CAO COMPLIANCE ADVISOR OMBUDSMAN

The Independent Accountability Mechanism for IFC & MIGA

MARCH 2025

Compliance Investigation Report

CAO Compliance Investigation of IFC/MIGA Environmental and Social Performance: Adjaristsqali Hydropower Cascade Project, Georgia

Complaint AGL-01/Makhalakidzeebi
IFC Projects #30428, 33435, 37781 & 601449; MIGA Project #12315

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Acronyms

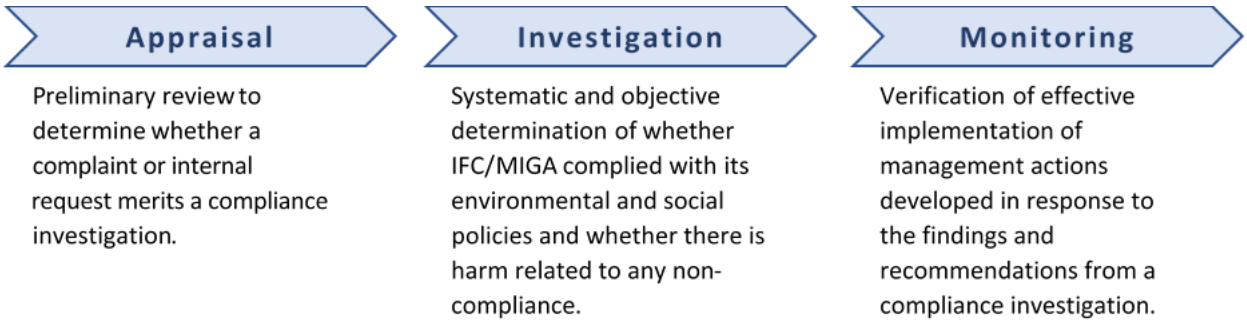
ADB	Asian Development Bank
AGL	Adjaristsqali Georgia LLC
BAP	Biodiversity Action Plan
CAO	Office of the Compliance Advisor Ombudsman (IFC and MIGA)
CAP	Corrective Action Plan
CEMP	Construction Environmental Management Plan
CHA	Critical Habitat Assessment
EBRD	European Bank for Reconstruction and Development
EPC	Engineering, Procurement and Construction contractor
E&S	Environmental and Social
ESAP	Environmental and Social Action Plan
ESDD	Environmental and Social Due Diligence
ESIA	Environmental and Social Impact Assessment
ESRAM	Environmental and Social Risk Allocation Memo
ESRP	Environmental and Social Review Procedures
ESRS	Environmental and Social Review Summary
FN	Footnote
GHG	Greenhouse gases
GIIP	Good International Industry Practice
GN	Guidance Notes (which correspond to the Performance Standards)
HPP	Hydropower plant
IAM	Independent Accountability Mechanism
IESC	Independent Environmental and Social Consultant
IFC	International Finance Corporation
IPAM	Independent Project Accountability Mechanism (of the EBRD)
MAP	Management Action Plan
MIGA	Multilateral Investment Guarantee Agency
MOU	Memorandum of Understanding
OSPF	Office of the Special Project Facilitator (of the ADB)
PS	Performance Standard (IFC)
PS1	Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts
PS6	Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
SEP	Stakeholder Engagement Plan
SPV	Special Purpose Vehicle

About CAO

The Office of the Compliance Advisor Ombudsman (CAO) is the independent accountability mechanism of the International Finance Corporation (IFC) and Multilateral Investment Guarantee Agency (MIGA), members of the World Bank Group. We work to facilitate the resolution of complaints from people affected by IFC and MIGA projects in a fair, objective, and constructive manner, enhance environmental and social project outcomes, and foster public accountability and learning at IFC and MIGA.

CAO is an independent office that reports directly to the IFC and MIGA Boards of Executive Directors. For more information, see www.cao-ombudsman.org.

About the Compliance Function
CAO's compliance function reviews IFC and MIGA compliance with environmental and social policies, assesses related harm, and recommends remedial actions where appropriate.
CAO's compliance function follows a three-step approach:



CAO's Compliance Investigation Process
CAO carries out its work in accordance with the IFC/MIGA Independent Accountability Mechanism Policy ("the CAO Policy").[1]

In carrying out its mandate, CAO facilitates access to remedy for project-affected people in a manner consistent with the international principles related to business and human rights included within the IFC/MIGA Sustainability Framework.

A compliance investigation of a complaint determines whether IFC/MIGA has complied with its E&S policies and whether there is harm related to any IFC/MIGA non-compliance, following a systematic and objective process of obtaining and evaluating evidence. In cases where CAO finds non-compliance and related harm, it makes recommendations for IFC/MIGA to consider when developing a remedial Management Action Plan (MAP) for approval by the Board.

CAO subsequently conducts a compliance monitoring process of the Board-approved MAP and reports on the effective implementation of any corrective actions it contains.

For more information about CAO, please visit: www.cao-ombudsman.org.

[1] The CAO Policy, which supersedes and replaces in its entirety the CAO Operational Guidelines and CAO Terms of Reference, became effective on July 1, 2021. Though commenced under the Operational Guidelines, this CAO compliance investigation was completed under the CAO Policy. The CAO Policy is available at: https://bit.ly/CAO- Policy.

Executive Summary

This compliance investigation report presents CAO's findings regarding IFC's investments in Adjaristsqali Georgia LLC (AGL), a special purpose company developing the Adjaristsqali Hydropower Cascade Project in southwest Georgia. MIGA is also involved through a guarantee to one of AGL's owners, Tata Power International Pte. Limited, but relies on IFC for E&S due diligence and monitoring of this joint project. The project is located in Georgia's Caucasus region, a geographically diverse landscape home to unique flora and fauna that is increasingly threatened by human activities.

CAO's investigation focused on allegations by local residents that the Shuakhevi hydropower scheme – one of three proposed under the Adjaristsqali Hydropower Cascade Project – has resulted in reduced water supply and quality, and biodiversity impacts. Based on the evidence presented below, CAO finds IFC non-compliances related to the complaint issues and presents IFC and MIGA with recommendations to mitigate harm from this active investment.

IFC and MIGA Involvement

IFC has been engaged since 2013 in the 187 MW, $427 million Shuakhevi hydropower project ("the project") in southwest Georgia, which began operations in March 2020.

In 2011, IFC InfraVentures (IFC project #30428) and Clean Energy Invest of Norway (CEI)[2] originally developed AGL and signed a joint development agreement to develop three cascading hydropower projects. In 2013, IFC InfraVentures attracted Tata Power International Pte. Limited as a strategic partner and a project sponsor. The goal was to tap the region's abundant water resources to provide renewable power for both Turkish and domestic markets. A special purpose company, Adjaristsqali Georgia LLC (AGL, the client), was formed to secure long term financing, and subsequently to build and operate the hydropower scheme. In 2014, IFC joined the European Bank for Reconstruction and Development (EBRD) and Asian Development Bank (ADB) in providing construction and operation loans. IFC provided AGL with an A loan of up to US$70 million (IFC project #33435) and additional equity of up to US$34 million (IFC project #37781). Subsequently, IFC supported AGL in demobilizing the construction workforce through an Advisory Services project (#601449). In 2015, MIGA provided a $63 million guarantee to Tata Power International Pte. Limited to cover its equity investment in AGL (MIGA project #12315).

The Shuakhevi scheme comprises the 39-meter Didachara dam on the Adjaristsqali River with a reservoir capacity of 623,000 m3, the 22-meter Skhalta dam on the Skhalta River with reservoir capacity of 493,000 m3, and a 5-meter weir on the Chirukhistsqali River, along with a series of transfer tunnels covering 33.8 kilometers (km)[3] which connect the reservoirs to the Shuakhevi powerhouse. In 2017, three years after construction began, seven tunnel sections totaling 300 meters in length collapsed. In 2019, the IFC Board approved a loan restructuring to enable the client to complete repairs.

[2] Norsk Mineral AS of Norway is a shareholder of CEI.
[3] The tunnels include: a 5.8 km tunnel from the Chirukhistsqali River to the Skhalta river and through the Skhalta HPP; a 9.1 km tunnel from the Skhalta and Chirukhistsqali rivers to the Didachara reservoir on the Adjaristsqali River; and a 16.8 km tunnel from the Didachara reservoir to the 178 MW Shuakhevi HPP. ESIA, p. 24. Available here: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://agl.com.ge/storage/media/other/2024-01-10/051fcc30-afa9-11ee-a75e-ed09f187ca8f.pdf.

In April 2020, IFC sold its AGL equity shares in equal parts to Clean Energy Invest and Tata Power International, leaving them sole owners of the Shuakhevi project. IFC's A loan and MIGA's guarantee remain active. Of the Adjaristsqali Hydropower Cascade Project's other two planned projects, one has been abandoned as too costly and the other, at Koromkheti, is currently not being pursued.

The Complaint

In February 2018, CAO received a complaint filed by 22 households from the Rabati neighborhood of Makhalakidzeebi village in Shuakhevi municipality, whose homes are 500 meters from a project tunnel. They allege that the Shuakhevi scheme reduced groundwater flows and that tunnel construction between the Chirukhistsqali and Skhalta rivers resulted in the loss of local springs, reducing their access to water for drinking, household use, and irrigation for the past several years. The complainants also allege the scheme's operations have had biodiversity impacts on the Adjaristsqali River and its tributaries, resulting in fewer riverside trees and the disappearance of several local fish species, including a vulnerable trout. The broader Adjaristsqali River basin[4] is recognized by Georgia's government as an area of high biodiversity value with several vulnerable and critically endangered species from the IUCN and National Red Lists.

The complaint also raised concerns about increased, ongoing risk to community safety from landslides and rockfalls due to explosions and drilling conducted during AGL's tunneling works.

IFC/MIGA and Client Response

Neither IFC nor MIGA submitted a Management Response to CAO as it was not required under the 2013 Operational Guidelines in effect when the case was transferred for compliance appraisal in November 2020.

In July 2018, when CAO was assessing the complaint, AGL stated that it had monitored spring water flow in Makhalakidzeebi from 2014 to 2017 after completing tunneling works and found no link between plant construction and reduction in groundwater levels. However, the company acknowledged the village's water scarcity problem and has since implemented two water supply rehabilitation projects in response. Regarding the alleged biodiversity impacts, AGL stated that data it gathers through regular monitoring of all three local rivers has revealed no biodiversity changes or concerns. AGL continues to monitor ingress water during tunnel audits.

Regarding rock slides, AGL cited inspections by a committee of government officials, community representatives, and geological experts in 2014 and 2016 that concluded damage to houses along the tunnel route was due to natural causes and not directly related to construction.

CAO Process, Analysis, and Findings

The 2018 complaint to CAO was replicated in complaints to the independent accountability mechanisms of EBRD and ADB. A joint dispute resolution process from June 2018 to August 2020 ended without agreement between AGL and the complainants, and in November 2020 the complaint was referred to CAO's compliance function. CAO's investigation reviewed how IFC and MIGA appraised, structured, and supervised the investments in AGL to evaluate whether groundwater and biodiversity impacts raised by the complainants were adequately considered and mitigated. CAO's analysis and findings regarding shortcomings in IFC's pre-investment due diligence and subsequent

[4] The Adjaristsqali river basin is approximately 1565 km2 and larger than the project's Zone of Influence.

project supervision are summarized below.

Groundwater

Groundwater baseline information: Despite community reliance on groundwater-fed springs for drinking water, the Environmental and Social Impact Assessment (ESIA) commissioned by IFC's client cited insufficient historical information to provide a detailed baseline for groundwater in the project's area of influence. CAO finds that conducting a baseline survey of existing springs close to project-affected communities would have been appropriate, given strong evidence of community dependence for personal use and livelihoods on these water sources. CAO therefore finds IFC's failure to require such a survey during pre-investment due diligence noncompliant with the requirements of IFC Performance Standards (PS) 1 and 6. This inaction resulted in a lack of baseline information commensurate to the scale and nature of a large hydropower project in an area known to house numerous springs, in breach of IFC's Sustainability Policy commitments. CAO also notes that collecting appropriate baseline data is important for determining potential negative project impacts and responding to related community concerns.

Assessment of project impact on groundwater and related ecosystem services: Multiple analyses conducted by IFC and its client during pre-investment due diligence found that tunneling during construction could significantly impact groundwater used by communities. However, IFC and AGL concluded that tunnel alignment combined with mitigation measures (tunnel grouting and lining and provision of alternative water supply) would make this outcome unlikely and thus classified the potential impact as non-significant. CAO finds that through this process IFC did assure that the client identified and assessed potential impacts to groundwater resources, commensurate with the nature and scale of the project, in compliance with the Sustainability Policy and PS1.

Mitigation measures to prevent impacts to local springs: IFC and AGL, identified mitigation measures for tunnel-related impacts, including tunnel lining where there was a risk of disrupting groundwater resources and a water feature survey to determine tunnel lining requirements. IFC's project E&S Review Summary stated that, should loss of drinking water occur, AGL would provide affected households with a temporary water supply and then install a permanent alternative water supply.

The plant's construction contractor and AGL were responsible for defining and implementing these mitigation measures – outlined in the project's E&S Impact Assessment (ESIA) and E&S Management Plan (ESMP) – through a Water Quality and Water Resources Management Plan. However, the latter plan omitted any references to tunnel pre-grouting, grouting, and lining or water surveys to inform such measures. It also described the likely need to provide alternative water supply as "rare" and did not provide guidelines for its proactive implementation. As a result of these omissions, and IFC's failure to address them with the client, the Environmental & Social Action Plan (ESAP) for the hydropower plant did not require AGL to implement the mitigation measures identified in the ESIA and ESMP as needed. Instead, the ESAP's only measure related to groundwater risk was a commitment to review community complaints about project impacts on water access.

Given that the Shuakhevi hydropower plant was a large-scale and complex undertaking in an area of unstable geology, tunnel construction posed a high-level risk to local groundwater and springs. Therefore, CAO concludes that the Water Resources Management Plan and ESAP should have required spring water monitoring before tunnel construction as well as provision of alternative water supply to communities impacted by water shortages. In addition, the Water Resources Management

Plan should have either specified requirements for tunnel grouting and lining when excess ingress water was recorded during building works, or referenced construction requirements for the building contractor. CAO finds that IFC's failure to require AGL to reflect these agreed mitigation measures in the ESAP and other E&S risk mitigation project documents compromised IFC's ability during supervision to verify client compliance with PS1 and PS6 requirements.

IFC supervision of spring water monitoring: The project began with several years of tunnel construction during which CAO finds that IFC failed to adequately supervise spring water monitoring by its client to prevent impacts to local groundwater. Instead, IFC supervision of water resources focused on compliance with local permits and licenses. Project documents suggest that neither IFC nor the E&S consultant for the project lenders (IESC) analyzed monitoring data to assess whether tunneling was impacting springs that served local villages, and IFC did not require AGL to use spring water monitoring data to inform project implementation. Moreover, spring water monitoring ended in 2016 when tunnel construction was completed, even though a tunnel collapse incident in 2017 meant that tunnel repairs and lining continued until 2020. Although the lenders' consultant recommended re-starting spring water monitoring, neither the consultant nor IFC followed up with the client. Given these supervision failures, CAO finds that IFC was unable to ensure client conformance with the relevant PS1 provisions.

IFC supervision of tunnel pre-grouting, grouting, and lining: Tunnel construction progress, including information about grouting, lining, and ingress water, was supervised and reported by the lenders' Independent Engineer (IE). During construction, IE reports described tunnels without grouting and excess levels of water ingress in several sections over multiple years, contrary to requirements in the Engineering, Procurement, and Construction (EPC) contract. The IE also reported that construction continued when excess water entered tunnels. Supervision records for this period contain no indication that IFC considered the implications of this negative development on local springs. CAO concludes that IFC's inaction in ensuring the implementation of grouting and lining requirements fell short of its Sustainability Policy obligations to supervise AGL's implementation of agreed mitigation measures in conformance with PS1.

IFC supervision of alternative water supply: Project reports by AGL and the lenders' E&S consultant describe agreements with local municipalities and client CSR initiatives that included alternative water supply improvements. However, these reports lack details of individual water supply projects, including water quantity and quality or their supervision. While AGL has provided alternative water supply to several local communities, including Makhalakidzeebi, as part of Corporate Social Responsibility (CSR) initiatives, villagers reported problems with the new supply during a 2022 CAO field visit, including pollution issues and insufficient flow.

CAO finds that during supervision IFC did not assess whether the client's initiatives met the ESMP's objectives of providing clean and sufficient water. In addition, IFC failed to work with AGL, as required by the Sustainability Policy, to improve project performance and ensure the necessary measures were taken to address the known E&S risks and impacts associated with water availability.

Biodiversity

CAO's compliance investigation included an in-depth analysis of the biodiversity impacts of the Shuakhevi hydropower project on the Chirukhistsqali, Adjaristsqali and Skhalta river ecology, focusing on IFC's due diligence and supervision and the effectiveness of agreed mitigation measures. CAO's findings regarding IFC non-compliances are summarized below.

Biodiversity baseline information: AGL's consultant conducted surveys to establish a fish biodiversity baseline for the original cascade design and project-affected area in 2011, before construction began. This process recorded vulnerable and endangered species according to the Red Lists of IUCN and Georgia in the Adjaristsqali River and its tributaries, including Black Sea salmon, Black Sea trout and the European eel, and identified recreational fishing as a local ecosystem service. However, CAO's analysis found shortcomings in the baseline's sample size, frequency, and attention to vulnerable and critically endangered species. CAO finds that IFC failed during pre-investment due diligence to ensure the client conducted a fish baseline rigorous enough for a large hydropower project in an area known for high biodiversity value, including endemic and critically endangered species, in breach of Performance Standard 1 (para. 7). Moreover, IFC did not ensure that the baseline was adjusted to meet the new project design, after only one of the three planned plants went ahead, as required under the Sustainability Policy.

Assessment of project impact on biodiversity and related ecosystem services: Dam projects can significantly affect river flow and AGL's consultant therefore evaluated potential effects on the three local rivers as part of the ESIA conducted prior to IFC's investment. The impact assessment concluded that annual average river flows would likely fall by 90%, reducing water flow sustaining the local ecologies to 10% of the pre-scheme annual average. While the ESIA noted that this flow adjustment was typical of other hydroelectric dams in Georgia, it acknowledged wide-ranging potential impacts, including on fish populations, movement of fish and otters, river water quality and permanent habitat loss from project infrastructure. However, while the project envisioned a two-phased approach to environmental flow assessment that would start at the ESIA and extend into monitoring, the ESIA did not conduct a detailed assessment of differing environmental flow scenarios and their impact on flora and fauna as recommended by international best practices or take into account the unique ecology and needs of each river in determining a 10% of average annual water flow baseline across the affected area. As a result, the analysis was insufficient to demonstrate that the project would achieve no net loss[5] of biodiversity, as required by Performance Standard 6. In terms of recreational fishing, the ESIA recognized fishing by local communities as both an ecosystem service and cultural service. It assessed the potential impact on fishing as minor to moderate, considering the impact during construction, fundamental changes to hydrological conditions, as well as the reduction of impact due to proposed mitigation and offsetting measures.

CAO finds that IFC did not meet its obligations to undertake E&S due diligence commensurate to the nature and scale of risks and to ensure that the project met PS6 requirements, particularly considering the high biodiversity values of the area. Specifically, the impact assessment did not adequately consider impacts on riverine habitats and biodiversity, despite the known presence of vulnerable species, leading to insufficient analysis to achieve no net loss (PS6, para 15). In contrast, CAO concludes that the impact assessment identified recreational fishing as an ecosystem service and proposed mitigation and offsetting measures, consistent with PS6 (paras. 7 and 25).

Mitigation measures to prevent biodiversity impacts: The project ESIA and subsequent Biodiversity Action Plan (BAP), developed by AGL's consultants, lacked any analysis of the adequacy or effectiveness of proposed mitigation measures for endangered or vulnerable species in the project area such as the European eel (*Anguilla anguilla)*, Black Sea salmon (S*almo labrax*

[5] No net loss is defined by IFC's Performance Standard 6 as, "the point at which project-related impacts on biodiversity are balanced by measures taken to avoid and minimize the project's impacts, to undertake on-site restoration and finally to offset significant residual impacts, if any, on an appropriate geographic scale."

pallas), Eurasian otter (*Lutra lutra*), and others. In particular, they failed to assess whether reducing river levels to 10% of the annual average flow would be sufficient to sustain these species and noted the loss of aquatic habitat connectivity at the project's two dams without including any mitigation or offset measures. While the weir has a fish passage incorporated, the two reservoirs do not have a means for migratory fish to overcome those barriers. In contrast, the ESIA did include biodiversity mitigation and offsetting measures for recreational fishing, including the creation of new recreational fishing areas around the reservoirs and restocking of the reservoirs and rivers with native fish species. Lastly, while the IFC client did undertake reforestation efforts to address loss of trees due to project works, CAO notes that AGL did not respond to the potential loss of trees along the rivers given the environmental flow water reduction.

CAO notes that the project's planned reduction of river flow to 10% of the annual average would likely have a significant negative impact on biodiversity including loss of fish spawning habitat, river connectivity, and riparian habitats. During due diligence, IFC should therefore have ensured that the client propose measures to demonstrate that no net loss of aquatic species could reasonably be achieved through the application of the mitigation hierarchy. Since project plans did not include such mitigation measures in an area with high biodiversity values, CAO finds that IFC's due diligence was not commensurate with the level of E&S risks and impacts and was non-compliant with its Sustainability Policy obligations to ensure client compliance with PS6 (paras. 7 and 15).

IFC supervision of biodiversity resources: The client's analysis of fish monitoring data during construction (between 2014 and 2020) showed a significant decline in species diversity and abundance downstream of the project's two dams and weir, also affecting the recreational fishing in the area. While this trend was to be expected given the loss of aquatic habitats, it was not promptly identified and, aside from Black Sea trout/brown trout[6] restocking efforts that started in 2021, AGL has not pursued an adaptive management program to reduce and offset species loss.

CAO finds that, during a decade of project construction and operation, IFC failed to supervise AGL's implementation of Biodiversity Action Plan monitoring requirements to prevent impacts or achieve no net loss of biodiversity, with particular regard to endemic, endangered, and vulnerable species. The fish baseline's limited river survey scope and methodology, together with changes made by the client to fish monitoring stations, undermines confidence in the comparability between the fish baseline data and the fish survey data collected during construction and operation. As a result, CAO concludes that IFC fell short of its obligations under the Sustainability Policy (paras. 7 and 45) to supervise its client to implement the appropriate mitigation or offset measures to achieve no net loss in conformance with PS6 (para. 15).

IFC supervision of environmental flow in project-affected rivers: CAO recognizes that IFC's client has monitored the environmental flow of the Adjaristsqali, Skhalta, and Chirukhistsqali rivers to ensure they maintain a minimum 10% of the annual average as required by the project's Low Flow Mitigation Strategy. However, as described above, CAO found no evidence that the environmental flow analysis undertaken during appraisal addressed the natural habitat needs or that the ongoing environmental flow of 10% of the annual average is adequate to mitigate project impacts on biodiversity, including species of conservation concern like the Black Sea salmon, Black Sea trout, European eel, and Eurasian otter, in line with PS6. CAO therefore finds that IFC failed to supervise AGL's analysis of impact based on the low flow in relation to endangered and vulnerable fauna,

[6] The project documentation has named the fish used to for restocking as trout or brown trout. The lack of distinction is relevant as Brown trout (Salmo trutta) is not native to Georgia. CAO assumes references to trout or brown trout in the documentation is used as a synonym for the freshwater ecotype of native Black Sea trout (*S.l. fario).*

beyond accounting for the permanence of 10% of annual average flow in all three rivers. IFC's inaction fell short of its Sustainability Policy (paras. 7 and 45) obligations to ensure AGL implemented mitigation measures that complied with PS1 and PS6 requirements.

Related Harm to the Complainants

The complainants' main allegations of harm relate to impacts to spring water used for domestic consumption and subsistence agriculture, and biodiversity impacts, including impacts on recreational fishing. In assessing whether there is harm related to a finding of IFC non-compliance, CAO takes into account whether the non-compliance contributed to an absence of data or information required to verify allegations of harm.

Regarding groundwater and springs, CAO finds:

1) That shortcomings in implementation and supervision of the mitigation measures identified and agreed to address potential impacts to groundwater use, including alternative water supply, led to unreliable access to clean water and **constitutes Harm to the complainants.**

2) That the complexity of the local geology combined with lack of robust information makes it difficult to establish that tunnel construction impacted the springs used by complainants for domestic consumption and subsistence agriculture. At the same time, the ESIA failure to establish a baseline for existing springs close to project-affected communities, despite the strong evidence of community dependence for personal use and livelihoods, makes it difficult to establish that tunnel construction did not impact these springs. Therefore, **CAO finds that this alleged harm cannot be ruled out**.

Regarding biodiversity and recreational fishing, CAO finds:

1) That there are residual impacts on the aquatic and riparian ecosystems that remain unmitigated. The establishment of a permanent 10% of annual average river flow, the impact on spawning habitat due to project construction, and the loss of river connectivity due to the lack of fish pass on the Didachara and Skhalta dams, represent a **significant likelihood of harm to the to the aquatic habitat** in the Adjaristsqali, Skhalta, and Chiruqstsqali rivers.

2) That, as a result of the project's impacts on biodiversity, and particularly the decrease of fish species during construction, along with the shortcoming in implementation and supervision of the mitigation measures, **the alleged harm to recreational fishing cannot be ruled out.**

To make these findings, CAO took into account the evidence summarized above (and in more detail in the main report) as well as the findings of independent experts it commissioned.

CAO Recommendations for IFC and MIGA

CAO's recommendations to IFC and MIGA for their consideration in developing a Management Action Plan to address this report's findings are presented below. The objective is to work with the Client to address project-level non-compliances and related Harm linked to their ongoing investments in a major hydropower project in an area that is geologically unstable and ecologically sensitive.

CAO notes that its recommendations are limited by its findings of Harm related to non-compliances but emphasizes IFC's opportunity to support remediation of this active investment and address ongoing shortcomings in its supervision of AGL to ensure PS6 alignment. The complainants' main

concerns remain lack of access to groundwater resources and unstable living conditions. The recommendations take account of IFC's opportunity to leverage support for the proposed measures.

Project-level Recommendations

1. **Water supply:** In line with the mitigation measures outlined in the project's ESIA and ESMP on providing an alternative water supply, IFC should work with the client to continue supporting the municipality's efforts to provide long-term reliable water supply to Makhalakidzeebi village and Rabati neighborhood of sufficient quantity and quality to meet their livelihood and domestic consumption needs. These additional efforts should be undertaken within a reasonable time. While system improvements are underway, CAO recommends that IFC work with its client to improve the ongoing alternative water supply provided to the complainants and ensure it is of sufficient quality and quantity to meet their domestic consumption needs. This activity should be categorized as a PS1[7] project mitigation or compensation measure conducted under IFC supervision.[8] To this end, CAO recommends that IFC, as part of its supervision efforts, surveys the client's water provisioning activity to establish that it meets water quality standards and is sufficient to meet the needs of the community. If project area realities make it difficult to ensure that complainants have access to sufficient and clean water, IFC should work with its client to explore other alternatives, such as providing support for relocation.

2. **Biodiversity Impacts**: Given the shortcomings found in the biodiversity baseline and monitoring, CAO recommends that in line with the World Bank Group's Good Practice Handbook,[9] IFC should work with its client to:

- Update the fish baseline to identify the fish species diversity within the adjusted study area of the Shuakhevi scheme, across seasons and in line with good international practice. Particular attention should be given to endemic, endangered, and vulnerable species which depend on aquatic ecosystems, including, but not limited to, fish species.
- Based on the results of the updated baseline, identify habitat needs of individual species, and revisit the assessment of the project's environmental flows. This should include an updated ecological flow analysis, using a high-resolution methodology that assesses a range of environmental flow scenarios to evaluate the impact on the identified fish species and on other species dependent on the freshwater habitat. This re-assessment should inform the identification of measures to adequately mitigate or offset adverse residual impacts to biodiversity, and demonstrate the achievement of no net loss.[10]
- IFC and the client should engage internationally recognized experts to review the

[7] PS1 establishes that the mitigation hierarchy to address identified risks and impacts will favor the avoidance of impacts over minimization, and, where residual impacts remain, compensation/offset, wherever technically and financially feasible. One of PS1 objectives is to adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimize, and where residual impacts remain, compensate/offset project impacts.
[8] As established in the ESIA and the ESMP.
[9] "When the host country grants an environmental license prior to an E-Flows Assessment or compilation of an E-flow Management Plan (EFMP), then project design and E-Flows decisions should be revisited." Good Practice Handbook, Environmental Flows for Hydropower Projects Guidance for the Private Sector in Emerging Markets (p.45 WBG, 2018).
[10] Examples of potential offsets include: Restore connectivity by removing barriers (dams, weirs) from rivers in the region where they no longer serve a purpose; installing fish passes at barriers outside the project that do not have them; and/or establish protected areas in nearby watersheds without dams and fund management plan preparation and implementation.

ecological flow analysis, update the BAP, to ensure that the mitigation and/or offset measures taken are adequate to ensure no net loss of biodiversity.

- Lastly, in order to adequately assess project impacts on aquatic biodiversity in affected rivers and reservoirs, CAO recommends that IFC work with its client to extend the monitoring of fish populations and vulnerable species for the life of the project. The international experts should also review the monitoring program to ensure that it adequately identifies and flags any significant changes in species diversity and populations. This should inform the periodic update of mitigation and/or offset measures.

Next Steps

In line with the CAO Policy, IFC will prepare a Management Action Plan for Board approval in response to this compliance investigation following consultation with AGL and the complainants. CAO will monitor the effective implementation of the Management Action Plan.

CAO will publish this investigation report on its website at www.cao-ombudsman.org/cases.

I. Background

A. IFC and MIGA Project

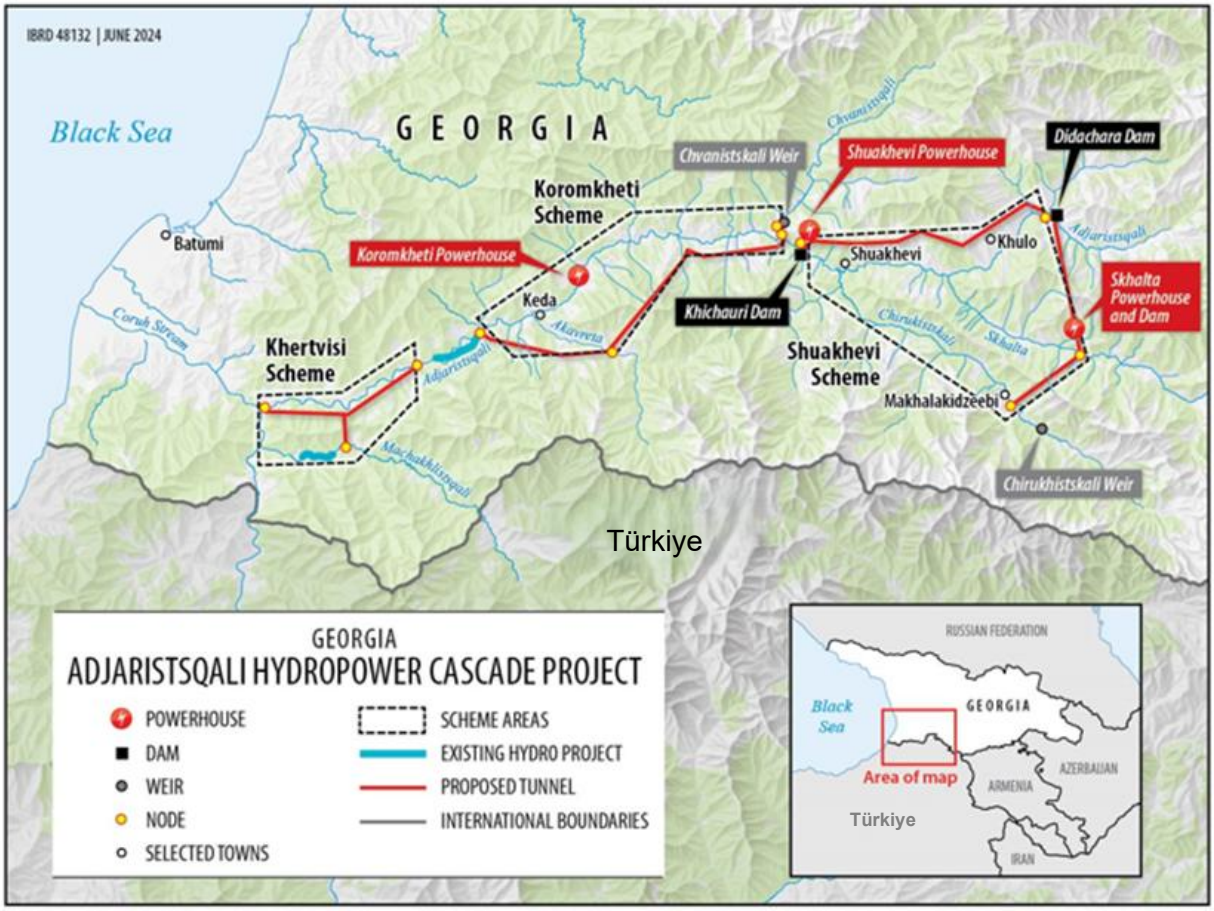
1.1 The Adjaristsqali Hydropower Cascade Project is located in the Autonomous Republic of Adjara in southwest Georgia, close to the Turkish border. The broader Adjaristsqali river basin[11] is an area of high conservation value due to its biodiversity and endemism in particular of reptile, bird, and plant species.[12] Georgia's government has identified the Caucasus as one of 34 global biodiversity hotspots, and acknowledged growing pressure on its habitats from agricultural, energy generation, and other activities.[13]

1.2 Designed to harness local water resources to provide power to both the Turkish and domestic markets, the cascade project was initially proposed as three power plants – the 187-megawatt (MW) Shuakhevi scheme, 150MW Koromkheti scheme, and 65MW Khertvisi scheme (Figure 1). Only the Shuakevi scheme was implemented since AGL decided not to take forward the Khertvisi scheme due to significant economic and environmental risks, and to date the Koromkheti scheme is also not being pursued.[14]

1.3 The 2018 complaint to CAO from local communities relates to the Shuakhevi scheme (also referred to as the "Shuakhevi hydropower project (HPP)" or "project"). IFC and other lenders have been involved in this active project since 2013.

[11] The Adjaristsqali river basin is approximately 1565 km2 and larger than the project's Zone of Influence.
[12] IFC, ESRS. Available here: https://disclosures.ifc.org/project-detail/ESRS/33435/adjaristsqali-georgia-llc
[13] Georgia's Fourth National Report to the United Nations Convention on Biological Diversity states that Georgia's Caucasus eco-region, represents one of 34 biodiversity "hotspots" and is distinguished for its "high levels of endemism whilst also being seriously threatened by habitat loss". https://www.cbd.int/doc/world/ge/ge-nr-04-en.pdf.
[14] IFC, ESRS.

Figure 1. The Adjaristsqali Hydropower Cascade Project



Source: IBRD Cartography Unit, May 2024

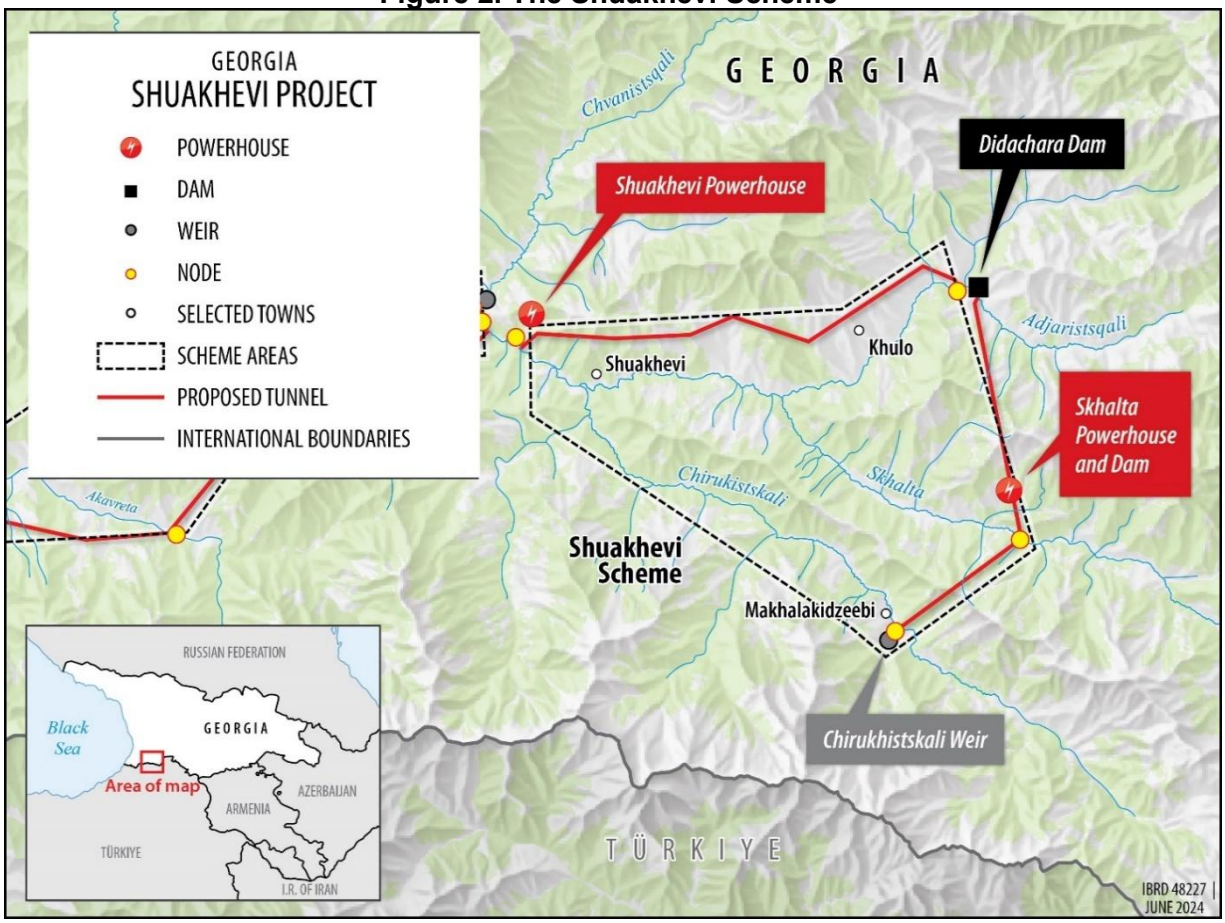
1.4 Adjaristsqali Georgia LLC (AGL) is a special purpose vehicle that was developed, built, and now operates Shuakhevi hydropower plant. AGL is 100% owned by Adjaristsqali Netherlands B.V., which was originally owned by Clean Energy Invest of Norway (40%), Tata Power International Pte. Limited of Singapore (40%), and IFC (20%). Since April 2020, Adjaristsqali Netherlands B.V. has been owned in equal parts by Clean Energy Invest and Tata Power International Pte. Limited.

1.5 According to IFC, the investors' aims for the US$427 million project were to: a) increase Georgia's renewable energy output; b) reduce greenhouse gas (GHG) emissions; c) increase Georgia's ability to attract foreign investment in the hydropower sector; and d) contribute to private sector investment in Georgia, including South-South investments.[15] In 2011, IFC InfraVentures[16] began assisting with project development (IFC project #30428) by supporting AGL's efforts to secure finance for construction. In 2014, three lenders, IFC, the European Bank for Reconstruction and Development (EBRD), and the Asian Development Bank (ADB) provided loans for $70 million, $90

[15] IFC, SII. Anticipated Impact Measurement and Monitoring Assessment. Available here: https://bit.ly/3xRLHmS.
[16] IFC InfraVenture is "a global infrastructure project development fund that has been created as part of World Bank Group's efforts to increase the pipeline of bankable projects in developing countries. Its unique offering, combining early-stage risk capital and experienced project development support, is designed to address the key constraints to private investment in infrastructure projects in frontier markets."

million, and $90 million, respectively, to build the hydropower plant (IFC project #33435).[17] IFC also invested up to US$34 million of equity in AGL (IFC project #37781). In 2015, MIGA provided a $63 million guarantee to Tata Power International Pte. Limited to cover its equity investment in the project (MIGA project #12315).[18,19] After the plant was built, IFC Advisory Services provided guidance on AGL's strategy for demobilizing the construction workforce and associated implementation plans, including sustainable livelihood opportunities for these workers and local communities (IFC project #601449).[20]

Figure 2. The Shuakhevi Scheme



Source: IBRD Cartography Unit, June 2024

1.6 The 187 MW Shuakhevi hydropower project was designed to generate 464,000 megawatt hours (MWh) of power annually, to be exported to Türkiye for nine months of the year and sold domestically from December to February, when Georgia is energy deficient. The scheme comprises the 39-meter Didachara dam on the Adjaristsqali River with reservoir capacity of

[17] IFC processed debt and equity investment jointly under project #33435, including project information disclosure. IFC, SII. Available here: https://bit.ly/3xRLHmS.
[18] Multilateral Investment Guarantee Agency, Adjaristsqali Hydro Project, project description, https://bit.ly/3IhR3wg
[19] In accordance with MIGA's Policy on Environmental and Social Sustainability (para. 6) and based on an internal agreement between IFC and MIGA, MIGA relies on IFC's E&S due diligence and monitoring in this joint project.
[20] IFC, Summary of Advisory Service and Project Information, https://bit.ly/3oq0kuB. CAO does not consider this Advisory Service project as it is not relevant to the issues raised in the complaint.

623,000 m3, the 22-meter Skhalta dam on the Skhalta River with reservoir capacity of 493,000 m3, and a 5-meter weir on the Chirukhistsqali River alongside a series of transfer tunnels covering 33.8 kilometers (km)[21] which connect the reservoirs to the Shuakhevi powerhouse. (See also Figure 2 and the glossary below). Construction also involved 5.9 km of new roads, four new bridges, and construction camps.[22] IFC designated the scheme a Category A project under its Policy on Environmental and Social Sustainability due to potentially significant adverse risks across multiple sites, including in relation to hydrology/ecological flow, land use/ownership, biodiversity, dam safety, and community and worker safety.

1.7 Project construction began in June 2014 and was expected to take three years.[23] While the completed plant was operating in testing mode between August and October 2017, seven major collapses occurred in different sections of tunnel. The project was halted and tunnels drained to conduct an extensive 12-month investigation, which identified approximately 300 meters of damaged tunnel. In particular, the investigation found that: (a) the headrace tunnel collapse and several other collapses were related to insufficient rock support during construction; and (b) remaining collapses were related to the presence of swelling rock[24] and dissimilar rock types, which caused ground deformations and exerted forces on the tunnel linings, eventually leading to their failure. In 2019, IFC's Board approved a loan restructuring to provide the required funds to assist AGL in completing repairs. The investigation and rehabilitation work, including lining up to 80% of the project's tunnels, took approximately two years and cost around $120 million. Shuakhevi HPP was recommissioned in February 2020 and began operations a month later.[25]

1.8 In December 2016, IFC completed its Advisory Services engagement with AGL. In April 2020, IFC sold its shares in AGL to Clean Energy Invest and Tata Power International Pte. Limited in equal parts, thus exiting the equity investment. Although both IFC's equity and advisory projects are closed, IFC's A loan and MIGA's guarantee remain active at the time of writing this report.

Project Glossary	
Dam	A wall constructed across a stream channel to restrict water. Water flows through spillways and penstocks instead of over the top of the dam.
Fish pass	A structure that allows fish to move around barriers like dams and weirs. Fish passes are also known as fish ladders, fishways, or fish steps.
Groundwater	Monitoring of underground levels of water in the aquifer

[21] The tunnels include: a 5.8 km tunnel from the Chirukhistsqali River to the Skhalta river and through the Skhalta HPP; a 9.1 km tunnel from the Skhalta and Chirukhistsqali rivers to the Didachara reservoir on the Adjaristsqali River; and a 16.8 km tunnel from the Didachara reservoir to the 178 MW Shuakhevi HPP. ESIA, p. 24. Available here: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://agl.com.ge/storage/media/other/2024-01-10/051fcc30-afa9-11ee-a75e-ed09f187ca8f.pdf.

[22] ESRS.

[23] ESRS.

[24] Swell rock is rock material that can absorb water and expand. Tunneling in the Caucasus faces significant challenges due to swell rocks, which exert pressures that can affect tunnel stability. Tectonic activity and mountain-building processes may further complicate stability where the presence of water, particularly near aquifers, increases swelling pressure, requiring effective drainage and waterproofing strategies. Underground excavations can also lead to swelling. W. Steiner, "Swelling rock in tunnels: Rock characterization, effect of horizontal stresses and construction procedures," International Journal of Rock Mechanics and Mining Sciences & Geomechanics Abstracts, vol. 30, no. 4, pp. 361-380, Aug. 1993.

[25] See more about the tunnel collapse and the remedial actions taken here: https://agl.com.ge/storage/media/other/2024-01-10/b651e550-af90-11ee-8894-4b3f5b5493c1.pdf

monitoring	
Groundwater use	Use of spring water sourced from the underground aquifer by communities
Penstock	A channel for conveying water to a waterwheel or turbine
Powerhouse	Structure housing generators and turbines at a hydropower facility
Reservoir	Water accumulated and restricted by the dam
Spillway	A passage for surplus water from the dam
Spring monitoring	Monitoring of surface-level springs located in the project area
Transfer tunnel	Underground tunnels connecting the rivers between the reservoirs and the powerhouse
Weir	A small barrier built across a river to divert its flow and allow floodwater to pass over the top of the structure

B. Regional Hazards and Related Project Agreements

1.9 The Adjara region is prone to natural hazards, including mudflows, erosion, and landslides. In 1989, a landslide killed 19 families in the Skhalta River valley, adjacent to the Chirukhistsqali River valley where the complainants live.[26] The project E&S Impact Assessment (ESIA) states that 763 families[27] across Adjara were classified as 'eco-migrants' and resettled between 2004 and 2010, including from Khulo and Shuakhevi villages close to the project, because of natural disasters, and that more than 250 settlements and up to 20,000 households continue to live in high risk and hazard zones. Over the past 30 years, landslides have destroyed 1,900 houses. Several settlements close to the project infrastructure are particularly vulnerable to landslides, including Makhalakidzeebi village where the complainants live.[28]

1.10 Against this backdrop, on May 1, 2014, the Government of Adjara, AGL, and Makhalakidzeebi village representatives signed an agreement that specified government and company obligations as part of the project.[29] Under this agreement, certain community investments can be implemented as corporate social responsibility (CSR) projects[30] and the Government of Ajara is obligated to resettle damaged households if a house is destroyed or uninhabitable as a result of a natural disaster.[31] AGL's obligations included surveying the condition of houses within 500 meters of the transfer tunnel's centerline, a program monitoring ground movements, disclosure of project documents, implementation of a community infrastructure project, efforts to employ residents, and

[26] ESRS and ESIA, p. 7.
[27] These families are identified as eco-migrants. The Ministry of Internally Displaced Persons from the Occupied Territories, Accommodation and Refugees of Georgia, and the Autonomous Republic of Adjara are implementing long-term and temporary housing programs for migrants who have been internally displaced as a result of the environment. As of October 2017, the OHCHR states that there are 18,804 registered eco-migrants (4,433 families) in Georgia. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.ohchr.org/sites/default/files/Documents/Issues/Housing/HousingStrategies/States/Georgia_1.pdf
[28] ESIA, pp. 135 and 136.
[29] The agreement states that persons permanently residing in Makhalakidzeebii or claiming land rights in the area, have agreed to authorize, and be represented by the persons signing this agreement and to be legally bound by this agreement. Agreement between Government of Ajara A.R., Adjaristsqali Georgia LLC and Residents of Makhalakidzeebi Village, dated May 1, 2014, p. 2. IFC and MIGA were not part of this agreement.
[30] Ibid., pp. 2 and 3.
[31] Agreement between Government of Ajara A.R., Adjaristsqali Georgia LLC and Residents of Makhalakidzeebi Village, dated May 1, 2014, p. 3, section 1.

university scholarships for local students.[32] The company also agreed to survey the availability and quantity of water supply, discussed in greater detail in Section 2 of this report. In return, the agreement states that Makhalakidzeebi villagers would not interrupt, block, sabotage or otherwise interfere with the project's construction, related works or access to the site.[33]

1.11 In 2019, AGL stated to the lenders' E&S consultant that it could consider assisting villagers who wanted to relocate through its corporate CSR efforts and IFC supervision records noted support from the complainants for this measure. In its 2022 visit to the area, CAO's field team noted its hazardous nature and that several complainants expressed their wish to resettle from Makhalakidzeebi due to their fear of land instability but had not done so as the compensation offered under the government resettlement program was insufficient to reestablish their livelihoods elsewhere. In addition, AGL reported to CAO that residents of the Rabati neighborhood in Makhalakidzeebi, closest to project tunnels, were considering registering with the government resettlement program for natural disasters. Although not all families were eligible for government relocation programs, AGL reported that the local and regional government were supportive of this option. Also in 2022, an IFC supervision report described a visit to Rabati during which geologists communicated that the area was unsafe and residents should consider resettlement.[34] CAO notes that Makhalakidzeebi village and AGL had signed an MOU eight years earlier, in May 2014, which included relocation support for the community if the project impacted water resources.[35]

C. The Complaint and CAO Assessment

a. Summary of the Complaint

1.12 The Adjara region comprises the municipalities of Kobuleti, Khelvachauri, Keda, Shuakhevi, and Khulo. Makhalakidzeebi village is part of Shuakhevi municipality, which occupies both sides of the Chirukhistsqali River gorge and the slopes of the river valley. The project's main effects on the village stem from the Chirukhistsqali weir and Chirukhistsqali-Skhalta tunnel. The weir is about 2 km from the village center and about 0.8 km from the last group of houses in the Rabati neighborhood. Rabati is also less than 500 meters from the project head race tunnel that connects the Chirukhistsqali and Skhalta rivers.

1.13 In February 2018, a few months after the series of tunnel collapses at the project site, CAO received a complaint[36] filed by community members representing 22 households from Rabati. The complainants raised concerns over the hydropower scheme's actual and anticipated negative impacts for residents of Makhalakidzeebi and the local environment.

1.14 The local residents' key concerns are as follows:

- **Groundwater:** The complaint alleges that tunnel construction led to reduced groundwater flows and the loss of springs, which in turn reduced villagers' access to water for drinking, household use, and irrigation. According to the complainants, seven local spring water sources have

[32] Ibid., pp. 4 – 7, Article 2.
[33] Ibid., Article 4.
[34] Lender comments tracked 220209 Arup report 2022.
[35] Agreement between Government of Ajara A.R., Adjaristsqali Georgia LLC and Residents of Makhalakidzeebi Village, dated May 1, 2014, pp. 5 and 6, section 2.6.
[36] Complaint to CAO, February 2018. Available at: https://www.cao-ombudsman.org/cases/georgia-agl-01makhalakidzeebi

disappeared since construction began in 2014, leaving people in Rabati without enough water to support their basic needs. They also claim that reduced access to water for irrigation affected the volume and quality of their crop/vegetable harvest, with serious consequences for subsistence. In addition, the complaint alleges that AGL and the government of Adjara have provided insufficient and poor-quality water to the community to compensate for the loss of spring water. They note that the 2014 agreement between AGL, the government of Adjara, and Makhalakidzeebi residents committed the IFC client to survey the village's water supply and remediate any negative impacts attributable to the project, including resettling affected households in cases where water supply cannot be provided.[37]

- **Biodiversity:** The complainants claim that river levels have fallen by two-thirds since construction began on the hydropower scheme with negative impacts on the biodiversity of the Adjaristsqali River and its tributaries. They allege that several fish species, including trout listed on the Red Book of Georgia,[38] have disappeared from both the Adjaristsqali and Chirukhistsqali rivers. They also claim that trees along the Chirukhistsqali River died as a result of discharges from the construction of the Chirukhistsqali weir and project-related reduction in water flow.

- **Landslides and rockfalls:** The complaint attributes landslides and rockfalls to explosions and drilling during tunneling works, claims that these events threaten community safety and have damaged homes in Rabati, and argues that the project failed to conduct pertinent geological studies to properly assess these risks. However, CAO's compliance appraisal concluded in 2021 that this aspect of the complaint did not meet the criteria for a compliance investigation.[39]

[37] Agreement Between Government of Adjara A.R., Adjaristsqali Georgia LLC and residents of Makhalakidzeebi Village, May 1, 2014, Article 2.
[38] The International Union for Conservation of Nature (IUCN) Red List of Threatened Species, often referred to as the IUCN Red List or Red Data Book, was established in 1964. It serves as a comprehensive inventory that assesses the global conservation status and extinction risk of biological species. See. https://www.iucnredlist.org/about/background-history. Georgia Law adopts the Red List of endangered wild fauna and flora.
[39] For more information, see the Compliance Appraisal here: https://www.cao-ombudsman.org/cases/georgia-agl-01makhalakidzeebi

Figure 3. Location of Rabati neighborhood in relation to project works

Source: IBRD Cartography Unit, June 2024

b. Summary of IFC and Client Response

1.15 Neither IFC nor MIGA submitted a Management Response to CAO as it was not a requirement under the 2013 Operational Guidelines in effect during compliance appraisal, which began in November 2020. However, during CAO's assessment and appraisal, AGL stated the following in response to the complaint:

- **Groundwater:** AGL explained that since 2014 it had regularly monitored spring water flow in Makhalakidzeebi and shared monthly monitoring reports with Georgia's Ministry of Environment. The company stated that the experts who carried out this monitoring found no causal link between AGL's activities and the decrease in groundwater levels. However, AGL acknowledged that water scarcity was affecting the village and explained that it had implemented two water supply

rehabilitation projects in partnership with the mayor's office.[40]

- **Biodiversity:** AGL argued that the allegation of impact on the biodiversity of the Adjaristsqali River was irrelevant since the complainants' community was located near the Chirukhistsqali River. The company stated that it regularly monitored impacts on the biodiversity of all three local rivers, and the data did not show any changes or concerns. AGL described the allegation of negative impacts on river biodiversity due to water diversion for the plant's operations as irrelevant and baseless.[41]

- **Landslides and Rockfalls:** AGL conducted geological and topographic studies to ensure the project design would minimize the risk of landslides and subsequently put in place measures to reduce landslide risk, including the use of low-energy explosives and hard rock excavation. The company installed ground and landslide monitoring systems and conducted periodic site monitoring, in addition to inspecting houses located along the tunnel route prior to and after tunnel construction. After the tunnel works were completed, the company commissioned an expert evaluation which concluded that damage to village houses was due to natural causes and not directly linked to AGL's operations. Since the risks of landslides and rockfalls cannot be causally linked to its activities, the company's position is that it has no obligation to support resettlement of the complainant households. However, AGL acknowledged that during construction in 2014-2016 a joint commission involving both independent and government geologists undertook an assessment of houses located within 500 meters of the tunnel. These homes were grouped into three categories: houses damaged due to natural disasters, houses which required reconstruction, and houses with minor deformations. The 22 complainant households in Rabati neighborhood fell under the first category and were eligible for compensation of 5,000GEL (approx. USD $1500) from Shuakhevi municipality. AGL offered to partially finance the compensation under the government's eco-migration program as part of its corporate social responsibility (CSR) activity. However, the complainants rejected the compensation as insufficient. Shuakhevi municipality paid compensation to households living on the left side of the river, opposite Rabati district.[42]

c. CAO Dispute Resolution and other Complaint Processes

1.16 CAO received the Rabati community complaint about the hydropower plant in February 2018, following the seven major tunnel collapses that occurred in August-October 2017. The complainants simultaneously submitted the complaint to the independent accountability mechanisms (IAMs) of the other development banks funding the project, namely: EBRD's Project Complaints Mechanism (PCM; now Independent Project Accountability Mechanism or IPAM)[43]; and ADB's Office of the Special Project Facilitator (OSPF). From June 2018 to August 2020, CAO and PCM facilitated a dispute resolution process with OSPF an observer. After this process concluded without a final agreement between AGL and the complainants, both PCM and OSPF closed their cases.[44] CAO's dispute resolution conclusion report was published in October 2020,[45]

[40] CAO Assessment Report regarding Complaint in Relation to Adjaristsqali Georgia LLC (AGL) (IFC #33435, #37781, #601449 and MIGA #12315), July 2018, p. 8.
[41] CAO Assessment Report Regarding Complaint in Relation to Adjaristsqali Georgia LLC (AGL) (IFC #33435, #37781, #601449 and MIGA #12315), July 2018, p. 8.
[42] Ibid., pp. 7 and 8.
[43] In July 2020, the PCM was replaced by the Independent Project Accountability Mechanism (IPAM).
[44] In May 2018 the eligibility determination to proceed with a problem-solving initiative was approved by EBRD's President. Therefore, after dispute resolution ended, IPAM (formerly PCM) closed the case. More on the IPAM's process can be found on their case registry: https://www.ebrd.com/work-with-us/projects/ipam/2018/03.html.
[45] CAO, Dispute Resolution Conclusion Report, October 2020. Available at: https://bit.ly/3W8hMm7.

and the following month CAO transferred the complaint to its compliance function for appraisal.

1.17 PCM received an additional complaint about the Shuakhevi project in July 2018, submitted by two civil society organizations. This complaint raised similar environmental and social assessment and management issues related to landslide risk, groundwater availability, and biodiversity impacts. PCM (and later IPAM) conducted a compliance review, completed in May 2022. The review report, and EBRD's Management Action Plan in response, were published in IPAM's case registry in October 2022,[46] and the relevant findings and EBRD management actions are referenced in later sections of this report.

d. Compliance Appraisal and Investigation Scope

1.18 In December 2021, CAO published a compliance appraisal report concluding that an investigation was warranted. CAO found that the issues raised regarding project impacts on groundwater and biodiversity were potentially significant given: (a) the complainants' reliance on groundwater for household and agricultural use; and (b) the project's location in an area of high conservation value.[47]

1.19 The purpose of the CAO compliance function is to carry out reviews of IFC/MIGA compliance with their E&S policies, assess related harm,[48] and recommend remedial actions where appropriate. In accordance with the IFC/MIGA Independent Accountability Mechanism Policy (CAO Policy), effective July 1, 2021, this report presents investigation findings with respect to compliance, non-compliance, and any related harm, and includes context, evidence, and reasoning to support CAO's findings and conclusions. This report also includes recommendations for IFC and MIGA to consider in the development of the Management Action Plan for the remediation of project-level non-compliance and related harm, and steps needed to prevent future non-compliance.[49]

1.20 As outlined in the terms of reference, CAO's compliance investigation focused on IFC/MIGA due diligence and supervision of AGL with respect to the assessment, prevention, and mitigation of project impacts on groundwater and biodiversity.[50] The CAO compliance appraisal report concluded that the topic of landslides and rockfalls did not require a compliance investigation. In making this decision, CAO considered the risk management measures taken by the company, information from the complainants, and the fact that the construction phase ended without any recorded landslides in Makhalakidzeebi village. However, this report includes general information about landslides and rockfalls where relevant to understanding the project context and complainants' claims regarding groundwater impacts.

1.21 CAO's compliance investigation of the Shuakhevi project examined whether IFC and MIGA obtained the information necessary to assess client compliance with the requirements of the IFC Sustainability Policy and Performance Standards, in particular:

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[46] IPAM, Shuakhevi HPP Case Webpage. Available at: https://bit.ly/3TFd5P3

[47] CAO, Compliance Appraisal Report, December 2021. Available at: https://bit.ly/3yBQKsk. The Adjaristsqali river basin is a high concentration area due to the presence of reptile, bird, and plant species.

[48] Harm is defined in the CAO Policy as "[a]ny material adverse environmental and social effect on people or the environment resulting directly or indirectly from a Project or Sub-Project. Harm may be actual or reasonably likely to occur in the future" (p. iv).

[49] CAO Policy, para. 120c. Available at: https://bit.ly/CAO-Policy.

[50] CAO, Terms of Reference for Compliance Investigation of IFC and MIGA, December 2021. Annex of Appraisal Report. Available at: https://bit.ly/3yBQKsk

- Performance Standard 1 (Assessment and Management of Environmental and Social Risks and Impacts)
- Performance Standard 6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources) as relevant to potential project impacts on groundwater and biodiversity, and in relation to good international industry practice (GIIP).

1.22 In reaching findings of compliance or non-compliance, CAO assessed whether there is evidence that IFC and MIGA applied relevant E&S requirements taking into account the sources of information available at the time the decisions were made. CAO does not make findings and conclusions with the benefit of hindsight.[51]

D. Investigation Methodology

1.23 CAO engaged three independent consultants with expertise in groundwater and biodiversity to provide technical advice on the issues raised in this compliance process (see Annex C for their biographies).

1.24 In conducting this investigation, CAO staff and experts undertook the following activities:

- Reviewed IFC's project documentation during pre-investment E&S due diligence and supervision, and other project-related materials shared by IFC, MIGA, and AGL
- Conducted in-person and virtual interviews with IFC and MIGA project staff and consultants
- Conducted a field visit to Georgia and the project area, interviewing complainants and AGL
- Engaged with Georgia government institutions and the independent environmental and social consultant (IESC) hired by the project lenders.

E. Timeline of Key Events

1.25 The timeline below includes key actions and events for the IFC/MIGA project and CAO complaint.

Date	Actions and Events
2013	Appraisal mission conducted by IFC, EBRD, and ADB (May)
2014	IFC Board approves equity and loan (May)
	Project construction starts (June)
	MOU signed between local communities, the municipality, relevant NGOs, and AGL (August)
	IFC's first and second equity subscription (November)
	Tunnel construction starts in Makhalakidzeebi area (December)
2015	First loan disbursement (March)
	MIGA issues its guarantee to equity sponsor (April)
	IFC's third equity subscription (May)
2016	IFC completes its Advisory Services engagement with AGL (December)
2017	Several tunnel sections collapse (August-October)

[51] CAO Policy, para. 116.

2018	IAMs of IFC, EBRD, and ADB receive complaints from Makhalakidzeebi villagers (February)
	CAO launches dispute resolution process (June)
	IAM of EBRD receives a second complaint from NGOs Green Alternative and CEE Bankwatch Network (July)
2019	IFC Board approves a loan restructure for repair of collapsed tunnels (February)
2020	Shuakevi HPP construction completed (February)
	Shuakevi HPP operations start (March)
	IFC sells its share in AGL, exiting the equity investment (April)
	CAO dispute resolution concludes without agreement (August)
2021	CAO publishes compliance appraisal report and compliance investigation begins (December)
2022	CAO field mission (May)
	EBRD IPAM compliance review completed (May)

II. CAO Analysis and Findings

A. IFC Policy Framework and General Requirements

2.1 IFC invested in AGL in the context of its 2012 Policy on Environmental and Social Sustainability (the Sustainability Policy) and Performance Standards (PS), together the Sustainability Framework. Through the Sustainability Policy, "*IFC seeks to ensure, through its due diligence, monitoring, and supervision efforts, that the business activities it finances are implemented in accordance with the requirements of the Performance Standards*".[52] The Sustainability Policy also notes that "*central to IFC's development mission are its efforts to carry out investment and advisory activities with the intent to 'do no harm' to people and the environment.*"[53] IFC invests in a project only when the activities it finances "*are expected to meet the requirements of the Performance Standards within a reasonable period of time.*"[54] IFC's approach to the management of project-related E&S risks is set out in its E&S Review Procedures (ESRP).

2.2 IFC is required to conduct pre-investment E&S due diligence (ESDD) of every project "*commensurate with the level of environmental and social risks and/or impacts.*"[55] During this review, IFC must identify any gaps in the client's practices and propose measures and actions to resolve them that meet Sustainability Policy and Performance Standard requirements. IFC captures these supplemental client actions in an E&S Action Plan (ESAP) and incorporates them as binding conditions of IFC's investment.[56]

2.3 Following approval and investment, IFC monitors the project to ensure compliance with the conditions in the investment agreements and applicable IFC policies and standards.[57] As set out in the ESRP, "*the purpose of supervision is to obtain information to assess the status of project's compliance with the PS and other specific E&S requirements agreed at commitment; to assess the current level of E&S risk; to provide advice to clients on how to address critical E&S issues; and to identify opportunities for improvement and good practices that could be applied to similar projects*."[58] The Sustainability Policy further states that "*if the client fails to comply with its environmental and social commitments as expressed in the legal agreements and associated documents, IFC will work with the client to bring it back into compliance, and if the client fails to reestablish compliance, IFC will exercise its rights and remedies, as appropriate.*"[59]

2.4 As noted earlier, the Performance Standards particularly relevant to the pre-investment due diligence and supervision of this project and the complaint issues are PS1 (Assessment and Management of Environmental and Social Risks and Impacts) and PS6 (Biodiversity Conservation and Sustainable Management of Living Natural Resources).[60] Detailed analysis of the relevant PS requirements is included in the discussion of each complaint issue below.

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[52] Sustainability Policy, para. 7.
[53] Ibid, para. 9.
[54] Ibid, para 22.
[55] Ibid, para. 26.
[56] Ibid, para. 28.
[57] Sustainability Policy para. 7.
[58] ESRP 6, para.1, version 7, April 15, 2013.
[59] Sustainability Policy, para. 24.
[60] See further reference to the relevant Performance Standards in Sections 2.3.3 and 2.4.3.

B. Overview of IFC and MIGA Due Diligence and Supervision

a. Project Roles of IFC and MIGA

2.5 IFC and MIGA agreed, in accordance with MIGA's Policy on Environmental and Social Sustainability, that MIGA would rely on IFC for E&S due diligence and monitoring of this joint project.[61] This report therefore focuses primarily on IFC's role, with reference to MIGA where relevant. For this project, CAO recognizes that MIGA's level of engagement involved: 1) receiving information on the project's due diligence, including information on issues and risks; 2) receiving IFC and IFC clients' environmental and social monitoring reports; and 3) participating in some project supervision missions and meetings alongside IFC. CAO also notes that MIGA continues to have a responsibility to require its client to ensure compliance with E&S requirements in relation to its active guarantee. Given MIGA's reliance on IFC, MIGA will continue to follow up with IFC with regard to next steps on the CAO's findings.

Pre-investment due diligence

2.6 Pre-investment E&S due diligence (ESDD) by the project lenders of the proposed large-scale Adjaristsqali Hydropower Cascade Project involved extensive studies and analysis by third party consultants. Annex A presents a timeline of project-related actions and records by IFC, Georgian government authorities, and independent third-party consultants engaged by AGL and IFC.

2.7 AGL engaged global engineering and development company Mott MacDonald to undertake the project E&S Impact Assessment (ESIA) and E&S Management Plan (ESMP). A local firm, Gamma Scientific, undertook supporting baseline studies and local consultation activities, and produced project documentation to meet national permitting requirements. Mott MacDonald was also the lead international consultant developing the project feasibility study.[62] The lenders, including IFC, hired project design and management consultancy Arup as an international E&S consultant (IESC) to provide support during due diligence and supervision.

2.8 In parallel with the ESIA for international lenders, Georgian authorities prepared a national EIA to comply with Georgian regulations. This assessment only considered the E&S impacts of the Shuakhevi HPP and was approved by the Ministry of Environment and Natural Resources.[63]

2.9 IFC's Environmental and Social Review Summary (ESRS) for the project was based on a joint

[61] The MIGA Policy on Environmental and Social Sustainability, para. 6. provides that "*[w]hile managing environmental and social risks and impacts in a manner consistent with the Performance Standards is the responsibility of the Client, MIGA seeks to ensure, through its due diligence and monitoring efforts, that the business activities it supports through a guarantee are implemented in accordance with the requirements of the Performance Standards.*" Furthermore, "*[w]hen the International Finance Corporation (IFC) and/or International Bank for Reconstruction and Development (IBRD) or any World Bank Group (WBG) entity is involved with the project, MIGA may rely on and use such entity's environmental standards, environmental and social due diligence and/or monitoring, in accordance with WBG common or shared guidance*." Certain E&S responsibilities remain with MIGA. MIGA weighs the costs and benefits of proposed business activities, articulates its rationale and specific conditions for the proposed guarantee, and provides these to its Board of Directors for those guarantees requiring approval (para. 18). Furthermore, MIGA's contracts include E&S provisions, requiring Clients to comply with applicable Performance Standards, conditions outlined in action plans, as well as reporting and monitoring requirements, as appropriate (para. 22). MIGA Policy on Environmental and Social Sustainability, October 2013, paras 6, 18, and 22. Available here: https://goo.gl/APDPo2.

[62] ESIA, September 2013, p. 2.

[63] IFC, ESRS.

appraisal mission conducted with EBRD and ADB in May 2013 and an E&S due diligence report prepared by Arup and dated September 5, 2013. According to the ESRS, disclosed in October 2013, IFC and the other lenders visited key project sites and met with stakeholders including local and national NGOs, and the leaders and elders of affected municipalities and villages.[64]

2.10 The lenders and AGL agreed an Environmental and Social Action Plan (ESAP) that set out actions the company would undertake as a condition of investment.[65] AGL was required to report on performance against these required actions and the lenders would audit or otherwise evaluate progress during project construction and operation. The ESAP stated that revisions to its terms could be made during project performance, but no changes would be made in violation of Georgian law or of the lenders' E&S performance requirements, including the IFC Performance Standards, ADB Safeguard Policy Statement (2009), and EBRD Performance Requirements (2008). Specific ESAP actions are discussed in later sections.

2.11 In May 2014, the IFC Board approved the equity and loan investments, and IFC signed the investment agreement with AGL. IFC made its first and second equity subscriptions in November 2014 and the first loan disbursement in November 2014. MIGA issued a guarantee in April 2015 to Tata Power International Pte. Limited for its equity investment in the project.

Supervision

2.12 Project construction started in June 2014. IFC's supervision consisted of annual visits until the onset of COVID-19 in early 2020, and resumed after COVID-19 restrictions were lifted in 2022. The lenders also required AGL to submit reports every six months during construction and annually during operation.[66] Arup, the IESC, monitored environmental, health, and safety (EHS), and social performance, and ESAP implementation, producing six-month updates and additional interim reports, visiting the project area regularly, and reviewing AGL's reporting on E&S performance. Annex A contains a timeline of supervision activities.

[64] IFC, ESRS.
[65] IFC, ESRS.
[66] The AGL Environmental and Social Monitoring Reports and other project documents are publicly available here: https://www.adb.org/projects/47919-014/main.

C. CAO Compliance Analysis and Findings: Impacts on Springs

2.13 This section assesses whether IFC fulfilled its pre-investment due diligence and supervision duties related to the hydropower project's impacts on groundwater and associated mitigation measures. Based on the analysis below, CAO finds IFC non-compliant with respect to its obligations under the Sustainability Policy.

a. Complainants' Perspective

2.14 The complainants allege that construction of the Shuakhevi hydropower project caused scarcity of spring water in their area. They claim that seven springs used by approximately 100 people from 22 households in the Rabati neighborhood have disappeared, leaving these households with insufficient water for drinking and sanitation. In addition, they state that the loss of groundwater supply has affected irrigation and agriculture, reducing the volume and quality of their harvest and cattle. Since their main income comes from potatoes and dairy products, they say this situation has had serious nutritional and economic consequences. Makhalakidzeebi village is divided by the Chirukhistsqali River with Rabati located on the right bank. The complainants explain that spring water has only been affected on their side of the mountain, which is also where the tunnel between the Chirukhistsqali and Skhalta rivers is located (see Figure 4). They therefore believe that the tunnel's construction triggered the water loss affecting their basic needs and livelihoods.

2.15 The complainants argue that the 2014 agreement between the Government of Adjara, AGL, and Makhalakidzeebi village requires the company to design and implement alternative water supply to replace water lost because of tunnel construction. They also claim that if such replacement is not possible, AGL is required under the agreement, as a last resort, to resettle the affected households within six months. The complaint states that the 22 households did not have access to spring water during construction in 2016-2017 until they were provided a water supply system that pumped river water to their homes. However, they state that this replacement water system was insufficient because it was unavailable two to three times a week, not all houses could pump water at the same time, and they continued to have too little water for their irrigation needs. In addition, they claim the pumped river water was of poor quality, becoming contaminated or muddied when it rained or snow melted.

2.16 The complainants allege that the spring water flow they relied on has not returned in the nine years since construction began in 2016. In addition, during CAO's field visit, the villagers raised concerns about water disappearing and reappearing in new places, alleging that this is also related to tunnel construction. They link cracks in one house to project explosions, and fear that the stability of the mountain and their houses will be affected due to spring water diversion.

b. Client Perspective

2.17 During CAO's assessment of the complaint, AGL informed CAO that it had regularly monitored spring water flow in Makhalakidzeebi village from the start of construction and shared monthly monitoring reports with Georgia's Ministry of Environment. The company states that the experts carrying out this water monitoring found no causal link between the project and decreasing groundwater levels in the village. However, AGL acknowledged to CAO that water scarcity is

affecting the village and that, in response, it has implemented two water supply rehabilitation projects in partnership with the mayor's office.[67]

c. Relevant Requirements

IFC Performance Standards requirements relevant to concerns over springs
PS1: Assessment and Management of Environmental and Social Risks and Impacts - "The client will establish and maintain a process for identifying the E&S risks and impacts of the project" (paras. 5, 7). - "The type, scale, and location of the project guide the scope and level of effort devoted to the risks and impacts identification process. The scope of the risks and impacts identification process will be consistent with GIIP" (para. 7). - "The risks and impacts identification process will be based on recent E&S baseline data at an appropriate level of detail" (para. 7). - "Where the identified risks and impacts cannot be avoided, the client will identify mitigation measures and establish corresponding actions. (…) The level of detail and complexity and priority of the identified measures and actions will be commensurate with the project's risks and impacts, and will take account of the outcome of the engagement process with Affected Communities" (para. 15). - "E&S Action Plans…will define desired outcomes and actions to address the issues raised in the risks and impacts identification process, as measurable events to the extent possible, with elements such as performance indicators, targets, or acceptance criteria that can be tracked over defined time periods, and with estimates of the resources and responsibilities for implementation" (para. 16). - "The client will establish procedures to monitor and measure the effectiveness of the management program (…) For projects with significant impacts, the client will retain external experts to verify its monitoring information. The extent of monitoring should be commensurate with the project's environmental and social risks and impacts, and with compliance requirements" (para. 22). - "Monitoring will normally include recording information to track performance and comparing this against the previously established benchmarks or requirements in the management program. Monitoring should be adjusted according to performance experience and actions requested by relevant regulatory authorities. The client will document monitoring results and identify and reflect the necessary corrective and preventive actions in the amended management program and plans" (para. 23).
PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources - "Where a project is likely to adversely impact ecosystem services (...) the client will conduct a systematic review to identify priority ecosystem services. (...) When Affected Communities are likely to be impacted, they should participate in the determination of priority ecosystem services in accordance with the stakeholder engagement process as defined in Performance Standard 1" (Para.25). - Requirements to avoid, minimize and mitigate impacts on ecosystem services which

[67] CAO Assessment Report Regarding Complaint in Relation to Adjaristsqali Georgia LLC (AGL) (IFC #33435, #37781, #601449 and MIGA #12315), July 2018, p. 8.

benefit affected communities (para. 25).

- In cases where there is a loss of use of or access to "the products people obtain from ecosystems" (para. 2) specific measures are required to ensure livelihood restoration. See also PS4 (Community Health, Safety and Security) (para. 8) and PS5 (Land Acquisition and Involuntary Resettlement) (para. 25).

d. IFC Pre-Investment Due Diligence: Analysis and Findings

i. Groundwater baseline

2.18 The ESIA for the hydropower complex notes that the *"project area is rich with local springs and wells suitable for drinking,"*[68] and that the springs used by local communities are located in landslide areas.[69] CAO understands that hundreds of superficial springs originate from the underground aquifers in the area, which depend significantly on weather conditions.

2.19 Despite local reliance on springs, the ESIA commissioned by AGL from Mott MacDonald includes only general groundwater information and does not provide details about location, flow volume, or the water quality of specific springs. The assessment cites "*insufficient historical information to describe a detailed baseline"*[70] for groundwater, and makes no distinction between a general baseline and a baseline of groundwater uses and withdrawals. Based on a review of project documents and engagement with IFC, AGL, and Arup, the lenders' independent environmental & social consultant (IESC), CAO established that no groundwater baseline or mapping of springs was conducted prior to IFC's pre-investment due diligence or the start of construction in July 2013.

2.20 The project's E&S Management Plan (ESMP) established the responsibility of AGL and its construction contractor to record a water use baseline prior to tunnelling.[71] It also required annual monitoring of spring water flows.[72] The ESMP notes that "*the goal is to be clear as to whether water (both surface water and groundwater) resources values are being maintained.*"[73] During IFC's pre-investment due diligence (ESDD), the IESC informed the project lenders that the limited nature of available baseline hydrology data made it critical to conduct additional monitoring followed by appropriate assessment of impacts and identification of mitigation measures. Project ESIA requirements, agreed between AGL and the lenders, also planned a second phase of hydrological surveys in 2012, further consultation with NGOs to refine mitigation measures, and a review of water resources and water quality control procedures before starting project construction. The ESDD report recommended completing all additional surveys and reviews identified in the ESIA and project permit approval conditions and incorporating the findings into E&S management processes for construction and operation of the hydropower plant. However, the subsequent project E&S Action Plan agreed between IFC and AGL did not identify any gap or client

[68] ESIA, p. 51.
[69] ESIA, p. 339.
[70] ESIA, p. 339.
[71] ESMP, p. 7.
[72] ESMP, p. 14.
[73] ESMP, p. 31.

requirement related to establishing baseline information on groundwater use, including the water quantity and water quality of springs used by communities.

2.21 PS1 (para. 7) requires project risks and impacts identification to be based on recent E&S baseline data with an appropriate level of detail. CAO notes that IFC recognized in its ESDD documentation that numerous springs with drinking water quality existed in the project area, and that local communities depended, to varying degrees, on this water for drinking, household use, and irrigation. The client's ESIA also identified potential impact from tunneling on groundwater resources (further explained below). Separately, the project ESMP explicitly required AGL and its contractor to record a water use baseline prior to tunnelling.[74] Yet, no baseline of groundwater resource use or site-specific water use information was conducted or compiled.

2.22 CAO recognizes that the original scale and impact zone of the Adjaristsqali Hydropower Cascade Project covered three sites[75] and a large area of influence that would have made conducting a detailed mapping of all groundwater resources an enormous, time-intensive, and costly undertaking. However, conducting a baseline of groundwater uses and withdrawals in the form of a survey of springs close to communities in the project's area of influence would have been appropriate given the strong evidence of community dependence on these for personal use and livelihoods.[76] The lack of such a baseline could have contributed to an inadequate assessment of project risks to communities and a failure to establish mitigation measures for ecosystem services.

2.23 In relation to ecosystem services, PS6 (para. 24) requires IFC clients to review and identify priority ecosystem services that project operations are most likely to impact with potentially affected communities participating in the process. In this case, the ESIA and other project documents repeatedly identified spring water provision to local communities from project area aquifers as an important ecosystem service.

2.24 CAO is therefore of the view that PS6 (para. 24), PS1 (para. 7), and good international industry practice (GIIP) required the collection of comprehensive groundwater use baseline data for the springs used by locals and located closest to the tunnel in order to properly assess project impacts on ecosystem services.

ii. CAO findings: Groundwater baseline information

2.25 CAO finds that IFC's ESDD did not identify or address the client's failure to comply with the PS1 (para. 7) and PS6 (para. 24) requirements cited above. This omission resulted in a lack of baseline information on groundwater uses and the water quantity and quality of ground water provided by specific springs to communities who depend on them, contrary to IFC's Sustainability Policy commitments (paras. 7, 26, and 28).

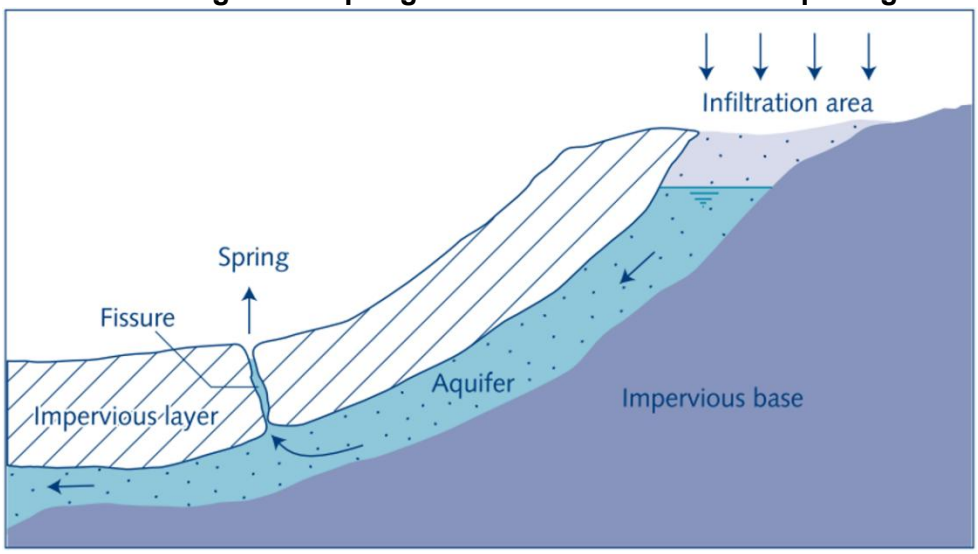
[74] The 2014 agreement between the local government, AGL and Makhalakidzeebi required AGL to conduct pre-construction surveys of springs as well.
[75] By the time IFC conducted pre-investment due diligence, it was clear that the project's scale had decreased, and the client would develop only two of the three planned hydropower sites, decreasing the area of influence.
[76] According to the ESIA, approximately 17 directly affected villages have been identified in the Shuakhevi municipality, including Makhalakidzeebi. ESIA, Appendix C, p. 61.

2.26 Collecting appropriate baseline data is important to determine potential adverse effects caused by a project and constitutes essential information to evaluate claims about adverse project impacts. In this case, the absence of such data makes it impossible to determine if decreases in spring water flow are, at least in part, attributable to the project as complainants and other communities claim, or caused by other factors, such as changing weather conditions. This is further discussed in this report's findings on harm (Section 3).

iii. Groundwater resource impact assessment

2.27 The project ESIA summarizes water supply and sanitation arrangements for several urban centers in the project area. It notes that Shuakhevi municipality gets its water from the Adjaristsqali River, while supply for the neighboring Khulo and Keda municipalities is drawn from groundwater resources. During floods, river water supply is unsuitable for drinking and the Shuakhevi population makes use of the springs.[77] However, "*[s]maller villages and farm households typically obtain their water supply from springs and small headwater tributaries. Sediment loads in the larger tributaries and the main river are generally too high for the water to be attractive as a drinking water source except for livestock*".[78] The ESIA does not identify these villages or households.

Figure 4. Generic diagram of springs and their connection to aquifer groundwater



Source: SMET & WIJK (2002)

2.28 The complainants from Rabati neighborhood are among those who use spring water – because the river is far from their homes up the mountain slope and river water in the area has high turbidity making it unsuitable for drinking. Other local households access water using the springs' natural flow whereas Rabati households would need pumps to transport river water to their homes.

[77] According to comments received from AGL during CAO's factual review and comment period for this report, the Adjaristsqali River is not used for drinking water.
[78] ESIA, p. 319.

2.29 The project's immediate area of influence covers approximately 100 affected villages,[79] of which 17 are in Shuakhevi municipality, including Makhalakidzeebi.[80] The ESIA provides no site-specific information about potential impact on groundwater sources in different villages.

2.30 However, it does list specific potential project impacts on groundwater use, stating that, "*[w]ater resources for drinking, irrigation and household use could be lost in areas where tunnels are dug underneath groundwater supplies.*"[81] Additional potential impacts included contamination, spills or leakages during tunnel construction, work camp wastewater, and competition for water resources with existing local users.[82] The impact assessment also highlighted increased risk of localized pollution from construction vehicles affecting watercourses or springs.[83]

Figure 5. Example of a spring near Rabati neighborhood, Makhalakidzeebi village

Source: CAO compliance mission, May 2022

2.31 In evaluating risks from project tunneling, the ESIA warns of "*potential direct impact on groundwater especially where the groundwater (or springs) is an important local resource*" adding that the works might disturb the water flow regime or introduce pollutants to the underground aquifer.[84] AGL's consultant identified construction as the project period with greater potential for lost groundwater resources, stating in the ESIA that the "*highest risk areas would be where the tunnel is closest to the surface and near the tunnel faces, as a result of topography and the designed tunnel depth.*"[85] In its social impact assessment chapter, the ESIA notes that tunneling

[79] ESIA, p. 117.
[80] ESIA, Appendix C, p. 61.
[81] ESIA, pp. 148 and 307.
[82] ESIA, p. 307.
[83] ESIA, p. 340.
[84] ESIA, p. 345.
[85] ESIA, p. 148.

works could temporarily or permanently drain water wells and the level of risk or likelihood of occurrence was unknown at the time.[86] However, other ESIA sections downplay this risk, stating, for example, that "*potential impact on springs used by communities could be a major adverse impact, but most springs and users located on old landslip areas have been avoided by the tunnel alignment so there will be relatively low risk*."[87]

2.32 The ESIA, submitted to IFC in 2013 during its pre-investment due diligence, concluded that the predicted construction effects for tunneling were 'moderate to minor adverse',[88] and could be mitigated through best practice construction and erosion minimization methods. Such best practices and methods were to be specified in AGL contractors' management plans and monitored through the over-arching project E&S Management Plan (ESMP).[89] The ESIA also stated that tunnel construction could have minor to insignificant residual impacts with mitigating actions being "grouting/lining tunnel sections as needed to seal against groundwater flow".[90] Tunnel lining supports tunnel stability and seals tunnels from water ingress or loss. Overall, the ESIA concluded that the project would have adverse construction impacts on water features, with some potential localized minor adverse impacts on river reaches or springs but that, assuming appropriate mitigation, these construction impacts were not considered significant. [91]

2.33 In November 2013, AGL separately commissioned a groundwater desktop review in response to concerns from Georgia's Ministry of the Environment regarding potential impacts on springs and groundwater. The lack of detailed groundwater baseline information meant that this review was based on modelling techniques that considered different scenarios for tunnels, rock types, and spring locations and behaviors. The study found that tunnel construction under most modeled scenarios could result in excess ingress water, impacting water levels from groundwater and springs – and therefore community water availability. However, the study concluded that these impacts would not materialize because AGL would mandate infiltration pre-grouting of tunnels in all scenarios, preventing groundwater infiltration and its associated impacts on local springs.

2.34 While the ESIA is clear about the presence of groundwater in the rock formations where tunnels were planned, project documents present an inconsistent assessment of potential impacts related to groundwater as an ecosystem service provided by the aquifers. Relevant E&S policy provisions include PS1 requirements for environmental impact assessment and PS6 requirements that the IFC client identify and assess impacts to ecosystem services. Despite recognizing that local communities use water for subsistence, agricultural use, irrigation, and household sanitation, the ESIA only includes river water among community provisioning services that could be significantly affected by the project. There is no mention of the use of groundwater and springs by local communities.[92] IFC's ESDD documentation also reflects this understanding. CAO considers provisioning of water from springs, like provisioning of water from rivers, to be an ecosystem service provided by the area's aquifers and water-rich mountain ecosystem.

[86] ESIA, p. 148.
[87] ESIA, pp. 163 and 347, and ESRS.
[88] ESIA, p. 345.
[89] ESIA, p. 345.
[90] ESIA, p. 374.
[91] ESIA, pp. 366, 381 and 382.
[92] ESIA, p. 268-269.

2.35 The project ESIA did assess impacts to ecosystem services in general, explaining the need to prepare a biodiversity action plan (BAP) in compliance with PS6 requirements to ensure no long-term impacts to ecosystem services. AGL subsequently prepared a BAP but neither this action plan nor the ESIA chapter on ecosystem services address potential impacts to ecosystem services provided by the aquifer, including groundwater to feed the springs.

2.36 At the same time, IFC's separate pre-investment due diligence conducted by Arup, found that tunneling "could be a major adverse impact" on local springs used by communities. The project ESRS published in October 2013 concluded, however, that this was a relatively low risk because most of these springs were located on old landslip areas avoided by the project's tunnel alignment. IFC also asserted that any other foreseen impacts could be minimized by localized tunnel grouting or lining, and by providing temporary water supply if loss of drinking water occurs.[93]

2.37 In relation to the hydropower project's operational phase, AGL's ESIA repeated the argument that it was unlikely the tunnels in operation would impact springs used for local water supplies because the contractor would grout or line tunnel sections that showed significant ingress of groundwater during construction."[94] As a result, the ESIA characterized the operational impact significance as "minor adverse". The project E&S Management Plan (ESMP) subsequently agreed by AGL and IFC included only a broad provision for monitoring community complaints about spring water sources.[95]

iv. CAO findings: Groundwater resource impact assessment

2.38 CAO's analysis of the ESIA and other project documents available to IFC during ESDD demonstrates that potential project impacts to springs and groundwater used by local communities were widely identified and assessed prior to investment. In particular, the November 2013 desktop review commissioned by AGL assessed different scenarios for potential project impacts on groundwater from tunneling activities, taking into account baseline information gaps. This review, AGL's ESIA, and IFC's ESRS all recognized that tunneling during construction could cause a significant impact on groundwater resources while ultimately concluding that mitigation measures would make this outcome unlikely and thus classified the potential impact as "low".

2.39 Given the scale of this assessment activity, CAO finds that IFC's pre-investment E&S due diligence properly assured that the client identified and assessed potential impacts to groundwater resources as required by Performance Standard 1 commensurate with the nature and scale of the proposed project, in compliance with the Sustainability Policy (para. 26).

v. Mitigation measures for potential groundwater impacts

2.40 AGL embedded the project's mitigation measures, including for the groundwater impact risks described above, in the ESMP as well as a table in the ESIA. These E&S mitigation measures

[93] ESRS, p. 11.
[94] ESIA, p. 365.
[95] ESIA, p. 365.

included several to be undertaken by AGL's construction contractor, which the ESMP stated would be further detailed in project Construction Environmental Management Plans (CEMPs).[96]

2.41 The ESIA described three types of mitigation measure to counter tunnel-related impacts on water features. These included: 1) embedded mitigation, which is built into the project during the EPC procurement and design process; 2) mitigation of significant effects; and 3) mitigation of non-significant effects. Specified embedded mitigation measures included tunnel lining where there is a risk of disrupting groundwater resources, locating construction compounds away from sensitive water features, and best practice to minimize pollution risk during construction and operation. To mitigate significant effects, the ESIA recommended a water feature survey to determine tunnel lining requirements.[97] Among the mitigation measures for non-significant effects, the ESIA again referenced locating site construction away from sensitive water features and adopting best practice to minimize pollution risk.

2.42 The ESIA also recommended developing "compensation and enhancement measures" at the project's detailed design stage where key local characteristics are taken into consideration. It noted that these measures were likely to include "*[p]roviding an alternative supply system to the limited number of small scale irrigators or fish farmers that may be affected, by moving their abstraction point and providing a new transfer canal/pipeline or other alternative water supply*."[98] Other project documents addressed support for additional water users affected by construction-related groundwater impacts. IFC's ESRS, for example, stated that, ¨[w]*here loss of drinking water occurs a temporary water supply will be established so that households are not without drinking water in the short term. In order to rectify loss of drinking water resources in the long term, a permanent alternative water supply will be installed by the Project*."[99]

2.43 The project's E&S Management Plan (ESMP)[100] agreed by IFC and AGL included two specific mitigation measures to protect groundwater from tunnel boring and compensate affected parties as needed: 1) a water feature survey to determine tunnel lining requirements; and 2) compensation through an alternative drinking water source. Both measures were the contractor's responsibility, with implementation through a Water Quality and Water Resources Management Plan, as part of the project CEMPs.[101] The ESMP also required the contractor and AGL to undertake a water use baseline prior to tunnelling,[102] and made groundwater protection during tunnel boring an objective tied to contractor responsibilities to deliver the water feature survey. The management plan also required annual monitoring of spring water flows[103] but did not specify the number of springs involved, the periods and time of year of monitoring, or provide any methodological guidance.

[96] IFC, ESRS.
[97] ESIA, pp. 367-368.
[98] ESIA, pp. 368.
[99] IFC, ESRS.
[100] The Environmental and Social Management Plan is a set of mitigation, monitoring, and institutional measures to be taken during the design, construction, and operation stages of the project to eliminate adverse environmental and social impacts, to offset them, or to reduce them to acceptable levels. The ESMP responds to the key impacts and risks identified in the ESIA. The ESMP is typically integrated with the bidding and contractual documents for the construction and operation of the project.
[101] ESMP, p. 14.
[102] ESMP, p. 7.
[103] ESMP, p. 14.

Spring water monitoring was also a condition of the project's environmental license, which acted as the basis for participatory monitoring during construction, discussed further below.

2.44 AGL developed a Water Quality and Water Resources Management CEMP that defined minimum implementation requirements for the IFC client and its contractors to prevent and mitigate potential negative effects from effluent discharges and on groundwater during construction.[104] The CEMP's provisions covered potential impacts to groundwater availability and springs from tunneling works,[105] but the rules, standards, activities, and measures it laid out referred only to water quality and pollution standards. The Water Quality and Water Resources Management mitigation plan similarly lacked any information about standards and guidelines applicable to groundwater supply impacts and did not establish activities and measures to mitigate these impacts with one exception.[106]

2.45 The single measure related to impacts on groundwater availability mandates review of community complaints about project impacts on their access to water resources. In cases where construction works could have potentially caused those impacts, the CEMP commits the contractor to undertake remediation measures, including deepening affected boreholes or, in rare instances, providing an alternative water supply. AGL's contractor and the project community liaison officer were held responsible for monitoring local complaints or issues associated with loss of water from local springs and boreholes.[107]

vi. CAO findings: Mitigation measures

2.46 PS1 (para. 13) requires IFC clients to establish management programs with mitigation measures addressing all identified project E&S risks and impacts with the level of detail and complexity commensurate with these risk and impacts (para. 15). In these management programs, clients must define desired outcomes and actions to the extent possible, using performance indicators, targets, or acceptance criteria that can be tracked over defined time periods and detailing resource estimates and responsibilities for implementation (para. 16). Projects like this one that require a full-scale ESIA should include management plans, procedures, practices, and legal agreements to manage mitigation measures systematically (PS1 GN63).

2.47 CAO finds that the mitigation measures IFC's client included in the ESIA and ESMP to monitor spring flows, meet tunnel lining or grouting requirements, and provide alternative water supply were adequate. However, the groundwater mitigation measures that were ultimately incorporated in the Water Quality and Water Resources Management CEMP, for implementation by AGL and its construction contractor, were not consistent with those in the ESIA and ESMP. The CEMP incorporated no mitigation measures for tunnel pre-grouting, grouting, and lining, or for water surveys to inform tunnel lining and grouting requirements. On provision of alternative water supply to communities affected by water loss, the CEMP projected the need to provide alternative water supply as "rare" and did not provide guidelines for its implementation or clearly incorporate it as a

[104] Water Quality and Water Resources Management CEMP, p. 1.
[105] Water Quality and Water Resources Management CEMP, p. 2.
[106] Water Quality and Water Resources Management CEMP, p. 4-5.
[107] Water Quality and Water Resources Management CEMP, P. 15.

mitigation measure. IFC failed to identify these gaps during pre-investment due diligence, and as a result the project E&S Action Plan included no requirements that the client implement these groundwater mitigation measures as needed.

2.48 In addition, CAO notes that the CEMP measures with respect to groundwater availability were mostly reactive and dependent on complaints from local communities, rather than the proactive project actions described in the ESIA and the ESMP. The plan linked any potential remediation measures to finding causation between the reported impact on affected communities and project activities. Yet, as noted earlier, AGL did not establish a clear baseline of groundwater and spring resources used by local communities, making causation difficult to demonstrate.

2.49 IFC's due diligence assessment described the importance of construction-specific plans to mitigate and manage water-related impacts but failed to ensure that groundwater mitigation measures were specified in the ESAP or other relevant E&S management plans.

2.50 CAO finds that while IFC's pre-investment review was commensurate to these risks, IFC did not meet the Sustainability Policy requirement "to ensure, through its due diligence, monitoring, and supervision efforts, that the business activities it finances are implemented in accordance with the requirements of the Performance Standards" when it came to managing project impacts and risks on groundwater resources.[108] Instead, the key mitigation measures identified by the ESIA to manage groundwater impacts and risks were not included in the project ESAP, the CEMP or other E&S risk mitigation project documents, in breach of PS1 (para. 15). As a result, IFC's supervision of its investment in AGL was compromised in relation to client implementation of tunnel grouting measures and the provision of alternative water supply to affected communities. This meant, in turn, that IFC's Sustainability Policy commitment to verify client compliance with PS1 and PS6 requirements was compromised.

e. IFC Supervision: Analysis and Findings

2.52 This section discusses IFC's supervision of client actions to mitigate potential project impacts to groundwater and springs after the investment was approved, and CAO's related compliance findings. It covers the hydroelectric power plant's construction and operations from 2014 to date. Both IFC's A loan to AGL and MIGA's guarantee remain active, with supervision ongoing.

Definitions

Spring water monitoring refers to the monitoring described as a mitigation measure in the ESIA and ESMP for potential project impacts from tunnel construction. This monitoring is also described as **participatory spring water monitoring** and was conducted by the client from mid-2014 until the end of 2016. After the tunnel collapse incidents in 2017, this monitoring effort was not re-started during repair works.

Hydrogeological monitoring was initiated by the client in 2017, during the plant's commissioning, in an effort to measure groundwater levels from the underground aquifer. This monitoring included visual checks of springs and was carried out again upon recommissioning

[108] Sustainabilty Policy, para. 7.

in 2019-2020.

2.53 CAO notes that IFC's failure to ensure during pre-investment due diligence that its client had the necessary mitigation measures in place to address dam-related risks and impacts to water resources continued during project implementation. Project documents describe the following management measures to avoid and minimize potential negative impacts to groundwater and local springs: 1) conducting a water feature survey to determine tunnel lining requirements; 2) compensation to impacted water users through an alternative drinking water source; 3) recording a water use baseline prior to tunnelling; 4) establishing a temporary water supply for impacted households were loss of drinking water occurs; 5) annual monitoring of spring flows; and 6) review of community complaints about project impacts on their access to water resources. As described above, the only water resources mitigation measure in AGL's E&S Management Plan (ESMP) that was subsequently included in the Water Resources CEMP governing the client's actions during construction was to review community complaints about project impacts on access to water resources. Consequently, not all mitigation measures agreed by AGL and IFC and contained in the project ESIA and ESMP were ultimately implemented or supervised. This section only discusses project actions that AGL and its contractor implemented, with supervision by IFC.

i. Spring water monitoring

2.54 The project's environmental license from Georgia's Ministry of Environment and Natural Resources (MoE) required monthly monitoring of groundwater levels during tunnel construction. AGL's annual progress reports to IFC show that the client monitored project-affected springs during the hydropower plant's construction from mid-2014 until the end of 2016. If this monitoring revealed changes in groundwater levels, AGL was obligated to maintain an alternative spring water source for local community use. IFC supervised AGL's spring water monitoring as part of its assessment of client compliance with national permits and licenses related to the project, rather than as direct supervision of project mitigation measures to prevent impacts to springs and their ecosystem services. This meant the focus of IFC's supervision was to review AGL's compliance with E&S conditions set by national authorities and to address any non-compliance.

2.55 During the first year of construction, the MoE found the project non-compliant with the construction permit's environmental conditions because groundwater monitoring had not been undertaken in the required timeframe. While IFC was aware of this non-compliance, CAO found no record that they sought to address the situation with the client.

2.56 In October 2015, IFC recorded that AGL had hired a Georgian hydrologist to undertake monthly assessments of hydrological monitoring, and that the MoE was receiving the results and hydrologist's assessments on a regular basis. Subsequent supervision records did not provide further information on this issue or record any further non-compliances.

2.57 The project lenders' independent consultant described the spring water monitoring program carried out during 2015 and 2016 as covering 20 villages and collecting monthly data in 650 to 686 locations. In mid-2016, IFC supervision reported a generally good client understanding of the requirements for this monitoring program, which ended after initial tunnel construction was completed in late 2016.

2.58 During 2017, although the initial project construction had ended, community concern about lost spring water sources persisted and was covered by local media. In August to October that year, the series of tunnel collapses occurred and work stopped temporarily on the dam works.[109] Following a site supervision visit in November 2018, IFC asked AGL for reassurance that spring water monitoring did not require restarting since tunnel repair work was underway. In 2019, the lenders' consultant (IESC) informed IFC that the lack of monitoring did not appear to be a compliance matter, but included re-starting spring water monitoring as a "recommendation for improvement" in its 2019 report. CAO notes that the table of compliance actions in the IESC report did not include this recommendation and subsequent IFC supervision documents did not report on the issue.

2.59 While spring monitoring as a construction mitigation measure did not restart, AGL developed a hydrogeological monitoring program for the project recommissioning phase in 2019-2020 which also included some spring monitoring.[110] This hydrological monitoring program comprised visual checks by AGL personnel under the supervision of the Chief Operating Officer. According to IFC supervision records, while rudimentary, this approach enabled AGL to determine whether the hydropower scheme's tunnels were affecting local groundwater systems by observing wet and dry seasons. Specifically, any excess water from the tunnels would be detected during the dry season when the flow of springs and rivers decreases.

2.60 CAO has found no evidence that the spring monitoring data AGL collected during project construction was analyzed and there is no record of IFC's supervision assessment of the monitoring results, or whether springs were being impacted or not. In addition, the project documents[111] reviewed by CAO did not provide any guidance or detailed methodology for spring water monitoring. CAO understands from interviews that the selection of groundwater sources for the participatory spring water monitoring program was based on information provided by local communities. This approach led to shortcomings in the type of data generated, which did not allow for interpretation by third parties.

2.61 CAO received the monitoring data collected through the participatory monitoring program between November 2014 and December 2016 for Makhalakidzeebi village in Excel format. However, the measurement devices and flow units used were inconsistent across springs, which prevented CAO's expert consultant from analyzing the information. In addition, CAO found no interpretation or analysis of this data in IFC supervision documents. CAO is of the view that this

[109] In 2017, during filling of the tunnels, damage to the tunnel surface was detected in some places. Project work was stopped and tunnels drained to conduct an investigation. The cause of the damage in the tunnels was identified as a reaction by the water in the surrounding geology resulting in excessive overload on the support structures. Six major rock falls and several small rock falls in various sections of the Head Race Tunnel and two full collapses in the Skhalta Didachara Transfer tunnel were identified. Detailed inspections, investigations, and rock testing were put in place to confirm the geological features of the rock. See more about the tunnel collapse and the remedial actions taken, here: https://agl.com.ge/storage/media/other/2024-01-10/b651e550-af90-11ee-8894-4b3f5b5493c1.pdf and here: documents/47919/47919-014-esmr-en_7.pdf.

[110] The client developed a hydrogeological monitoring program to be implemented across the commissioning phase as a response to community grievances relating to hydrogeology (appearance/disappearance of spring waters) and rockfalls during tunnel filling.

[111] The ESIA, ESMP or the Water Resources CEMP.

data should have been analyzed as tunnel construction was progressing, to inform the client and assure IFC that local springs were not impacted by tunnel construction and that PS1 requirements for mitigation measures were being fulfilled.

ii. CAO findings: Supervision of spring water monitoring

2.62 Based on the above, CAO finds that IFC failed to adequately supervise implementation of spring water monitoring as an established mitigation measure to prevent impacts to groundwater and its ecosystem services to communities during tunnel construction. Instead, IFC supervision focused on ensuring compliance with local permits and licenses. Project documents suggest that IFC did not access or analyze spring water monitoring data to assess whether tunneling works were impacting local springs, or require AGL to use the data to inform project implementation.

2.63 Monitoring ended in 2016, even though the tunnel collapses in 2017 meant that tunneling works for repairs and lining continued until 2020. Although IFC was advised to ask AGL to re-start spring water monitoring during this time, IFC did not follow through. While a more thorough assessment of spring water monitoring implementation did take place in 2022, this was well after tunnel construction had ended.

2.64 Performance Standard 1 requires the client to establish and implement mitigation measures to manage significant environmental impacts, such as impacts to groundwater and associated springs, and the Sustainability Policy (paras. 7, 45) requires the IFC to supervise client PS compliance. In this case, CAO finds that IFC did not supervise implementation of spring water monitoring to establish that the mitigation measures AGL employed effectively prevented impacts to groundwater and springs used by local communities during tunnel construction. As a result, IFC could not ensure its client's conformance with the relevant PS1 provisions.

iii. Tunnel grouting and lining

~~2.65~~ As described above, both IFC's pre-investment due diligence and AGL's E&S impact assessment described tunnel grouting and lining requirements as key mitigation measures to prevent water ingress levels during construction that could impact the flow of groundwater and springs.

2.66 Tunnel construction progress, including information about grouting, lining, and ingress water, was supervised by the lenders' Independent Engineer (IE). CAO reviewed IE reports for seven years (2014-2020) for this investigation. These reports variously describe grouting in some project tunnels, some tunnels without grouting, and excess levels of water ingress during tunnel construction in several tunnel sections during several years. IE reports also confirm that tunnel works continued during instances of excess ingress water because meeting construction benchmarks took priority over controlling excess water and the quality of grouting and lining. Supervision documentation does not indicate that IFC considered the E&S implications of these negative developments although IFC was aware at the time of continuing reports from villagers about changes in spring water flow and water infiltration into their homes.[112] After the tunnel

[112] IFC Supervision Reports from 2014 to 2021, and the CAO complaint for this case submitted in February 2018.

collapses in 2017, IFC supervision reports include confirmation from AGL that 80-90 percent of tunnels had been lined.

2.67 In April 2023, following the launch of CAO's compliance investigation, IFC commissioned an internal review of the project's assessment of potential groundwater impacts and implementation of mitigation measures during construction and commissioning. This review confirmed the shortcomings described above regarding grouting and lining mitigation measures during tunnel construction and the presence of excess ingress water. The assessment did not include recommendations to address past shortcomings and CAO has no information to date about any planned IFC response.

iv. CAO findings: Supervision of tunnel impacts on groundwater

2.68 CAO finds that IFC fell short of its Sustainability Policy obligations (paras. 7, 45) to supervise AGL to implement appropriate mitigation measures for the hydropower complex's construction in conformance with PS1, for the following reasons:

- IFC's ESDD concluded that the project would meet PS1 requirements as grouting and lining would prevent excess ingress water during tunnel construction. This view was based on the ESIA and ESMP and the 2013 hydrogeological desktop review AGL commissioned, all of which reinforced the importance of tunnel grouting and lining to prevent negative construction impacts on local groundwater and springs. However, the project ESAP did not address tunnel grouting and lining, and IFC took no action to address this omission with its client as part of E&S supervision.
- IFC inaction continued despite construction reports from the Independent Engineer that described excess ingress water during tunnel construction, inadequate grouting and lining, and ongoing tunnel construction despite high levels of ingress water.

v. Water supply to communities

2.69 IFC's ESRS for the project stated that, "[w]here loss of drinking water occurs a temporary water supply will be established so that households are not without drinking water in the short term. In order to rectify loss of drinking water resources in the long term, a permanent alternative water supply will be installed by the [p]roject".[113] However, such measures were not incorporated in the project ESAP or the Water Quality and Water Resources Management Plan CEMP to mitigate or compensate for impacts to groundwater and local springs.

2.70 During project supervision, reports received by IFC described agreements with local municipalities and client CSR initiatives that included alternative water supply improvement projects. AGL provided water supply to several communities in the area, including two projects in Makhalakidzeebi implemented in 2015 and 2017 by AGL in partnership with the Shuakhevi mayor's office and the Adjara regional government.

2.71 During its 2022 field visit, CAO learned that the first water supply project for Makhalakidzeebi had initially not covered the Rabati neighborhood where the complainants reside but was later

[113] IFC, ESRS.

expanded to cover both sides of the river. Community members reported to CAO that the new water supply system did not work properly, was unreliable, had problems with water intake, and delivered insufficient flow to satisfy local demand. CAO observed firsthand the use of poor quality, low-grade construction materials as well as the poor quality and high turbidity (muddiness) of the water supply after rain and snow events, which the residents state makes the water unusable. A new municipal project is planned, with support from AGL, to expand the existing network, increase water intake capacity, improve water treatment, and ensure provision of drinking and irrigation water to the community. At the time of CAO's site visit, the municipality was developing documentation and tender details for the construction works.

2.72 CAO notes that AGL's project performance reports to IFC and IFC's supervision reports do not provide information about the characteristics of individual water supply projects, including water quantity and quality, or regular implementation updates. IFC and its client explained that alternative water supply measures were provided as part of AGL's CSR measures. However, CAO emphasizes that provisioning of alternative water sources was included in the agreed mitigation measures described in the ESIA for the hydropower plant. CAO also notes that IFC's 2023 independent assessment of groundwater impacts considered the provisioning of alternative water supply as a mitigation measure. This IFC review concluded that, although it was impossible to determine whether the project had impacted groundwater resources during construction, the implementation of this mitigation measure would have addressed such impacts.

vi. CAO findings: Water supply to communities

2.73 CAO finds that IFC did not meet its obligation under the Sustainability Policy (paras. 7, 9, and 45) during supervision, for the following reasons**:**

- IFC did not assure that the project's water supply initiatives met the objectives stated in the project E&S Management Plan of providing clean and sufficient water on a reliable basis.

- IFC was aware that the water supply project was sub-optimal yet did not require the client to provide the project-affected community with a reliable and adequate supply of clean water.

- IFC did not work with its client to improve the project's performance in this regard.

2.74 Consequently, CAO finds that IFC did not ensure the client incorporated the necessary measures to address identified E&S risks and impacts associated with water availability, as proposed in the ESIA, resulting in a failure to ensure client compliance with PS1 (paras. 13, 15, and 16).

vii. Community complaints about water-related mitigation measures

2.75 CAO notes that, despite shortcomings in its supervision of mitigation measures to manage impacts to groundwater and springs, IFC did consistently review community complaints of impacts to groundwater as part of its supervision of the project's community grievance mechanism.

2.76 Supervision monitoring reports describe ongoing community grievances from different villages in the project area about the disappearance and emergence of spring water over the project's duration. Most of the claims of spring and groundwater losses refer to the hydropower site's construction period. In broad terms, IFC documentation states that AGL investigated complaints

and provided water to individual households who reported shortages as a CSR measure. In its response to complaints, the client explained that affected springs were located outside the tunnel alignment and therefore could not have been affected by tunneling works. IFC supervision records indicate that the client's responses to grievances were difficult for communities to understand, suggesting that information about project activities and impacts needed to be more clearly communicated.

2.77 In 2014, regular complaints about the disappearance and emergence of spring water from communities in the project area, especially during tunnel construction were also communicated to IFC. However, there is no record that IFC requested an independent assessment of whether these reported impacts were project related.

2.78 In December 2017, the project lenders' consultant (IESC) recommended that the IFC client conduct an urgent independent hydro-geological review of all complaints about disappearing and reappearing springs since the start of construction[114] as a priority action to avoid falling out of compliance.[115] Another lender subsequently commissioned this assessment study, which was characterized as a desktop review of information provided by AGL and the IESC. The assessment was limited by an absence of baseline data and the inability to validate inferences and conclusions because of incomplete information.[116] IFC did not have access to this assessment in full.

[114] Lender Group (EBRD, IFC, ADB), Shuakhevi Hydropower Project, Georgia, Environmental and Social Monitoring Report for Operations #1, ShuakheviHPP ES Opps-1, Final | 1 December 2017, pp. 19-20 and 23.
[115] Lender Group (EBRD, IFC, ADB), Shuakhevi Hydropower Project, Georgia, Environmental and Social Monitoring Report for Operations #1, ShuakheviHPP ES Opps-1, Final | 1 December 2017, p. 35. Subsequent IFC supervision documentation does not refer to this independent review.
[116] IPAM, Compliance Review Report, Shuakhevi HPP, Case 2019/01, May 2022, p. 37.

D. CAO Compliance Analysis and Findings: Biodiversity

2.79 This section assesses IFC's due diligence and supervision of the impacts on and risks to biodiversity posed by the large-scale hydropower plant, and the associated mitigation measures undertaken by the client. In its analysis, CAO addressed the complainant concerns regarding decrease in river water flow, disappearance of fish species, and loss of trees along the Chirukhistsqali River. Given the project's location in an area of high conservation value, CAO also focused on broader impacts to the connectivity of the region's river biodiversity systems and associated ecosystem services of the Chirukhistsqali, Skhalta, and Adjaristsqali Rivers, particularly as flow in all three rivers downstream of the weir and dams, respectively, was reduced to a 10% of annual average flow.

2.80 IFC's actions and CAO's analysis and findings are presented in chronological order, covering first the pre-investment due diligence period of 2012-2014 and then IFC's supervision efforts from 2014 through the present. CAO finds IFC non-compliant with its obligations under the Sustainability Policy and Performance Standards 1 and 6 in its due diligence and supervision of potential project-related impacts on biodiversity.

a. Complainants' Perspective

2.81 The complainants reside in Rabati neighborhood on the slopes of the Chirukhistsqali River gorge and the project's Chirukhistsqali weir is about 0.8 km from their closest homes. These households claim that river levels have decreased by two-thirds since construction of the Shuakhevi hydropower scheme and blame the plant for the disappearance of several fish species, including a vulnerable species of local trout listed on the Red Book of Georgia. They attribute these impacts to sediment discharges during construction of the Chirukhistsqali weir and water diversion through the Chirukhistsqali-Skhalta tunnel which lowered the downstream river level. Complainants state that, prior to project construction, they would catch fish locally two to three times a week during spawning season for household consumption and occasional sale, but the decline in fish populations has adversely impacted this activity.[117]

2.82 The complaint also cites loss of trees along the Chirukhistsqali River, which they allege is due to the significant water reduction. According to the complainants, the trees are approximately 20 years old and require significant water during the summer.

1.1.1.1 Client Perspective

2.83 During CAO's assessment of the complaint in 2018, AGL explained that it regularly monitors impacts on the biodiversity of all three local rivers and had not noted any changes or concerns. AGL also noted that project construction preceded water diversion through the Chirukhistsqali-Skhalta tunnel and therefore could not have negatively impacted the river's biodiversity.

2.84 During CAO's compliance investigation field visit in 2022, AGL specified that it monitored river biodiversity annually in 2012 and 2013, and has done so four times a year since 2014, at 14 sampling stations, with the help of several agencies. To address biodiversity concerns, AGL

[117] This type of fishing is described throughout this compliance report as *recreational fishing*, as it is not the main source of food consumption or economic gain, but rather described as a common/cultural pastime. This is in contrast to *fisheries* in the area that are seen as small or medium sized businesses.

added that it had restocked 10,000 Black Sea trout/brown trout[118] across the Chirukhistsqali, Skhalta, and Didachara rivers. Regarding tree damage, AGL acknowledged identifying 27 hectares impacted by the project and stated that it is replanting 31 hectares with more than 10,000 seedlings.

b. Relevant Requirements

IFC Performance Standards requirements relevant to biodiversity concerns
PS1: Assessment and Management of Environmental and Social Risks and Impacts - "The client will establish and maintain a process for identifying the E&S risks and impacts of the project" (paras. 5, 7). - "The type, scale, and location of the project guide the scope and level of effort devoted to the risks and impacts identification process. The scope of the risks and impacts identification process will be consistent with GIIP" (para. 7). - "The risks and impacts identification process will be based on recent E&S baseline data at an appropriate level of detail" (para. 7). - "Where the identified risks and impacts cannot be avoided, the client will identify mitigation measures and establish corresponding actions…The level of detail and complexity and priority of the identified measures and actions will be commensurate with the project's risks and impacts and take account of the outcome of the engagement process with Affected Communities" (para 15). - "The client will establish procedures to monitor and measure the effectiveness of the management program…For projects with significant impacts, the client will retain external experts to verify its monitoring information. The extent of monitoring should be commensurate with the project's environmental and social risks and impacts, and with compliance requirements" (para. 22).
PS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources - The risks and impacts identification process as set out in Performance Standard 1 should consider direct and indirect project-related impacts on biodiversity and ecosystem services and identify any significant residual impacts (para. 6). - Requirements to avoid, minimize, and mitigate impacts on "ecosystem services" which benefit affected communities (para. 25). - For the protection and conservation of biodiversity, IFC's mitigation hierarchy includes biodiversity offsets, which may be considered only after appropriate avoidance, minimization, and restoration measures have been applied (para. 10). In areas of natural habitat, the client will not significantly convert or degrade natural habitats, unless all of the following are demonstrated: (i) No other viable alternatives within the region exist for development of the project on modified habitat; (ii) Consultation has established the views of stakeholders, including Affected Communities, with respect to the extent of conversion and degradation; and (iii) Any conversion or degradation is mitigated according to the mitigation hierarchy (para. 14). - In areas of natural habitat, mitigation measures will be designed to achieve no net loss

[118] The project documentation has named the fish used to for restocking as trout or brown trout. The lack of distinction is relevant as Brown trout (Salmo trutta) is not native to Georgia. CAO assumes references to trout or brown trout in the documentation is used as a synonym for the freshwater ecotype of native Black Sea trout (*S.l. fario).*

of biodiversity where feasible. Appropriate actions include: (i) Avoiding impacts on biodiversity through the identification and protection of set-asides; (ii) Implementing measures to minimize habitat fragmentation, such as biological corridors; (iii) Restoring habitats during operations and/or after operations; and (iv) Implementing biodiversity offsets (para. 15).

c. IFC Pre-Investment Due Diligence: IFC Actions and CAO Analysis

i. Regional biodiversity context

2.85 Georgia is located in the Caucasus Ecoregion, identified by WWF as one of the 35 most biodiverse in the world and one of 25 endangered hotspots.[119] The internationally financed Shuakhevi hydropower project is therefore located in an area of high biodiversity value. Endemism in the Caucasus is very high, with more than 10,000 plants, 700 vertebrate animals, and 20,000 invertebrate animals catalogued in its mixed forests. More than a third of the region's marine and freshwater fish species are found nowhere else in the world.[120] These species are under increasing threat from human activities, including those that lead to habitat destruction. Hydropower presents a pressing challenge for freshwater biodiversity conservation in Georgia, where it accounts for more than 90% of electricity generation.[121]

The original Adjaristsqali Hydropower Cascade Project comprised the Adjaristsqali River and its tributaries – the Chirukhistsqali, Skhalta, Chvanistsqali, Akavreta, and Machakhlistsqali rivers. The project E&S Impact Assessment (ESIA) noted that the Adjaristsqali River system contains habitat for vulnerable, endangered, and endemic species. Aquatic species included Black Sea salmon (*Salmo labrax pallas*), Black Sea trout/brown trout (*Salmo trutta*, *Salmo labrax fario*)[122] and colchic khramulya *(Capoeta sieboldii)*, all of which are considered 'vulnerable' on the Red List of Georgia as well as the European eel (*Anguilla anguilla)*, which is considered 'critically endangered/decreasing' on the IUCN Red List.

2.86 The ESIA also identified fauna of high conservation value within the original Cascade project area, including:

- Eurasian otter (*Lutra lutra*): listed as 'vulnerable' on the IUCN Red List and the Red List of

[119] WWF Caucasus, Our Story. Available here: https://www.wwfcaucasus.org/about_us/our_story/#:~:text=It%20is%20part%20of%20the,of%20WWF's%2035%20Priority%20Places.&text=The%20Caucasus%20is%20one%20of,and%20animal%20life%20on%20Earth.

[120] BAP, p. 26-27. Available here: https://disclosures.ifc.org/project-detail/ESRS/33435/adjaristsqali-georgia-llc

[121] Japoshvil, B, Couto, T, Mumladze, L, Epitashvili,G. McClain, M, Jenkins, C, Anderson, E. "Hydropower development in the Republic of Georgia and implications for freshwater biodiversity conservation", Biological Conservation, Volume 263,2021,109359.

[122] The project documentation has been inconsistent in naming the trout found on the river. It has been described variously as brown trout, trout, freshwater trout, Salmo trutta, black sea trout, etc. The lack of distinction is relevant as Brown trout (Salmo trutta) is not native to Georgia. CAO assumes references to brown trout/Salmo trutta in due diligence documentation is used as a synonym for Black Sea trout (S.l. fario). The inconsistent nomenclature used in the DD raises questions as to what actual species was being reported in the monitoring and assessment. CAO cannot be sure, as scientific names were not consistently used, but has made the assumption that it was the freshwater ecotype of Salmo labrax fario. This inconsistency underscores the lack of rigor this investigation has seen in the surveying and monitoring of aquatic species.

Georgia. The population is decreasing and is estimated at 400 individuals.[123]

- Brown bear (*Ursus arctos*): listed as an endangered species on the Red List of Georgia.
- Eurasian lynx (*Lynx lynx*): listed as 'critically endangered' on the Red List of Georgia.
- Numerous bat species, in particular Mehely's horseshoe bat (*Rhinolophus mehelyi*): listed as 'vulnerable' on the IUCN Red List and the Red List of Georgia.[124]

2.87 In addition, bird diversity along the Adjaristsqali valley is relatively high, reflecting the modified and natural habitats along the gorge and its position within the internationally important Batumi migratory bottleneck.[125]

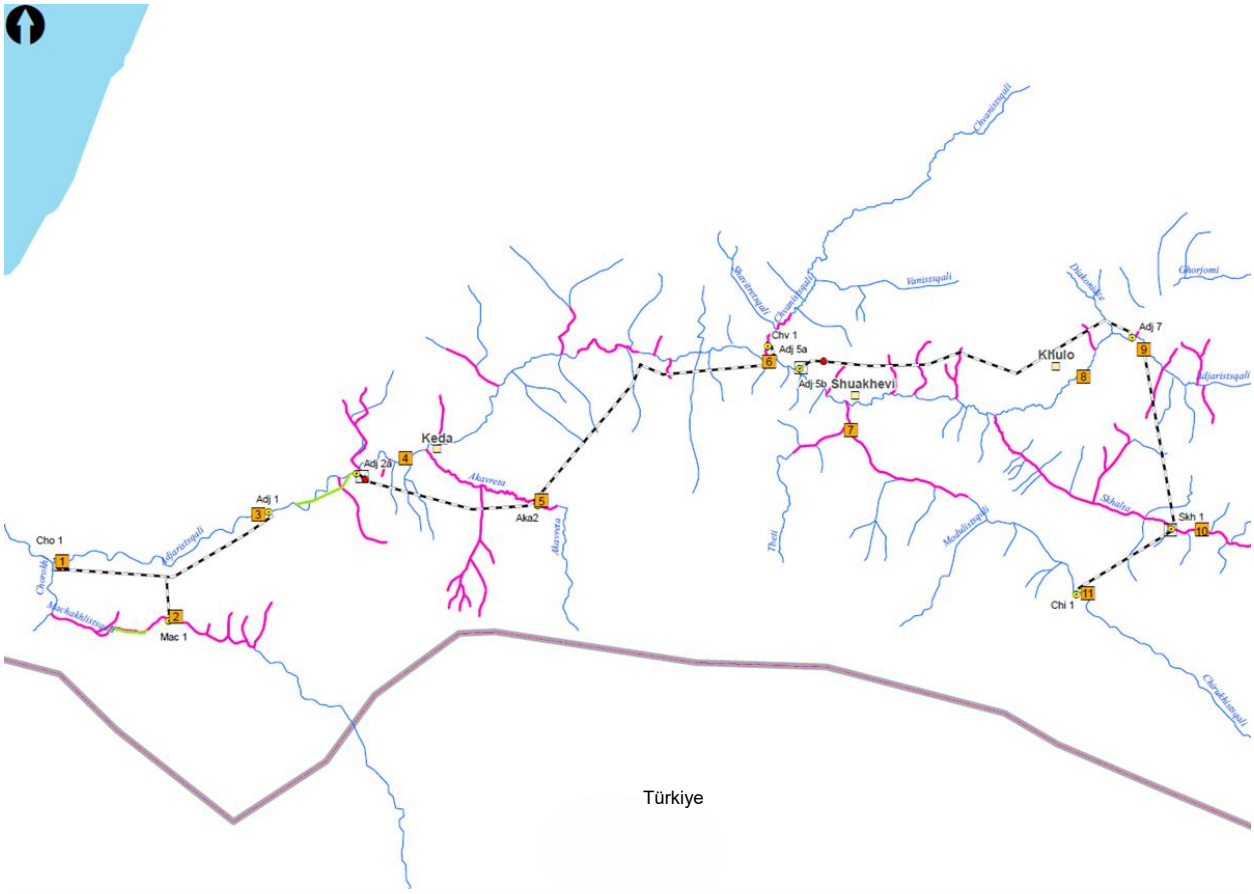
ii. Baseline information on biodiversity resources and ecosystem services

2.88 Prior to investment by the project lenders, including IFC, AGL commissioned ecological surveys in 2011 as part of the E&S Impact Assessment for the proposed hydropower schemes.[126] These assessments included fish surveys that covered the project area of influence (AoI), a 90km stretch of the Adjaristsqali River from the eastern confluence with the Ghojomi River to the western confluence with the Chorokhi River, including the five tributary rivers (see Figure 6 below). This fish baseline was then supplemented by a desk review using information from primary and secondary sources, international databases like Fishbase and IUCN, and information from the Georgian government, including the Red Book and the Red List of Georgia.[127] Based on this analysis, the ESIA recorded the presence of 47 freshwater and anadromous species from 17 families in the Adjara region.[128]

2.89 To establish the baseline, a series of fish surveys and interviews with 20 fishermen at 11 sites with different morphological conditions (see Figure 6) between late August and early September 2011 were conducted. This research identified 18 fish species,[129] including several fry (young fish) species in the tributaries of the Adjaristsqali, including Roach (*Rutilus rutilus)*, European bitterling (*Rhodeus amarus)*, Rock minnow (*Alburnoides fasciatus)*, Caucasian chub (*Squalius cephalus orientalis)*, and Colchic minnow (*Phoxinus colchicus)*. Their presence indicated a favorable habitat for fry to thrive.[130]

[123] Georgia's Fifth National Report to the Convention on Biological Diversity states that the declining population is due to the reduction of fish stocks in the rivers and deterioration of their habitats.
[124] ESIA, pp. 282-283 and BAP, p. 84. All bat species are protected in Europe under The Convention on the Conservation of European Wildlife and Natural Habitats (Bern, 1982) and the EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (1992).
[125] ESIA, p. 207.
[126] The ecological surveys included: description of vegetation types, floristic surveys, bird surveys, mammal surveys, reptile and amphibian surveys, and fish surveys. ESIA, p. 188.
[127] ESIA, p. 187.
[128] ESIA, Vol III Appendices, p. 151. Mott MacDonald, 2012; Goradze et al., 2012.
[129] ESIA, Vol III Appendices, p. 151-152.
[130] ESIA, p. 214.

Figure 6. Project Area of Influence and Fish Field Survey Points for the 2011 Baseline



Source: ESIA Vol III Appendices

2.90 Since the region's fish are dispersed through different altitudes, samples were taken using gill nets, landing nets, throwing nets, fishing rods, and dragnets for fingerlings.[131] The 20 fishermen interviewed provided further information on fish presence, their preferred and sensitive areas, and the importance of fishing to the local community.[132] AGL's consultant considered the information obtained to be reliable if confirmed by more than three fishermen.[133] The interviews revealed that catches tended to be dominated by Colchic barbel (*Luciobarbus escherichii)* and Caucasian chub (*Squalius cephalus)* throughout the catchment. In areas of low flow, minnows (*Alburnoides fasciatus* and *Phoxinus colchicus*) and Colchic khramulya (*Capoeta sieboldii*) dominated the catch. The fishermen stated that fish stocks had decreased in the last five to ten years.[134] They identified recreational fishing as part of the local culture and economy across all rivers in the

[131] Habitats and sensitive sections included: shallow stony water riffles, fast flowing rapids, marginal vegetation with overhang for smaller species, deeper flowing channels for larger fish, deeper slack water pool margins, and spawning sites.
[132] ESIA Annexes, p. 151.
[133] ESIA, p. 191.
[134] ESIA, p. 219.

project area of influence. Fishermen used catches for their own consumption, or to sell on the roadside and/or to local restaurants.[135]

2.91 In terms of protected fish species present within the AoI, the 2011 baseline survey found:

- **Black sea salmon** (*Salmo labrax pallas*): This species was found in the Adjaristsqali River at the confluence with the Chorokhi River. Some interviewees also said it was present in the Machakhlistsqali River.
- **Black Sea trout/brown trout[136]** (*Salmo trutta*, *Salmo labrax fario*): This nomenclature is used to distinguish the freshwater ecotype of *Salmo labrax*. This ecotype was found in upper reaches of the tributaries of the Skhalta and Chirukhistsqali, and in the Chvanistsqali and Adjaristsqali confluences, Machakhlistsqali, and Akavreta.[137]
- **Colchic khramulya** *(Capoeta sieboldii)***:** This species was present in the Chirukhistsqali, Adjaristsqali, and Chorokhi confluence, and Machakhlistsqali River.
- **European eel** (*Anguilla anguilla)***:** This species was occasionally found at the Adjaristsqali and Chorokhi confluence.[138] This species was not caught during the fish surveys, but at least three local fishermen reported its presence in the Adjaristsqali and Chorokhi confluence.[139]

2.92 The interviewees also confirmed the presence of protected species such as the European eel and Black Sea salmon in the Chorokhi and Machakhistsqali Rivers.[140] Although these species are migratory, local fishermen believe migration has declined due to the regulation of flows in the higher reaches of the Chorokhi.[141] The IUCN Red List identifies dams and water management/use among the threats to both the European eel and the Black Sea salmon in the wider region.[142]

2.93 The 2011 fish baseline conducted for the ESIA incorporated the original cascade project design, which covered all three planned hydropower projects. While the project design was later readjusted to include only the Shuakhevi project scheme which is the subject of the CAO complaint, the fish baseline was not revised. In CAO's view, the baseline that AGL's consultant conducted was not commensurate to the scale, risks, and nature of the construction of a large hydropower project in an area valued for its biodiversity. Only 11 stations for the 2011 fish surveys were selected despite the assessment area covering 90 km of main river and five tributaries, and the surveys were conducted only once, at the end of August 2011. Best practice establishes that baseline fish surveys be conducted monthly over several months and during different seasons for

[135] ESIA, p. 172.
[136] The project documentation has been inconsistent in naming the trout found on the river. It has been described variously as *brown trout, trout, freshwater trout, Salmo trutta, black sea trout etc.* The lack of distinction is relevant as Brown trout (Salmo trutta) is not native to Georgia. CAO assumes references to brown trout/*Salmo trutta* in due diligence documentation is used as a synonym for Black Sea trout (*S.l. fario).* The inconsistent nomenclature used in the DD raises questions as to what actual species was being reported in the monitoring and assessment. CAO cannot be sure, as scientific names were not consistently used, but has made the assumption that it was the freshwater ecotype of Salmo labrax fario. This inconsistency underscores the lack of rigor this investigation has seen in the surveying and monitoring of aquatic species.
[137] The complainants have mentioned that trout and other fish species disappeared in the Chirukhistsqali River.
[138] ESIA p. 205.
[139] ESIA, P. 170.
[140] The Chorokhi River and Machakhlistsqali River are located in the lower Adjaristsqali River Basin, within the original Khertvisi Scheme area, which was ultimately not pursued. The Shuakhevi scheme, which is the focus of this investigation, is located in the upper Adjaristsqali River Basin.
[141] ESIA, p. 206.
[142] IUCN Red List. See more information here: https://www.iucnredlist.org/species/135658/4172650.

at least a year, in order to accurately account for all possible species and particularly for protected migratory species like the European eel and Black Sea salmon.[143]

2.94 In August 2012, AGL's consultant conducted additional fish surveys in the Shuakhevi project area. These were not undertaken to revise the baseline but as part of the first annual fish monitoring program included in the initial ESIA. Eleven fish species were recorded, seven species less than in 2011. Differences from the 2011 fish surveys included the presence of the protected species Colchic khramulya (*Capoeta sieboldii*) in the Adjaristsqali River but not in Chirukhistsqali River, the presence of Black Sea trout (*S. labrax fario)* in upstream tributaries of the Chirukhistsqali and no findings of Black Sea salmon (*Salmo labrax pallas)*.[144]

2.95 The E&S due diligence conducted by the lenders' independent consultant in 2013 noted that the fish baseline was considered thorough as it incorporated desk review, field surveys, and interviews with the communities. However, it pointed out that methods for ongoing monitoring, evaluating, and reporting activities were insufficiently covered and recommended that AGL adopt a detailed monitoring schedule to evaluate and report on ecological impacts. IFC due diligence documentation also recommended an additional baseline survey to determine the risk of collision with migrating raptors and storks and consider whether the power scheme needed to be re-routed or re-designed. [145]

2.96 CAO concludes that the biodiversity baseline prepared for the ESIA was limited in scope with only a one-time fish survey, 11 survey stations, and 20 fisherman interviews across the original large project area of influence. Given the location of the project in an area recognized internationally as a biodiversity hotspot, this baseline was inadequate. As a result, not enough information was gathered to understand the presence or range of species, including vulnerable and critically endangered species, taking into account migratory and seasonal behaviors.

iii. Assessment of project impact on biodiversity and ecosystem services

2.97 Under IFC's Performance Standard 6, clients are required to consider direct and indirect project-related impacts on biodiversity and ecosystem services and, in areas of natural habitat, to design mitigation measures to achieve no net loss of biodiversity, where feasible. In 2013, during IFC's pre-investment E&S due diligence, the ESIA conducted by AGL's consultant identified significant likely ecological effects from the proposed Shuakhevi project, which included two dams with reservoirs on the Adjaristsqali and Skhalta Rivers and a weir on the Chirukhistsqali River. These expected impacts included reduced river water quality due to construction discharges and sediment release, temporary obstruction to fish movement and migration, and temporary habitat loss.[146]

2.98 Regarding construction of the Chirukhistsqali weir, the ESIA considered potential impacts on the river close to where the complainants reside to be minor. These potential impacts included disturbances to downstream water flows and a reduction in water quality, temporary increase of sediment and sediment traps within the riverbed and banks, and temporary obstruction to fish

[143] European Commission, Oceans and Fisheries. See more about European eel migration here: https://oceans-and-fisheries.ec.europa.eu/ocean/marine-biodiversity/eel_en.
[144] ESIA, 2013. p. 214. A summary of the results from the 2011 and 2012 fish surveys is provided in Apppendix C2 of the BAP.
[145] ESDD, September 2013, p. 54.
[146] ESIA, p. 220.

movements and migration. The Chirukhistsquali weir was expected to have less impact than the two dams, as fish surveys indicated that no spawning habitat would be affected and no protected migratory fish species were present other than the Black Sea trout/brown trout,[147] which spawned at higher altitudes and did not migrate all the way to sea.[148] In addition, adult fish were considered capable of avoiding sediments as the river ecology had already adapted to frequent landslides in the area. To minimize impact during operations, the Chirukhistsquali weir was also designed to include a fish pass to allow for upstream and downstream passage of various fish species.[149]

2.99 The potential impacts identified for the Skhalta and Didachara dams during construction were considered minor to moderate in magnitude. They included disturbance to river flow during construction with potential impact on spawning habitat, and temporary increase in sediments that could potentially smother fish eggs downstream. However, the ESIA anticipated that the impact would diminish as adult fish in the area were already accustomed to avoiding solids due to frequent landslides and due to the absence of identified spawning habitats in the Adjaristsqali River. AGL's consultant found that spawning habitats were likely to be affected in Skhalta river, but identified additional spawning habitats as alternatives downstream along the same river.[150]

2.100 Overall, the client ESIA shared with IFC during its pre-investment due diligence determined that the cumulative impact of the Shuakhevi project's components was likely to impact fish populations, spawning habitats, and water flows.[151] Predicted impacts included the permanent obstruction of upstream fish movement to feeding and spawning areas, and temporary and permanent loss of habitat within the footprint of the reservoirs. In particular, the project's 36m Didachara dam on the Adjaristsqali River was expected to create a permanent obstruction to upstream fish movement as it was too tall for an effective fish pass. However, the ESIA stated that the dam would cause no loss of spawning habitat and no impact on protected migratory fish species since they had not been identified during the ecological baseline in this reach of river, which is high in the Adjaristsqali river catchment. The ESIA also concluded that the 21m Skhalta dam on the Skhalta River would permanently block upstream fish movement and that project construction would trigger temporary loss of spawning habitat downstream.[152] At the same time, AGL's consultant identified the importance of spawning habitats along the Skhalta, Chirukhistsquali, and other tributaries of the Adjaristsqali river in reducing the hydropower plant's impacts on aquatic habitats.[153] Among fauna, otters were identified as likely to be significantly impacted by the project's reduced river flows (affecting food availability) and physical barriers, which would prevent their movement up and downstream. Without mitigation efforts, these impacts were considered major adverse.[154]

[147] CAO assumes references to brown trout or *Salmo trutta* in the DD is used as a synonym for Black Sea Trout or *Salmo labrax fario.*
[148] ESIA, p. 228-229.
[149] ESIA, p. 229, and 274-275.
[150] ESIA, p. 229.
[151] ESIA, p. 230.
[152] According to comments received from AGL during CAO's factual review and comment period for this report, both the Didachara and Skhalta dams were specifically designed at lower elevations to avoid significant overlap with Black Sea trout/brown trout spawning habitats. In contrast, for the Chirukhistsqali weir, which is located at a higher elevation and was recognized as having a potential impact on spawning habitats, a fish pass was incorporated into the design.
[153] ESIA, 228-229.
[154] ESIA, p. 234.

2.101 The impacts of river damming on fish and other aquatic species are well documented,[155] and include blocking fish migration routes, altering hydrological and water temperature regimes, and modifying channel morphology resulting in habitat fragmentation.[156] In this case, the permanent blockage of fish movements by the two dams would likely create a net loss of habitat for vulnerable and critical species like Black Sea salmon (*Salmo labrax pallas*), Black Sea trout (*Salmo trutta, Salmo labrax fario*) and European eel *(Anguilla anguilla*).[157] It would also reduce spawning habitat availability for Colchic khramulya (*Capoeta sieboldii*), Colchic nase (*Chondrostom colchicum*) and other species which were noted in the baseline, are known to migrate to rivers and streams to spawn, and have been identified as threatened by dams.[158]

2.102 In addition, the limited fish surveys undertaken for the baseline likely affected the accuracy of the ESIA. Further complicating the assessment is the potential for confusion in the species terminology used and the morphological similarities between Black Sea salmon, Black Sea trout and potentially the non-native Brown trout. This observation arises from the use of various common names in the due diligence for what CAO assumes to be the same trout species, and also to the references to *Salmo trutta* which is the taxonomy of the non-native Brown trout that was formerly given to the native Black Sea trout before it was reclassified as an ecotype of *Salmo labrax*. For this investigation, CAO has assumed that *S.trutta* is used synonymously with *S.labrax fario* although the Latin name for what it is assumed to be the native species used in AGL's and IFC's records varies between documents. While Black Sea trout (*Salmo trutta, Salmo labrax fario*) does not migrate to the sea, Black Sea salmon (*Salmo labrax pallas*) was identified in the fish baseline and has been recognized by the IUCN as a migrating species threatened by dams.[159] The references to 'brown trout' in project documents rather than the scientific term raises the question as to whether the document is referring to the non-native species, Brown trout, or the native species known as Black Sea trout.

2.103 Dam construction and operation significantly affects river flow, including in Georgia where several other dams already operated. AGL's consultant therefore evaluated potential effects on river flow from the proposed Shuakhevi project's operations as part of the ESIA, prior to IFC's investment. The impact assessment concluded that annual average river flows in the three affected rivers would likely fall by 90%, reducing water flow sustaining the local ecologies to 10% of the pre-scheme annual average. While the ESIA noted that this flow adjustment was typical of other hydroelectric dams in Georgia, it also acknowledged wide-ranging potential impacts from the Shuakhevi project's operations related to river flow reduction to 10% of the average annual natural flows, including:

- A likely direct effect on fish populations and indirect effect on bird and mammal species, such as otters, dependent on the river habitats
- Restrictions on the movement of fish and otters

[155] Barbarossa et al 2020; Impacts of current and future large dams on the geographic range connectivity of freshwater fish worldwide; Proceedings of the National Academy of Sciences, available here: https://doi.org/10.1073/pnas.1912776117
[156] In Chen et al. 2023 River Damming Impacts on Fish Habitat and Associated Conservation Measures. Available at https://doi.org/10.1029/2023RG000819
[157] "Hydropower stations inhibit the migration of young eels (upstream) and adult eels (downstream) between their inland growing habitats and their oceanic spawning places. Long-distance migratory species like the European eel, salmon and sturgeon are seriously depleted, or even close to the edge of extinction." Sustainable Eel Group, Barriers to Migration and Habitat Loss. Available here: https://www.sustainableeelgroup.org/habitat-loss-blocked-migration-2/
[158] IUCN Red List. https://www.iucnredlist.org/species/19026443/19222898; and https://www.iucnredlist.org/species/19083721/19222933.
[159] IUCN Red List. See more information here: https://www.iucnredlist.org/species/135658/4172650.

- Changes in river water quality, especially during low flows and when sediment was released during dam flushing

2.104 In addition, the ESIA predicted permanent habitat loss from project infrastructure like dams, weirs, powerhouses and substations, and inundation due to the creation of reservoirs above dams, along with degradation of habitats resulting from the 'dead zone' around each of the reservoirs.

2.105 In evaluating the effects of a greatly reduced river flow, the ESIA focused on impacts downstream of both dams and the weir, and the hydropower scheme's potential to cause a major impact on the fish population and aquatic ecology of the three rivers along these stretches. For the operational impact assessment of aquatic habitats, the affected reaches of the Shuakhevi project were divided into ten subsections based on level of impact. The ESIA identified the impact of both the 39-meter Didachara dam on the Adjaristsqali River and the 22-meter Skhalta River dam as major. However, it claimed that this impact would be lessened as a result of project design that would enable river flow to spill over the dams and weir during some seasons of rain and snow, increasing the predetermined 10% flows. The impact would also be lessened by the contribution of downstream tributaries to the increase of flow.

2.106 For the Skhalta dam, the ESIA estimated that post-construction flows would be 28% of the prior annual average from March to May due to the dam spilling during high flows. However, in low flow months, including August, the river would not exceed the proposed 10% of annual average environmental flow. The assessment found that low flows could potentially trigger changes to the river habitat, particularly given the fact that suitable spawning habitat had been identified by the baseline surveys conducted downstream of the dam. The hydrological changes and impact in the Adjaristsqali River were also expected to be major, despite the ESIA estimating that flows at this location would be 19% of the annual average. Moreover, CAO notes that this analysis by AGL's consultant was based on a limited biodiversity baseline, as described earlier.

2.107 The ESIA also identified significant potential flow-related impacts from the five-meter Chirukhistsqali weir, situated less than one kilometer away from the complainants' neighborhood, including permanent reduction of riverine habitats, alteration of shelter for fish, and risk of fish mortality during migration. However, it added that this project component was expected to have the least impact on fish, as the weir design included a fish pass for various species and because the 10% of annual average flow would increase at times given the predetermined intake capacity of the weir. In addition, the ESIA argued that the additional tributaries downstream would diminish the hydrological changes along the river.[160] Based on the impact analysis for the Chirukhistsqali River, the ESIA concluded that the weir's impacts would be greater on the first two kilometers downstream, particularly during the low flow periods expected to occur for approximately six months a year. From March to May, the river was expected to increase to 20% of former annual average flow due to the weir spilling during high flows, reducing impacts on aquatic life. In addition, the inflows from the Modulistsqali River located 6.5km downstream of the weir was predicted to increase the flow of the Chirukhistsqali and therefore maintain the fish habitat and

[160] ESIA, p. 237.

bankside vegetation.[161] However, CAO notes that it is unclear whether this analysis by AGL's consultant was fully informed, given the limitations of the biodiversity baseline described above.

2.108 In order to assess the appropriate environmental flow for the three affected rivers, the ESIA established a two-phase approach. Phase I used a minimum environmental flow release of 10% of the existing annual average to assess the sensitivity of habitats and the presence or absence of spawning habitats. The 10% of annual average flow was established as a minimum, based on its historical use in other hydropower projects in Georgia and as the minimum recommended to sustain short-term survival habitat for most aquatic biota.[162] CAO notes that the chosen approach, known as Building Block E flow Methodology (BBM), was limited in scope as it seeks to determine objectives based on a single prescribed flow regime (10% of annual average flow) that had been pre-determined.

2.109 The 10% established during Phase I was only to be exceeded when the weir/dams overflowed due to the plant's intake capacity, and was comparable to flows present in the rivers during the summer months in a dry year. However, the ESIA also noted that the plant's ability to adjust water releases when establishing environmental flow may be limited due to the project design. Expected adverse impacts from adopting a 10% of annual average flow included the reduction of habitat, the loss or disruption of ecological function, the loss of habitat connectivity, reduced water quality, and reduced fish diversity, among others, as detailed above. However, due to the limited nature of the biodiversity baseline, it is unclear how AGL and its consultant substantiated these conclusions. Phase II monitoring was proposed as a means to confirm impacts and identify mitigation and enhancement measures.

2.110 Phase II involved implementing a long-term monitoring and adaptive management program, including surveys to identify the fish present in affected river stretches and gather more information on suitable spawning habitats. The first stage involved meso-habitat mapping[163] by AGL consultants under low flow conditions to identify the impacts and limitations on the affected rivers. This work was conducted in August 2012 and included collecting habitat and physical data on the Adjaristsqali, Chirukhistsqali and Skhalta rivers. The second stage of Phase II included reviewing the impact assessment made during Phase I, continuing habitat mapping over a long-term monitoring period, and developing an adaptive management plan to mitigate and offset impacts throughout the project's lifetime, as required under IFC's Performance Standard 6.[164]

2.111 In 2013, during its pre-investment due diligence, IFC determined that the client needed to develop a detailed monitoring schedule to evaluate ecological impacts, and reported that AGL's methodology for monitoring, evaluating, and reporting were insufficiently covered in the ESIA.

2.112 CAO notes that AGL's approach of establishing a minimum 10% of annual average environmental

[161] ESIA, p. 238.
[162] Tharme and King, 2008.
[163] The describing factors of meso-habitat classes are water depth, surface pattern, surface gradient, and surface velocity and by combining this information ten different classes are obtained.
[164] ESIA, p. 383.

flow, while based on a common practice and design measure, did not take into account the ecological baseline and needs analysis for each river. The ecology of each river and tributary is unique, depending on factors like flow, water quality, channel management, riparian zone, fishing activity, and the presence of physical barriers. Consequently, CAO considers that the adopted reduced flow regime of 10% of annual average natural flow likely resulted in residual impacts that were underestimated and likely to impact downstream natural habitats and their biodiversity and ecosystem services. There is no evidence that IFC considered this reduction in water volume in terms of affecting natural habitats, and whether the mitigation measures would meet the PS6 requirement of achieving no net loss of biodiversity.[165] The Building Block E flow Methodology (BBM) implemented did not correspond to the high resolution assessment that the characteristics of the rivers required. It was also limited in scope as it sought to determine objectives based on a single prescribed flow regime (10% of annual average flow) that had been pre-determined.[166] BBM was developed in the 1980s and by the 2000s had evolved into the DRIFT[167] methodology which is recognized as good practice by the IFC, World Bank, and others. DRIFT incorporates scenario analysis, enabling impact assessment for a range of potential environmental flows and incorporates local knowledge and understanding of the affected ecosystem and its biota (such as fish behavior).[168] The BBM[169] assessment was further undermined by the insufficient rigor of the biodiversity baseline, which meant that Phase II monitoring and mitigation responses by the IFC client relied on deficient baseline data.[170] In cases such as this, where the initial assessment used for environmental flow analyses of hydropower dams was limited in scope, good international practice recommends revisiting the initial assessment.

2.113 Overall, CAO notes that although the project ESIA broadly recognized that water reduction would impact natural aquatic habitat, its conclusions relied on the expectation that the overflow and river tributaries would minimize this impact without any analysis of the proposed flow regime's impact on specific species, including those Red Listed globally or in Georgia. In addition, IFC's due diligence did not consider the project to be located in critical natural habitat, but in natural habitat. In CAO's view, the region's importance as a biodiversity hotspot with high species endemism should have prompted a robust discussion during IFC's due diligence, including its review of the client's ESIA. The insufficient analysis of an appropriate ecological flow and related mitigation measures to achieve PS6's no-net loss of biodiversity requirement, the shortcomings in the biodiversity baseline, and the lack of consideration for the project's location all point to a significant shortcoming in IFC's due diligence. in terms of meeting is obligations to undertake its ESDD commensurate to the nature and scale of risks and to ensure that the project meets the

[165] No net loss is defined as the point at which project-related impacts on biodiversity are balanced by measures taken to avoid and minimize the project's impacts, to undertake on-site restoration, and finally to offset significant residual impacts, if any, on an appropriate geographic scale (e.g., local, landscape-level, national, regional) (PS1, FN9).
[166] ESIA, p. 411.
[167] Downstream Response to Imposed Flow Transformations (DRIFT) https://www.drift-eflows.com/wp-content/uploads/2018/02/DRIFT-User-Manual.pdf; and IFC's Good Practice Handbook, available here: https://www.ifc.org/en/insights-reports/2018/publications-handbook-eflows.
[168] https://www.drift-eflows.com/about-drift/applications/.
[169] The biodiversity survey methodology was insufficient to accurately identify species, such as migratory species. As such, it did not establish a baseline against which an adequate level of confidence can be placed in the data subsequently generated regarding project impacts on aquatic species, several of which are Red-Listed globally and/or in Georgia.
[170] Phase II, from August 2011 onwards, would collect data to identify sensitive sections of affected rivers, propose measures to reduce impacts, and include habitat enhancement measures.

biodiversity conservation requirements of PS6.

2.114 In conclusion, CAO finds that IFC did not meet its Sustainability Policy obligations to undertake E&S due diligence commensurate to the nature and scale of risks and to ensure that the project met the biodiversity conservation requirements of PS6. Specifically, the impact assessment accepted by IFC did not fully take into consideration the impacts of using a predetermined 10% of average annual water flow for the three affected rivers on riverine natural habitat and biodiversity, making the analysis insufficient to demonstrate that the project would achieve no net loss where feasible as required by PS6 (para. 15).

2.115 The IFC client's assessment of the environmental and social impacts of the Shuakhevi hydropower scheme also recognized its cumulative impact on the ecology and biodiversity of the Adjaristsqali river system and further downstream when combined with existing and other proposed development projects. AGL's ESIA consultant therefore undertook a cumulative impact assessment, covering AGL's proposed Shuakhevi and Koromkheti schemes and a number of other existing and planned projects in the river basin. These included a ski resort at Goderdzi Pass, a proposed Deriner Dam cascade of three hydropower plants on the Chorokhi river in Türkiye (Kirnati, Khkelvachauri 1 and Khkelvachauri 2 HPPs with a total capacity of 105.4 MW), and the Atsi Hydropower Project downstream of the Shuakhevi scheme on the Adjaristsqali River. The Atsi dam has been operating since 1941 with no fish pass for upstream fish movement or known environmental flow rule.[171] Based on this analysis, the ESIA highlights cumulative impacts on the area's natural forests and fisheries due to gradual deterioration in water quality and an increase in fishing and use of timber due to agricultural expansion along the river gorge.[172] However, CAO notes that there was no analysis of cumulative impacts regarding fish migration as a result of river fragmentation due to existing and future hydropower projects in the Adjaristsqali river system. Good industry practice in such circumstances is to establish a fish corridor along migration routes which could comprise a series of fish passes (such as fishways, fish ladders, and by-passes) built in the different fragmenting barriers.[173]

2.116 The client's ESIA also evaluated the project's potential impact on trees, a concern raised by the CAO complainants. AGL's consultant identified likely habitat impacts during construction including deforestation and tree felling to build access roads, stripping the reservoir slopes, and permanent habitat loss from reservation inundation and project infrastructure including work compounds. The main habitat impacted was riverside grassland and terraces with patches of riverine forest and scrub dominated by alder trees. There was also a moderate impact on deciduous spruce forest.[174] Felling activities for project construction resulted in patches of degraded spruce forest by the Chirukhistsqali River near to the complainants' homes in Rabati neighborhood.[175]

2.117 The ESIA's remedial measures included a habitat removal and reinstatement plan for impacted

[171] ESIA, p. 315 and More information about the ATSI hydropower project can be found here: https://epggen.ge/en/hpps/%E1%83%A2%E1%83%94%E1%83%A1%E1%83%A2%E1%83%981234-5-3/
[172] ESIA, p. 271.
[173] See examples here: https://www.fao.org/inland-fisheries/topic/detail/ru/c/1142413/ and here: https://www.fao.org/inland-fisheries/tools/detail/ru/c/1147055/
[174] IFC, ESRS, p. 8.
[175] BAP, p. 32. The following tree species are represented: *Picea orientalis, Carpinus caucasica, Alnus barbata, Salix caprea*. Herbaceous plants include *Pteridium tauricum.*

forests. Planned activities included pre-construction surveys of affected species, use of indigenous species in re-vegetation programs, and recording all felled tree species for sharing with the Directorate of Environmental and Natural Resources of Adjara.[176] In support, the ESDD recognized the likely impacts on natural forests and recommended that the client implement the habitat management and reinstatement plan.[177]

2.118 However, the ESIA does not contain an identification and impact assessment for trees located along the project-affected rivers and IFC did not raise this lack of assessment with the client during due diligence. Moreover, CAO notes that there was no assessment of potential impacts on trees from the reduction in environmental flow during construction and operation.[178] Trees in floodplains and riparian areas can be affected when stream flow is chronically reduced and groundwater level can also be affected by flow diversion upstream and regulation for hydropower generation. CAO also notes that riparian and floodplain tree species tend to be located in mesic habitats[179] and are highly dependent on access to reliable water sources, including stream surface water, soil moisture, and shallow groundwater.[180] Moreover, riparian trees are a key element of healthy aquatic habitats. Given all these circumstances, CAO highlights the ESIA's failure to take into account how the loss of riparian trees due to project-related reductions in environmental flow would negatively impact river habitat.[181]

2.119 CAO also notes that drought and anthropogenically modified hydrological conditions in rivers may result in stress-induced responses in trees including adaptive canopy thinning and branch sacrifice in order to reduce the need for water. Extreme moisture deficit may ultimately cause death. When groundwater declines below the depths required for riparian and floodplain tree rooting, access to a secure water resource that enables these species to persist in dry surface water environments becomes less likely.

2.120 The complaint to CAO also alleged negative impacts on household fishing, a local ecosystem service. IFC's client addressed this ecosystem service in the ESIA, concluding that fish populations in the Adjara region are diverse but low in abundance,[182] with no species considered abundant enough to be important for commercial fishing. However, the assessment acknowledged that subsistence fishing was popular and valued by communities with "local amateur fishing occurring in the lower reaches of the Adjaristsqali." While identifying fishing as the only notable recreational service associated with the Adjaristsqali river[183] the ESIA consultant nevertheless concluded that the project's impacts on fishing would be minor, apart from the

[176] BAP, p. 69.
[177] ESDD, p. 35.
[178] BAP, p. 30.
[179] Mesic habitat refers to land with a well-balanced supply of moisture throughout the growing season, such as stream sides, wet meadows, springs and seeps, irrigated fields, and high-elevation habitats. See more here: https://www.wlfw.org/water-is-life/#:~:text=What%20Is%20Mesic%20Habitat%3F,fields%20and%20high%2Delevation%20habitats.
[180] While Colchic Rainforests and Wetlands of Georgia are inscribed on UNESCO`s World Heritage List, they are located in the Mtirala National Park, Kintrishi Protected Areas, Kobuleti Protected Areas, and Kolkheti National Park, which are not in the area of the Shuakhevi project. See more here: https://www.wwfcaucasus.org/?5209791/Colchic-Rainforests-and-Wetlands-of-Georgia-are-inscribed-on-UNESCOs-World-Heritage-List, and https://whc.unesco.org/en/list/1616/. See location of the Colchic Rainforests and Wetlands here: https://whc.unesco.org/document/188957.
[181] Rivaes et al. 'Reducing river regulation effects on riparian vegetation using flushing flow regimes'; in Ecological Engineering Volume 81, August 2015, Pages 428-438.
[182] ESIA, p. 2010.
[183] ESIA, p. 270.

possibility of change in species caught – from those that prefer flowing water to those that prefer stagnant water such as lakes and reservoirs. In response to the impacts due to the construction activities and fundamental changes in hydrology, the ESIA included mitigation and offsetting measures like the incorporation of a fish pass for the weir only, implementation of ecosystem services surveys and fish monitoring in line with the BAP, creation of new recreational fishing areas around the reservoirs, and restocking of the reservoirs and rivers with native fish species.

2.121 In addition, the ESIA identifies fisheries and local water use as the two provisioning services used by communities that the project could significantly affect, due to water quality and availability.[184] The ESIA also stated that fishing as a provisioning service was likely to increase during construction, as a way for communities to feed construction workers. This was seen as an economic benefit while also causing potential additional impact to fish populations.[185]

2.122 Based on the above, CAO concludes that IFC's E&S due diligence adequately identified recreational fishing as an ecosystem service, accounted for the impacts during construction and the fundamental changes to river hydrology, and established mitigation and offsetting measures in line with what is expected from clients under PS6.

iv. Project mitigation measures for potential impacts on biodiversity

2.123 While acknowledging the potential for wide-ranging impacts from the large-scale hydropower scheme, IFC's client asserted in its ESIA that impacts on biodiversity and ecosystem services, particularly through lower river flow, would be reduced through proposed mitigation measures.

2.124 These mitigation measures were identified in the initial ESIA of March 2012, the subsequent E&S Management Plan (ESMP) for the project completed in October 2012 and agreed with IFC, and a Biodiversity Action Plan completed in 2013. All these assessments and plans were undertaken for AGL by its international consultant, Mott MacDonald. They included:

- Implementation of a two-phase approach to address the impact of reduced environmental flows. Phase I (August 2011) would set the environmental flow at 10% of the average annual flow, in line with common practice in Georgia. Phase II (from August 2011 onwards) would collect data to identify sensitive sections of affected rivers, propose measures to reduce impacts, and include habitat enhancement measures. [186]
- Removal, relocation, and habitat reinstatement of impacted mammals and reptile species such as Brown bear, European Lynx, bats, Clark's lizard, Caucasus viper, and Caucasian Salamander
- Construction of a fish pass at the weir to allow for upstream passage of fish and the consideration of measures for the safe downstream passage of fish
- Installation of a hundred bird boxes and bat boxes to compensate for the loss of nesting sites
- Creation of new recreational fishing areas around the reservoirs and stocking of the reservoirs and rivers with native fish species.

[184] ESIA, p. 268.
[185] ESIA, p. 269.
[186] Phase II was designed to apply the meso-habitat method, which would classify the river in sections of morphological classes, like water depth, surface pattern, surface gradient, and surface velocity through visual observation. This would make it possible to track habitat diversity, under different flow conditions, and identify potential loss of important areas for fish such as spawning, feeding and refuge. ESIA. p. 390.

2.125 With respect to environmental flow, the ESIA described the reduction of downstream flows across the three affected rivers as the single most significant impact on ecology and biodiversity in the project's area of influence, affecting fish populations and other species such as the Eurasian otter.[187]

2.126 The IFC client's mitigation measure for this impact focused on the two-phased approach to manage water flow in the rivers described in detail earlier. Phase I would implement a minimum environmental flow release of 10% of annual average flows – a level comparable to natural flow during summer months in a dry year – at all times in the Adjaristsqali, Skhalta and Chirukhistsqali rivers, only to be exceeded at times when the weir/dams overflow due to exceeding intake capacity.[188] CAO could find no evidence that the chosen 10% base environmental flow took into account the specific needs of key species, including endangered, vulnerable, and endemic species identified in the biological baseline survey. Rather, the ESIA recognized that a flow of this magnitude maintained all year and for consecutive years would impose significant change on the environmental conditions and consequently have a major adverse impact on the ecological receptors.[189]

2.127 Phase II of the environmental flow mitigation committed AGL to use long-term and site-specific analysis to develop an "adaptive management"[190] plan to mitigate and offset any significant impacts on water features and associated impacts on river habitats during the lifetime of the project. The purpose of Phase II, as noted by the ESIA was to *"confirm mitigation measures that will protect the fish communities present in the Adjara Rivers taking into account key fish species life cycle and environmental requirements, as well as taking in consideration other users' needs*."[191]

2.128 Given the region's ecological sensitivity and the project's identified potential adverse impacts on biodiversity, the ESIA also required the IFC client to develop a Biodiversity Action Plan (BAP) with specific conservation actions for the following habitats and species:

- Natural forest habitats of high conservation value
- Riverine/aquatic habitats
- Protected and notable plant species
- Protected and threatened mammals including all bats, otters, and carnivorous mammals
- Protected birds and birds of high conservation value
- Protected and threatened fish species, including Black Sea salmon, Black Sea trout/brown trout, European eel, and Colchic khramulya.[192]

[187] ESIA, p. 244.
[188] ESIA, p. 388.
[189] ESIA, p. 388.
[190] Adaptive management involves structured monitoring to systematically make adjustments necessary to achieve conservation and environmental objectives. See: *Using Adaptive Management to Meet Conservation Goals*. Thomas M. Franklin, U.S. Department of Agriculture, Farm Service Agency; https://www.fsa.usda.gov › FSA_File › chap_7.
[191] ESIA, p. 384 and BAP p. 79. Phase II data collection, would identify sensitive sections of the affected rivers and determine the hydrological conditions and ecological requirements of the river system, which are critical in reducing the project impacts on the river habitat and associated species.
[192] CAO notes that multiple common names, ostensibly for the same species, have been used in different project documents for this species presumed to be *Salmo labrax fario.* However, doubts persist on whether it is in fact always the same species being referenced. Similarly, the scientific name for what is ostensibly the same species varies among project documents. There are critical technical and ecological implications in relation to the inconsistent use of species names.

2.129 AGL's consultant developed this Biodiversity Action Plan (BAP) in July 2013, in consultation with IFC, NGOs, other lenders, government agencies, and expert consultants. The plan's objective was to ensure implementation of mitigation measures designed to achieve conservation and no net loss of biodiversity.[193] The BAP confirmed that the project area provides habitat for a range of protected aquatic species including the Brown trout, Black Sea salmon, and European eel, and concluded that the impact on river habitats and species was likely to be moderate to significant due to the reduction in river flows.[194]

2.130 Based on the biodiversity baseline summarized above, the BAP included a Critical Habitat Assessment (CHA), focused on the Shuakhevi and Koromkheti schemes, to determine which IFC Performance Standard 6 conservation requirements applied to the project. This assessment concluded that the threshold for critical habitat defined under PS6 was not reached and the Biodiversity Action Plan therefore focused on implementing specific mitigation measures for achieving no net loss for what was classified as natural habitat. [195] CAO notes, however, that there is no evidence that BAP considered cumulative impacts of existing and future hydro projects on the rivers in its analysis.

2.131 The mitigation measures specified in the BAP included:

- Implementation of annual monitoring by plant operator AGL, in line with Phase II, of river habitat and biota from pre-construction in 2012 until 10 years after construction[196]
- Preparation and implementation of a River Basin Management Plan for Adjaristsqali to improve water quality and data collection within the catchment
- Awareness-raising among local communities about the importance of conserving threatened species, and support to local fish farmers with regard to sustainable fish farming.[197]

2.132 While the Biodiversity Action Plan included mitigation measures to address numerous impacts on biodiversity, CAO finds there were shortcomings with respect to ensuring the project would not negatively impact endemic, endangered, or vulnerable species. Most notably absent from both the ESIA and BAP was any analysis of the adequacy or effectiveness of proposed mitigation measures for endangered or vulnerable species such as the European eel (*Anguilla anguilla)*, the Black Sea Salmon (S*almo labrax pallas)*, and the Euroasian otter (*Lutra lutra*), among others. The IFC client's consultant made no assessment of whether the 10% of average annual environmental flow baseline would be sufficient to protect populations of these species. Nor were any measures proposed to mitigate or offset the impacts of a notable loss of aquatic habitat connectivity at the higher dams, in line with PS6 requirements.

2.133 In terms of ecosystem services, the BAP noted that the Biodiversity Monitoring and Evaluation Programme (BMEP) for the project area would incorporate ecosystem services used by local communities following consultations with communities, E&S specialists, and other stakeholders.

[193] ESIA, p. 193.
[194] BAP, July 2013, p. 76.
[195] BAP, July 2013, p. 56.
[196] The BAP also mentioned that the annual monitoring could be extended after the 10-year period, in case significant changes were detected due to project operations. In the case of monitoring otters, macro-invertebrates and Caucasian salamander (threatened globally and in Georgia), it would also be undertaken before and after construction for 10 years annually to identify any project impacts and mitigation required. BAP, p. 80.
[197] BAP, July 2013, p. 82.

This monitoring would determine changes in income and the number of people depending on provisioning ecosystem services.[198] Ecosystem services surveys were due to start in 2014 and repeat every three years until 2026.[199] CAO considers this engagement with communities and other stakeholders a positive mitigation measure, but CAO's review of supervision documents only found surveys related to nut production, beekeeping, cattle breeding, and land acquisition and livelihood restoration.

2.134 Regarding the environmental flow assessment methodology implemented by the client and its proposed adaptive management plan and associated mitigation measures, CAO considers that, in line with PS6, IFC's client should have demonstrated that no net loss of aquatic species could reasonably be achieved through the suggested application of the mitigation hierarchy, the success of which would then be confirmed during supervision. Alternatively, AGL could have proposed and implemented new adaptive management measures, and/or for example offsets, in compliance with PS6. Instead, CAO considers that the measures that AGL and its consultant proposed and took do not demonstrate that no net loss of biodiversity has been or will be achieved for this project.

2.135 CAO considers the scale of this hydropower project in an area of such global biodiversity significance merited a more rigorous approach to assessing the impacts of the reduction of natural flow. Specifically, a high-resolution method evaluating alternative scenarios, such as the DRIFT methodology,[200] would have been more appropriate. This would have resulted in more detailed analysis of impacts on: the presence and abundance of individual species, including all species of conservation concern; sediment reduction; the effects of peaking-power releases; and other river- and project-specific variables, including management interventions. As the project impacts are situated in natural habitat and in order for the client to demonstrate no net loss, CAO believes that the ESIA and BAP proposed mitigation measures should likely have been supplemented by offsets and potentially also by an adjustment of environmental flows.

2.136 With regard to trees, proposed mitigation measures were limited to addressing the loss of 52,000 m^2 of natural forest habitats due to construction and operation activities. [201] CAO notes that the resultant reforestation efforts do not respond to any impact or potential loss of trees along the river, including those tree species identified as endangered or vulnerable.[202]

v. IFC pre-investment due diligence: Summary of CAO findings

2.137 CAO recognizes the attention IFC gave to river biodiversity during its pre-investment due diligence, including with regard to the establishment of a fish baseline prior to project construction in the Adjaristsqali River and tributaries, by identification of impacts on aquatic habitat, and recognition of recreational fishing as both an ecosystem and a cultural service.

2.138 However, as a result of this compliance investigation, CAO finds that:

- The completed fish baseline had shortcomings, given a). the change of project design and

[198] Different from the Phase II data collection, the BMEP was designed to monitor the nature, extent, quality and special configuration of the habitats in the Adjaristsqali River Basin in relation to project impacts and human activities. The BMEP was initially prepared to be implemented for 13 years, from 2013 until 2026. BAP, p. 102-103.
[199] BAP, p. 106.
[200] DRIFT. Available here: https://www.drift-eflows.com/about-drift/.
[201] ESIA p. 273.
[202] ESIA, p. 274.

area of influence, b). the frequency of surveys conducted, c). the limitations of annual sampling, and d). the lack of attention to vulnerable and critically endangered species. This resulted in a lack of baseline information commensurate to the nature and scale of a hydropower project in an area known for biodiversity and endemic species, in breach of the Sustainability Policy.

- In terms of recreational fishing, CAO notes that IFC's E&S due diligence adequately identified it as an ecosystem service, accounted for the impacts during construction and the fundamental changes to river hydrology, and proposed mitigation and offsetting measures, consistent with PS6.
- IFC's E&S due diligence did not identify the gaps in the ESIA and BAP regarding mitigation measures and the established environmental flow of 10% annual average, despite the biological importance of the area, the presence of endangered and vulnerable species of fauna and flora, and the pressures their populations face. The client and its consultant mainly relied on the overflow and tributaries to minimize the potential impact on aquatic habitat, and did not analyze in detail what species would be affected by a water flow reduction of 90%, despite having identified protected species in the area.

2.139 Ultimately, the shortcomings in the biodiversity baseline, the insufficient analysis of an appropriate ecological flow and appropriate mitigation measures to achieve no-net loss, and the lack of consideration of the project's location in a natural or critical natural habitat all point to significant shortcomings in IFC's ESDD.

2.140 As a result, CAO concludes that IFC pre-investment E&S due diligence did not properly assure that the client identified and assessed potential impacts to biodiversity as required by Performance Standard 1 (para. 7) and 6 (para. 6, 7, and 15) commensurate with the level of environmental and social risks and impacts to achieve a no net loss and with the nature and scale of the proposed project, in compliance with the Sustainability Policy (para. 7, 26, and 28). In contrast, CAO concludes that the impact assessment identified recreational fishing as an ecosystem service and proposed mitigation and offsetting measures, consistent with PS6 (paras. 7 and 25). [203]

e. IFC Supervision: IFC Actions and CAO Analysis

i. Supervision of biodiversity monitoring

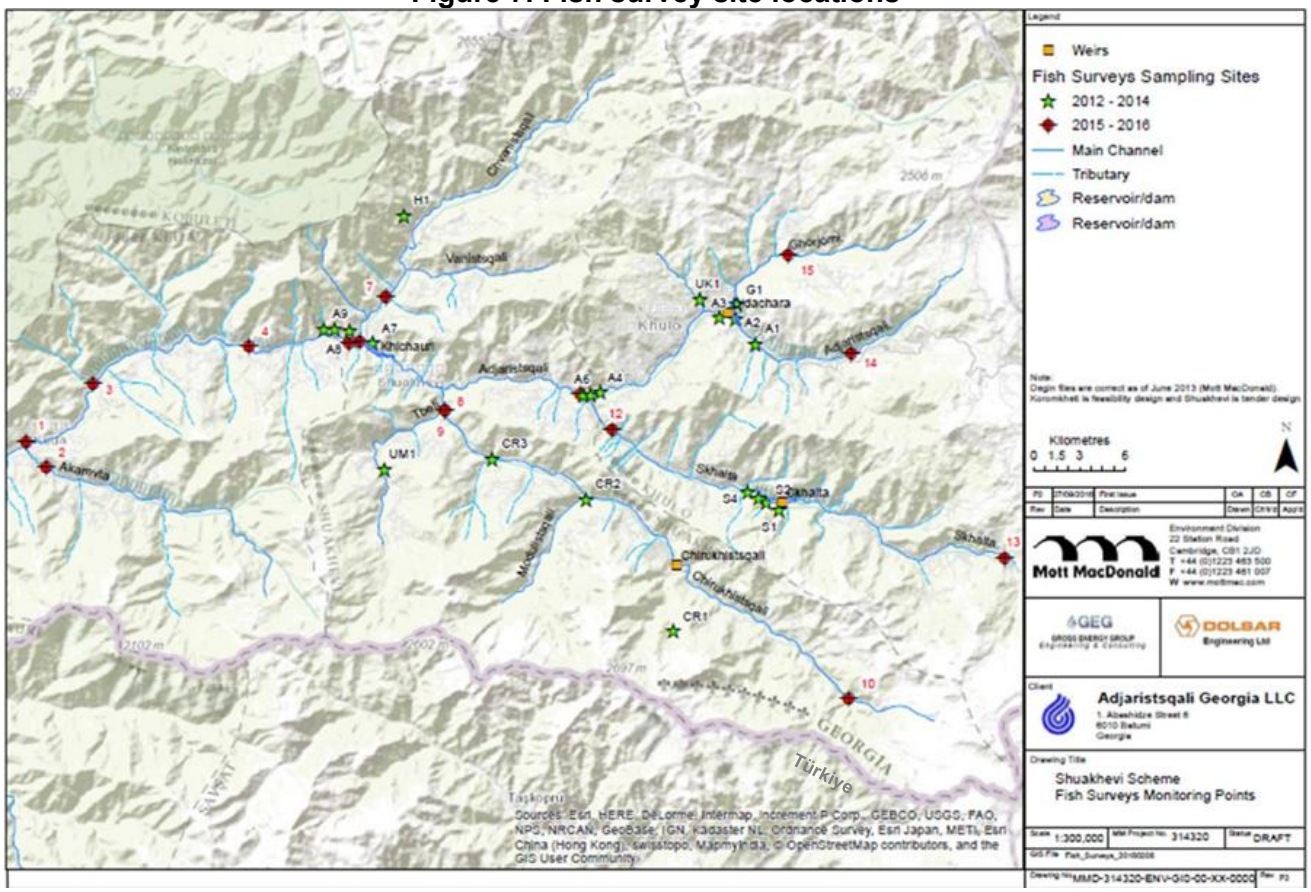
2.141 IFC's environmental and social supervision of the Shuakhevi hydropower plant focused during construction and operation on two areas: the client's commitments to undertake fish monitoring in affected rivers and to implement the agreed environmental flows strategy.

2.142 Fish monitoring took place once a year in 2012 and 2013, four times a year from 2014 to the present – in January-February, March-April, July-August, and October-November.[204] NGOs contracted by AGL conducted the monitoring and reported to the IFC client which in turn reported

[203] An IFC client is required to conduct a systematic review to identify priority ecosystems, which are: (i) those services on which project operations are most likely to have an impact and, therefore, which result in adverse impacts to affected communities; and/or (ii) those services on which the project is directly dependent for its operations (e.g., water). When affected communities are likely to be impacted, they should participate in the determination of priority ecosystem services in accordance with the stakeholder engagement process as defined in Performance Standard 1.
[204] CAO had access to the raw data recorded from 2014 until 2020, during project construction.

to the international consultant (IESC) working for the project lenders, including IFC.[205] However, the location of fish survey sampling sites was not consistent, changing between 2012-2014 and from 2015 onward. Two stations were maintained throughout on the Chirukhistsqali River, one upstream and one downstream of the weir.

Figure 7. Fish survey site locations



Source: AGL, Low flow mitigation strategy report. September 2017.

2.143 Between 2012 and 2016[206], the monitoring program identified 15 species in the Adjaristsqali River, although no more than 10 species were recorded each time. Identified species of conservation importance included *Capoeta sieboldii* and *Chondrostoma colchium*. Trout (*Salmo labrax fario*) was only recorded in the winter and spring of 2016. In the Skhalta River, ten species were recorded during monitoring – three in 2012, six in 2013, and four in 2014 including *Luciobarbus escherichii* and *Rutilus rutilus.* From then on, there was a sharp decrease in recorded Skhalta River biodiversity with only trout (*Salmo labrax fario*) and Caucasian chub (*Squalius cephalus orientalis)* found in 2015 and 2016, and only one species recorded each year. The NGOs also recorded changes in site characteristics such as riverbed and bank modifications and narrowing of

[205] Black Sea Association monitored from 2012-2014, Flora and Fauna monitored from 2015-2018, and Nekton Consulting from 2019-2021.
[206] Fish were sampled in February, April, August, and October to capture seasonal differences.

mesohabitats.[207] In the Chirukhistsqali River, the monitoring program identified six fish species in 2012-2016 but only two species in 2012, 2013, and 2014, all few in number. Colchic barbel (*Luciobarbus escerichii*), and trout (*Salmo labrax fario*) were two of the most frequent species found. In 2015, the number of species recorded increased to four and in 2016 to five.

2.144 CAO notes two aspects of concern with the fish monitoring program that are relevant to this investigation. First, the data collected during the first few years of construction was in raw form, and was not analyzed until 2017. As such, AGL and the IESC were not aware of, and did not take into account, relevant trends in fish population during the height of project construction, and subsequently made no adjustments to support fish passage and river connectivity. Second, the monitoring appears to have focused on selective fish species and did not collect data related to potential project impacts on the vulnerable Black Sea salmon, European eel and other riverine species of concern such as the European otter. Black Sea salmon and European eel were initially identified during the baseline studies in the Chorokhi River and Machakhlistsqali River, which are located downstream in the Adjaristsqali River catchment, outside of the area of influence of the Shuakhevi scheme. However, given the shortcomings in baseline and early monitoring noted by CAO, in addition to the IUCN and Sustainable Eel Group identifying dams as a threat to the Black Sea salmon and European eel in the wider region, CAO has concerns about the lack of information available at the project level on these vulnerable species. Furthermore, the monitoring documentation reviewed by CAO does not support any conclusion that the mitigation and offsetting measures were effective or sufficient to align the project with PS 6.

2.145 IFC supervision documents from 2016 note methodological differences between the baseline survey and subsequent monitoring of mesohabitats, and that the data collected was not comparable as fish survey locations changed over the years. IFC also acknowledged that mesohabitats would be permanently lost due to construction of the Didachara dam and reservoir, while stating that no key habitats would be lost that were not already represented elsewhere in the Adjaristsqali River system.[208] CAO notes that the presence of similar habitats does not mean that habitats which are permanently lost do not have to be compensated or offset to achieve no net loss under IFC's Performance Standard 6.

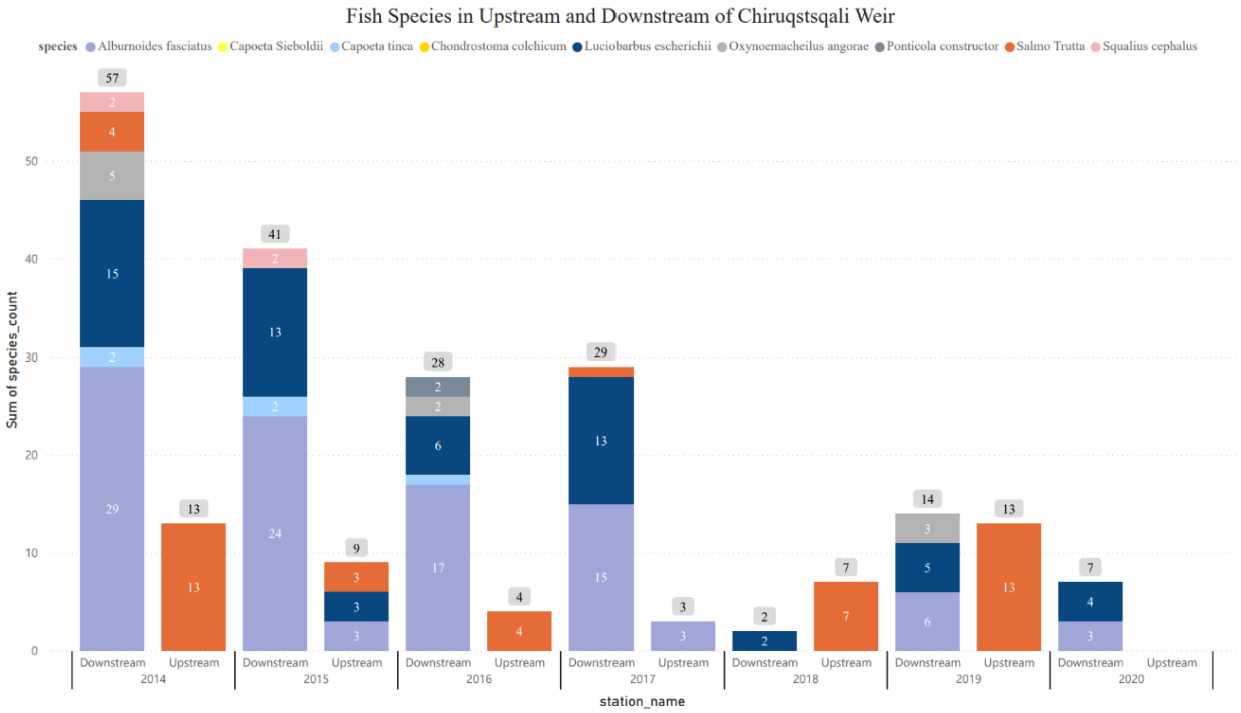
2.146 At the time of reporting concerns were consistently raised in supervision documents and by IFC's consultant, with the way collected biodiversity data was being reported, given that no analysis was typically presented, and the raw data was difficult to analyze for time period and location in the monitored species. In 2015, AGL's consultant advised AGL and its local NGO, on the improvements required and provided measures to improve NGO reporting. In 2016, an AGL consultant held a report writing workshop in Georgia with the NGOs. In 2017, IFC supervision records included positive statements on its client's implementation of the project Biodiversity Action Plan (BAP). However, during the same year, villagers reported their concerns that river pollution events related to the repair work on damaged tunnels had caused a decline in fish species.[209] As of 2018, supervision documents continued to identify issues with biodiversity reporting in relation to the quality of reporting and presentation of data, and the lack of statistical analysis of trends. In 2019, IFC consultant reiterated that the hydropower scheme had been out of compliance for several years, due to AGL's inability to demonstrate project impact on the biodiversity baseline and related adaptive management measures. In response, IFC and other

[207] Ecological Baseline Report, 2016, p. 43-50.
[208] Ecological Baseline Report, 2016, p. 38.
[209] CAO interview with people at Makhalakidzeebi village on May 29, 2022.

lenders asked AGL to provide a Corrective Action Plan (CAP) to address shortcomings in the biodiversity monitoring including how data was reported and analyzed, since the provision of raw data by NGOs conducting the monitoring was making interpretation difficult. The CAP focused on how to improve the quality and clarity of the of biodiversity monitoring reports before the March 2019 surveys took place, in order to meet PS6 requirements. The plan included workshops, alternative report formats, statistical review of trends, and a continuous review of NGO fish monitoring reports by an external consultant.

2.147 In 2020, a statistical trend analysis of fish monitoring during project construction from 2014-2020, including tunnel repair work in 2018-2020, to identify whether fish had increased or decreased in quantity. This analysis found a decline in the number of fish species caught in the Chirukhistsqali River but the trends were inconclusive and subsistence fishing and natural fish movements were suggested as potential factors in the decline. Figure 8, produced from project monitoring data obtained by CAO, shows a decline over time in fish abundance recorded at the Chirukhistsqali weir monitoring stations. It also indicates that Colchic khramulya (*Capoeta sieboldii)* and Colchic nase (*Chondrostoma colchicum*) were not found between 2014 to 2020, despite being identified at fish sampling sites and by interviewed fishermen as present in the Chirukhistsqali River when the baseline was established. This is particularly relevant as Colchic khramulya was identified as *vulnerable* on the Red List of Georgia. In addition, the fish baseline findings versus the absence of the species during monitoring makes it difficult to ascertain whether a) the baseline was inaccurate, b) the project may have had negative impacts on those two species, or c) there were other reasons that caused them to disappear. Regardless, CAO notes that IFC did not raise the absence of these species as a cause of concern during its supervision of project construction and the fish monitoring program. Moreover, the delay of several years in analyzing raw data on fish presence meant that AGL did not implement an adaptive management plan in time to ensure no net loss of biodiversity in line with its Phase II commitments and the requirements of PS6.

Figure 8. Fish Monitoring of the Chiruqstsqali Weir, 2014-2020



Source: CAO designed graph, using project data

2.148 As described in detail earlier, the 2012 project ESIA and E&S Management Plan (ESMP) committed AGL to a two-phase mitigation approach to address project-related impacts on biodiversity from the lowering of river flows. Under Phase II, the IFC client was to review the impact assessment made during Phase I, through habitat mapping over a long-term monitoring period, and establish an adaptive management plan to mitigate and offset impacts. However, CAO's review of IFC's supervision reports found no record of analysis by either AGL or IFC of the fish monitoring data collected during construction, which later confirmed the decrease of several fish species. Nor were any additional specific actions or adaptive management measured taken in a timely manner to mitigate or offset habitat impacts. CAO therefore concludes that, while fish monitoring data was periodically collected by AGL, IFC did not ensure that its client analyzed this critical data during construction. This failure resulted in the absence of an adaptive management plan, as planned for Phase II, that would have addressed the decrease in fish during the construction period of 2014 to 2020. Instead, AGL resorted to an overreliance on restocking a single species, brown trout, as a way to mitigate habitat impact.

2.149 In March 2021, AGL conducted a first round of fish stocking of the three affected rivers, using 10,000 juvenile freshwater trout, as required under the project environmental license issued by the Government of Georgia.[210] In preparation, the selected fish farm received a permit in 2020 and was monitored by the Ministry of Environment to catch and remove 180 reproductive trout and transport them to the hatchery.[211] Another 10,000 trout were released in March 2023, making over 20,000 trout in all, and AGL extended its hatchery contract to 2024.[212]

[210] OBAP, April 2021, p. 123.
[211] AGL monitoring, July-Dec 2020, p. 17.
[212] Arup Monitoring, February 2024, p. 31.

2.150 CAO considers the introduction of large numbers of *Salmo trutta* into the river by the IFC client as a remediation measure to be of concern, given the potential confusion between Black Sea trout and the non-native Brown trout described earlier.[213] CAO has assumed that *S.trutta* is used synonymously with *S.labrax fario,* for the description of the native Black Sea trout in project documents, but has no certainty that this is the case. In addition, it is unclear whether AGL has implemented stocking of the other non-salmonid fish species of conservation concern, as defined in the Low Flow Mitigation Strategy (LFMS) and Biodiversity Action Plan for the Operation Phase (OBAP).[214] Restocking with just one species (trout) could present further risks to the stability of the area's aquatic habitat and biodiversity.

2.151 In May 2022, during its field visit, CAO learned that AGL had hired a consultant to monitor the fish pass in the Chirukhistsqali weir near the complainant's homes in 2020 and 2021, and had plans to monitor again in October 2022. Based on a method where they would tag the fish downstream and recatch them upstream, the consultant concluded that the fish pass was effective with brown trout (*Salmo trutta*, *Salmo labrax fario),* and even the slowest species, able to cross it. CAO also confirmed that AGL continued to check on the environmental flow of the three affected rivers in order to guarantee maintenance of 10% of average annual natural river flow, as required by the Ministry of Environment. AGL contracts a state body to monitor at the Chirukhistsqali weir, Skhalta and Didachara dams to ensure continuous 10% of annual average environmental flow and send a quarterly report of their daily data to the Ministry of Environment.

2.152 AGL's E&S commitments and IFC's supervision also included the monitoring of recreational fishing as an ecosystem service, as identified in the project ESIA. CAO notes that the mitigation measures for ecosystem services established in the 2013 Biodiversity Action Plan included three-yearly surveys from 2014 through 2026. However, CAO's review of supervision documents only found surveys of nut production, beekeeping, cattle breeding, and the project's Land Acquisition and Livelihood Restoration Plan (LALRP) and Detailed Livelihood Restoration Plan (DLRP) requirements. IFC's records provide no evidence that recreational fishing was monitored as part of the ecosystem services questionnaires as stated in the BAP, and CAO has not found any monitoring data on whether and how recreational fishing was impacted near project sites. Additional mitigation and offsetting measures to reduce the impact on fishing included the incorporation of a fish pass in the Chirukhistsqali weir and the restocking of native fish, which have been implemented. CAO acknowledges that the fish pass has been integrated and monitored for efficiency, and restocking efforts for Black Sea trout/brown trout have been ongoing since 2021. However, it is important to note that the decline in fish species diversity and abundance downstream of the Chirukhistsqali Weir between 2014 and 2020 has also negatively affected recreational fishing in the area. In addition, to date, CAO is uncertain of the success of the restocking efforts under environmental flow conditions of 10% of annual average.

[213] The inconsistent nomenclature used in the DD raises questions as to what actual species was being reported in the monitoring and assessment. At the times one of the apparently alternative names was being used (brown trout, trout, freshwater trout, Salmo trutta, black sea trout, etc.). CAO cannot be sure, as scientific names were not consistently used, but has made the assumption that it was the freshwater ecotype of Salmo labrax fario. This inconsistency underscores the lack of rigor this investigation has seen in the surveying and monitoring of aquatic species.
[214] OBAP, p. 47.

ii. Supervision of environmental flow

2.153 As part of its commitment to conduct environmental flow Phase II monitoring, AGL reviewed the aquatic ecology monitoring data collected during construction to inform the preparation of a Low Flow Mitigation Strategy (LFMS). In May 2017, IFC required the client to provide a clearer definition of anticipated project impacts on individual fish species and their habitat, including definition of a quantitative baseline for each fish species against future monitoring of fish abundance. In September 2017, shortly before the project began initial operations, the LFMS was finalized with an accompanying Ecological Baseline Review Report (EBR).[215]

2.154 The LFMS was designed to help mitigate the impact of the project's reduced water flow on the river environment and freshwater ecology receptors. It required ongoing monitoring of the downstream impact of flow changes during dam commissioning, particularly following major spill events or sediment flushing activities. For Chirukhistsqali weir, the strategy focused on ensuring that the fish pass was viable for habitats downstream in order to maintain full hydraulic connectivity. AGL contracted an environmental consultancy and a local fish specialist to undertake the LFMS survey works with supervision and review from another consultant, ERM. AGL's environmental consultancy conducted surveys in 2017 by monitoring the weir and dams through the downstream gauging stations in conditions of both natural and environmental flow. This monitoring found that river flow and habitat connectivity was maintained under environmental flow conditions of 10% annual average, in line with project commitments. The environmental consultancy repeated the low flow monitoring surveys in December 2019 to provide an updated baseline and recheck any change in environmental flow impacts. The surveys downstream of Chirukhistsqali weir were observed by IFC's supervision consultant ecologist. No issues of concern were identified, and the environmental flow was released through the fish pass as required.[216]

2.155 In 2020, IFC supervision records note that while the LFMS strategy was largely being implemented for the commissioning phase, some additional low flow mitigation studies in relation to fish habitat mapping and sediment samples should be conducted by experienced third parties. In February 2021, IFC records confirm that the LFMS was being implemented appropriately during commissioning and that the only material issue in relation to the Chirukhistsqali weir fish pass had been addressed. The LFMS strategy during operation included for geomorphology surveys to be completed following sediment flushing and extreme flood events. These surveys are designed to assess changes to, and connectivity of, aquatic habitats, and inform the requirement for adaptive management. The LFMS strategy would also monitor river continuity, channel morphology, hydrology, riverbanks and risks posed to river continuity by landslides or bank collapse, sediment, and water quality. However, no LFMS monitoring was carried out post-commissioning due to the COVID-19 pandemic. Instead, the Chirukhistsqali weir fish pass monitoring was undertaken by a local consultancy subcontracted to do manual visual observation.

2.156 After the tunnel repairs were completed and the hydropower plant could restart operations, AGL developed an adapted Biodiversity Action Plan to cover the operational phase from September

[215] Low Flow Mitigation Strategy (September 2017) and Ecological Baseline Review (July 2017), available here: https://agl.com.ge/storage/media/other/2024-01-10/37da57f0-afaa-11ee-85ae-b394bcb1e6ec.pdf.

[216] In addition to the fish pass, AGL's environmental consulting company also monitored the river discharge depth and flow suitability approximately 150 meters downstream of the weir.

2021.[217] This amended BAP stated that flushing would take place in all three rivers twice a year, and that fish monitoring would be conducted at the 15 stations four times a year for at least three years. [218] The sediment management plan added that flushing between September and March would be optimal for biodiversity. Instead, flushing in the Didachara reservoir took place in mid-April during the identified fish spawning season.[219] In 2022, IFC supervision documents noted an inconsistency between the fish spawning season, stocking advice in the BAP, and the sediment monitoring plan. As a result, it indicated that assessment of habitats, the aquatic ecology baseline, and spawning seasons of the species present required further consideration. In addition, CAO notes that the 2022 river bank monitoring of the Chirukhistsqali focused on two sites where there was a risk of landslides, and described how flushing activity increased the bank width in one area. However, the monitoring records did not detail the potential flushing impacts on bank erosion or its impact on trees along the river, despite stating that the banks on both sides of the Chirukhistsqali River are steep and forested.

2.157 The impacts on aquatic spawning habitats and aquatic organisms from conducting flushing activities during the identified spawning period could be significant and had not yet been quantified, IFC recommended that AGL:

- Undertake a full review of data on fish spawning seasons and the habitat and species recorded in each river impacted by flushing releases to ensure advice on spawning seasons is consistent
- Undertake an assessment of potential impacts on aquatic habitats and species at different times of year and at different locations downstream of each impoundment
- Justify and confirm the months/seasonal 'windows' in which flushing should and should not be undertaken
- Identify and schedule additional monitoring as needed
- Establish thresholds for triggering adaptive management and a plan for adaptive management measures to be implemented if thresholds are breached
- Update the Sediment Management Plan and BAP.

2.158 In April 2023, AGL's environmental consultancy undertook hydro-morphological monitoring of the three impacted rivers, Adjaristsqali, Skhalta and Chirukhistsqali, and continued to find river continuity the entire length of the project-affected downstream stretch in all three rivers under low conditions of the 10% environmental flow of annual average. The consultants also concluded that water depths were suitable for fish, although IFC supervision documents did not specify which fish species were identified as suitable, and that conditions were favorable for the river ecosystems to function. No adaptive mitigation was identified as necessary. However, CAO notes that because no fish passes were constructed for the dams, only for the weir, river connectivity has necessarily been impacted. The barrier effect on fish migration in both directions, and the consequent fragmentation of the aquatic habitat, represent significant residual impacts on riverine natural habitat.

[217] Biodiversity Action Plan for the Operations Phase, September 2021, available here: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://agl.com.ge/storage/media/other/2024-01-10/4ca79f30-af90-11ee-bc2c-89d0c87d1ae1.pdf.
[218] Fish monitoring would be conducted four times a year in the following months: January-March; April-June; July-September; October-December.
[219] April and May were identified as spawning seasons for a number of fish species.

2.159 In 2022, AGL's environmental consultants determined for the third consecutive year that the Chirukhistsqali weir fish pass was operating effectively, by tagging and catching fish downstream and upstream.[220] To monitor otters, the consultant used camera traps and surveyed the riverbanks and the reservoir to detect tracks. No otter tracks were found along the Chirukhistsqali River, but they were observed close to an upstream tributary.

2.160 In terms of the monitoring of environmental flow, the reports are disclosed on a monthly basis on AGL's website. [221] From the publicly available environmental flow monitoring reports, CAO notes that the Didachara dam has reports of the Adjaristsqali river September 2017-April 2024, the Chirukhistsqali weir has reports of the Chirukhistsqali river from December 2019-April 2024, and the Skhalta dam has reports of the Skhalta river from January 2020-April 2024. From these data, CAO notes that while the environmental flow rarely dipped below 10% of the annual average for each river, the Chirukhistsqali river was the one that appeared to be most affected by low flow. Specifically, while for the dams the environmental flow dropped below 10% only once - Didachara in May 2020 and Skhalta in February 2020 - CAO notes that the environmental flow dropped several times below the established 10% annual average flow for the Chirukhistsqali weir in May 2020, August 2022, and from July 2023-February 2024.[222]

iii. IFC supervision: Summary of CAO findings

2.161 During a decade of supervision to date, CAO finds that IFC periodically monitored the client's implementation of biodiversity monitoring and mitigation measures and requested some corrective actions from the client. CAO recognizes IFC's supervision efforts to improve fish monitoring, the weir fish pass, and the monitoring of environmental flow in the Adjaristsqali, Skhalta and Chirukhistsqali rivers, as required by the Low Flow Mitigation Strategy from 2017.

2.162 However, CAO's compliance investigation found that the following considerations point to significant shortcomings in IFC's supervision to work with the client to ensure that the no-net loss requirements under PS6 are achieved:

- The loss of aquatic habitats identified in the monitoring reports is classified as of low significance, without analysis to support this conclusion. However, the loss of these habitats indicates a potential net loss of biodiversity regardless of the existence of similar habitats downstream of the dams. Yet, there is no evidence that these identified impacts on river habitats have been adequately mitigated or compensated in line with PS6.
- From the data available to CAO, and the trend analysis conducted in 2020, a decline in diversity of fish species was identified during project construction but data on the abundance of these species was not collected.
- Mitigation and offsetting measures to reduce the impact on fishing included the incorporation of a fish pass in the Chirukhistsqali weir and the restocking of native fish, which have been implemented. The fish pass has been integrated and monitored for

[220] The presence of seven fish was recorded, with four of them identified for spawning migration through the fish pass to the upper reaches of the river. Among the four, Black Sea trout/brown trout was identified.
[221] The environmental flow monitoring reports of each river since 2017 can be found on AGL's website, here: https://agl.com.ge/en/dokumentebi
[222] This flow reduction below the established 10% happens mainly during the summer, which is when the environmental flow of the river becomes most critical. Other tributaries downstream would be expected to also be low and unable to compensate for the reduced flow in the Chirukhistsqali river.

efficiency, and restocking efforts for Black Sea trout/brown trout have been ongoing since 2021. However, the decline in fish species diversity and abundance downstream of the Chirukhistsqali Weir between 2014 and 2020 has also negatively affected recreational fishing in the area. In addition, to date, CAO is uncertain of the success of the restocking efforts under environmental flow conditions of 10% of annual average.

- The restocking of impacted fish species has been limited to *Salmo labrax fario* and not extended to non-trout species as initially recommended by project consultants. This approach by IFC's client will likely have impacted the ecological equilibrium of the aquatic habitat. AGL and its consultants presented no analysis of the potential impact of introducing large numbers of one species on other aquatic species with which they would compete for resources in a habitat reduced by 90% in size.
- The limited scope of the baseline (too few sampling locations and insufficient frequency of monitoring) in combination with the subsequent changes in fish monitoring methodology (change of sampling locations and change from annual to quarterly monitoring) represent significant flaws that inhibit an accurate assessment of the project's aquatic impacts.
- From 2015 until 2019, IFC supervision reports consistently noted shortcomings in the client's biodiversity reporting, yet IFC failed to ensure timely compliance during project construction. Instead, the client persistently neglected to address the existing gaps and did not demonstrate the project's impact on the biodiversity baseline, or how adaptive management was being implemented.
- The project's environmental flow methodology was designed to determine the hydrological conditions and ecological requirements of the river system and to account for and reduce the project impacts on river species and habitat. However, CAO notes that this has not been demonstrated during the flow regime's implementation, since spawning habitats present in river reaches have been lost or degraded due to project impacts on access to and from spawning sites, in addition to the loss of spawning habitat due to reservoir inundation.[223] The dams have changed the equilibrium of the river system, and the new equilibrium will be with reduced habitat availability, including spawning habitat. The scale of this impact on aquatic habitats and species could potentially be mitigated to varying degrees based on a range of scenarios that increase the environmental flow to 20-30-40%, as per the DRIFT methodology. However, in the absence of any proposed adjustment in environmental flow, PS6 requires offsets to compensate for these residual impacts.
- CAO finds no evidence that IFC's client undertook environmental flow analysis with specific reference to the natural habitat needs to achieve no net loss of biodiversity where feasible, as required by PS6 (para.15). In particular, there is no information to establish whether the reduced environmental flows required for the hydropower scheme are adequate to mitigate impacts on biodiversity, including endemic species of high conservation value such as Black Sea salmon (Salmo labrax pallas), European eel (Anguilla anguilla), Colchic khramulya, Colchic nase, Caucasian goby, and Eurasian otter (Lutra lutra).

2.163 Therefore, CAO finds that IFC fell short of its obligations under the Sustainability Policy (paras. 7 and 45) to supervise its client to implement the appropriate mitigation or offset measures to achieve no net loss where feasible in conformance with Performance Standard 6 (para. 15). IFC failed to ensure that the project was achieving no net loss to biodiversity, particularly with respect to preventing impacts on endemic, endangered, and vulnerable species, such as the Black Sea salmon, the European eel, and Eurasian otter, as required by PS6.

[223] OBAP, p. 63 and 135.

III. Assessment of Harm

A. Requirements for IFC Non-Compliance Findings and Related Harm

3.1 A CAO compliance investigation includes findings of any Harm related to IFC non-compliance. Harm is defined as "[a]ny material adverse environmental and social effect on people or the environment resulting directly or indirectly from a Project or Sub-Project. Harm may be actual or reasonably likely to occur in the future."[224]

3.2 In considering findings regarding Harm and whether any Harm is related to IFC and MIGA non-compliance, CAO assesses IFC's review and supervision of its E&S requirements at the project level. In this case, CAO's investigation considered project-level E&S performance in relation to the application of the following Performance Standards:

- Performance Standard 1 (PS1): Social and Environmental Assessment and Management Systems
- Performance Standard 6 (PS6): Biodiversity Conservation and Sustainable Natural Resource Management.

3.3 IFC and MIGA's E&S policies establish the responsibility they and their clients bear to collect or document information on a project's E&S performance.[225] The CAO Policy requires that "in making findings regarding Harm and whether any Harm related to IFC/MIGA non-compliance with its E&S Policies, CAO will assess IFC/MIGA's review and supervision of its E&S Requirements at the Project or Sub-Project level, and consider Project- or Sub-Project-level environmental and social performance."[226] In assessing whether there is Harm related to a non-compliance finding, CAO will take into account whether IFC non-compliance contributed to an absence of data or information needed to verify the complainants' allegations of harm. In such circumstances, CAO may find that there are "indications of related Harm," when it is reasonably likely that the alleged harm raised by complainants occurred or could happen in the future.

3.4 The complainants' main allegations of harm within the scope of this investigation concern impacts to spring water that they use for domestic consumption and subsistence agriculture, and biodiversity impacts on recreational fishing.

B. Harm Related to Groundwater and Springs

a. CAO Findings on Harm Related to Springs

3.5 CAO notes that during its 2022 compliance investigation field visit, the project's impact on spring water sources remained the complainants' primary concern. Four years after submitting their complaint to CAO, these residents of Rabati neighborhood in Makhalakidzeebi reiterated that they depend on spring water for domestic consumption and subsistence agriculture. They stated that

[224] CAO Policy, glossary.
[225] See, for example, 2012 Sustainability Policy, paras. 28 and 45, 2012 PS1, paras. 7, 14, 23, 24, 30, and 34.
[226] CAO Policy, para. 114.

local springs they relied on have not recovered following the plant's construction and that they do not consider water from the river a viable drinking supply alternative due to its high turbidity and distance from their homes. In April 2024, they informed CAO that they still lack access to clean water and are forced to rely on muddy water from the river. As explained earlier, the client contests these allegations, reporting that tunnel construction has not caused any impact to local springs.

3.6 As described in the Analysis and Findings section above, CAO found shortcomings in IFC's supervision and client implementation of mitigation measures[227] designed to prevent impacts to springs during project construction. Specifically, CAO noted that IFC received reports of excess ingress water during tunnel construction and a lack of assurances regarding tunnel pre-grouting.[228] In 2013, the client commissioned a drawdown assessment that warned that excess ingress water during tunnel construction could impact underground water levels but stated that pre-grouting would prevent this. The project E&S Impact Assessment (ESIA) completed during IFC's pre-investment due diligence confirmed the potential impact to community springs. Yet, supervision of tunnel pre-grouting and provisioning of water supply were not included as mitigation measures in the project E&S Action Plan that IFC subsequently agreed with AGL. As a result, IFC's E&S supervision did not cover those critical issues and IFC did not engage AGL to assess whether excess ingress water could be impacting local springs as community complaints alleged.

3.7 Regarding monitoring of spring water levels, CAO's investigation found that the monitoring information AGL collected during tunnel construction was not subsequently analyzed to inform project activity as construction continued. IFC's supervision records also noted these shortcomings in spring monitoring data and its use, yet this monitoring approach was not improved. As a result, IFC could not use the flawed data to assess and verify client assurances that local springs were not being impacted during tunnel construction.[229]

3.8 During its 2022 field mission, CAO visited one of the springs near Rabati neighborhood. CAO observed that both the spring and the pipeline used to deliver its water to the community were dry. However, CAO lacked sufficient information to determine whether the spring was running before project construction, or the lack of water flow was caused by seasonal fluctuation or other factors.

3.9 Additionally, both the ESIA and the project's E&S Management Program (ESMP) committed the client to provide alternative water supply to potentially impacted communities, and stated that permanent alternative water supply would be installed to rectify loss of drinking water resources in the long term.[230] IFC's subsequent 2023 assessment of hydrogeology and springs stated that any impact potentially caused to local springs during tunnel construction would have been mitigated by the client's alternative water supply measures.[231] However, it acknowledged that establishing a causal link between construction work and impact on springs was impossible due to the lack of a community groundwater uses baseline.

[227] See findings related to the ESIA and the 2013 drawdown report in the analysis and findings section regarding groundwater.
[228] IFC, BTO Report. Assessment of hydrogeology and springs. April 6, 2023.
[229] See "Supervision of Spring Water Monitoring" section under Groundwater analysis and findings.
[230] When loss of drinking water resources was established. ESIA, pp. 368-369; ESMP, pp. 7 and 14; and ESRS.
[231] IFC, BTO Report. Assessment of hydrogeology and springs. April 6, 2023.

3.10 CAO recognizes that during tunnel construction the client supported alternative water supply initiatives for several local communities as part of its corporate social responsibility initiatives, including Makhalakidzeebi village. However, CAO finds shortcomings in how this supply was implemented and supervised as monitoring reports generated by IFC's consultant do not provide information about the water quantity and quality provided or include regular implementation updates for individual projects.[232] CAO also learned during its field visit that this project did not initially cover Rabati neighborhood, and that the installed system was insufficient and unreliable to solve the water access issues impacting the complainants. CAO understands that the client and local municipality are working together to improve water supply in the area. Nevertheless, lack of reliable access to clean water for domestic consumption and subsistence agriculture remains an issue of basic need affecting the complainants and their community. Most recently, in April 2024, the complainants informed CAO that they still did not have sufficient access to water and that the supply they did receive was contaminated with sediment. Since this supply is from the river, they are understandably concerned about health impacts from untreated contaminated water.

Figures 9 and 10. Tap water from a complainant's house (left) and water from the supply tank used by complainants (right)

Source: Photos shared by the complainants, August 2024

3.11 **CAO finds that these shortcomings in the client's implementation and IFC's supervision of mitigation measures to address potential impacts to groundwater use, including the provisioning of alternative water supply, led to unreliable access to clean water and constitutes Harm to the complainants.**

b. CAO Findings on Harm Related to Springs

[232] See "Provisioning of water supply to communities" section under Groundwater supervision analysis and findings.

3.12 Regarding the alleged harm to local springs, CAO's expert consultant mapped the tunnel cross-sections relevant to the dry springs previously used by Makhalakidzeebi residents, using location information recorded in monitoring documentation. This mapping shows that all relevant springs are located above the tunnel, at a distance of at least 400 meters. CAO's expert concluded that tunnel blasting could have led to the draining of springs at that distance, depending on the geological conditions, in particular rock fracturing. The consultant also noted that the movement of water through fractured strata is very difficult to track and tunneling can force fracturing and lower groundwater levels over a long distance where springs are located. Even a few centimeters of lowered groundwater could be enough to reduce or completely stop natural water flow in the relevant springs. According to CAO's expert, such an impact is not likely due to the fairly large distance between the springs and tunnel but cannot be ruled out. While local springs used by communities likely experienced low flow before the project, and could have been impacted by severe weather conditions in recent years, CAO's expert concluded that the absence of baseline data prevented a clear picture of the situation. Springs in the area are fragile and if impacted are unlikely to recover, as evidenced by current spring water flow around Makhalakidzeebi, which is very low and no longer a reliable source of water for the Rabati community.

3.13 The complexity of area geology combined with lack of robust information makes it difficult to establish that tunnel construction impacted the springs used by complainants for domestic consumption and subsistence agriculture. At the same time, the ESIA not including a baseline for existing springs close to project-affected communities, despite strong evidence of community dependence for personal use and livelihoods, makes it difficult to establish that tunnel construction did *not* impact these springs. **Therefore, CAO finds that this alleged Harm cannot be ruled out.**

C. Harm Related to Aquatic Habitats and Recreational Fishing

3.14 The complainants second main area of concern related to the hydropower complex impacts on biodiversity, including fish populations that communities in the region access for recreational fishing. Based on the analysis above of actions taken by IFC and IFC's client, CAO finds that there are residual impacts on the project-affected aquatic and riparian ecosystems that remain unmitigated. The establishment of a permanent 10% of annual average river flow, the impact on fish spawning habitat from project construction, and the loss of river connectivity due to the lack of fish passes on the Didachara and Skhalta dams, represent a significant likelihood of harm to the to the aquatic habitat in the Adjaristsqali, Skhalta, and Chiruqstsqali rivers. Furthermore, AGL and IFC provide no information to establish whether the environmental flows in place have proved adequate to mitigate the project impacts on biodiversity, including species of high conservation value such as the Black Sea salmon, Black Sea trout, European eel, Colchic Khramulya, Colchic nase, Caucasian goby, and Eurasian otter, in line with PS6 requirements.

3.15 **Based on the available information, CAO concludes that there is not sufficient relevant evidence to establish Harm with certainty in the case of aquatic habitats.** However, given the significant likelihood of Harm to the aquatic habitat, the project would benefit from reassessing environmental flows and including additional measures to ensure that adverse biodiversity impacts are adequately mitigated or, if not, offset, in order to ensure no net loss of biodiversity, consistent with para. 45 of the IFC Good Practice Handbook on Environmental Flows for Hydropower Projects

(2018).[233]

3.16 Regarding the alleged harm to recreational fishing, reports by AGL and the lenders' independent E&S expert consultant describe significant impacts to fish species in the project area during project construction. Monitoring during this time showed a measurable decrease in the number of fish present in the area. Failure to carry out a review of the monitoring data in a timely manner made it difficult to assess and mitigate the impacts of fish reduction and the potential associated harm to recreational fishing during the construction period. In addition, while the ESIA identified fishing as a recreational activity in the project area and established mitigation and offsetting measures, recreational fishing was not monitored as an ecosystem service. Thus, little information exists about the importance of recreational fishing to local communities and the significance of its potential harm. However, the complainants' testimonies, which were reiterated in 2022 during CAO's field visit, describe how fish decline has affected their ability to fish for recreational and nutritional purposes, and small economic gain.

3.17 Shortcomings in IFC's supervision of the project also contributed to this absence of data regarding the project's impacts on the recreational fishing as well as posing challenges to assessing and mitigating impacts on other vulnerable and endangered species. While there is not sufficient relevant evidence to establish Harm with certainty in relation to recreational fishing, **CAO finds it plausible that the impacts to recreational fishing during project construction described by the complainants may have occurred and concludes that the alleged Harm cannot be ruled out.**

[233] IFC's Good Practice Handbook states: "When the host country grants an environmental license prior to an E-Flows Assessment or compilation of an E-flow Management Plan (EFMP), then project design and E-Flows decisions should be revisited." Available here: https://www.ifc.org/en/insights-reports/2018/publications-handbook-eflows.

IV. Recommendations for IFC/MIGA Management Action Plan

4.1 Regarding the outcome of CAO compliance investigations, the CAO Policy provides that: *Where CAO finds non-compliance and related Harm, CAO makes recommendations for IFC/MIGA to consider when developing a Management Action Plan (MAP). Recommendations may relate to the remediation of Project- [...] level non-compliance and related Harm, and/or steps needed to prevent future non-compliance, as relevant in the circumstances.*[234]

4.2 In relation to the AGL hydropower project in Georgia, CAO makes the recommendations below for IFC and MIGA's consideration in order to remediate the non-compliances and related Harm described above.

4.3 IFC's investment and MIGA's guarantee in the project remain active and IFC continues regular supervision of AGL. CAO emphasizes that this active project status represents a significant opportunity for IFC and MIGA to work with their Clients to address non-compliances and potential for related Harm to the complainants and local communities. CAO notes that its recommendations are confined to its findings of Harm related to established non-compliances.

4.4 Recent communications with the complainants indicate that their main continuing concerns are the risk of landslides and their associated unsafe and unstable living conditions, as well as their lack of access to groundwater resources and clean and sufficient water. CAO notes that Makhalakidzeebi village and AGL signed an MOU over a decade ago, in May 2014, which included relocation support for the community if the project impacted water resources.[235]

4.5 CAO's recommendations below take into account IFC and MIGA's opportunity to work together in leveraging support for these measures.

A. Project-level Recommendations

4.6 Water supply: In line with the mitigation measures outlined in the project's ESIA and ESMP on providing an alternative water supply, IFC should work with the client to continue supporting the municipality's efforts to provide long-term reliable water supply to Makhalakidzeebi village and Rabati neighborhood of sufficient quantity and quality to meet their livelihood and domestic consumption needs. These additional efforts should be undertaken within a reasonable time. While system improvements are underway, CAO recommends that IFC work with its client to improve the ongoing alternative water supply provided to the complainants and ensure it is of sufficient quality and quantity to meet their domestic consumption needs. This activity should be categorized as a PS1 project mitigation or compensation measure conducted under IFC supervision. To this end, CAO recommends that IFC, as part of its supervision efforts, surveys the client's water provisioning activity to establish that it meets water quality standards and is sufficient to meet the

[234] CAO Policy, para. 113. Similarly, paragraph 120 of the CAO Policy establishes that a compliance investigation report will make "[r]ecommendations for IFC/MIGA to consider in the development of a MAP relating to the remediation of Project- or Sub-Project-level non-compliance and related Harm, and/or steps needed to prevent future non-compliance, as relevant in the circumstances."

[235] Agreement between Government of Ajara A.R., Adjaristsqali Georgia LLC and Residents of Makhalakidzeebi Village, dated May 1, 2014, pp. 5 and 6, section 2.6.

needs of the community. If project area realities make it difficult to ensure that complainants have access to sufficient and clean water, IFC should work with its client to explore other alternatives, such as providing support for relocation.

4.7 **Biodiversity Impacts:** Given the shortcomings found in the biodiversity baseline and monitoring, CAO recommends that in line with the World Bank Group's Good Practice Handbook, IFC should work with its client to:

- Update the fish baseline to identify the fish species diversity within the adjusted study area of the Shuakhevi scheme, across seasons and in line with good international practice. Particular attention should be given to endemic, endangered, and vulnerable species which depend on aquatic ecosystems, including, but not limited to, fish species.
- Based on the results of the updated baseline, identify habitat needs of individual species, and revisit the assessment of the project's environmental flows. This should include an updated ecological flow analysis, using a high-resolution methodology that assesses a range of environmental flow scenarios to evaluate the impact on the identified fish species and on other species dependent on the freshwater habitat. This re-assessment should inform the identification of measures to adequately mitigate or offset adverse residual impacts to biodiversity, and demonstrate the achievement of no net loss.[236]
- IFC should work with the client to engage internationally recognized experts to review the ecological flow analysis, update the BAP, to ensure that the mitigation and/or offset measures taken are adequate to ensure no net loss of biodiversity.
- Lastly, in order to adequately assess project impacts on aquatic biodiversity in affected rivers and reservoirs, CAO recommends that IFC work with its client to extend the monitoring of fish populations and vulnerable species for the life of the project. The international experts should also review the monitoring program to ensure that it adequately identifies and flags any significant changes in species diversity and populations. This should inform the periodic update of mitigation and/or offset measures.

V. Conclusion and Next Steps

5.1 This CAO compliance investigation has documented areas in which IFC positively engaged with AGL to provide support to comply with the client's E&S commitments. However, IFC/MIGA shortcomings in due diligence and supervision of the Shuakhevi hydropower plant created a challenging project situation. As a result, IFC/MIGA could not ensure that "the costs of economic development do not fall disproportionately on the poor or vulnerable and that the environment is not degraded in the process," contrary to its commitment enshrined in the Sustainability Policy.

5.2 This report includes the above recommendations to IFC/MIGA on how to address CAO's non-compliance findings and related Harm through project-level corrective actions that may provide some redress for adversely affected local communities.

[236] Examples of potential offsets include: Restore connectivity by removing barriers (dams, weirs) from rivers in the region where they no longer serve a purpose; installing fish passes at barriers outside the project that do not have them; and/or establish protected areas in nearby watersheds without dams and fund management plan preparation and implementation.

5.3 In response to this compliance investigation report, IFC/MIGA will prepare for Board approval a Management Action Plan following consultation with AGL and the complainants. CAO will monitor the effective implementation of the Management Action Plan.

Annex A: Project Timelines

Timeline of Pre-investment Records

Year	Dates	Pre-Investment Records
2012	March	Draft Environmental and Social Impact Assessment (ESIA) prepared by Mott MacDonald and Gamma Scientific
	October	Environmental and Social Management Plan (ESMP) prepared by Mott MacDonald
	November	Construction Environmental Management Plan (CEMP) prepared by Mott MacDonald
2013		Environmental Impact Assessment (EIA) prepared by Georgian authorities
	July	Biodiversity Action Plan (BAP) prepared by Mott MacDonald
	September	Environmental and Social Due Diligence (ESDD) report and Environmental and Social Action Plan (ESAP) prepared by Arup
	September	Final Environmental and Social Impact Assessment (ESIA) prepared by Mott MacDonald and Gamma Scientific (from 2012-2013)
	September	Stakeholder Engagement Plan (SEP) disclosed
	October	IFC's Environmental and Social Review Summary (ESRS) disclosed

Timeline of Supervision Records and Activities

Year	Supervision Dates	Supervision Records and Document Date
2014	August 2014	IESC site visit
	October 2014	IESC Monitoring Report
	June to December 2014	AGL Semi-Annual Environmental and Social Monitoring Report (dated April 2015)
2015	May 2015	IESC site visit
	May 2015	IFC Supervision Site Visit (dated March 2016)
	July 2015	IESC Monitoring Report
	January to June 2015	AGL Semi-Annual Environmental and Social Monitoring Report (undated)
	July to December 2015	AGL Semi-Annual Environmental and Social Monitoring Report (dated March 2016)
	November 2015	IESC site visit
2016	May 2016	IESC site visit
	Q1 2016	IESC Interim Environmental and Social Monitoring Report (dated April 2016)
	January to June 2016	AGL Semi-Annual Environmental and Social Monitoring Report (dated October 2016)
	Q2 2016	IESC Environmental and Social Monitoring Report (dated November 2016)

	Q3 2016	IESC Interim Environmental and Social Monitoring Report (dated December 2016)
	November 2016	IESC site visit
	July to December 2016	AGL Semi-Annual E&S Monitoring Report (dated April 2017)
	Q4 2016	IESC E&S Monitoring Report (dated March 2017)
	2016	IFC Annual Monitoring Report (dated July 2017)
2017	Q1 2017	IESC Interim E&S Monitoring Report (May 2017)
	February 2017	IFC and MIGA supervision site visit
	January to June 2017	AGL Semi-Annual E&S Monitoring Report (October 2017)
	September 2017	IESC site visit
	September 2017	IFC supervision site visit
	July	Environmental and Social Action Plan (ESAP)
	July to December 2017	AGL Semi-Annual E&S Monitoring Report
	December 2017	IESC E&S Monitoring Report for Operations #1
2018	January to June 2018	AGL Semi-Annual E&S Monitoring Report (dated November 2020)
	November 2018	IESC site visit
	November 2018	IFC supervision site visit (report dated March 2019)
	November 2018 site visit	IESC E&S Monitoring Report (dated January 2019)
	July to December 2018	AGL Semi-Annual E&S Monitoring Report (dated December 2019)
2019	January to June 2019	AGL Semi-Annual E&S Monitoring Report (dated June 2019)
	June 2019	IESC site visit
	June 2019 site visit	IESC E&S Monitoring Report (dated October 2019)
	July to December 2019	AGL Semi-Annual E&S Monitoring Report (dated December 2019)
	December 2019	IESC and IFC site visit
	December 2019 site visit	IESC E&S Monitoring Report (date February 2020)
	2019	IFC Annual Monitoring Report (dated June 2020)
2020	January 2020	Stakeholder Engagement Plan
	January to June 2020	AGL Semi-Annual E&S Monitoring Report (dated October 2020)
	September 2020	IESC virtual supervision visit (report dated November 2020)
	September 2020	IFC supervision site visit (report dated November 2020)
	September 2020	IESC E&S Monitoring Report (dated February 2021)
	July to December 2020	AGL Semi-Annual E&S Monitoring Report
2021	February 2021	PDS Change (project data sheet post-handover)
	April 2021	Biodiversity Action Plan for the Operations Phase

	November to December 2021	IESC E&S Monitoring Report (report dated February 2022)
2022	September 2022	IFC supervision site visit
	September 2022 to October 2023	IESC Social Monitoring Report (dated February 2024)
	September 2022 to October 2023	IESC Environmental Monitoring Report (dated February 2024)
2023	October 2023	IFC site supervision visit Back to Office Report

Annex B: Overview of the CAO Investigation Process

"*The purpose of the CAO Compliance function is to carry out reviews of IFC/MIGA's compliance with E&S [Environmental and Social] Policies, assess related Harm, and recommend remedial actions where appropriate*."[237] The Compliance function does not evaluate the adequacy or suitability of E&S Policies, nor does it make findings in relation to the compliance of a project, sub-project, client, or sub-client with the IFC/MIGA Performance Standards. However, in carrying out its role, the CAO Compliance function will assess IFC/MIGA's review and supervision of its E&S requirements at the project- or sub-project level, and consider project- or sub-project level environmental and social performance.[238]

Notably, CAO has no authority with respect to judicial processes. It is not a court of appeal, a legal enforcement mechanism, or a substitute for international court systems or court systems in host countries.

In line with the Transitional Arrangements agreed as part of the CAO Policy process in 2021,[239] this compliance investigation report was prepared following CAO's Policy. All prior work, including the compliance appraisal, was prepared following CAO's 2013 Operational Guidelines.

Investigation

A CAO compliance investigation focuses on IFC/MIGA and how it assured a project's E&S performance. The objective of a compliance investigation is to determine:

(1) whether IFC/MIGA has complied with its E&S Policies; and
(2) whether there is harm or potential harm related to any IFC/MIGA non-compliance.[240]

In assessing E&S performance, it is often necessary for CAO to review the actions of IFC/MIGA's client and to verify E&S outcomes in the field.

Scope and Methodological Approach[241]

The scope of a compliance investigation into a complaint is determined in the Investigation Terms of Reference, published in CAO's Appraisal Report**.** It is based on information available to CAO from documents, interviews, statements, reports, correspondence, CAO observations of activities and conditions, and other sources that CAO deems relevant. CAO's investigation report will include the investigation findings with respect to compliance, non-compliance, and any related Harm. The report will also include context, evidence, and reasoning to support CAO's findings, and conclusions regarding the underlying causes of any non-compliance identified.[242]

Sufficient, relevant evidence is required to afford a reasonable basis for CAO's compliance findings and conclusions.[243] CAO will not make findings and conclusions with the benefit of hindsight. Rather, CAO will assess whether there is evidence that IFC/MIGA applied relevant E&S Requirements considering the sources of information available at the time the decisions were made.[244] Furthermore, while CAO may seek clarifications during the investigation, it will not accept an expansion away from the scope identified in the TOR. Should

[237] CAO Policy, para. 76.
[238] Ibid., para. 77.
[239] Transitional Arrangements for CAO Cases. Available on CAO's website: https://officecao.org/Transition.
[240] CAO Policy, para. 112.
[241] Ibid., paras. 115, 117, and 118.
[242] Ibid., para. 120(b).
[243] Ibid., para. 117.
[244] Ibid., para. 116.

additional issues or concerns emerge during an investigation, these may be subject to a separate appraisal at the discretion of the CAO Director General.

In relation to any findings of IFC/MIGA non-compliance and related Harm, CAO will make recommendations for IFC/MIGA to consider in the development of a Management Action Plan (MAP) relating to the remediation of project or sub-project -level non-compliance and related Harm, and/or steps needed to prevent future non-compliance, as relevant in the circumstances. Recommendations will take into account the implications of any IFC/MIGA exit.[245]

Investigation Report Finalization

Upon receiving comments on the draft investigation report from IFC/MIGA and the complainants, CAO will finalize its investigation report. Once the final investigation report is officially submitted to IFC/MIGA Senior Management and circulated to the Board, CAO's website will notify the public of the investigation's completion.[246]

Upon CAO's official submission of the compliance investigation report to IFC/MIGA, IFC/MIGA Management has 50 business days to submit a Management Report to the Board for consideration. The management report must include a Management Action Plan (MAP) for Board approval. A MAP outlines actions that IFC/MIGA proposes in response to CAO's investigation findings. IFC/MIGA must consult with complainants and the client during its MAP preparation process.[247]

At the same time that IFC/MIGA presents the MAP for Board approval, CAO will submit comments on the proposed MAP to the Board. Upon the Board's approval of the MAP, the compliance investigation report, management report, and MAP will be published on CAO's website.[248]

[245] Ibid., para. 120(c).
[246] Ibid., para. 128.
[247] Ibid., paras. 130–131, and 134.
[248] Ibid., paras. 135 and 138.

Annex C: CAO Non-Compliance Findings, Related Harm, and Recommendations

In accordance with the CAO Policy, IFC Management is required to prepare a Management Report in response to this compliance investigation.[249] For the purposes of addressing CAO findings of non-compliance and related Harm, if any, the Management Report will include, for Board approval, a Management Action Plan (MAP) comprising time-bound remedial actions proposed by Management.[250] Alternatively, the Management Report should include a reasoned response to CAO's findings or recommendations regarding non-compliance or related Harm that IFC is unable to address in the MAP.[251] If the Board approves a MAP, CAO monitoring will verify effective implementation of the actions it contains.[252] CAO compliance monitoring will not consider non-compliance findings for which there is no corresponding corrective action in the MAP.[253]

In Table B.1, the first column presents CAO compliance findings and assessment of related harm. CAO will complete the second column during its compliance monitoring of this case on the basis of IFC's Board-approved MAP.

In Table B.2, in accordance with the CAO Policy,[254] CAO makes recommendations to address CAO's findings of non-compliance and related Harm for IFC to consider when developing its Management Action Plan. These recommendations relate to remediation of project-level non-compliance and related Harm, as well as steps needed to prevent future non-compliance.

[249] CAO Policy, para 130.
[250] Ibid., para. 131.
[251] Ibid., para. 132.
[252] Ibid., para. 140.
[253] Ibid., para. 141.
[254] Ibid., para. 113.

Table B.1. CAO Findings of Non-Compliance and Related Harm

CAO Findings of Non-Compliance and Related Harm
Complaint Issue 1. Groundwater
IFC/MIGA Pre-Investment E&S Due Diligence
Groundwater Baseline: CAO finds that IFC's ESDD did not identify or address the client's performance gap with PS1 (para. 7) and PS6 (para. 24), resulting in a lack of baseline information on groundwater uses and the quantity and quality of groundwater provided by specific springs to communities who depend on them, contrary to its Sustainability Policy commitments (paras. 7, 26, and 28). **Mitigation Measures for Potential Impacts on Groundwater:** CAO finds that while IFC's pre-investment review was commensurate to these risks, IFC did not meet the requirement under the Sustainability Policy to seek "to ensure, through its due diligence, monitoring, and supervision efforts, that the business activities it finances are implemented in accordance with the requirements of the Performance Standards" when it came to managing project impacts on and risks to groundwater resources.[255] PS1 (para. 13) requires IFC clients to establish management programs with mitigation measures addressing all identified project E&S risks and impacts with the level of detail and complexity commensurate with these risk and impacts (para. 15). The key mitigation measures identified by the ESIA to manage groundwater impacts and risks were not included in the project ESAP, the CEMP or other E&S risk mitigation project documents. As a result, IFC's supervision of its investment in AGL was compromised in relation to the client's implementation of tunnel grouting measures and the provision of alternative water supply to affected communities. This meant, in turn, that IFC's Sustainability Policy commitment to verify client compliance with PS1 and PS6 requirements was also compromised.
IFC Supervision
Spring Water Monitoring: CAO finds that IFC failed adequately to supervise implementation of spring water monitoring as an established mitigation measure to prevent impacts to groundwater and related ecosystem services to communities during tunnel construction. Project documents suggest that IFC did not access or analyze spring water monitoring data to assess whether tunneling works were impacting local springs. Similarly, during supervision IFC did not require the client to use spring monitoring data to inform project implementation. PS1 requires the client to establish and implement mitigation measures to manage significant environmental impacts, such as impacts to groundwater and associated springs, and the Sustainability Policy (paras. 7, 45) requires IFC to supervise client PS compliance. In

[255] Sustainability Policy, para. 7.

this case, CAO finds that IFC did not supervise implementation of spring water monitoring to establish that the mitigation measures AGL employed effectively prevented impacts to groundwater and springs used by local communities during tunnel construction. As a result, IFC could not ensure its client's conformance with the relevant PS1 provisions.

Tunnel Grouting and Lining:
CAO finds that IFC fell short of its Sustainability Policy obligations (paras. 7, 45) to supervise AGL to implement appropriate mitigation measures during the hydropower scheme's construction in conformance with PS1, for the following reasons:

IFC's ESDD concluded that the project would meet PS1 requirements on the basis that grouting and lining would prevent excess ingress water during tunnel construction, which could not proceed with excess ingress water levels. This view was based on the ESIA and ESMP and the 2013 hydrogeological desktop review AGL commissioned, all of which reinforced the importance of tunnel grouting and lining to prevent negative construction impacts on local groundwater and springs. However, the project ESAP did not address tunnel grouting and lining, and IFC took no action to address those issues as part of E&S supervision during the construction phase.

IFC inaction continued despite construction reports from the Independent Engineer that described excess ingress water during tunnel construction, inadequate grouting and lining, and continuous tunnel construction despite high levels of ingress water.

Water Supply to Communities:
CAO finds that IFC did not meet its obligation under the Sustainability Policy (paras. 7, 9, and 45) during supervision, for the following reasons**:**
IFC did not assure that the project's water supply initiatives met the objectives stated in the project E&S Management Plan of providing clean and sufficient water on a reliable basis.
IFC was aware that the water supply project was sub-optimal and did not require the client to provide the project-affected community with reliable and adequate supply of clean water.
IFC did not work with its client to improve the project's performance in this regard.

Consequently, CAO finds that IFC did not ensure the client incorporated the necessary measures to address identified E&S risks and impacts associated with water availability, as proposed in the ESIA, resulting in a failure to ensure client compliance with PS1 (paras. 13, 15, and 16).

Harm related to groundwater and springs:

CAO finds that the shortcomings in implementation and supervision of the mitigation measures recommended to address potential impacts to groundwater use, including the provisioning of alternative water supply, led to unreliable access to clean water and constitutes Harm to the complainants.

The complexity of the area geology combined with lack of robust information makes it difficult to establish that tunnel construction impacted the springs used by complainants for domestic consumption and subsistence agriculture. At the same time, the ESIA's failure to provide a baseline for existing springs close to project-affected communities, despite the strong evidence of community dependence for personal use and livelihoods, makes it difficult to establish that tunnel construction did not impact these springs. Therefore, CAO finds that this alleged Harm cannot be ruled out.

Complaint Issue 2. Biodiversity

IFC/MIGA Pre-Investment E&S Due Diligence

In terms of the biodiversity baseline, the assessment of project impact on biodiversity and ecosystem services, and the project mitigation measures, CAO found that:

- The fish baseline conducted had shortcomings due to, a) the change of project design and area of influence, b) the frequency of surveys conducted, c) the limitations of annual sampling, and d) the attention to vulnerable and critically endangered species. This resulted in a lack of baseline information commensurate to the nature and scale of a hydropower project in an area known for biodiversity and endemic species.

- IFC E&S due diligence did not identify the gaps in the project ESIA and BAP regarding the mitigation measures and established environmental flow of 10% annual average, despite the biological importance of the area, the presence of endangered and vulnerable species of fauna and flora, and the pressures their populations face. The project mainly relied on help from the overflow and tributaries to minimize the impact on aquatic habitat, and did not analyze in detail what species would be affected by the water flow reduction of 90%, despite having identified protected species in the area.

Ultimately, the shortcomings in the biodiversity baseline, the insufficient analysis of an appropriate ecological flow and appropriate mitigation measures to achieve no net loss, and the lack of consideration of the project's location in a natural or critical natural habitat all point to a significant shortcoming in IFC's pre-investment E&S due diligence.
As a result, CAO concluded that IFC's ESDD did not properly assure that the client identified and assessed potential impacts to biodiversity as required by Performance Standard 1 (para. 7) and 6 (para. 6, 7, and 15) commensurate with the level of environmental and social risks and impacts to achieve a no net loss and with the nature and scale of the proposed project, in compliance with the Sustainability Policy (para. 7, 26 and 28).

IFC Supervision

In terms of IFC's supervision of project impacts on biodiversity and environmental flow, CAO found that:

- The loss of aquatic habitats identified in the monitoring reports is classified as of low significance, without analysis to support the conclusion. However, the loss of these habitats indicates a potential net loss of biodiversity regardless of the existence of similar habitats downstream of the dams. Yet, there is no evidence that these identified impacts on river habitats have been adequately mitigated or compensated in line with PS6.
- From the data available to CAO, and the trend analysis conducted in 2020, a decline in diversity of fish species was identified during project construction. Additionally, data on the abundance of these species was not collected.
- Mitigation and offsetting measures to reduce the impact on fishing included the incorporation of a fish pass in the Chirukhistsqali weir and the restocking of native fish, which have been implemented. The fish pass has been integrated and monitored for efficiency, and restocking efforts for Black Sea trout/brown trout have been ongoing since 2021. However, the decline in fish species diversity and abundance downstream of the Chirukhistsqali Weir between 2014 and 2020 has also negatively affected recreational fishing in the area. In addition, to date, CAO is uncertain of the success of the restocking efforts under environmental flow conditions of 10% of annual average.
- The restocking of impacted fish species has been limited to *Salmo labrax fario* and not extended to non-trout species as initially recommended by the project consultants. Additionally, this action will likely have impacted the ecological equilibrium of the aquatic habitat. There was no analysis presented of the potential impact of introducing large numbers of one species (*Salmo larax f.)* on other aquatic species with which they would compete for resources in a habitat reduced by 90% in size.
- The limited scope of the baseline (too few sampling locations and insufficient frequency of monitoring) in combination with the subsequent changes in fish monitoring methodology (change of sampling locations and change from annual to quarterly monitoring) represent significant flaws that inhibit an accurate assessment of the project's aquatic impacts.
- While from 2015 until 2019 IFC supervision reports consistently note shortcomings with the biodiversity reporting provided by the client, IFC failed to ensure timely compliance during project construction. Instead, the client persistently neglected to address the existing gaps and did not demonstrate the impact of the project on the biodiversity baseline, or how adaptive management was being implemented.
- The project's environmental flow methodology was designed to determine the hydrological conditions and ecological requirements of the river system and to account for and reduce the impacts of the project on river species and habitat. However, in implementation, CAO notes that this has not been demonstrated, as spawning habitats present in river reaches have been determined to be lost or degraded due to project impacts on access to and from spawning sites, in addition to the loss of spawning habitat due to inundation of the reservoir area.[256] The dams have changed the equilibrium of the river, and the new equilibrium will be with reduced habitat availability, including spawning habitat. The scale of the impact on aquatic

[256] OBAP, p. 63 and 135.

habitats and species could potentially be mitigated to varying degrees based on a range of scenarios that increase the environmental flow to 20-30-40%, as per the DRIFT methodology. However, in the absence of any proposed adjustment in environmental flow, PS6 requires offsets to compensate for these residual impacts.

- CAO has not found any evidence that the environmental flow analysis has been undertaken with specific reference to the natural habitat needs to achieve no net loss. In particular, there is no information to establish whether the environmental flows are adequate to mitigate the project impacts on biodiversity, including endemic species of high conservation value such as the Black Sea salmon (Salmo labrax pallas), European eel (Anguilla anguilla), Colchic khramulya, Colchic nase, Caucasian goby, and Eurasian otter (Lutra lutra), in line with PS6.

Therefore, CAO finds that IFC fell short of its obligations under the Sustainability Policy (paras. 7 and 45) to supervise its client to implement the appropriate mitigation or offset measures to achieve no net loss in conformance with PS6 (para. 15). IFC failed to ensure that the project was achieving no net loss, particularly with respect to preventing impacts on endemic, endangered and vulnerable species, such as the Black Sea salmon, European eel, and Eurasian otter, as required by PS6.

Harm related to aquatic habitats and recreational fishing

Based on the available information, CAO concludes that there is not sufficient relevant evidence to establish Harm with certainty in the case of aquatic habitats. However, given the significant likelihood of Harm to the aquatic habitat, the project would benefit from reassessing environmental flows and including additional measures to ensure that adverse biodiversity impacts are adequately mitigated or, if not, then offset, to ensure no net loss, consistent with para. 45 of the IFC Good Practice Handbook on Environmental Flows for Hydropower Projects (2018).[257]

In addition, shortcomings in supervision that led to an absence of data regarding the project's impacts on recreational fishing also posed challenges to assessing and mitigating impacts on other vulnerable and endangered species. While there is not sufficient relevant evidence to establish Harm with certainty related to recreational fishing during the construction period, CAO finds it plausible that the impacts to recreational fishing during project construction described by the complainants may have occurred and concludes that the alleged Harm cannot be ruled out.

[257] IFC's Good Practice Handbook states: "When the host country grants an environmental license prior to an E-Flows Assessment or compilation of an E-flow Management Plan (EFMP), then project design and E-Flows decisions should be revisited." Available here: https://www.ifc.org/en/insights-reports/2018/publications-handbook-eflows.

Table B.2. CAO Project-Level Recommendations

Project-Level Recommendations
Complaint Issue 1. Groundwater
In line with the mitigation measures outlined in the project's ESIA and ESMP on providing an alternative water supply, IFC should work with the client to continue supporting the municipality's efforts to provide long-term reliable water supply to Makhalakidzeebi village and Rabati neighborhood of sufficient quantity and quality to meet their livelihood and domestic consumption needs. These additional efforts should be undertaken within a reasonable time. While system improvements are underway, CAO recommends that IFC work with its client to improve the ongoing alternative water supply provided to the complainants and ensure it is of sufficient quality and quantity to meet their domestic consumption needs. This activity should be categorized as a PS1[258] project mitigation or compensation measure conducted under IFC supervision.[259] To this end, CAO recommends that IFC, as part of its supervision efforts, surveys the client's water provisioning activity to establish that it meets water quality standards and is sufficient to meet the needs of the community. If project area realities make it difficult to ensure that complainants have access to sufficient and clean water, IFC should work with its client to explore other alternatives, such as providing support for relocation.
Complaint Issue 2. Biodiversity
Given the shortcomings found in the biodiversity baseline and monitoring, CAO recommends that in line with the World Bank Group's Good Practice Handbook,[260] IFC should work with its client to: • Update the fish baseline to identify the fish species diversity within the adjusted study area of the Shuakhevi scheme, across seasons and in line with good international practice. Particular attention should be given to endemic, endangered, and vulnerable species which depend on aquatic ecosystems, including, but not limited to, fish species. • Based on the results of the updated baseline, identify the habitat needs for individual species, and revisit the assessment of the project's environmental flows. This should include an updated ecological flow analysis, using a high-resolution methodology that assesses a range of environmental flow scenarios to evaluate the impact on the identified fish species and other species dependent on the freshwater habitat. This re-assessment would more effectively inform the identification of measures to

[258] PS1 establishes that the mitigation hierarchy to address identified risks and impacts will favor the avoidance of impacts over minimization, and, where residual impacts remain, compensation/offset, wherever technically and financially feasible. One of PS1 objectives is to adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimize, and where residual impacts remain, compensate/offset project impacts.
[259] As established in the ESIA and the ESMP.
[260] "When the host country grants an environmental license prior to an E-Flows Assessment or compilation of an E-flow Management Plan (EFMP), then project design and E-Flows decisions should be revisited." Good Practice Handbook, Environmental Flows for Hydropower Projects Guidance for the Private Sector in Emerging Markets (p.45 WBG, 2018).

adequately mitigate or offset adverse residual impacts to biodiversity, and demonstrate the achievement of no net loss. [261]

- IFC should work with the client to engage internationally recognized experts to review the ecological flow analysis, update the BAP, to ensure that the mitigation and/or offset measures taken are adequate to ensure no net loss of biodiversity.
- Lastly, in order to adequately assess project impacts on aquatic biodiversity in affected rivers and reservoirs, CAO recommends that IFC request AGL to extend the monitoring of fish populations and vulnerable species for the life of the project. The international experts should also review the monitoring program to ensure that it adequately identifies and flags any significant changes in species diversity and populations. This should inform the periodic update of mitigation and/or offset measures.

[261] Examples of potential offsets include: Restore connectivity by removing barriers (dams, weirs) from rivers in the region where they no longer serve a purpose; installing fish passes at barriers outside the project that do not have them; and/or establish protected areas in nearby watersheds without dams and fund management plan preparation and implementation.