reflects a moderate-to-high emissions trajectory and provides the basis for understanding future hydrological and environmental risks in the HPP area.

Based on RCP 6.0 projections for 2040-2059, the Climate Change Risk Management (CCRM) identifies several long-term climate-related changes as follows:

1. **Rising average air temperatures** of approximately 1.5-2.5°C by mid-century, which may alter seasonal water balances, increase evapotranspiration, and influence river flow regimes;
2. **shifts in precipitation patterns,** resulting in increased flood intensity and frequency;
3. **hydrological variability** associated with seasonal redistribution of river flow, requiring adaptive management of generation reliability;
4. **reduced water availability** for electricity generation in specific months despite an overall increase in annual runoff

To address these risks, the Climate Strategy integrates adaption measures aligned with CCRM recommendations

1. **Data-driven adaptation measures,** including enhanced meteorological and hydrological monitoring, establishment of climate and river flow databases, and periodic analysis of temperature, precipitation, water level, and discharge trends in line with CCRM recommendations;
2. **Operational measures**, including flexible generation planning that incorporates projected seasonal flow redistribution under the RCP 6.0 scenario;

[4] *For the Bakhvi 1 Hydropower Plant, the Climate Change Risk Management (CCRM) was conducted by Blue Rivers. This process evaluates how projected climate impacts-such as rising temperatures, altered precipitation, and hydrological variability-may affect the plant's long-term reliability. It also defines adaptation and mitigation measures to strengthen resilience, ensuring that both infrastructure and surrounding ecosystems are prepared for future climate conditions.*

3. **HPP-specific engineering and ecosystem resilience measures,** such as slope stabilization, erosion control, and maintenance of riparian vegetation, informed by identified flood and hydrological risks;
4. **Governance measures**, ensuring climate-related risks are integrated into operational decision-making and overseen through defined management responsibilities.

Bakhvi 1 HPP also emphasized biodiversity monitoring as a core part of climate resilience:

1. **Continuous ecological monitoring** during construction and operation to track species dynamics;
2. **Regular biodiversity surveys**, providing data to guide adaptive management and ensure alignment with international biodiversity safeguards

Through this integrated approach, Bakhvi 1 HPP will strengthen both infrastructure resilience and ecosystem health, ensuring reliable renewable generation under the RCP6.0 climate scenario.

Governance and ESG Oversight

Strong governance is central to ensuring that the Climate Strategy is implemented effectively. Climate and environmental issues are formally embedded in Bakhvi 1 HPP's ESG framework and receive oversight at the highest levels:

- **The Supervisory Board** regularly reviews climate performance, including emissions tracking, climate risk assessments, and biodiversity monitoring results. This ensures that climate responsibility is fully embedded in operational processes and elevated as a strategic priority;
- **Annual climate and ESG reporting** discloses performance in emissions, adaptation measures, and biodiversity protection, in line with international frameworks such as the Task Force on Climate-Related Financial Disclosures (TCFD) and IFC Performance Standards;
- **Stakeholder engagement** is maintained throughout the HPP lifecycle, ensuring that local communities, regulators, and investors are fully informed and that their concerns are incorporated into decision-making

By embedding climate and ESG oversight into governance, Bakhvi 1 HPP creates accountability mechanisms that align with international investor expectations and global standards.

2. Georgia's Climate Strategy and Energy Sector Overview

Georgia has committed itself to ambitious climate action through its national climate strategy and its Nationally Determined Contribution (NDC) under the Paris Agreement. According to national climate strategies and sectoral plans, the country aims to reduce GHG emissions by 47% below 1990 levels by 2030, with the potential to reach 57% with international support. These goals are supported by frameworks such as the Climate Change Adaptation Strategy and Action Plan [5] and the National Energy and Climate Plan, which highlight renewable energy development as a cornerstone of Georgia's low-carbon pathway.

The energy sector is both a challenge and an opportunity for Georgia's decarbonization. Fossil fuels, particularly imported natural gas and oil products, continue to dominate energy consumption, leaving the country exposed to price volatility and external dependency. At the same time, Georgia possesses significant renewable energy resources, especially hydropower, which already contributes the

[5] *The "Climate Change Adaptation Strategy and Action Plan" is a national policy document for Georgia, developed with technical support from the Food and Agriculture Organization of the United Nations (FAO). It sets out strategic priorities, sectoral actions, and institutional measures to enhance Georgia's resilience to climate change, reduce vulnerabilities across key sectors, and ensure coherence with international climate commitments such as the Paris Agreement.*

majority of domestic electricity generation. Hydropower is therefore recognized as the most direct pathway to reducing reliance on fossil fuels, cutting GHG emissions, and enhancing energy security.

Within this framework, Bakhvi 1 HPP plays a targeted yet important role. As a run-of-river hydropower facility, it adds renewable capacity with minimal operational emissions. Unlike large-scale dams, Bakhvi 1 HPP has a smaller environmental footprint while still contributing to Georgia's national grid and supporting regional development. Its operation displaces fossil-fuel-based generation, thereby reducing carbon intensity and advancing the government's ambition to integrate more renewables into the energy mix.

Together, the national energy strategy, CCRM findings, and microclimate analysis position Bakhvi 1 HPP as a climate-aligned infrastructure. It contributes directly to Georgia's renewable energy objectives while being grounded in evidence-based climate science. By embedding resilience planning into both design and operation, Bakhvi 1 HPP supports the dual goals of national decarbonization and long-term hydropower reliability.

3. Objective and Scope

The Climate Strategy of Bakhvi 1 HPP defines a comprehensive framework to align the HPP with Georgia's climate goals and international good practice. It sets out strategic objectives in four core areas: climate adaptation, climate mitigation, biodiversity protection, and ESG performance. These objectives respond directly to the risks and opportunities identified in key governance documents. CCRM outlines projected climate risks and corresponding adaptation measures, while the Sustainability and Emissions Reduction Plan defines operational targets for lowering emissions and improving environmental performance. The Macro-and Microclimate Impact study, prepared by ALPAGE, provide an assessment of macro-and microclimat impacts risks that could potentially be caused by Bakhvi 1 HPP, in Bakhvitskali river basin. Together with corporate sustainability policies, the Environmental and Social Management System (ESMS), annual reporting frameworks, and the Climate Change Risk Management assessment prepared by Blue Rivers, these documents create a consistent governance structure.

Together, they ensure that climate and sustainability objectives are embedded across planning, operational management, and corporate oversight. By clearly defining boundaries across lifecycle phases, greenhouse gas emissions, and geographic scope, the strategy provides clarity for stakeholders and strengthens accountability in implementation.

4. Policy and Regulatory Alignment

Bakhvi 1 HPP's Climate Strategy is designed to comply fully with Georgia's legal requirements and the most relevant international environmental and climate frameworks. By embedding compliance obligations into HPP planning and implementation, Bakhvi 1 HPP minimizes regulatory risks, strengthens its environmental and social license to operate, and ensures eligibility for international climate finance.

<u>Compliance with national regulations</u>

The Climate Strategy integrates the following key Georgian legal and policy instruments:

1. **Environmental Assessment Code of Georgia**: requires a full Environmental Impact Assessment (EIA) prior to HPP approval, including public consultation, alternatives analysis, and detailed impact mitigation measures. For Bakhvi 1 HPP, this includes hydrological impacts, biodiversity considerations, and socio-economic effects
2. **Law of Georgia on Water**: establishes the legal framework for regulated water use, permit requirements, and sustainable use of surface water resources, while ecological flow

obligations for the Bakhvistskali River are defined through the EIA, and environmental decision;

3. **Law on Ambient Air Protection:** obliges monitoring and reporting of air emissions, particularly relevant for construction-phase machinery and transport;
4. **Law on Waste Management:** establishes requirements for the safe handling, segregation, storage, transportation, disposal, and monitoring of waste, including hazardous materials;
5. **Law of Georgia on Environmental Liability:** establishes obligations for prevention, mitigation, remediation, penalties, and compensation in cases of environmental damage, reinforcing the importance of preventive measures and the polluter-pays principle;
6. **Climate-related commitments under Georgia's long-term Low-Emission Development Strategy (LEDS):** while not a binding law, the LEDS frames national climate targets and informs project-level emission reduction strategies.

By integrating these instruments, Bakhvi 1 HPP ensures full legal compliance while directly contributing to Georgia's climate objectives and sustainable development vision.

<u>Alignment with international standards</u>

Bakhvi 1 HPP's Climate Strategy is guided by a combined international compliance framework, integrating the IFC Performance Standards and the European Investment Bank (EIB) Environmental and Social Standards. This approach ensures that the HPP meets internationally recognized benchmarks for environmental sustainability, social responsibility, and climate resilience, thereby supporting long-term alignment with global climate finance requirements. The relevant IFC Performance Standards are outlined below.

- **Performance Standard 1:** Assessment and Management of Environmental and Social Risks and Impacts - ensuring comprehensive climate, environmental, and social risk management throughout the HPP lifecycle;
- **Performance Standard 3:** Resource Efficiency and Pollution Prevention - requiring the HPP to minimize GHG emissions, improve energy efficiency, and ensure sustainable water resources management;
- **Performance Standard 4:** Community Health, Safety, and Security - addressing potential impacts of extreme weather events and natural hazards on local communities through climate-resilient infrastructure design and emergency preparedness;
- **Performance Standard 6:** Biodiversity Conservation and Sustainable Management of Living Natural Resources - directly informing biodiversity monitoring, fish pass design, riparian management, and habitat protection measures.

Key EIB standards applied include:

- **Standard 1:** Environmental and Social Impacts and Risks - ensuring comprehensive climate, environmental, and social risk assessment and the integration of adaptation measures throughout the HPP lifecycle;
- **Standard 3:** Resource Efficiency and Pollution Prevention - requiring the HPP to minimize GHG emissions, improve energy efficiency, prevent pollution, and ensure sustainable water resources management;
- **Standard 4:** Biodiversity and Ecosystems - directly informing biodiversity monitoring, fish pass design, riparian management, habitat protection, and ecosystem resilience measures;
- **Standard 5:** climate Change - requiring the HPP to assess physical climate risks, demonstrate resilience under climate scenarios, support greenhouse gas reduction objectives, and align with low-carbon and climate-resilient development pathways

Together, these IFC and EIB standards ensure that Bakhvi 1 HPP is compatible with international expectations for environmental sustainability, social responsibility, and climate finance eligibility.

Use of site-specific climate data

Compliance is strengthened by the integration of site-specific climate data, including macro-and microclimate conditions and climate risk zones. These assessments provide details on precipitation variability, erosion-prone slopes, flood-sensitive stretches, and fog and humidity patterns that affect hydropower reliability. Incorporating such data ensures that compliance documents are grounded is scientific evidence, making them strong and defensible before regulators, financiers, and stakeholders.

By combining compliance with Georgian regulations, detailed integration of IFC Performance Standards, and adherence to EIB Environmental and Social Standards the Climate Strategy establishes a clear pathway for lawful, resilient, and sustainable development. This alignment reduces risks, enhances transparency, and secures Bakhvi 1 HPP's standing with both regulators and international investors.

5. GHG Emissions Management

GHG emissions management under Bakhvi 1 HPP's Climate Strategy is based on a structured accounting, monitoring, and reporting framework covering all relevant lifecycle phases and emission categories. The approach follows internationally recognized methodologies, particularly the GHG Protocol, and emphasizes transparency, accountability, data quality, and continual improvement in emissions performance.

Baseline emissions profile

The baseline emissions profile reflects the sources and scale of GHG emissions expected during the construction of Bakhvi 1 HPP. Construction activities represent the primary emissions source, with the largest contributions arising from the operation of heavy-duty machinery and vehicles, which consume diesel fuel and other hydrocarbons. Additional emissions originate from the production and transportation of carbon-intensive construction materials, particularly steel and concrete, which are associated with substantial embodied carbon. Temporary electricity consumption for construction camps, offices, and on-site facilities also adds to the overall footprint.

According to Micro-and Macroclimate Impact Assessment of the Bakhvi 1 HPP the total construction-phase footprint is estimated at 41,967 tones of CO_2 equivalent (tCO_2eq). The result is consistent with other small HPPs, whose GHG footprint during construction is usually around 50 000 tons CO_2eq. The majority of this impact is linked to Scope 3 emissions, embodied carbon in materials and logistics, while direct fuel use and site energy demand account for the remainder. This baseline provides the quantitative benchmark against reduction measures are defined.

Table N1. Construction GHG emissions

Item	Quantity		GHG unit content		GHG footprint
					tons CO2eq
Concrete	10 760	m^3	1905	kgCO2eq/m^3	20 498
Reinforced steel	800	ton	1.1	kgCO2eq/kg	880
Excavation	200 000	m^3	36.7	kgCO2eq/m^3	7 340
Fuel (cars and generators)	1 928 571	l	2.7	kgCO2eq/l	5 207
Flooded soil	0.23	ha	10	tons C/ha	9
Trees cut (before reforestation)	37.02	ha	217	tonsCO2/ha	8 033
Total					**41 967**

** The emissions related to the construction were estimated on the basis of volumes and quantities necessary for the construction of the HPP. The methodology followed is that of the Inter-American Development Bank[6]: it is the most recent and comprehensive methodology available. It provides emission factors that, when applied to project quantities and volumes, allow the footprint of construction activities to be deducted.*

Construction-phase emissions (Scope 1, Scope 2, and Scope 3)

The calculation of Scope 1 and Scope 2 emissions follows internationally recognized emission factors and operational data, ensuring compliance with industry good practices.

Scope 1 emissions represent direct emissions from fuel consumption in stationary combustion sources and fleet vehicles. These emissions are quantified using the formula:
Scope 1 Emissions (tCO_2eq/yr) = Total Fuel Consumed (tonnes) × Emission Factor ($tCO_2eq/tonne$), where an emission factor of 3.14 tCO_2eq per tonne of fuel is applied to reflect CO_2-equivalent emissions from different fuel types.

Scope 2 emissions, which arise from electricity consumption, are calculated using a grid-based approach:
Scope 2 Emissions (tCO_2eq/yr) = Total Electricity Consumed (kWh) × Grid Emission Factor ($kgCO_2eq/kWh$) × Loss Factor × Dual-Scoping Adjustment. The grid emission factor of 0.35 $kgCO_2eq/kWh$, combined with a loss factor of 0.2, accounts for transmission and distribution losses within the grid, ensuring a comprehensive assessment of indirect electricity-related emissions.

Scope 3 emissions, which encompass indirect emissions occurring across the value chain, are tracked and calculated to provide a holistic view of the organization's environmental impact. These emissions originate from activities such as business travel (air and land transport), site visits, guest and visitor trips, supply chain logistics, and operational support vehicles. The calculation applies the formula:
Scope 3 Emissions (tCO_2eq/yr) = Total Fuel Consumption (L) / 1000 × Emission Factor ($tCO_2eq/tonne$), with emission factors varying by fuel type. CCEH Hydro VI LLC maintains a structured tracking methodology to quantify and monitor Scope 3 emissions, ensuring accuracy and alignment with corporate sustainability goals.

In 2024, CCEH Hydro VI did not initiate Scope 3 emissions tracking, as the Bakhvi 1 HPP was in the initial phase of construction. Notably, physical construction activities commenced only in the second half of the year, resulting in a minimal and non-material Scope 3 footprint due to limited supply chain and contractor activity during this period.

Recognizing the importance of a comprehensive emissions inventory, the company initiated Scope 3 emissions tracking in 2025, in line with the scaling of construction activities. Through enhanced data accuracy and targeted reduction measures, CCEH Hydro VI continues to strengthen its commitment to sustainability, regulatory compliance, and long-term carbon neutrality objectives.

Bakhvi 1 HPP uses the following metrics and targets to track and disclose emissions:

- Absolute Emissions Target: Target an overall reduction in Scope 1, Scope 2, and Scope 3 greenhouse gas emissions, supported by quarterly monitoring and annual disclosure.
- Measures emissions per unit of projected power output (e.g., CO_2e per MWh), supporting future operational efficiency and aiming to minimize emissions relative to energy generation once the plant is operational
- Increase renewable sources within operations, monitored quarterly, to lower emissions and align with Georgia's renewable energy goals.

[6] IDB. (2012). *Greenhouse gas emissions assessment methodology.*

- Disclose annual emissions data for Scope 1, Scope 2, and Scope 3, reflecting the company's commitment to comprehensive greenhouse gas transparency and accountability.

<u>Operational phase – low-emission advantage and avoided emissions</u>

Once operational, Bakhvi 1 HPP will leverage hydropower's intrinsic climate advantage, producing electricity with negligible direct emissions. Unlike thermal generation, hydropower does not rely on fuel combustion, and therefore Scope 1 emissions are virtually absent during operations. The only minor contributions will result from periodic maintenance and repair activities, which require spare parts and material inputs captured under Scope 3, and auxiliary electricity use for plant control systems, lighting, and communications, which constitutes Scope 2. These are expected to remain minimal and will be managed through efficient design and, where possible, through renewable electricity supply.

Beyond its low direct footprint, the plant's most important contribution lies in its avoided emissions - the displacement of fossil fuel-based generation in Georgia's electricity grid. Based on its expected output, and and the broader climate contribution assumptions reflected in the Macro- and Micro-Climate Assessment for Bakhvi 1 HPP, prepared by the international consulting company ALPAGE, Bakhvi 1 HPP will avoid approximately 15,717 tCO_2eq per year when compared to the national grid average (333 gCO_2/kWh) and approximately 18,880 tCO_2eq per year when compared to gas-fired generation (400 gCO_2/kWh). This means that the entire construction footprint of roughly 41,967 tCO_2eq will be offset in under three years of operation.

<u>GHG outlook</u>

Bakhvi 1 HPP is committed to supporting Georgia's national climate goals through a proactive emissions reduction strategy. As Bakhvi 1 HPP remains in its construction phase, CCEH Hydro VI LLC will designate the first full year of operation as the baseline year once the HPP becomes operational, at which point GHG emissions projections will be updated and a target will be set to reduce total emissions by 30% by 2030 relative to this baseline.

To achieve this, Bakhvi 1 HPP will implement a structured, year-over-year reduction pathway, focused on cleaner technologies, improved energy efficiency, and alignment with international sustainability practices.

While a formal Net Zero roadmap is not yet in place, CCEH Hydro VI LLC acknowledges the need to align its long-term climate approach with emerging decarbonization expectations.

The company upholds its commitment to responsible business conduct and integrates environmental stewardship into its core operational principles. This approach reflects CCEH Hydro VI LLC's broader vision for low-carbon development and long-term sustainability.

<u>Implementation and Monitoring</u>

- We commit to tracking emissions quarterly, as carried out during the construction phase of Bakhvi 1 HPP, and continuing the same approach throughout the operational phase to ensure alignment with reduction targets and transparency in reporting
- We commit for regular internal and external audits to validate data accuracy and ensure compliance with emissions targets
- We commit to conducting regular internal and external audits to validate data accuracy and ensure compliance with emissions targets, continuing the approach established during the construction phase into the operational phase

- We commit to disclosing annual progress on the company's website through ESG reports, continuing the practice implemented during the construction phase by reporting detailed emissions metrics and achievements during the operational period.

<u>Methodology for Target Setting and Evaluation</u>

Data Collection:

Since 2024 during the construction phase, Bakhvi 1 HPP collects quarterly data for Scope 1 and Scope 2. From 2025 onward, Scope 3 emissions are integrated into the tracking and reporting process to ensure more comprehensive GHG accounting. These efforts establish a resilient baseline and ensure early alignment with future reduction targets. The same methodology will be applied and expanded during the operational phase once the plant is commissioned and enters into service.

- Tracking Methodology: emissions data during construction is collected using fuel consumption logs, supplier-provided fuel usage records, and site energy consumption records for the operational phase, emissions tracking will incorporate automated energy monitoring system for continuous and precise data collection. The methodology will be reviewed and updated accordingly once the plant is commissioned, taking into account operational realities, data availability, and technical capacity.
- Verification Process: Emissions data collected by the company team undergoes internal review to ensure consistency and transparency. Third-party verification has not been conducted to date but is anticipated as part of future assurance processes to strengthen the reliability and credibility of the reported data

- Technology Used:

- Electricity Consumption: During the construction phase, electricity use is monitored through on-site metering systems. In the operational phase, automated metering systems will be implemented to ensure real-time and accurate measurement
- Fuel Usage: Data is collected from fuel provider records and verified by the accounting department, ensuring accuracy in reported fuel consumption.
- Emission Factors: Applied based on sector-specific international practices, ensuring alignment with recognized global standards for emissions calculations.

Benchmarking:

CCEH Hydro VI LLC benchmarks its emissions data against:

- National Climate Goals (Georgia's NDC) to align with GHG reduction commitments.
- Industry Standards, including emissions intensity benchmarks for hydropower facilities.
- Best Practices in ESG Reporting, such as Task Force on Climate-Related Financial Disclosures (TCFD) and GHG Protocol methodologies.

Sustaining Low-Emission Operations:

- Suppliers undergo a pre-contract evaluation to ensure their environmental management practices align with CCEH Hydro VI LLC's sustainability standards and support the low-carbon footprint of hydropower operations.
- During the construction phase, CCEH Hydro VI LLC has prioritized energy efficiency by implementing measures such as scheduled equipment maintenance, optimized machinery use, and monitoring of temporary power systems to reduce unnecessary energy consumption. For the operational phase, the company will apply similar principles by conducting regular turbine performance assessments, making operational adjustments to maximize energy output, and ensuring preventive maintenance to limit downtime. In both phases, reliance on grid electricity is minimized by emphasizing on-site renewable generation and using backup power inly when operationally essential

6. Climate Governance and ESG Framework

A comprehensive governance and ESG framework underpins the Bakhvi 1 HPP Climate Strategy, ensuring that decision-making, accountability, and sustainability commitments are emcedded into every stage of the HPP. By combining corporate governance principles with international ESG benchmarks, the Bakhvi 1 HPP establishes a sound and reliable foundation for climate action, enhancing transparency, resilience, and trust among regulators, investors, and local communities.

Governance rols and responsibilities

The governance structure of Bakhvi 1 HPP is defined through the General Meeting of the Partners, the Supervisory Board, and Executive Management, as outlined in the Bakhvi 1 HPP Corporate Governance Manual.

- **The General Meeting** provides the highest level of governance oversight through approval of major strategic, financial, and governance decisions;
- **The Supervisory Board** ensures oversight of climate-related risks, approves adaptation and mitigation budgets, and endorses annual ESG disclosures;
- **Executive Management** is responsible for daily implementation of climate and ESG commitments, including GHG tracking, biodiversity surveys, and stakeholder engagement

This tired system ensures accountability, aligns climate priorities with corporate strategy, and provides clear reporting lines to both investors and regulators.

Environmental resilience measures: Biodiversity Protection and Water Stewardship

The environmental dimension of Bakhvi 1 HPP's Climate Strategy ensures that ecological integrity and climate resilience are embedded throughout both construction and operations. The approach reflects international standards for environmental stewardship and positions the HPP as a responsible actor within the Bakhvistskali River basin.

- **Biodiversity Protection:** Protection of biodiversity is a central priority. Regular ecological surveys are undertaken before, during, and after construction to monitor sensitive species, habitats, and ecosystem dynamics. The findings of these surveys inform adaptive management measures, such as riparian restoration, erosion control, and the use of climate-sensitive fish passages. This continuous process ensures that the HPP not only avoids harm but actively contributes to the long-term health of local ecosystems;
- **Water Stewardship**: Responsible management of water resources is recognized as fundamental for both hydropower reliability and ecosystem sustainability. Measures include maintaining ecological flows in the Bakhvistskali River, monitoring water quality to prevent sedimentation and pollution, and ensuring that HPP operations do not disrupt aquatic habitats. Integrated water management principles are applied so that electricity generation, community needs, and ecosystem preservation remain in balance, particularly under changing climate conditions.

Climate-related performance and incentives:

Bakhvi 1 HPP integrates climate-related performance indicators into its governance and management framework to ensure accountability and alignment with climate strategy objectives. Climate-related KPIs are defined, monitored, and linked to management performance evaluation processes, supporting the effective implementation of mitigation and adaptation measures.

Climate-related KPIs include:

1. Reduction of Scope 1, Scope 2 and Scope 3 emissions against baseline levels;
2. Maintenance 100% compliance with environmental flow requirements (once HPP will become operational);
3. Seek for avenues to strengthen of energy efficiency and optimization;

4. Monitoring of biodiversity indicators and ecosystem stability;

Implementation of respective mitigation measures.

Climate governance responsibilities and accountability:

1. The Supervisory Board provides oversight of climate performance and strategic targets;
2. Executive Management ensures implementation of climate objectives and integration into operational decision-making;
3. The ESG Manager is responsible for monitoring, reporting, and compliance with climate-related KPIs.

Performance-based incentives and evaluation

Climate-related KPIs are incorporated into management performance evaluation processes. A defined share of variable remuneration is linked to the achievement of climate and ESG-related targets, ensuring that sustainability objectives are directly reflected in management incentives. In addition to monetary incentives, non-monetary mechanisms, including performance recognition and professional development opportunities, are applied to reinforce accountability across relevant employee groups.

Additional non-monetary incentives may include career development opportunities and role-based recognition aligned with climate performance objectives.

Climate-related KPIs are supported by defined performance targets and continuous improvement objectives. While specific quantitative targets are subject to periodic review, the framework ensures:

1. Reduction of GHG emissions against established baseline levels;
2. 100% compliance with environmental flow requirements at all times;
3. Improvement of energy and resource efficiency across operations

Monitoring and evaluation

Performance against climate-related KPIs is tracked on a quarterly basis through the Monitoring, Evaluation, and Reporting (MER) system, subject to internal review and disclosed annually through ESG reporting. This ensures transparency, accountability, and alignment with international climate governance standards

<u>Social and governance measures for transparency and accountability</u>

Social and governance dimensions are equally prioritized, ensuring that climate action is embedded in broader sustainability commitments.

- **Community and stakeholder engagement**: Structured dialogue mechanisms provide local communities with opportunities to express concerns and influence HPP decisions;
- **Labor standards**: Compliance with Georgian labor law and international good practices ensures safe working conditions, non-discrimination, and fair compensation;
- **Anti-corruption measures:** Codes of ethics and compliance monitoring reduce governance risks and strengthen investor confidence.

Community's and stakeholders' concerns are addressed through multi-channel engagement and a grievance mechanism. Labor practices follow national and international standards, while ethics and anti-corruption safeguards are embedded in governance. Transparency is maintained via annual reporting, external ESG monitoring, and Board oversight, with yearly policy reviews ensuring continuous improvement.

7. Climate Risk and Resilience Assessment

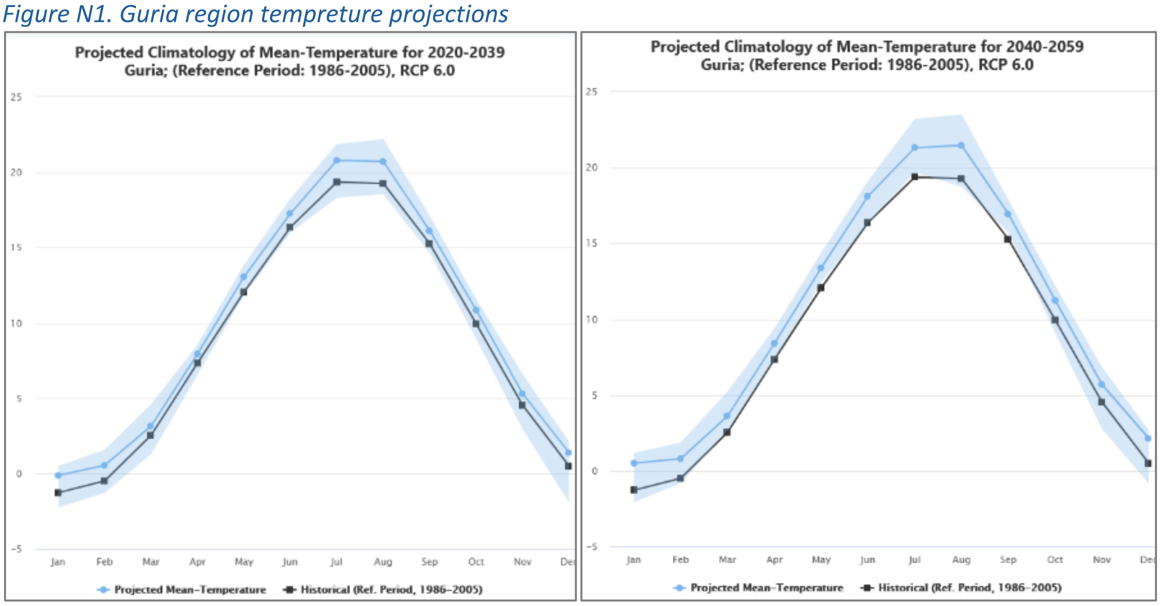
Bakhvi 1 HPP's exposure to climate hazards is evaluated by combining modeled projections for the Guria region and site-specific hydrometeorological evidence around the Bakhvistskali/Baisurastskali rivers. The result is a risk picture that is quantitative, scenario-based, and grounded in the plant's actual operating context.

Macro-level risks and site-specific climate and micro-climate factors

Under the RCP 6.0 climate scenario for 2040-2059, the CCRM indicates a ~1.5 °C rise in average air temperature in Guria (from ~4.4 °C to ~5.9 °C relative to 1986-2005). Average annual precipitation is projected to increase from a long-term mean of ~953 mm to ~997 mm, alongside a ~10.6% increase in flood intensity and frequency, with heightened flood occurrence potential during wetter spring months (March-June) and moderately higher summer rainfall. Together, these trends increase hydrological variability and require proactive flood management, slope stabilization, and climate-resilient maintenance planning to safeguard long-term infrastructure reliability

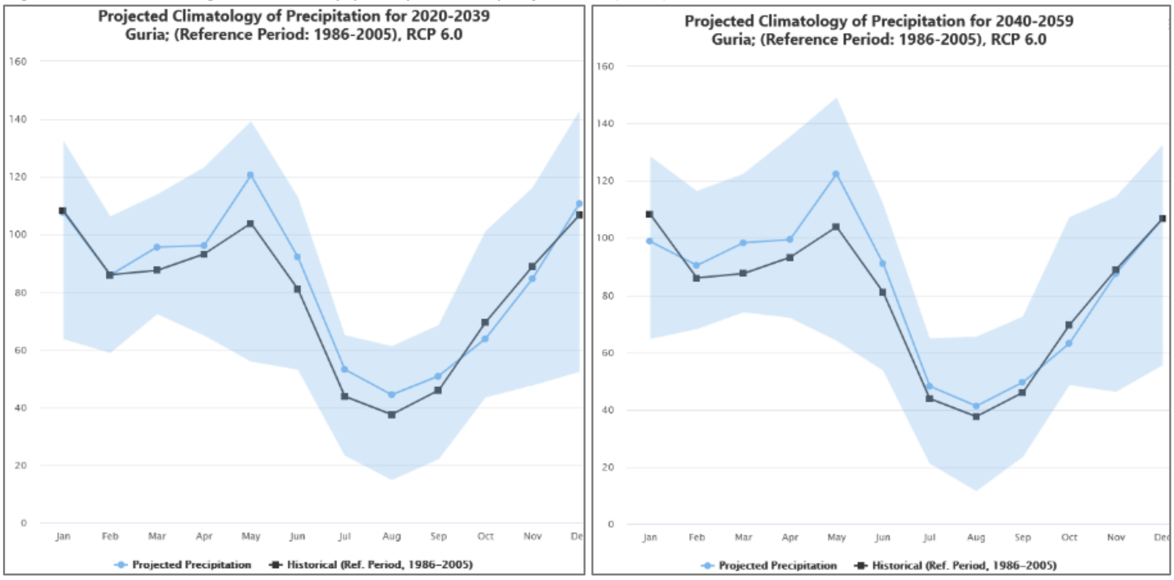
In comparison with the 1986-2005 reference period, an increase of temperatures by about 1°C was already observed in Guria region, and an additional 1°C increase is expected in the coming 20-30 years. These figures are consistent with observations made in western Europe. It is however important to point the fact that these are averages at the regional level. Observations made in mountainous regions however show that the increase of temperatures is approximately twice faster in the alpine zone (at higher altitude): this is due to the reduction of the size and duration of the snow cover, that results in a lower average albedo of the soil, and consequently a higher retention of heat.

Figure N1. Guria region tempreture projections



In comparison with the 1986-2005 reference period, a slight increase of annual precipitations is expected, but it is unevenly distributed. Higher precipitations are essentially expected around Springtime (March to June), and to a lesser extent in Summer. Autumn and winter are expected to become slightly dryer.

Figure N2. Guria region monthly precipitation projection (mm)



Bakhvistskali river basin is located in the subtropical humid climate region. Data on air temperature and precipitation in the basin according to the meteorological stations are presented in Tables 4 and 5.

Table N4. Air tempreture data from Bakhmaro and Ozurgeti meteorological stations

MS*	Monthly average air temperature, °C												Annual average	Absolute min	Absolute max.
	1	2	3	4	5	6	7	8	9	10	11	12			
Bakhmaro	-5.8	-4.6	-2.3	2.5	7.3	10.4	13.4	13.5	9.6	4.8	-1	-1.4	2.5	-38	30
Ozurgeti	4.8	5.4	8	12	16.6	20	22.3	22.6	19.4	15.4	10.4	6.9	13.6	-19	41

Table N5. Precipitation data from Bakhmaro, Ozurgeti, Kveda Bakhvi, and Vakijvari meteorological stations

MS	Monthly average precipitation, mm												11-3	4-10	Year
	1	2	3	4	5	6	7	8	9	10	11	12			
Bakhmaro	209	203	174	87	96	126	107	114	153	214	201	185	972	897	1869
Ozurgeti	198	186	139	110	81	130	156	179	224	235	223	212	958	1115	2073
Kveda Bakhvi	198	166	133	76	64	115	125	156	212	243	200	193	890	991	1881
Vakijvari	226	192	154	87	74	128	142	176	238	276	226	221	1019	1121	2140

Scenario modeling and operational implication

The climate risk modeling for Bakhvi 1 HPP follows the recommendations of the International Hydropower Association's *Climate Change Resilience Guide for Hydropower* (2019). This framework places emphasis on ensuring that hydropower investments can absorb climate-related stresses and evolve into greater robustness. Consistent with this approach, the assessment adopts a 2040-2059 time horizon, which captures medium-term climate risks and allows for proactive integration of adaptation measures into design, operation, and maintenance.

Hydrology and Energy Yield

1. According to the CCRM, under RCP 6.0 for 2040-2059, mean annual water availability at the headworks (50% exceedance) is projected to increase by approximately 0.13 m^3/s; (see the table 6)
2. Modeled annual generation rises to ~43.77 GWh, which is about 4% above the design baseline, indicating that climate-induced hydrological changes are expected to modestly enhance production reliability and yield;
3. This demonstrates that, while climate risks exist, the long-term balance of energy supply remains favorable under central climate trajectories.

Flood Hazard and Extreme Events

1. Scenario results also show a ~10.6% increase in flood intensity and frequency, with heightened seasonal concentration during wetter spring and summer periods
2. These changes elevate risks to intake and spillway capacity, worker safety during access, and outage probability during extreme rainfall events, even though average long-term generation remains stable;
3. The distribution of rainfall and runoff is expected to be more volatile, requiring structured operational responses and infrastructure reinforcement.

Operational Implications

1. **High-flow management** - Spillway and gate operating protocols must be reinforced to handle more frequent peak inflows. Investments in early-warning systems, real-time hydrological

monitoring, and automation of control structures are recommended to safeguard both operations and downstream communities.

2. **Sediment and bedload control** - Heavier rainfall and clustered storm events are expected to increase sediment transport and bedload movement. Timely flushing through bottom outlet gates, regular removal of sediment deposits from pools, slots, sand traps, and downstream entrance areas, as well as systematic post-flood inspections, should be implemented to maintain hydraulic performance, turbine efficiency, and uninterrupted ecological flow functionality
3. **Geotechnical resilience** - Intensified rainfall and changing runoff dynamics increase the risk of slope instability, erosion, and landslide processes across critical HPP infrastructure areas. Climate resilience is strengthened through proactive slope stabilization, drainage reinforcement, regular terrain monitoring, and rapid corrective actions following extreme weather events.
4. **Ecological monitoring** - Altered flow seasonality and flood pulses may impact aquatic habitats. Long-term ecological monitoring and adaptive flow management protocols should be in place to preserve biodiversity resilience.

Table N6. Average flow with 50% provision of Bakvistskali river for the Bakhvi 1 HPP headwork

Flow	Data source	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average flows with 50% provision, m^3/s	according Generation Report	0.8	0.7	0.9	3.5	8.4	6.3	2.5	1.6	1.4	1.5	1.5	1.2
	for period 2040-2059	0.66	0.93	1.19	3.26	8.99	6.43	3.18	1.70	1.54	1.59	1.23	1.24
Environmental flow, m^3/s		0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
Bypassed flow, m^3/s	according to the HPP documentation	0.29	0.29	0.29	0.29	4.4	2.3	0.29	0.29	0.29	0.29	0.29	0.29
	for period 2040-2059	0.29	0.29	0.29	0.29	4.99	2.43	0.29	0.29	0.29	0.29	0.29	0.29
Flow to be used by HPP, m^3/s	according to the HPP documentation	0.51	0.41	0.61	3.21	4	4	2.21	1.31	1.11	1.21	1.21	0.91
	for period 2040-2059	0.37	0.64	0.90	2.97	4	4	2.89	1.41	1.25	1.30	0.94	0.95

Prognosed distribution of the energy production was conducted based on the received values of water discharge for the period 2040-2059 (see the table 7 below)

Table N7. Monthly generation distribution for period 2040-2059

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Water discharge (m^3/s)	0.66	0.93	1.19	3.26	8.99	6.43	3.18	1.70	1.54	1.59	1.23	1.24
Generated Energy, GWh	1.103	1.374	1.942	4.894	7.669	7.055	6.200	3.326	2.873	3.068	2.109	2.158

In total, Bakhvi 1 HPP annual generation based on the actual monthly river flows has been calculated at 42.03 GWh. Annual energy generation for the period 2040–2059 is projected at 43.77 GWh. Quantitative climate modeling under the Blue Rivers CCRM confirms that this represents an approximately 4% increase under the RCP 6.0 scenario for 2040–2059, while the same climate trajectory indicates a ~1.5°C rise in average annual air temperature and an associated ~10.6% increase in flood intensity and frequency, highlighting the need to combine favorable energy yield outlooks with strengthened flood resilience planning.

Table N8. Increased intensity and frequency of extreme floods for period 2040-2059

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Increased intensity and frequency of extreme floods, %	12.5	9.0	7.6	7.4	9.3	12.2	13.5	15.3	11.7	9.0	8.1	11.5	10.6

Climate analysis indicates that the construction and operation of Bakhvi 1 HPP are not expected to create measurable climatic impacts within the Bakhvistskali River basin, including no significant influence on regional temperature, precipitation patterns, or localized climate conditions. At the same time, the HPP and its catchment will continue to be exposed to climate-driven changes associated with global warming, which may influence hydrological patterns, flood dynamics, local ecosystems, and the long-term resilience of critical infrastructure. These risks are addressed through comprehensive environmental management, continuous monitoring, and the implementation of targeted adaptation measures, ensuring that climate-related impacts remain well controlled and effectively managed throughout the HPP lifecycle. This approach supports proactive climate governance, adaptive management, and resilient operational planning, ensuring long-term performance and sustainability of the asset.

8. Water Resource Stewardship

Bakhvi 1 HPP applies responsible and sustainable water management practices across all stages of development and operation, aligned with national permitting requirements and international sustainability principles. The approach prioritizes the conservation and efficient use of water resources as a core element of climate resilience and long-term operational reliability.

During construction, water use is limited to essential domestic and technical activities, supported by effective resource planning and continuous monitoring to ensure compliance with quantitative limits and quality standards. This approach has enabled efficient control of water demand and minimized pressure on local water resources.

A continuous river flow monitoring system is in place, including an automated gauging station on the Bakhvistskali River, providing real-time data to support compliance with environmental flow requirements and regulatory reporting obligations. This system will remain operational throughout the lifecycle of the HPP, ensuring adaptive management of water resources and maintaining ecological continuity downstream.

Within the Climate Strategy framework, water management plays a central role in addressing hydrological variability associated with climate change. Systematic flow monitoring and adaptive regulation of water use support generation reliability, sediment management, and flood risk control, while safeguarding ecosystem health. This integrated approach ensures that water resources are managed sustainably and that the HPP remains resilient under evolving climate conditions.

9. Biodiversity and Ecosysyem Protection

Bakhvi 1 HPP is committed to preserving biodiversity and maintaining ecosystem health as a core element of its environmental and climate resilience approach. Through continuous monitoring and targeted conservation measures, the HPP supports the protection of local habitats and species within the Bakhvistskali River basin.

Seasonal biodiversity surveys are conducted by independent third-party specialists to assess species diversity and monitor changes in aquatic and terrestrial ecosystems, including fish populations, macroinvertebrates, and key habitat conditions. This monitoring framework provides a reliable basis for evaluating the effectiveness of mitigation measures and supports adaptive management where necessary.

Biodiversity management focuses on maintaining habitat quality, supporting native species, and minimizing potential impacts associated with HPP activities. Conservation measures are regularly reviewed and adjusted to ensure alignment with environmental protection objectives and international standards.

The results of ongoing biodiversity monitoring indicate stable ecological conditions within the HPP area and confirm that current management measures are effective in maintaining ecosystem integrity. Continued monitoring and adaptive management ensure that biodiversity protection remains robust under changing environmental and climate conditions.

Performance is tracked through defined KPIs, including emissions intensity and biodiversity indicators, with detailed metrics presented in Annex 1, tables N1-N6.

10. Challenges from Climate Change

Climate change presents a multi-dimensional risk landscape for Bakhvi 1 HPP, affecting operational reliability, environmental performance, and long-term regulatory and financing alignment. These risks are systematically assessed across physical hazards, transition risks, and ecological pressures, forming the basis for proactive resilience and ESG integration.

Physical Hazards: Extreme Weather and Hydrological Changes
The most immediate risks arise from altered hydrological regimes and increasing variability of extreme weather events:

- **Flood risks:** Under the RCP 6.0 mid-century scenario (2040–2059), the CCRM indicates an approximate 10.6% increase in flood intensity and frequency, with heightened seasonal occurrence during wetter spring and summer periods. This elevates risks to intake structures, spillway capacity, and slope stability, requiring reinforced design standards and operational preparedness.

- **Drought risks:** While long-term average flows remain stable or slightly positive, increased seasonal variability may reduce dry-period water availability, affecting generation optimization and downstream ecological flow management.
- **Extreme weather:** Increased rainfall intensity and clustering of storm events contribute to higher sedimentation and bedload transport, placing additional pressure on river morphology, infrastructure integrity, and operational continuity.

These risks are managed through strengthened flood control systems, erosion and sediment management, and climate-informed operational planning to ensure reliability and environmental compliance.

Transition Risks: Regulatory and Market Dinamics

The evolving climate policy and financing environment introduces transition-related risks that require continuous alignment:

- **Regulatory evolution:** Georgia's commitments under the Paris Agreement and alignment with EU climate frameworks imply progressively stricter requirements for emissions disclosure, biodiversity protection, and environmental flow compliance;
- **Investor expectations:** Alignment with IFC Performance Standards, EIB Environmental and Social Standards, and climate disclosure frameworks such as TCFD requires continuous enhancement of ESG governance, transparency, and risk management practices;
- **Market context:** The transition toward a low-carbon energy system increases scrutiny of lifecycle emissions, including Scope 3 impacts during construction, requiring proactive emissions management to maintain competitiveness in climate finance and energy markets.

These dynamics are addressed through integrated ESG governance, transparent reporting, and proactive alignment with international standards to ensure continued access to financing and regulatory compliance.

Ecological Pressures: Biodiversity and Ecosystem Resilience

Climate change also introduces pressures on ecological systems with potential operational and reputational implications:

- **Habitat sensitivity:** Increased flood events and slope instability may affect riparian zones and riverbank integrity, while seasonal variability can influence aquatic ecosystem conditions.
- **Species response:** Changes in flow regimes and water temperature may influence migratory patterns of fish species, requiring adaptive management of ecological flow and fish pass systems.
- **Cumulative pressures:** Combined effects of climate change and human activity may increase risks of habitat fragmentation and ecosystem stress, requiring continued alignment with IFC PS6 and EIB biodiversity standards.

These pressures are managed through continuous ecological monitoring, adaptive flow management, and targeted conservation measures to maintain ecosystem integrity.

Overall, the integration of climate risk management across physical, regulatory, and ecological dimensions ensures that Bakhvi 1 HPP maintains high standards of resilience, environmental performance, and ESG alignment, supporting long-term operational stability and sustainable value creation.

11. Adaptation Strategies and Measures

Climate change presents a range of operational, environmental, and safety risks for Bakhvi 1 HPP, requiring proactive and integrated adaptation measures to strengthen resilience while safeguarding ecological and social responsibilities. Adaptation is implemented through a combination of engineered solutions, adaptive operational practices, and nature-based measures, ensuring that climate resilience is embedded across both infrastructure design and long-term operations. These measures are informed by climate risk assessments, site-specific studies, and international standards, supporting a systematic and forward-looking resilience framework.

Technical Upgrades for Resilience

Engineering measures are designes to address increasing hydrological variability and the projected rise in the extreme events:

- **Flood reslinience:** In response to projected increases in flood intensity and frequency (~10.6%), spillway and intake structures are strengthened and supported by enhanced monitoring systems to ensure safe and efficient management of high-flow events;
- **Slope and erosion stability:** Erosion-prone slopes, access roads, and infrastructure corridors are stabilized through a combination of engineered structures and vegetation-based solutions, reducing landslide and geotechnical risks under intensified rainfall conditions;
- **Sediment management systems:** Systems are adapted to accommodate increased sediment loads and bedload transport, including desilting infrastructure and operational measures to protect turbine performance and maintain hydraulic efficiency.

Adaptive Operational Practices

Operational resilience is supported through dynamic and data-driven management:

- **Flexible flow management:** Real-time hydrological monitoring through automated gauging systems enables responsive adjustment of environmental flows, ensuring regulatory compliance and reducing stress during both high-flow and low-flow conditions;
- **Climate-informed scheduling:** Generation planning integrates climate projections and seasonal variability, supporting grid stability while optimizing renewable output and reducing reliance on fossil-based back-up.
- **Emergency preparedness:** Early-warning systems and clearly defined operational protocols support rapid response to extreme events, minimizing operational disruptions and ensuring safety of personnel and local communities.

Environmental and Nature-Based Efforts

Nature-based solutions complement engineering and operational controls, strengthening ecosystem resilience and supporting compliance with IFC Performance Standard 6 and EIB Environmental and Social Standard 3:

- **Riparian restoration:** Restoration of riparian zones enhances bank stability, improves natural flood buffering capacity, and supports habitat continuit;.
- **Fish pass management:** Adaptive operation of the fish pass ensures ecological connectivity under variable flow conditions;
- **Erosion control and reforestation:** Vegetative stabilization and targeted reforestation reduce runoff, limit sediment transport, and enhance ecosystem resilience;
- **Avalanche risk management:** In high-altitude areas, monitoring of snowpack conditions and targeted stabilization measures reduce risks to infrastructure, access roads, and workforce safety under increasingly variable climatic conditions.

Together, these measures form an integrated adaptation framework that strengthens the resilience of Bakhvi 1 HPP to climate-related risks, ensuring reliable operation, protection of ecosystem services, and alignment with international ESG and climate finance standards.

12. Community And Stakeholder Engagament

Building resilience to climate change requires not only technical and environmental measures but also strong and inclusive governance. Bakhvi 1 HPP applies a structured stakeholder engagement approach to climate-related planning and monitoring, ensuring that local communities, civil society, government institutions, and independent experts contribute to decision-making processes. Transparent communication and collaborative initiatives strengthen social acceptance, support environmental performance, and enhance long-term climate resilience.

Transparent climate and ESG reporting

Climate, water, biodiversity, and broader ESG performance are disclosed through annual reporting, ensuring transparency and accountability to stakeholders. These disclosures include greenhouse gas emissions, hydrological monitoring results, biodiversity performance, and key governance indicators. Reports are reviewed at the Supervisory Board level and publicly disclosed, while targeted engagement activities ensure that relevant findings are actively communicated to stakeholders involved in environmental and climate governance. This approach supports informed decision-making and reinforces stakeholder trust.

Collaborative adaptation and environmental initiatives

Stakeholders are actively engaged in the design and implementation of climate adaptation and ecosystem restoration measures. Cooperation with local organizations and independent experts strengthens biodiversity monitoring and ensures that adaptation measures are aligned with both ecological conditions and community priorities. Partnership-based initiatives, including reforestation and watershed-level activities, contribute to enhancing ecosystem resilience and supporting climate adaptation at a broader landscape scale.

Strategic cooperation with Guria National Park

Bakhvi 1 HPP recognizes the strategic importance of cooperation with Guria National Park as a key regional partner in biodiversity conservation and climate adaptation. As the park develops its management framework, the HPP supports coordinated monitoring of key species and collaborative habitat restoration initiatives. This alignment ensures that hydropower operations and conservation objectives are mutually supportive, contributing to ecosystem resilience and reinforcing Georgia's commitments under international environmental and climate frameworks.

Through this integrated stakeholder engagement framework, Bakhvi 1 HPP strengthens climate governance, enhances transparency, and ensures that adaptation measures are inclusive, locally informed, and aligned with international ESG standards.

13. Capacity Building and Internal Governance

Strengthening institutional capacity is essential for embedding climate resilience and sustainability into all phases of Bakhvi 1 HPP's development and operation. HPP applies a structured approach to capacity building and internal governance, ensuring that staff competencies, accountability mechanisms, and knowledge transfer processes are aligned with the Climate Strategy and broader ESG commitments.

Community awareness and engagement

Bakhvi 1 HPP contributes to local capacity building through targeted awareness and engagement activities focused on sustainable energy, environmental protection, and climate change. During the construction phase, educational initiatives were implemented in cooperation with local municipalities and schools. In the operational phase, awareness raising will continue through structured stakeholder engagement processes, ensuring that climate and environmental topics remain integrated into community dialogue and outreach activities.

Integration of performance indicators into governance

Capacity building is reinforced through the integration of climate and ESG-related performance indicators into the governance framework. These include metrics related to greenhouse gas management, compliance with environmental flow requirements, biodiversity monitoring, and transparency of disclosures. Performance results are systematically reviewed by management and reported to the Supervisory Board, ensuring oversight, accountability, and continuous improvement in line with international standards.

Through this integrated framework, Bakhvi 1 HPP strengthens internal capabilities, enhances governance effectiveness, and supports the development of a resilient and climate-aware organizational culture. This approach ensures that climate-related knowledge, responsibilities, and performance management are embedded across all levels of the organization, supporting long-term operational stability and alignment with international ESG expectations

14. Monitoring, Evaluation, and Reporting (MER)

Monitoring Evaluation, and Reporting (MER) forms a core component of Bakhvi 1 HPP's climate governance framework, ensuring accountability, transparency, and data-driven decision-making. By integrating hydrological, biodiversity, and greenhouse gas (GHG) performance into a unified system, HPP enables systematic tracking of climate risks, environmental performance, and the effectiveness of adaptation measures.

Integrated monitoring system

A structured monitoring framework supports continuous data collection across key climate and environmental parameters. Hydrological monitoring, including river discharge, is conducted through automated gauging systems, with results reported to the National Environmental Agency. Biodiversity monitoring is implemented through regular field surveys, tracking ecosystem conditions and key indicator species to identify potential climate-related pressures. GHG emissions are monitored in line with internationally recognized methodologies, covering Scope 1, Scope 2, and Scope 3 emissions. This integrated approach ensures a comprehensive and reliable evidence base for performance evaluation and risk management.

Review, Reporting, and Assurance

Monitoring results are consolidated into annual ESG and climate performance reports, which is reviewed annually by the ESG Manager, approved by the Company Director, with oversight from the Holding ESG and Sustainability Lead to ensure alignment with international standards, including IFC Performance Standards and EIB Environmental and Social Standards. Where appropriate, independent verification is applied to strengthen data credibility and provide assurance to regulators, investors, and stakeholders. Public disclosure supports transparency and reinforces stakeholder confidence.

Adaptive management and continuous improvement

The MER framework functions as an adaptive management tool, linking monitoring outcomes with decision-making processes. Findings are used to inform corrective actions, refine operational practices, and enhance climate resilience measures. This feedback loop ensures that the Climate Strategy remains responsive to evolving risks, regulatory requirements, and stakeholder expectations.

Through this integrated MER framework, Bakhvi 1 HPP ensures robust governance, maintains high standards of environmental and climate performance, and supports continuous improvement, strengthening long-term resilience and alignment with international ESG and climate finance requirements.

15. Investment and Financing Plan

A credible Climate Strategy requires clear financial commitments to ensure that adaptation, mitigation, and biodiversity measures are effectively implemented. Bakhvi 1 HPP applies a structured investment approach aligned with international climate finance practices, ensuring that sufficient resources are allocated across all phases to support environmental and social performance and long-term climate resilience.

Allocation of climate-related investments

Dedicated financial resources are allocated to key climate adaptation measures, including flood protection infrastructure, slope stabilization, and sediment management systems, aimed at addressing increasing hydrological variability and extreme weather risks. Climate mitigation investments focus on reducing greenhouse gas emissions through energy-efficient construction practices, use of lower-carbon materials, and optimization of operational performance.

Biodiversity protection is supported through targeted funding for habitat restoration, riparian rehabilitation, and maintenance of ecological connectivity measures. Ongoing environmental monitoring, including biodiversity surveys conducted by independent specialists, is financed on a continuous basis to ensure transparency, compliance, and adaptive management.

Financial governance and accountability

Climate-related expenditures are integrated into the HPP's broader financial planning and ESG governance framework. Climate risks are considered within financial planning to ensure adequate allocation of resources for adaptation measures. Budget allocations are subject to internal review processes and oversight by management and the Supervisory Board, ensuring accountability, efficient use of resources, and alignment with strategic priorities

Through this structured financing approach, Bakhvi 1 HPP ensures that climate adaptation, mitigation, and biodiversity measures are fully resourced and effectively implemented, supporting long-term resilience, regulatory compliance, and alignment with international climate finance and ESG standards

16. conclusion

The Climate Strategy of Bakhvi 1 HPP establishes a comprehensive and integrated framework for managing climate-related risks and opportunities across governance, operations, environmental performance, stakeholder engagement, and financing. By aligning with internationally recognized standards, including the IFC Performance Standards, EIB Environmental and Social Standards, and the International Hydropower Association's *Climate Resilience Guide* (2019), the strategy ensures that climate considerations are systematically embedded into decision-making and operational practices. The approach is built on strong governance, scenario-based climate analysis, structured GHG management, sustainable water stewardship, and biodiversity protection, forming the foundation of long-term climate resilience. Transparent reporting, active stakeholder engagement, and continuous capacity building further reinforce accountability and support the integration of climate objectives across all levels of the organization.

Looking ahead, Bakhvi 1 HPP is well positioned to deliver reliable renewable energy while maintaining high standards of environmental and social performance under evolving climate conditions. As a participant of the United Nations Global Compact Georgia (UNGC) since May 2024, Bakhvi 1 HPP demonstrates its commitment to internationally recognized sustainability principles and responsible business conduct.

Through this integrated and forward-looking approach, Bakhvi 1 HPP contributes to Georgia’s decarbonization pathway, supports alignment with the Paris Agreement, and strengthens its position as a climate-resilient and ESG-aligned infrastructure asset in the region.

Annex 1. The number of surveys conducted in 2025 and the content of each study

Table N1. Number of surveys conducted in 2025

Study Area	Number of surveys conducted	Responsible third-party specialist
Air (dust and emissions)	4	DG Consulting
Noise and vibration	4	DG Consulting
Surface water quality	4	DG Consulting
Geological processes	2	Levan Kebuladze – Geostandarti Ltd.
Habitats and vegetation cover	2	Niko Kerdikoshvili – MSc in Ecology, Scientific Program Manager at Tbilisi Zoo
Animals, birds, amphibians, and reptiles	4	Niko Kerdikoshvili – MSc in Ecology, Scientific Program Manager at Tbilisi Zoo
Aquatic biodiversity surveys	2	Giorgi Zaalishvili – MSc in Biology (specialization in Hydrobiology–Ichthyology)

Table N2. Biodiversity study Results

Metric	Actual 2025
Number of mammal species identified through the study	8
Number of mammal species identified, listed in the Georgian Red List	3
Number of bird species identified through the study	26
Number of bird species identified through listed in the Red List	0
Number of reptiles and amphibian species identified through the study	5
Number of reptile and amphibian species listed in the Georgian Red List	1
Number of bat species identified through the study	8

Table N3. Aquatic Biodiversity Study Results

Metric	Target 2025	Actual 2025
Number of fish species identified during monitoring periods in the Bakhvistskali River	1 (exclusively Brown trouta)	1
Total number of fish captured during monitoring periods in the Bakhvistskali River	7	8
Total biomass of fish recorded during monitoring periods in the Bakhvistskali River	536 g	366 g
Bakhvistskali river taxonomic diversity of macroinvertebrates: number of orders and families	9/35	9/35

Annex 2. Emissions Data

Table N4. Emissions Data For 2023

Type Of Data	Q1	Q2	Q3	Q4	Actual '23
Scope 1 (tCo2eq/yr)	18	17	38	153	226
Scope 2 (tCo2eq/yr)	0,3	0,28	0,49	0,24	1,31
Scope 3 (tCo2eq/yr)	N/A	N/A	N/A	N/A	N/A
Avoided Emission (tCo2eq/yr)	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**

Table N5. Emissions Data For 2024

Type Of Data	Q1	Q2	Q3	Q4	Actual '24
Scope 1 (tCo2eq/yr)	133	15	19	14	181
Scope 2 (tCo2eq/yr)	0,16	0	0,25	0,11	0,52
Scope 3 (tCo2eq/yr)	N/A	N/A	N/A	N/A	N/A
Avoided Emission (tCo2eq/yr)	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**

Table N6. Emissions Data for 2025

Type Of Data	Q1	Q2	Q3	Q4	Actual '25
Scope 1 (tCo2eq/yr)	14	15	28	23	80
Scope 2 (tCo2eq/yr)	0,04	0.08	0,03	0,02	0,17
Scope 3 (tCo2eq/yr)	14	126	45	28	213
Avoided Emission (tCo2eq/yr)	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**