وزارة الماليـــــــــة
Ministry of Finance
State of Qatar • دولـــة قطـــر

State of Qatar Sovereign Green Bond

Impact Report

February 2026

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Introduction

Synopsis

The State of Qatar (the "State" or "Qatar" or the "Sovereign") is pleased to present its inaugural Green Bond Impact Report, which details the environmental impact of the projects utilized in the Use of Proceeds and allocation process. The report will also provide an overview of the ESG-related strategies adopted by the entities overseeing projects that support the State in achieving its commitments in this arena.

In May 2024, the State of Qatar issued its first Green Bonds. The USD 2.5 billion issuance comprised a dual tranche structure, featuring USD 1.0 billion 5-year (ISIN XS2822506759), and USD 1.5 billion 10-year (ISIN XS2822506833) maturities, representing the joint largest Green offering by a Central and Eastern Europe, Middle East and Africa (CEEMEA) Sovereign issuer at the time.

In March 2025, the State published its inaugural Green Bond Allocation Report. The proceeds were allocated to environmentally sustainable projects implemented by the Public Works Authority (Ashghal) and Qatar Railways Company (Qatar Rail). Full allocation was achieved with proceeds being allocated to Sustainable Water & Wastewater Management, Climate Change Adaptation and Clean Transportation categories. The detailed Allocation Report can be found on the Ministry of Finance website (www.mof.gov.qa).

Ashghal

Ashghal was established in 2004 as an independent body responsible for the design, construction, delivery and management of infrastructure projects, state owned assets and public buildings in Qatar.

The Public Works Authority seeks to implement its mandates in line with the objectives outlined in the Qatar National Vision (QNV) 2030 by developing the infrastructure in the country according to the highest standards to attain top global standings in this field.

Through its initiatives in digital transformation, environmental sustainability, human resource development alongside other initiatives, Ashghal contributes towards the implementation of the Third National Development Strategy (NDS) of the State of Qatar 2024-2030.

Qatar Rail

Qatar Rail was established in 2011 to be responsible for managing and delivering the entire lifecycle of Qatar's railway infrastructure, including the design, development, construction, commissioning, operation, and maintenance of the country's rail network and associated systems.

Qatar Rail is committed to delivering excellence to its stakeholders and provides clear direction on the environmental requirements. In that context, Qatar Rail is certified to the international standard for environmental management systems (ISO14001) and has implemented a cycle of continuous improvement.

Qatar Rail's network consists of two core rail systems: the Doha Metro, a rapid mass transit system covering the Greater Doha Area; and the Lusail Tram, providing convenient travel within the newly developed Lusail City.

Sustainability Commitment & Utilized Projects Overview – Ashghal

Ashghal's Sustainability Commitment Overview

Ashghal has formulated a comprehensive set of sustainability objectives designed to embed ESG considerations across its operations in alignment with national and international development goals. The main objectives are as follows:

- Integrating a Sustainability Monitor Dashboard (SMD) into the entity's technical sections that provides insights into the complex relationship between economic, social, and environmental factors. It enables Ashghal to track its progress against the United Nations Sustainable Development Goals (SDGs) using clear indicators for easy monitoring, identifying areas of strength and those that require further attention.
- Promoting local SME purchases, to support domestic manufacturing, job creation, income distribution, and the diversification of the national economy, which aims at boosting growth and economic resilience through the "Taahil" program.
- Adopting specific initiatives aimed at accelerating domestic manufacturing, such as "Tawteen".
- Implementing relevant initiatives to enhance material consumption, air quality, wastewater management, and energy efficiency. Such initiatives include:
  - Incorporating the 4Rs Approach: Refuse, Reduce, Reuse and Recycle by offering clear recycling streamlines representative of the opportunities Ashghal has and could implement across its projects and operations.
  - Reducing construction dust emissions and noise during project execution.
  - Accurately capturing wastewater management performance and establishing clear targets for continuous improvement.
  - Surveying the building portfolio managed by Ashghal and working towards improving the energy performance of existing buildings to reduce consumption in line with Global Sustainability Assessment System (GSAS) requirements.

Contribution of the projects financed via green bond proceeds

Ashghal used the proceeds from the Green Bond issuance to finance and refinance a series of ongoing wastewater and climate adaptation projects that advance both national and institutional sustainability objectives. These projects directly contribute to the environmental and social pillars of the Qatar National Vision 2030, as well as the goals of the Qatar National Environment and Climate Change Strategy (QNE) and Ashghal's Sustainability Strategy 2022. They also meet the eligibility requirements stated in the State's Green Financing Framework 2023.

The projects financed under the bond support three complementary sustainability outcomes:

- **Circular water use and resource efficiency -** the Wastewater and Sewage Treatment Plant (WWSTP) increases Qatar's wastewater treatment and reuse capacity through high-quality tertiary treatment, enabling the recovery of Treated Sewage Effluent (TSE) for irrigation, landscaping, and industrial use. This reduces reliance on desalinated potable water and supports the complete utilization of all treated water by 2030. The plant's sludge treatment

also facilitates biogas recovery, contributing to circular-economy principles and lower carbon intensity of operations.

- **Climate change adaptation and resilience -** by strengthening flood management capacity and ensuring reliable wastewater services in growing urban areas such as Al Wakra and Al Wukair, these projects directly contribute to Qatar's National Climate Change Action Plan (NCCAP), which identifies over 300 adaptation measures. The upgraded drainage and TSE infrastructure enhance urban flood resilience, safeguard communities and assets, and ensure business continuity under extreme rainfall scenarios.
- **Sustainable infrastructure and local value creation -** the projects adopt energy-efficient, gravity-based conveyance systems and integrate renewable energy applications such as solar-powered tower lighting and reducing diesel use during construction. They also stimulate local content and employment through public–private partnership delivery models, aligning with Ashghal's strategic objective to support SME participation and technology transfer.

Overall, these investments contribute to multiple UN Sustainable Development Goals, notably SDG 6 (Clean Water and Sanitation), SDG 11 (Sustainable Cities and Communities), and SDG 13 (Climate Action), reflecting the integrated approach envisioned in Qatar's Sovereign Green Financing Framework.

Sustainability Commitment & Utilized Projects Overview – Qatar Rail

Qatar Rail's Sustainability Commitment Overview

Qatar Rail aims to "be the preferred mode of transport for a sustainable future for all". The company's mission of "connecting communities with safe and sustainable mobility solutions with focus on excellence", demonstrates commitment to low-carbon transportation and increased access to public transportation. Qatar Rail contributes to the environment and sustainability through the reduced GHG emissions that come from the shift from private vehicles to public transportation. This lowers air pollution and results in improved air quality. Qatar Rail also improves the quality of life for the communities it serves, social benefits include reduced traffic congestion, fewer traffic accidents, job creation, enhanced accessibility and improved mobility for diverse population groups.

Sustainability principles are integrated across Qatar Rail's full lifecycle to align with Qatar National Vision 2030, Qatar National Environment and Climate Change Strategy, Qatar National Renewable Energy Strategy, and the Ministry of Transport's Sustainable Transport Strategy. Qatar Rail's sustainability initiatives contribute to the State of Qatar's National Climate Change Action Plan and further promote climate resilience through contributing to the National Adaptation Plan.

Qatar Rail has a comprehensive program of more than 35 sustainability initiatives that collectively address the Environmental, Social, and Governance (ESG) dimensions of responsible operations. These initiatives are designed to reduce environmental impact, strengthen community engagement, and uphold the highest standards of governance and transparency.

Environmental Pillar

Qatar Rail is committed to reducing emissions and improving energy efficiency through energy audits, retrofit programs, and investments in solar energy that expand renewable contributions.

Operational decarbonization is further supported by transitioning to low-emission vehicles. Circularity and waste management are promoted through the reduction of single-use plastics, enhanced recycling systems, and awareness campaigns. Water stewardship is advanced via condensate capture and reuse, the application of treated sewage effluent for irrigation, and recycling processes for train washing.

Conservation and biodiversity are supported through the provision of trees and shading in station areas and at the first and last mile, while climate adaptation and resilience are strengthened through studies on extreme weather impacts, climate risk forecasting, and future-proofing of assets. All of this is accompanied by regular reporting and communication.

Social Pillar

Employee wellbeing and development are prioritized through enhanced training programs and workplace improvements. Qatar Rail maintains a strong focus on health, safety, and security across all operations, the results of which are evident in the company's exemplary record. Broader societal engagement is achieved through community involvement initiatives and support for local businesses, reinforcing the company's role as a partner in national development.

Governance Pillar

Qatar Rail ensures ESG transparency and compliance by embedding business ethics across its operations. Supply chain governance is strengthened through responsible procurement practices, while data privacy and protection measures safeguard stakeholder trust. These governance initiatives reflect Qatar Rail's commitment to accountability and integrity in all aspects of its business.

Contribution of the projects financed via green bond proceeds

The Doha Metro spans 76 kilometres with 37 stations across the Red, Gold, and Green lines. The Lusail Tram has been in operation since 2022, and covers 19 kilometres across the Orange, Pink, and Turquoise lines.

In 2025, the network recorded over 65.6 million trips on the Doha Metro and Lusail Tram combined; promoting environmental sustainability, social inclusion, and economic development as part of Qatar's integrated national transport framework. The design capacity for the current phase of the project stands at 160 million trips per year providing scope to expand ridership.

With a standard fare of 2 Qatari Riyals per trip, the system provides an affordable and convenient alternative to private transport options including taxis. Recently introduced products like 30-day Metro pass and Annual Metro Pass reduce the cost per trip even further.

Impact Reporting

Summary of impact

By allocating the proceeds from the issuance of the green bonds to environmentally focused spending by government bodies – specifically Ashghal and Qatar Rail – the State enables the reporting of the impact of these funds. Where possible, and where data are available, specific impact outcomes are outlined in relation to this expenditure. The selection of impact metrics in this report aligns with the ICMA Harmonised Framework for Impact Reporting (June 2024) and relevant sector-specific best practices, while also taking account of national variations and local or time-specific factors (for example, changes in emission factors over time as the national electricity mix evolves). The following sections explain how the impact has been assessed.

The impact methodology differentiates between project types and the nature of the data available. For Qatar Rail, impact estimation focuses on the environmental outcomes generated during the operational phase of the assets, using actual service-delivery data where available. For Ashghal, the impact assessment relies on ex-ante figures provided by the project teams, which reflect engineering design capacities and forecasted volumes rather than measured operational performance. As such, Ashghal-related results represent indicative, design-based estimates that may be refined once full operations commence. Please refer to Annex II for more details.

This report presents the State's attributed environmental impact across two distinct timeframes:

1. Annual impact of the assets financed in 2024
2. Estimated ex-ante cumulative impact over the bond financing period, starting from its issuance (i.e. May 2024) to maturity[1]

The table below summarises the impact associated with the green bond for the most recent reporting year:

Table 2: Summary of projects impact and Green Bond contribution[2]

Project category	Amount allocated in mUSD (2024)	Absolute impacts achieved by the projects in 2024	Annual impacts attributed to the Bond in 2024	Annualised impact attributable to the bond over its lifetime[3]
Clean transportation	USD 1,000	◆ 48,223 tCO_2e emissions avoided (ex-post estimate) ◆ 60,728,228 passengers transported	◆ 1,971 tCO_2e emissions avoided (ex-post estimate)[4] ◆ 2,482,035 passengers transported	◆ 3,831 tCO_2e emissions avoided annually during the bond's lifetime

1 Ex-ante impact figures are engineering-design forecasts based on current construction plans and operational assumptions. Actual performance may differ due to ramp-up phases, operational variability, or adjustments to the construction design. As recommended by the ICMA Harmonised Framework for Impact Reporting (2024), ex-ante results should be interpreted with caution and are subject to revision when ex-post data becomes available.
2 Please refer to Annex II for further details on the assumptions and input data.
3 For Qatar Rail, the annual impact is calculated using a dynamic approach that relies on forecasted operational data provided by the entity; specifically annual ridership and annual passenger-kilometres. Unlike Ashghal's cumulative, design-capacity-based method, Qatar Rail's impact reflects expected variations in transport activity over time. Annual impact figures are derived directly from projected passenger usage, enabling the impact to scale year-by-year in line with anticipated system demand and operational performance.
4 The ex-post avoided emissions figures reflect Qatar's share of project emissions reductions realised during the bond period, adjusted for actual or estimated operational timelines. Projects that were under construction or not yet operational during the bond period were excluded.

Project category	Amount allocated in mUSD (2024)	Absolute impacts achieved by the projects in 2024	Annual impacts attributed to the Bond in 2024
Sustainable water and wastewater management[5] [6]	USD 879	◆ Design capacity for wastewater treatment: 21.6 million m³/year ◆ Installed treatment capacity of wastewater plants: 60,000 m³/day ◆ Expected annual capacity for treated wastewater reuse or distribution through TSE filling stations: 175,200 m³/year ◆ Storage capacity for treated wastewater: 66.3 million m³ ◆ Design capacit y for recycled water supply: 26.6 million m³/year ◆ Length of foul sewer network constructed: 70 km ◆ Length of drainage tunnel constructed: 13 km ◆ Length of wastewater pipeline constructed: 23 km ◆ Length of stormwater drainage network constructed: 18.9 km ◆ Installed capacity of sewage transfer system: 18.2 million m³/year	◆ Design capacity for wastewater treatment: 9.9 million m³/year ◆ Installed treatment capacity of wastewater plants: 27,444 m³/day ◆ Expected annual capacity for treated wastewater reuse or distribution through TSE filling stations: 80,136 m³/year ◆ Storage capacity for treated wastewater: 30.3 million m³ ◆ Design capacity for recycled water supply: 12.2 million m³/year ◆ Length of foul sewer network constructed: 32 km ◆ Length of drainage tunnel constructed: 6 km ◆ Length of wastewater pipeline constructed: 10 km ◆ Length of stormwater drainage network constructed: 9 km ◆ Installed capacity of sewage transfer system: 8.3 million m³/year
Climate change adaptation[7]	USD 621	◆ Number of facilities protected: 1,556 ◆ Length of infrastructure protected: 168 km ◆ Population benefiting: 471,924 ◆ Area protected: 57 km2	◆ Number of facilities protected: 671 ◆ Length of infrastructure protected: 72 km ◆ Population benefiting: 203,399 ◆ Area protected: 24.49 km2

For the cumulative impact achieved through the State of Qatar's green bond financing over the bond period, the cumulative impact calculation shown below applies only to projects implemented by Ashghal, specifically water related and climate change adaptation assets. These projects deliver environmental and resilience benefits through the availability of treatment or protective capacity, which represents the level of service the assets are intended to provide throughout their operational life. Because this level of service is expected to remain broadly stable from year to year, design capacity or protective-outcome figures offer an appropriate basis for estimating impact. These figures are multiplied by the number of years financed and adjusted for Qatar's share of total project financing, reflecting the capacity based nature of these assets and the steady annualised benefits they are expected to provide.

$$\text{Cumulative Impact Qatar} = \text{Annual}\big(\text{Design} - \text{Capacity}\big)\text{Impact}_{\text{Project}} \times \text{Qatar Share of Total Financing}_{\text{Project}} \times \text{Years Financed}$$

This formula applies exclusively to Ashghal-implemented projects (Water and Climate Change Adaptation categories). It represents a simplified calculation based on steady design-capacity impacts over the supported period. Further adjustments may be made where project commissioning occurs mid-period or where updated performance data become available.

5 Impacts are attributed to the Sovereign Green Bond based on the share of category-level financing relative to the total contract value of in-scope projects. The allocation to the Water category (USD 879 million) represents approximately 45.7% of the aggregate contract value of eligible water assets; therefore, 45.7% of each project's design-capacity metrics is reported as attributable to the Green Bond.
Where feasible, future reports will aim to refine these estimates by incorporating verified cost allocations or financing shares, to improve the accuracy and comparability of reported impacts.

6 Ashghal water-related metrics represent design or installed capacities based on engineering specifications. These are not annual operational volumes.

7 Impacts are attributed to the Sovereign Green Bond based on the share of category-level financing relative to the total contract value of in-scope projects. The allocation to the Adaptation category (USD 621 million) represents approximately 43.1% of the aggregate contract value of eligible adaptation assets; therefore, 43.1% of each project's design-capacity metrics is reported as attributable to the Green Bond.

Qatar Rail's clean transportation assets generate climate benefits that depend directly on how the system is used in practice. Avoided emissions vary with annual ridership, passenger kilometres and the proportion of metro trips that replace private vehicle travel, all of which can change over time as the network expands and user uptake grows. For this reason, Qatar Rail's annual impact is estimated using a dynamic, activity based approach grounded in forecast operational data provided by the entity. Annual avoided emissions are therefore recalculated for each reporting year, allowing the reported impact to evolve in line with expected transport activity and operational performance over the bond period.

The table below summarises the impact associated over the bond period:

Table 3: Summary of Qatar's impact contribution over the bond period

Project category	Amount allocated in mUSD (2024)	Maturity	Annual impacts attributed to the Bond in 2024
Clean transportation	USD 1,000	5 years	◆ 38,310 tCO2e emissions avoided (ex-ante estimate)[8] attributed to the bond ◆ 890,227,003 passengers transported via metro and 51,097,099 passengers transported via tram over the bond period
Sustainable water and wastewater management	USD 879	10 years	◆ Design capacity for wastewater treatment (98.6 million m^3 cumulative) Design capacity for treated wastewater reuse or distribution through TSE filling stations (801,365 m^3 cumulative) Design capacity for recycled water supply (122 million m^3 cumulative) ◆ Stock and capacity indicators (e.g.daily treatment capacity or total network length constructed) represent one-off or point-in-time values describing infrastructure built or installed. These are not multiplied over the bond tenor, as they do not represent recurring annual flows of service delivery.
Climate change adaptation	USD 621	10 years	◆ All indicators under the Climate Change Adaptation category represent fixed or one-time protective outcomes achieved through project implementation. These are not annualised or multiplied over the bond tenor, as they describe permanent infrastructure and beneficiaries rather than recurring flows of service delivery.

For the detailed environmental impact associated with different project categories, please refer to the individual section of the impact assessment below.

8 The ex-ante avoided emissions estimate assumes each project was fully operational throughout the period covered by Qatar's financing. It does not account for construction timelines or actual commissioning dates.

Clean Transportation

The scope of the impact assessment for the bond proceeds covers Qatar Rail expenditures associated with both the construction and operation of the Doha Metro and the Lusail Tram:

- The Doha Metro is a rapid transit system spanning approximately 76 km with 37 stations, operating across the Red, Green, and Gold Lines since 2019.
- The Lusail Tram is a light rail network connecting Lusail City, comprising four lines, 25 stations (with 10 underground), and is electric and designed for sustainable urban integration.

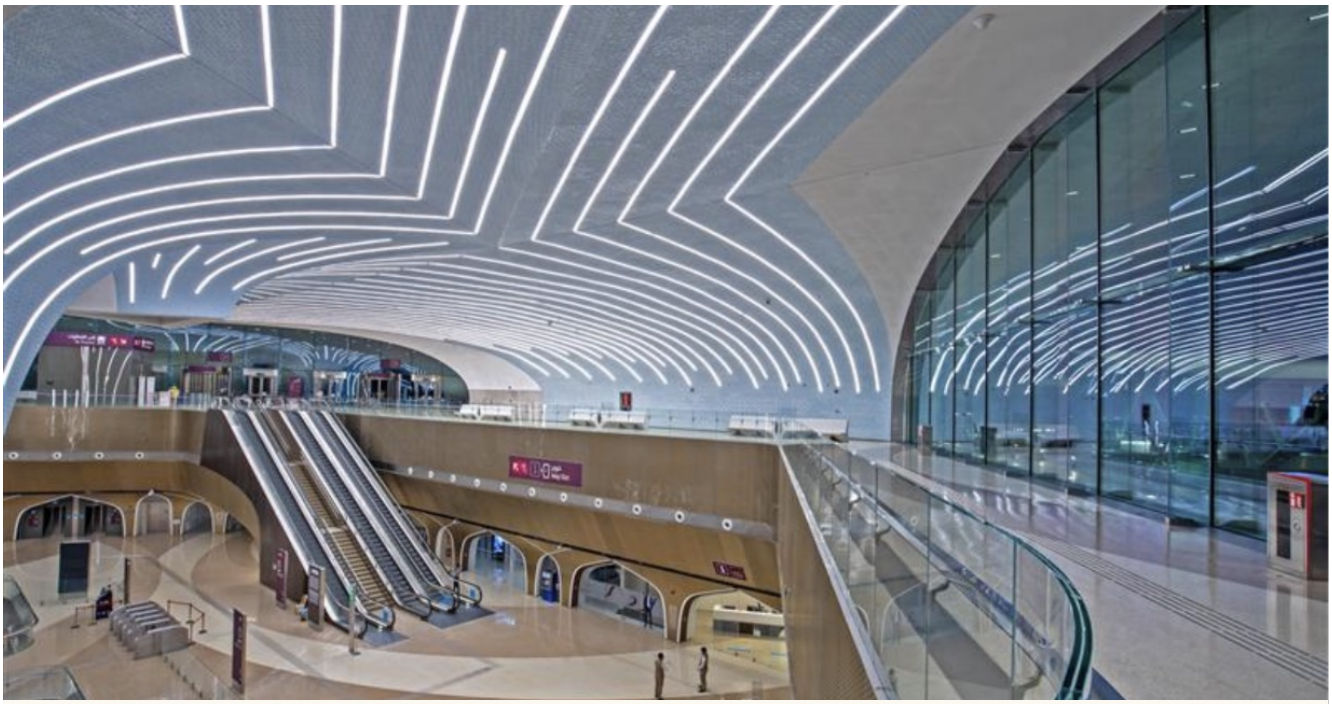
These systems support modal shift from driving vehicles to electric mass transit, helping to reduce traffic congestion and GHG emission, and providing further reductions in air pollution, road injuries, and fuel savings. They also contribute towards Qatar National Vision 2030 objectives of sustainable mobility and accessible urban growth in line with the eligible activities defined in the State of Qatar Sovereign Green Financing Framework, the use of bond proceeds for clean transportation projects contributes to the advancement of several UN Sustainable Development Goals (SDGs), including:

SDG 9 - Industry, Innovation and Infrastructure

Target 9.1 - Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.

SDG 11 - Sustainable Cities and Communities

Targets 11.2 - By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.



Doha - Msheireb station concourse level

Table 4: Clean transportation impact disclosure[9]

Project	Year	Impact indicators			
		New train lines created (km)	Annual ridership (number of passengers)	Annual avoided emissions attributed to the Bond in 2024 (tCO_2e/year)	Expected annual avoided emissions attributed to the Bond in 2030 (tCO_2e/year)
Metro	2024	~76 km (Red, Green, and Gold Lines)	57,615,511	1,971	4,362
	2030		85,406,258		
Tram	2024	~25 km (four lines)	3,112,717		
	2030		5,664,000		

Doha - View of Ahmed Bin Ali Stadium adjacent to the Doha Metro Green Line

9 The impact disclosure table is prepared in accordance with the Clean Transportation core metrics from the ICMA Harmonised Framework for Impact Reporting (June 2024).

Sustainable Water and Wastewater Management

The State of Qatar has undertaken a series of significant infrastructure projects to enhance the sustainability and efficiency of its water and wastewater management systems. These initiatives align with Qatar's National Vision 2030 and contribute to achieving the United Nations Sustainable Development Goals (SDGs), particularly SDG 6: Clean Water and Sanitation.

SDG 6 - Clean Water and Sanitation

Target 6.2 - By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.

Target 6.3 - By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.

The projects encompass a range of activities, including the design, construction, rehabilitation, and operation of sewage treatment works, transmission pipelines, and associated facilities. Notable projects include:

- Industrial Area Sewage Treatment Works (STW) and Expansions: This project involves the expansion of the existing sewage treatment facilities to accommodate the growing industrial demands in the area.
- Rehabilitation of Doha South Sewage Treatment Works (DSSTW): This project focuses on upgrading and rehabilitating the existing sewage treatment plant to enhance its capacity and efficiency in treating wastewater from the southern regions of Doha.
- Integrated Industrial Wastewater Treatment Works (WWTP): Development of a dedicated 10,000 m³/day industrial wastewater treatment facility to manage effluents from small and medium industries, replacing reliance on the Al Karaana evaporation ponds and integrating blended treated industrial effluent with IASTW operations for compliant reuse.

Table 5: Sustainable water and wastewater management impact disclosure[10]

Project	Year	Capacity and infrastructure indicators	
		Installed treatment capacity (m3/day)	Design annual treatment capacity (m3/year)
Industrial Area Sewage Treatment Works (STW)	2024	13,722	4,917,050
Rehabilitation of Doha South Sewage Treatment Works (DSSTW)	2024	9,148	3,339,020
Integrated Industrial WWTP	2024	4,574	1,600,900
Total	2024	27,444	9,856,970

10 The impact disclosure table is prepared in accordance with the Sustainable water and wastewater management core metrics from the ICMA Harmonised Framework for Impact Reporting (June 2024). Impacts are attributed to the Sovereign Green Bond based on the share of category-level financing relative to the total contract value of in-scope projects. The allocation to the Water category (USD 879 million) represents approximately 45.7% of the aggregate contract value of eligible water assets; therefore, 45.7% of each project's design-capacity metrics is reported as attributable to the Green Bond. All figures reflect design or installed treatment capacities provided by Ashghal; they do not represent measured operational performance

Table 6: Sustainable water and wastewater management impact disclosure for supporting and ancillary assets in scope[11]

Year	Capacity and infrastructure indicators	Figure	Related projects
2024	Design annual capacity for treated wastewater reuse or distribution through TSE filling stations (m^3/year)	80,136	◆ TSE Tanker Filling Stations At Doha West & Lusail
2024	Storage capacity for treated wastewater (m^3)	30,325,601	◆ TSE Distribution Network (Doha South) ◆ TSE Lagoon
2024	Design capacity for recycled water supply (m^3/year)	12,187,423	◆ Doha North STW-Recycled Water supply
2024	Length of foul sewer network constructed (km)	32	◆ Doha West catchment area
2024	Length of wastewater pipeline constructed (km)	10	◆ Doha South - Doha West Sewage Flows interconnection ◆ Industrial Area Doha West Sewage Flows interconnection
2024	Length of stormwater drainage network constructed (km)	9	◆ Doha West catchment area
2024	Installed annual capacity of sewage transfer system (m3/ year)	8,347,550	◆ Doha South - Doha West Sewage Flows interconnection ◆ Industrial Area - Doha West Sewage Flows interconnection

Figures reflect design or installed treatment capacities provided by Ashghal; they do not represent measured operational performance.

11 The impact disclosure table is prepared in accordance with the Sustainable water and wastewater management core metrics from the ICMA Harmonised Framework for Impact Reporting (June 2024). Impacts are attributed to the Sovereign Green Bond based on the share of category-level financing relative to the total contract value of in-scope projects. The allocation to the Water category (USD 879 million) represents approximately 45.7% of the aggregate contract value of eligible water assets; therefore, 45.7% of each project's design-capacity metrics is reported as attributable to the Green Bond.

Climate Change Adaptation

The State of Qatar has implemented a series of strategic initiatives to strengthen resilience against climate-related risks, particularly flooding and water management challenges. These projects support Qatar's National Vision 2030 and contribute to the United Nations Sustainable Development Goals, notably SDG 11: Sustainable Cities and Communities and SDG 13: Climate Action.

SDG 11 - Sustainable Cities and Communities

Targets 11.b - By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels.

SDG 13: Climate Action

Target 13.1 - Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.

Target 13.3 - Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.

The scope of these initiatives covers the planning, design, construction, and operational management of flood prevention and water network infrastructure. Key projects include:

- Flood Prevention Scheme (FPS) – Doha South Areas: This scheme involves constructing an integrated stormwater drainage network, including pipes, pumps, and hydraulic structures, to protect southern Doha from flood events.
- Flood Prevention Scheme (FPS) – Outer Areas: Extending flood protection to outer areas of Doha, this project delivers an extensive stormwater system designed to manage heavy rainfall and reduce flood risk.
- Surface and Ground Water Network, Al Thumama: Developed to ensure reliable water management during high-demand periods, this project established a modern surface and groundwater network in Al Thumama area.

Table 7: Climate change adaptation impact disclosure[12]

Project	Year	Impact indicators				
		Length of Infrastructure Protected (km)	Area Protected (Km^2)	Number of Facilities Protected	Population benefiting	Assets Protected (description)
Flood Prevention Scheme - Doha South Areas	2024	31	12.93	16	163,471	Roads, Schools, Homes, Govt. Assets, Health Centres, stadium, Sports Complex, Parks, Others
Flood Prevention Scheme - Doha Outer Areas	2024	19	8.88	3	21,626	Municipal Roads, Mosques, Schools, Camel Raising Facility (Shahaniya), Sports Club and Residential/ Commercial Buildings
Surface and Groundwater Network	2024	23	2.68	652	18,302	Private Properties, Prestigious Buildings, Stadium, Tournament Routes, Public Parks, Schools, Mosques, Commercial Markets, Roads, etc.
Total	2024	72	24.49	671	203,399	

12 The impact disclosure table is prepared in accordance with the Climate change adaptation core metrics from the ICMA Harmonised Framework for Impact Reporting (June 2024). Impacts are attributed to the Sovereign Green Bond based on the share of category-level financing relative to the total contract value of in-scope projects. The allocation to the Adaptation category (USD 621 million) represents approximately 43.1% of the aggregate contract value of eligible adaptation assets; therefore, 43.1% of each project's design-capacity metrics is reported as attributable to the Green Bond.

Annex I - Acronyms and Abbreviations

CO_2e	Carbon dioxide equivalent
DEFRA	Department for Environment, Food & Rural Affairs
DESNZ	Department for Energy Security and Net Zero
EF	Emission factor
GBA	Gross building area
GHG	Greenhouse gases
GSAS	Global Sustainability Assessment System
ICMA	International Capital Market Association
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
kg	Kilogram
kWh	Kilowatt Hour
L	Litre
m^2	Square metre
m^3	Cubic metre
Mn	Million
MW	Megawatt
MWh	Megawatt Hour
SDG	Sustainable Development Goals
t	Metric Tonne
tCO_2e	Tonne of Carbon Dioxide Equivalent
UNSDG	United Nations Sustainable Development Goals
CEEMEA	Central and Eastern Europe, Middle East and Africa
QNE	Qatar National Environment and Climate Change Strategy

Annex II - Basis of Preparation

Purpose, scope and reporting approach

This annex explains the methodological basis, data sources, and assumptions used to estimate the impacts presented in this report. The approach follows the ICMA Harmonised Framework for Impact reporting (June 2024) , ensuring that reported results are transparent and conservative.

The analysis covers projects financed by the State of Qatar's sovereign green bond under three eligible categories: Clean Transportation, Sustainable Water, Wastewater Management and Flood Management Infrastructure. For Qatar Rail, impacts are reported on an ex-post basis using observed operational data for 2024, reflecting actual avoided emissions from the Doha Metro and Lusail Tram. Ex-ante estimates are also provided at the project level to illustrate the expected future avoided-emissions potential over the long operational lifetime of the Doha Metro and Lusail Tram.

For Ashghal, where many projects remain under construction, results are primarily ex-ante and represent estimated performance once fully operational.

Clean Transportation – Qatar Rail

Project scope, boundary and function unit

The assessment covers the operational phase of the Doha Metro and the Lusail Tram. Both systems are fully electric and operational, designed to facilitate modal shift from private vehicles to mass transit.

For the current reporting cycle, only traction electricity (train propulsion) is included in Qatar Rail's project emissions. Non-traction electricity, such as energy used in stations for lighting, lifts, escalators or back-of-house operations, and district cooling, are excluded from the analysis. These energy uses are shared across transport operations, commercial tenants and common facilities, and there is currently no metering system that allows the reliable separation of transport-specific consumption. Including estimates for these loads would create a risk of material misattribution. The functional unit for all calculations is One passenger-kilometre of transport service delivered in the reporting year by the rail system under study and an equivalent passenger-kilometre in the baseline road mode used for comparison. The functional unit represents the quantified performance of the transport service used as the reference for all inventory data and results. Results are calculated on a per-passenger-kilometre basis and subsequently aggregated to annual (lump-sum) totals to reflect the overall impact of each project. Construction-phase and other embodied emissions are excluded from the avoided-emissions boundary, as the focus is on operational performance (use phase) and mode-shift impacts.

This boundary choice is disclosed transparently. The exclusion of non-traction and district-cooling electricity may lead to a slight overstatement of avoided emissions compared with a fully comprehensive operational boundary. However, this ensures that only verifiable and attributable data are included in the analysis. The limitation is addressed through conservative parameter assumptions and a plan to expand the boundary when more granular metering becomes available.

Methodology and attribution

Avoided emissions occur when passengers use the metro or tram instead of private vehicles or taxis. The annual ex-post avoided emissions are calculated using the following equation:

$$\mathrm{AE} = \left(\mathrm{pkm} \times \text{Displacement rate}\left(\%\right) \times \frac{\text{Road vehicle EF}}{\text{Occupancy}}\right) - \left(\text{Traction energy}\left(\mathrm{kWh}\right) \times \text{Grid EF} \times \text{Displacement rate}\left(\%\right)\right)$$

In this equation, passenger-kilometers (pkm) are derived from observed ridership multiplied by average trip length. The displacement rate represents the proportion of metro and tram users who would otherwise have travelled by cars. The road vehicle EF represents the emissions intensity of road travel in kgCO2e/km. The occupancy factor denotes the average number of passengers per road vehicle. The electricity emissions factor reflects the location-based grid intensity in kgCO2e/kWh. The electricity consumption includes the traction energy only, in line with the boundary definition.

Financial attribution of impacts to the State of Qatar's sovereign green bond is applied each year on a pro-rata basis, reflecting the Ministry of Finance's share of eligible financing relative to the total eligible cost of operational Qatar Rail assets. The attribution factor is recalculated annually according to the following formula:

$$\text{Attribution Factor} = \frac{\text{MoF Green Bond Proceeds Allocated (CAPEX + OPEX)}}{\text{Total Project Financing at measurement date (CAPEX + OPEX)}}$$

This approach excludes any future capital expenditure beyond the 2024 boundary, such as new extension or rolling stock not financed by this green bond. In cases where multiple financiers contribute to the same asset, impacts are apportioned pro-rata according to each financier's share, and refinancing does not result in the re-attribution of previously reported impacts. Where an asset commences operation partway through a reporting year, its result is time-weighted by months in operation. In 2024, all assets were fully operational, so no time-weighting adjustment was necessary.

Input data

All input data was provided by Qatar Rail Company (Qatar Rail). Both Metro and Tram parameters such as annual ridership, average trip length, traction and non-traction energy consumptions were directly derived from Qatar Rail's internal records. Projection data were derived from QRail's internal estimation. The counterfactual scenario's car travel distance was calculated by QRail based on their operation observations. Location based electricity emissions factors were derived from International Energy Agency (IEA) and the grid decarbonisation was following Qatar National Renewable Energy Strategy. The location-based electricity emission factor applied in the calculations is derived from IEA dataset for Qatar (IEA, 2023). This value reflects the country's predominantly gas-fired generation mix, complemented by a small solar contribution.

In line with the Qatar National Renewable Energy Strategy, the share of renewables in domestic electricity generation is expected to rise from about 5 percent in 2024 to 18 percent by 2030.

For forward-looking analyses, this policy signal is used to project the location-based grid emission factor. Assuming constant gas generation efficiency, the resulting 2030 location-based emission factor is estimated based on the

expected renewable energy proportion.

Methodology

a. Baseline (reference) scenario

The baseline is private road travel that would have occurred in the absence of the rail systems. This baseline is used to determine avoided car-kilometres and baseline emissions against which rail operational emissions are compared.

The baseline is parameterised using the following key inputs:

- Mode shift share (displacement rate): 98 percent constant across years. This represents the share of metro or tram trips assumed to displace car or taxi use, rather than other public modes (data provided by Qatar Rail).
- Average car trip length: 13.3 km (Estimated by Qatar Rail).
- Average car occupancy: 1.25 passengers per vehicle.

b. Low-carbon solution (LCS) scenario[13]

The LCS is Doha Metro or Lusail Tram travel. Rail activity is calculated as passenger-km from observed Annual ridership and Average trip length for each asset. LCS operational emissions include traction electricity only, using:

- Traction energy (kWh per year) and Traction energy per pkm (kWh/pkm), recorded for each asset and year in the "Calculation" sheet.
- A location-based electricity grid emission factor applied within the calculation grid. The numeric factor is not visible in the parameter tables, so it is not reproduced here.

Calculation approach

For each asset and year:

1. Passenger-km = Annual ridership × Average trip length.
2. Displaced passenger-km by cars = Passenger-km × Mode shift share.
3. Baseline emissions = Displaced passenger-km × Average car EF (kgCO2e/pkm).
4. LCS emissions = Traction electricity (kWh) × Grid EF (kgCO2e/kWh) × Mode shift share.
5. Avoided emissions (gross) = Baseline emissions − LCS emissions.

Where assets start or cease operation mid-year, time-weighting would be applied. In 2024 all assets are fully operational, so no time-weighting is applied.

Financial attribution of impacts to the Green Bond

The attribution factor reflects the bond's share of eligible financing relative to the total project financing within the defined boundary. The methodology is dynamic because the attribution factor is applied annually and subject to change.

- The factor will naturally decline over time as the project attracts additional financing (through OPEX). This decline

13 Q-Rail has plans to install on-site solar photovoltaic system from 2028, with the expectation that these systems will replace approximately 18 percent of traction electricity currently supplied from the national grid. This improvement has not been incorporated into the avoided emissions assessment presented in this report. In line with the conservative reporting approach applied throughout, all quantitative results rely solely on currently verified data and project operational plan, and the existing grid emissions factor trajectory. The planned solar PV deployment therefore represents a potential future enhancement to the system's decarbonisation profile and is not included in this assessment.

reflects a depreciation of impact attribution.

- However, since the project boundaries "Lock in" the majority of CAPEX financing (the main asset share), the depreciation in the factor is expected to be minimal. Only the subsequent increase in OPEX will significantly influence the factor's annual adjustment.

For the initial measurement, this factor is set at 0.0469 (4.69%).

Uncertainties, limitations, and conservative choices

- Boundary exclusion for non-traction and district cooling. Excluded due to the absence of transport-specific metering. This may overstate avoided emissions relative to a full operational boundary. The exclusion is disclosed and will be revisited when granular metering becomes available.
- Mode shift share. A constant 98 percent displacement rate is applied across years. Any future availability of mode share surveys or revealed preference data would allow reassessment. The constant value is used consistently and transparently.
- Average car parameters. Average car trip length, occupancy, and emission factors are applied uniformly. These values materially influence the baseline. They should be reviewed periodically against local sources.
- Attribution factor. A single value is applied for the period. If financing shares change, the factor should be updated prospectively based on verified costs.
- Data provenance. Ridership, trip length, and traction energy originate from Qatar Rail operational data were used as provided. An internal quality sense check has been conducted, and South Pole believes that the data provided were within the reasonable range. No independent verification of the data has been conducted.

Overall, the approach favours conservative inclusion of only metered traction energy and transparent disclosure of exclusions and fixed assumptions. No proxy values have been introduced beyond those already present in the data Qatar Rail provided.

Sustainable Water and Wastewater Management & Climate Adaptation - Ashghal

The impact results presented in this report are based on data and technical documentation provided by Ashghal. The information was compiled and structured across several data groupings corresponding to different project types and implementation stages within Ashghal's infrastructure portfolio.

For the Sustainable Water and Wastewater Management category, the data were divided into:

- Treatment projects: including sewage treatment plants and related facilities.
- Collection projects: covering foul sewer networks, tunnels, and pumping systems.
- Discharge projects: including treated sewage effluent storage and distribution systems.
- Handover projects: referring to projects transferred to the Drainage Network Operations and Maintenance Department (DNOMD) upon completion, while their corresponding Supervision Consultants' contracts are closed by the Drainage Networks Projects Department (DNPD) as per Ashghal's internal procedures.

For the Climate Change Adaptation category, the data were divided into:

- Climate Change Adaptation projects: covering drainage, stormwater, and flood-prevention infrastructure aimed at increasing Qatar's resilience to extreme rainfall and surface runoff.

All impact figures are ex-ante estimates, reflecting design capacities and technical characteristics of assets under construction or recently commissioned. These will be refined in future reporting cycles as operational performance data becomes available.

For wastewater treatment plants, capacity figures and utilisation rates (generally set at 100%) were provided directly by Ashghal. When only daily treatment capacity data were available, annual figures were derived by assuming 365 operating days per year.

Impacts for Water and Climate Change Adaptation projects are attributed to the Sovereign Green Bond based on the share of category-level financing relative to the total contract value of eligible assets. For the Water category, the allocation of USD 879 million represents approximately 45.7% of the aggregate contract value of in-scope water projects; therefore, 45.7% of each project's design-capacity indicators is reported as attributable to the Green Bond. For the Climate Change Adaptation category, the allocation of USD 621 million represents approximately 43.1% of the aggregate contract value of eligible adaptation assets; accordingly, 43.1% of the protective-outcome indicators are considered financed by the Sovereign Green Bond. Where feasible, future reports will aim to refine these estimates by incorporating verified cost allocations or financing shares to improve the accuracy and comparability of reported impacts.

Disclaimer

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The impact assessment results presented herein are based on data and documentation provided by the client and/or third-party sources.

All estimates and findings are sensitive to input parameters, such as emission factors, baseline scenarios, and actual or assumed asset performance. Results should be interpreted in light of the data quality and methodological limitations described in this report.

This assessment has been conducted independently by South Pole consultants who were not involved in the structuring, approval, or execution of the financing activities. To the best of our knowledge, the consultants do not hold any conflicts of interest with respect to the State of Qatar, the financed projects, or any affiliated third parties. South Pole has not independently verified or conducted independent verification of the accuracy, completeness, or traceability of the data.

- Where data gaps exist, reasonable proxies , industry benchmarks, or assumptions have been applied, as disclosed in the relevant sections.
- Impact estimates are sensitive to input assumptions, emission factors, and asset performance. Results should be interpreted considering the data quality and methodological choices described above.

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State of Qatar Sovereign Green Bond

Impact Report

February 2026

For enquiries, please contact the Credit Policies and Public Debt Department via email **debts@mof.gov.qa**