RETAL

Sustainability Development Framework

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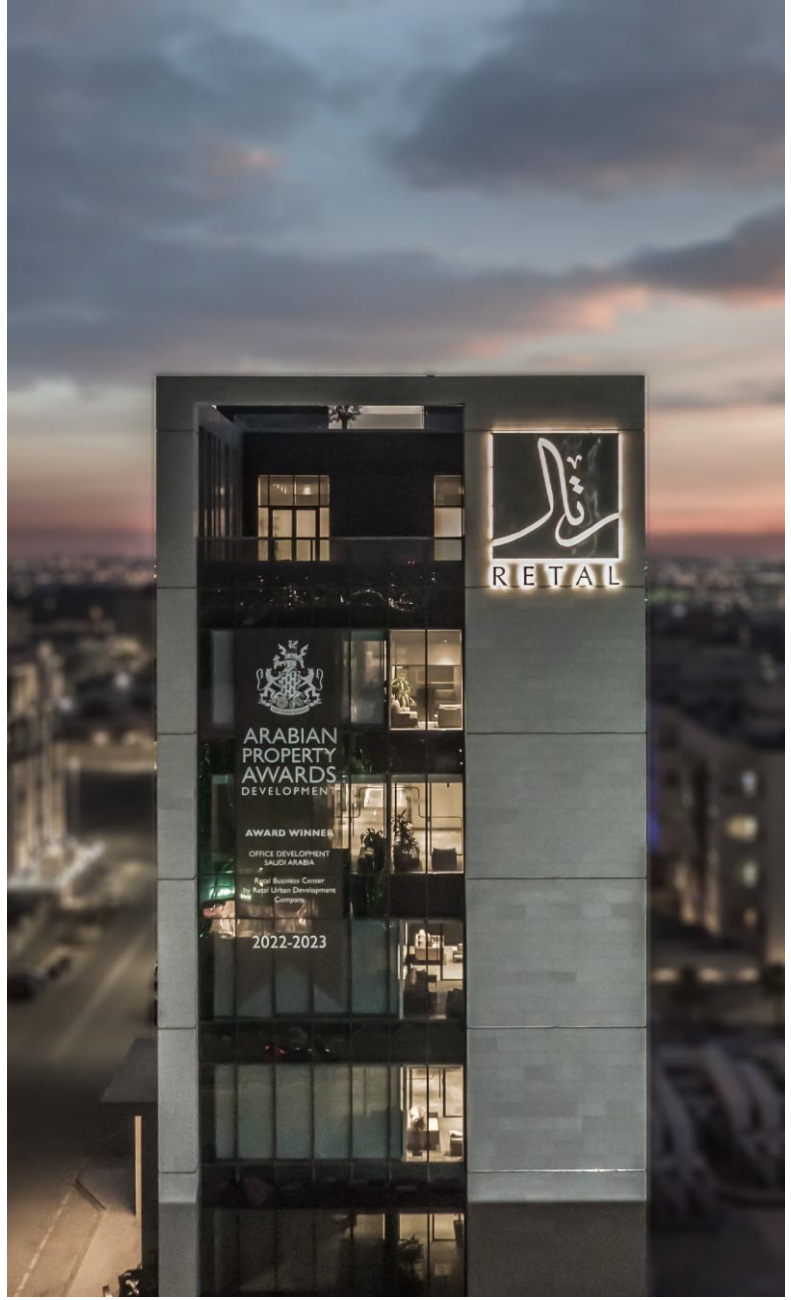
Introduction

Retal's vision for sustainable urban development is built on the principle that real estate projects must generate long-term value for society, the environment, and the economy. The company is committed to developing communities and assets that are socially inclusive, environmentally resilient, and economically viable, while contributing directly to the national transformation objectives of the Kingdom of Saudi Arabia's Vision 2030.

This Sustainability Development Framework serves as a core instrument to operationalise Retal's vision. It aligns with international sustainability agendas, including the United Nations Sustainable Development Goals (UN SDGs) and the Paris Agreement on climate action, while reflecting industry-leading Environmental, Social, and Governance (ESG) practices. By embedding sustainability into the lifecycle of its projects, Retal positions itself as a leader in advancing the Kingdom's built environment toward global standards.

The framework also acknowledges compliance with national sustainability standards such as the Mostadam Building Rating System, the Saudi Building Code, and national energy and water efficiency regulations. At the same time, it incorporates global benchmarks including the Leadership in Energy and Environmental Design (LEED) rating system, and the WELL Building Standard, ensuring that Retal's developments are competitive and future-ready.



Purpose of the Framework

The primary purpose of this framework is to establish a standardised, scalable, and actionable approach for integrating sustainability across all phases of project delivery: planning, design, procurement, construction, and operations.

Specifically, the framework seeks to:

- Provide clear and measurable **Key Performance Indicators (KPIs)** to track and evaluate sustainability performance.
- Serve as a **compliance tool** to align project delivery with regulatory standards in Saudi Arabia and recognised international certifications.
- **Support accountability and governance** through structured roles, responsibilities, and reporting hierarchies.
- **Facilitate scalability and consistency**, ensuring sustainability practices are embedded into every project regardless of type, size, or complexity.
- **Serve as a reference for internal teams, consultants, contractors, regulators, and certification bodies**, reinforcing Retal's role as a leader in sustainable urban development.

By arraying sustainability into its operations, Retal ensures that every development contributes to corporate growth and to national sustainability objectives and global ESG imperatives.

Scope and Application

This framework is designed to be comprehensive yet adaptable, recognising that project contexts vary in scale, typology, and stakeholder composition.

- **Retal-Led Projects:** The framework applies in full to all projects wholly owned and led by Retal, across all phases from conceptual design through post-handover operations.
- **Client-Led or External Projects:** When Retal serves as a consultant, contractor, or development partner, the framework may be proposed for partial or full adoption, subject to client agreement and project context.
- **Project Coverage:** The framework applies across residential, mixed-use, and infrastructure projects, with flexibility to integrate additional sustainability measures as required by specific site or regulatory conditions.
- **Framework Flexibility:** Each project must achieve a minimum level of compliance, with the option to adopt advanced practices (such as embodied carbon tracking, circular economy strategies, or WELL-based health performance metrics) where feasible and beneficial.

This scope ensures that sustainability is not treated as an optional add-on but as an integrated requirement across Retal's diverse portfolio.

Review & Updates

Sustainability is an evolving field, shaped by technological innovations, regulatory changes, and stakeholder expectations. Accordingly, this framework is designed as a living document, subject to continuous improvement.

- **Version Control:** Each edition of the framework will include a version number, publication date, and summary of changes.
- **Update Cycle:** The framework will undergo an annual review, with interim updates triggered by significant regulatory changes, new ESG commitments, or major project learnings.
- **Feedback Loop:** Project teams, consultants, and operations managers will have defined channels to provide feedback, document lessons learned and propose enhancements.
- **Change Management:** All updates will be recorded in an official change log and communicated across Retal departments and stakeholders to ensure transparency, consistency, and compliance.

Through this structured update process, Retal ensures that its sustainability framework remains adaptive and aligned with both the Kingdom's evolving Vision 2030 agenda and international ESG benchmarks.

Integration Development

Integration with Design and Projects

Integrated Development Process

Integration with Design and Projects

Overview

For Retal, integration means that ESG principles are embedded into every stage of development, whether for residential buildings, mixed-use projects, infrastructure, or master-planned communities. The integration extends to social responsibility and governance structures, ensuring developments are efficient, inclusive, equitable, and transparent.

Key Elements of Integration:

Environmental Integration

- Integration of energy modeling throughout design and construction to ensure measurable reductions in energy use intensity.
- Incorporation of greywater reuse, efficient irrigation systems, and water-saving fixtures. Strategies include leak detection, sub-metering, and treatment systems to minimise potable water demand.
- Application of embodied carbon analysis and sustainable procurement policies. Use of low-emission materials, life cycle assessments, and priority for locally sourced and recycled products.
- Adoption of construction and operational waste management plans, focusing on reduction, reuse, recycling, and diversion of waste from landfill.
- Compliance with Saudi Environmental Law (2020) for hazardous waste disposal, ensuring safe handling, storage, and reporting.
- Inclusion of biodiversity preservation measures in site selection and landscaping, with priority given to native and drought-tolerant species.
- Alignment with recognised frameworks such as Mostadam, LEED, and Global Real Estate Sustainability Benchmark (GRESB) for consistency and comparability of performance.
- Design and operational measures to adapt to projected climate change impacts, ensuring long-term asset resilience.

Social Integration

- Projects ensure that housing and community facilities remain affordable and physically accessible to diverse users, including people with disabilities, in line with universal design principles.
- Designs incorporate heritage and local identity, ensuring architectural continuity and safeguarding intangible cultural assets.
- Buildings and communities integrate features aligned with the WELL Building Standard, promoting indoor air quality, access to natural light, and active design strategies.
- Urban planning emphasises safe, inclusive, and gender-sensitive public spaces that support social interaction and community cohesion.
- Design promotes walkability, public transport connectivity, and inclusive urban mobility.
- Engagement with local communities during design and operation phases to ensure developments meet social expectations and cultural identity.

Governance Integration

- Clear processes are established for setting KPIs, tracking progress, and publishing performance results.
- Active participation of investors, regulators, and communities is incorporated into governance, ensuring accountability and shared ownership of outcomes.
- Sustainability compliance requirements are integrated into procurement, design, and construction contracts to secure implementation at every stage.
- Adoption of rating systems (e.g., Mostadam, LEED, GRESB) ensures that governance processes are measurable and verifiable.
- International disclosure frameworks, including Global Reporting Initiative (GRI) and GRESB, are applied to enable comparability, transparency, and alignment with global best practices.

Integrated Development Process

Overview

The Integrated Development Process (IDP) is Retal's structured methodology for embedding Environmental, Social, and Governance (ESG) principles into every stage of real estate development. The process ensures that ESG objectives are established at project inception, integrated throughout the design and delivery phases, and validated at project handover through certification.

The framework is aligned with internationally recognised standards, including the Leadership in Energy and Environmental Design (LEED) rating system administered by the U.S. Green Building Council, the WELL Building Standard developed by the International WELL Building Institute, and the Mostadam Building Rating System.

In addition, the process references international reporting and disclosure frameworks such as the Global Reporting Initiative (GRI) and the Global Real Estate Sustainability Benchmark (GRESB) to ensure that Retal's projects meet both domestic requirements and international investor expectations.

Core Characteristics of Retal's Integrated Development Process

The IDP follows a lifecycle-based methodology covering planning, design, construction, operations, and recertification. Each phase is connected, creating a continuous chain of accountability and performance monitoring. From the earliest planning stages, ESG objectives such as energy reduction, water conservation, carbon footprint management, and labor rights compliance are clearly defined and documented in the Owner Project Requirements (OPR) and in the project Sustainability Scorecard.

The IDP requires that all disciplines — architects, engineers, landscape designers, sustainability consultants, cost managers, and contractors — work collaboratively rather than in sequence.

For example, energy modeling informs architectural massing decisions, material selection is coordinated with procurement teams to verify low-carbon sourcing, and water reuse strategies are engineered jointly with landscape design to maximise efficiency. This cross-disciplinary workflow ensures that sustainability requirements are integrated into technical and financial decision-making from the outset.

The process is inherently collaborative, engaging architects, engineers, ESG specialists, contractors, operations managers, and community representatives in structured workshops and design charrettes. This ensures that sustainability, social responsibility, and governance requirements are embedded into project decision-making from the outset. At every stage, Retal requires documented evidence to support ESG commitments. Examples include energy simulation models, embodied carbon calculations, supplier sustainability declarations, worker welfare audits, and biodiversity impact assessments. These records form the basis of compliance reporting and facilitate certification with bodies such as Mostadam, LEED, and WELL.

The IDP is not static; it evolves through lessons learned from completed projects, regulatory updates, and advancements in building technology. Retal's ESG Taskforce reviews outcomes from each development and feeds improvements back into standards, guidelines, and project templates. This ensures that every new project benefits from accumulated knowledge, reflects current best practice, and anticipates emerging stakeholder and regulatory expectations.

Governance oversight is provided by Retal's ESG Committee, supported by the ESG Taskforce and Departmental Sustainability Representatives. Together, these bodies ensure strategic objectives are translated into operational requirements across all projects.

Sustainability Planning & Design Stage

Objective: Establish the sustainability roadmap, certification pathways, and project-specific ESG KPIs.

01

Define project sustainability intent, aligned with Saudi Vision 2030, Retal ESG Strategy, and applicable frameworks (LEED, WELL, Mostadam).

02

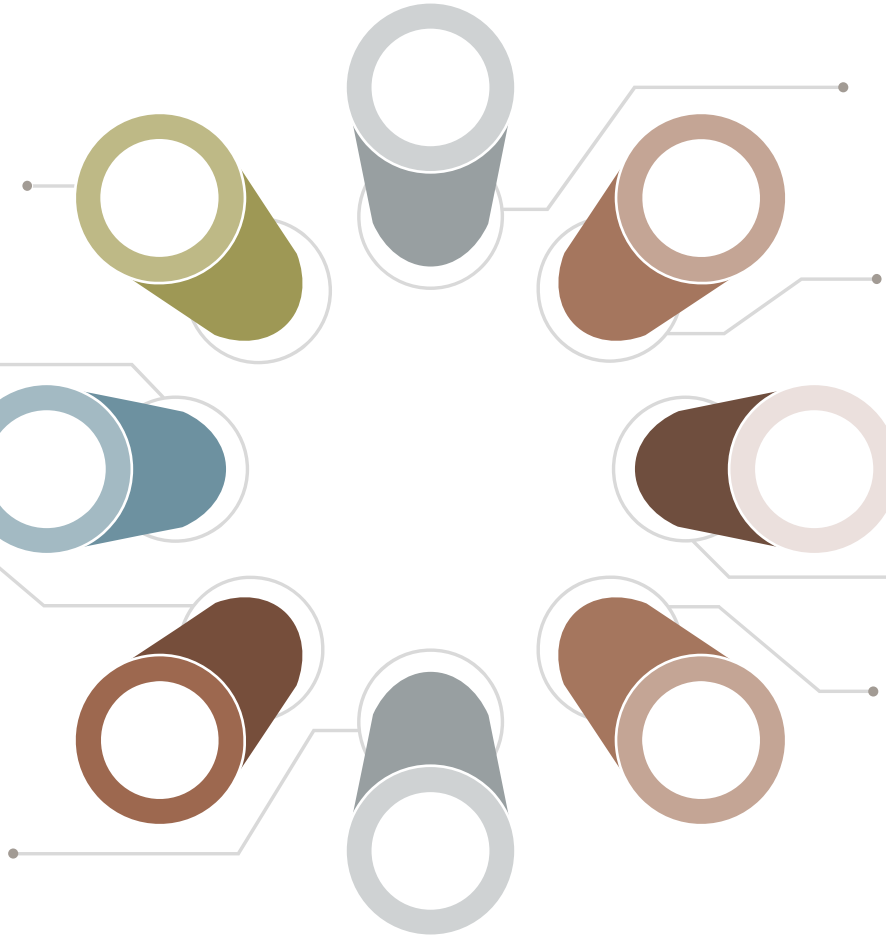
Appoint the Sustainability Consultant and Independent Commissioning Agent (ICA).

03

Develop a Sustainability Scorecard outlining targeted credits and performance metrics.

04

Conduct an Integrated Design Charette, ensuring all disciplines understand sustainability requirements.



08

Finalise tendering documents with integrated sustainability requirements and qualifications for contractors.

07

ICA reviews commissioning requirements and develops the Owner Project Requirements (OPR) and Commissioning Plan.

06

Develop design documentation incorporating sustainability requirements (e.g., energy efficiency, embodied carbon, water reuse).

05

Register the project with the relevant certification body (Mostadam, LEED, etc.).

At this stage, integration is achieved by ensuring that architects coordinate closely with energy modelers to optimise building massing, engineers align mechanical and electrical systems with sustainability targets, and landscape designers incorporate water-efficient strategies consistent with technical specifications. Procurement teams are engaged early to validate sustainable sourcing, while the ICA ensures all requirements are technically achievable and measurable.

Sustainability Construction Stage

Objective: Execute construction according to sustainability specifications and certification requirements.

01 Handover workshop from design to construction teams, led by Sustainability Consultant and ICA.

02 Review sustainability requirements, project scorecard, and specifications.

03 Prepare procurement strategies for sustainable materials and systems.

04 Conduct material submittal reviews and supplier verification for compliance.

05 Implement waste management protocols, recycling/reuse strategies, and hazardous waste disposal in line with Mostadam and LEED requirements.

06 ICA updates commissioning procedures, verifying installation of mechanical, electrical, and plumbing systems.

07 Sustainability Consultant conducts site inspections, audits, and progress reviews.

08 Collect certification evidence (invoices, material declarations, site records, energy/water reports).

09 Submit documentation to the certification body for mid-construction or pre-handover reviews.

10 Achieve final green certification prior to project handover.

During construction, integration is maintained through weekly coordination meetings that bring together contractors, sustainability consultants, and the ICA. Site teams receive direct guidance on material use, waste segregation, and installation practices, while procurement and logistics teams work in tandem with sustainability specialists to ensure compliance with sourcing and documentation requirements. This multi-disciplinary alignment ensures that design intentions are carried through into on-site execution.

Green Building and Community Recertification Guidance

This guideline establishes expectations for pursuing recognised sustainability certifications for new assets, including buildings, communities, mixed-use developments, and infrastructure, during the design and construction phases. Certification ensures that sustainability objectives are embedded early in project delivery and aligned with both national and international benchmarks.

New Buildings

Projects are encouraged to achieve certification under recognised systems such as LEED Building Design and Construction (BD+C) or Mostadam New Construction. Certification should be targeted prior to handover, demonstrating compliance with minimum performance requirements in energy, water, materials, and indoor environmental quality.

New Communities

For community-scale developments and large mixed-use projects, certification under LEED for Neighborhood Development or Mostadam Community is recommended. Certification at this stage validates the integration of sustainable mobility, water efficiency, energy performance, and community well-being features into the master planning and construction process.

Alignment with Standards

Certification should be pursued in accordance with the following frameworks:

- Environmental: LEED BD+C, Mostadam New Construction, WELL Building Standard (Design & Construction)
- Social: WELL Community Standard, UN Sustainable Development Goals (SDGs), Global Reporting Initiative (GRI) social indicators
- Governance: Global Real Estate Sustainability Benchmark (GRESB)

By embedding certification into the design and construction stages, and by ensuring that architects, engineers, contractors, sustainability consultants, and procurement teams coordinate throughout delivery, Retal demonstrates measurable sustainability outcomes. This integrated workflow provides assurance that performance targets are not only established but also implemented and verified before project handover.

Governance and Implementation

Governance Framework

Roles & Responsibilities

Reporting & Feedback Flow

Governance and Implementation

Overview

Effective governance is essential to achieving Retal's sustainability and ESG objectives. Governance provides the leadership, accountability, and operational alignment required to ensure that sustainability principles are integrated across all projects and business functions.

For this guideline, governance is centered on project-level implementation, ensuring that design teams, construction contractors, sustainability consultants, and Independent Commissioning Agents (ICA) carry out their responsibilities in line with Retal's ESG and Decarbonisation strategies. Oversight is provided through structured reporting to Retal's ESG Taskforce and, ultimately, the ESG Committee.

Governance Framework

The governance framework establishes a clear structure for decision-making, accountability, and reporting on ESG performance. It is designed to align with both Retal's corporate strategy and the national objectives of Saudi Vision 2030, while also meeting global investor and stakeholder expectations for ESG transparency.

Project-Level Governance Roles

Project Owner/Developer Sets the sustainability vision for the project, secures budgets, and ensures that sustainability requirements are embedded into contracts and procurement processes. Responsible for appointing sustainability consultants and the ICA.	**Design Teams** Integrate sustainability requirements into all design deliverables, ensuring compliance with energy, water, carbon, and social KPIs. Participate in integrated design charrettes and coordinate with other disciplines to achieve ESG targets.	**Construction Teams** Implement sustainability requirements during construction, including waste management, material selection, and installation quality. Provide evidence and documentation for certification submissions. Work closely with the ICA to verify performance.
Sustainability Consultant Supports the project owner and design/construction teams by preparing sustainability scorecards, reviewing documents, and advising on compliance with LEED, Mostadam, WELL, and other frameworks. Monitors progress toward KPIs.	**Independent Commissioning Agent (ICA)** Provides independent verification that building systems are designed, installed, and tested to meet project sustainability requirements. Develops and implements commissioning plans, and reports on performance validation.	**Departmental Sustainability Representatives** Ensure that lessons learned and project-level feedback are communicated back to Retal's ESG Taskforce. Provide department-specific insights from design, construction, operations, and procurement functions.

Roles and Responsibilities

The governance framework assigns clear roles and responsibilities across all layers of Retal's organisation and its project partners. This ensures accountability, transparency, and alignment with both corporate ESG strategy and regulatory requirements.

Stakeholder	Role	Responsibilities
Retal Executive Management	Strategic Leadership and Oversight	• Define the corporate Sustainable Development vision in alignment with Saudi Vision 2030 and Retal's ESG Strategy. • Approve budgets, resources, and strategic priorities for Sustainable Development initiatives. • Oversee adoption of the Sustainable Development Framework across all Retal projects. • Monitor performance through consolidated reports submitted by the ESG Committee. • Ensure accountability and transparency in decision-making.
ESG Committee	Governing Body for Sustainability and ESG	• Establish and approve sustainability policies, strategies, and corporate objectives. • Ensure alignment of projects with national regulations and global certification standards (Mostadam, LEED, WELL). • Review consolidated sustainability performance reports submitted by the ESG Taskforce. • Provide final approvals for sustainability initiatives and certification roadmaps. • Drive strategic alignment between Sustainable Development and overall business performance.
ESG Taskforce	Planning and Coordination	• Develop reporting templates, data collection frameworks, and compliance checklists. • Provide training and awareness sessions to project teams and Sustainability Representatives. • Monitor regulatory changes and update sustainability requirements accordingly.
Building Construction Company (BCC)	Construction Delivery Partner	• Lead construction delivery across Retal projects as the primary contracting arm. • Implement Sustainable Development requirements during construction, ensuring compliance with quality, safety, and environmental standards. • Coordinate with subcontractors, suppliers, and project managers to ensure timely execution and adherence to sustainability objectives. • Provide evidence of sustainable construction practices (waste management, material sourcing, emissions control) for certification submissions.

Roles and Responsibilities

Stakeholder	Role	Responsibilities
Sustainability Representatives from: • Development Department • Design Department • Procurement Department	Integration of ESG at Department Level	• Act as ESG focal points within their respective departments (design, construction, procurement, compliance). • Integrate ESG requirements into departmental workflows, contracts, and project documents. • Ensure ESG compliance within departmental operations, including design specifications, construction protocols, and asset management procedures. • Track department-level KPIs and submit data to the ESG Taskforce. • Participate in ESG audits and reviews to validate compliance and performance.
Project Managers	Implementation and Compliance Authority	• Oversee day-to-day execution of project sustainability requirements across design and construction stages. • Ensure that contractors, subcontractors, and suppliers comply with sustainability obligations embedded in project contracts. • Monitor progress against KPIs, coordinate between disciplines, and escalate compliance issues to BCC and Sustainability Consultants. • Prepare regular compliance and progress reports for Departmental Representatives and the ESG Taskforce.
Design and Construction Teams	Design Integration	• Embed sustainability requirements into all design deliverables, including energy, water, material, and indoor environmental quality targets. • Participate in integrated design charrettes with engineers, sustainability consultants, and contractors. • Ensure that project design documents meet requirements of LEED, Mostadam, WELL, and Saudi Building Code. • Prepare documentation for certification submissions at the design stage.
Contractors and Subcontractors	Site Implementation	• Deliver on-site construction activities in compliance with the Sustainable Development Framework. • Implement waste management protocols, material efficiency measures, and safe handling of hazardous substances in line with Saudi Environmental Law (2020). • Ensure subcontracted works align with sustainability requirements and are monitored through inspections and progress reports. • Report compliance issues and corrective actions to BCC and Sustainability Consultants.

Roles and Responsibilities

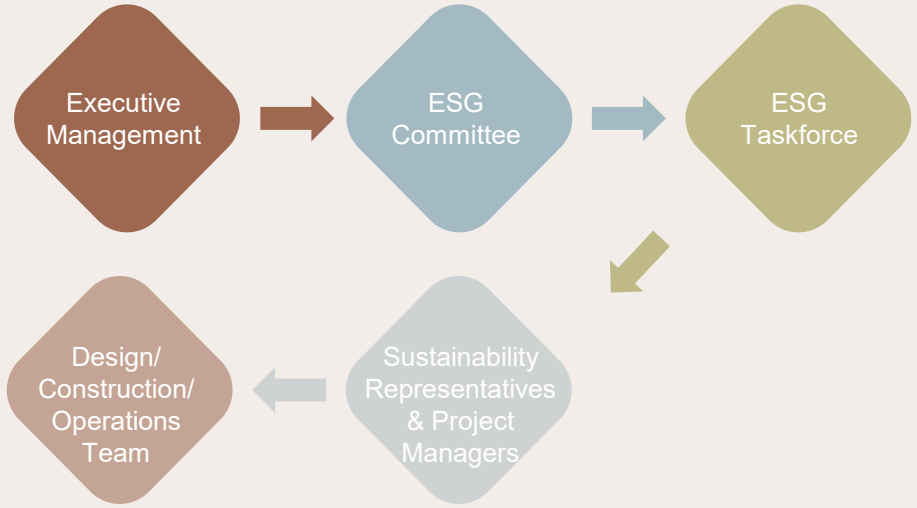
Stakeholder	Role	Responsibilities
Suppliers and Vendors	Sustainable Procurement	• Provide certified sustainable materials and systems, prioritising local and recycled content. • Submit environmental product declarations (EPDs), certifications, and chain-of-custody documentation where applicable. • Cooperate with project teams in supplier audits and sustainability reviews.
Sustainability Consultant	Technical Expertise and Certification Management	• Provide technical guidance on energy modeling, water reuse, embodied carbon, and material efficiency strategies. • Develop and manage the project's Sustainability Scorecard and ensure certification pathways (LEED, WELL, Mostadam) are achieved. • Conduct sustainability audits, site reviews, and document verification during design and construction stages. • Coordinate directly with certification bodies to manage submissions and approvals.
Independent Commissioning Agent (ICA)	Systems Performance Assurance	• Verify that building systems (mechanical, electrical, plumbing, and renewable energy systems) are designed, installed, and tested to meet sustainability performance targets. • Develop and update commissioning plans, starting at the design stage and continuing through construction. • Provide independent validation of energy and water efficiency measures through functional performance testing. • Prepare commissioning reports and ensure alignment with certification requirements.

Reporting and Feedback Flow

Governance requires structured communication between strategic leadership, operational managers, and project teams. Retal adopts a two-directional reporting structure:

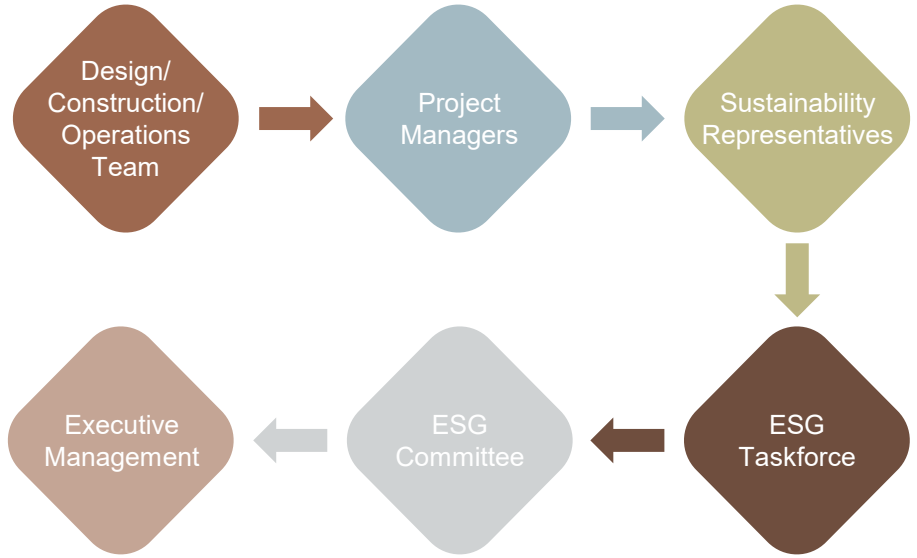
Top-Down Reporting:

- The ESG Committee establishes corporate ESG objectives and communicates them to the ESG Taskforce.
- The ESG Taskforce translates these objectives into practical tools, frameworks, and KPIs for project teams.



Bottom-Up Reporting:

- Project teams, Sustainability Representatives, and consultants collect KPI data and compliance evidence.
- Reports are consolidated by the ESG Taskforce and submitted to the ESG Committee for review.
- This ensures accountability and provides a mechanism for leadership to make informed decisions.



Sustainability KPIs

Energy

Water

Circular Economy

Climate Change and GHG Emissions

Sustainability KPIs

Purpose and Applicability

Retal's Sustainability Key Performance Indicators (KPIs) establish measurable, enforceable, and transparent requirements that guide sustainable development across all projects. These KPIs are mandatory requirements in addition to certification under established green building rating systems such as Leadership in Energy and Environmental Design (LEED), the Mostadam Building Rating System (Saudi Arabia), WELL Building Standard, and other relevant international frameworks.

The KPIs serve as a compliance and accountability mechanism, enabling Retal to:

- Ensure performance alignment with its Environmental, Social, and Governance (ESG) and Decarbonisation strategies.
- Track measurable sustainability outcomes across all phases of project development.
- Support Saudi Vision 2030's environmental targets and contribute to national commitments on climate change mitigation.

Unless specifically noted, all KPIs apply to both new construction and existing buildings. For heritage properties, where conservation requirements take precedence, KPIs will not be applied.

The KPIs are grouped into four main categories: **Energy, Water, Circular Economy (Waste and Materials), and Climate Change and GHG Emissions**. Within each category, KPIs set performance benchmarks, specify technical methodologies, and define compliance verification requirements. These KPIs not only ensure alignment with rating systems such as LEED (Leadership in Energy and Environmental Design), Mostadam, WELL (International WELL Building Institute), and the Saudi Building Code (SBC), but also reflect global frameworks such as the ISO 14000 Environmental Management series, ASHRAE standards, and the GHG Protocol.

1. Energy

Energy efficiency and renewable integration are central to Retal's sustainability strategy. Energy-related KPIs are designed to minimise consumption, reduce dependency on fossil fuels, and promote clean energy adoption throughout the asset life cycle. These KPIs ensure compliance with Saudi Building Codes, Mostadam, and international standards such as ASHRAE, while supporting the Kingdom's net-zero ambitions.

KPI Code	Title	Target	Baseline
KPI 1.1	Energy Performance	Minimum of 15% reduction in modeled energy use intensity (EUI)	ASHRAE Standard 90.1-2013
KPI 1.2	Energy Management	≥90% of connected loads sub-metered by end-use category (lighting, fans, cooling, water heating, renewable energy, and plug loads)	Mostadam BD+C
KPI 1.3	Renewable Energy Supply	All new projects must conduct a detailed renewable energy feasibility study and include design provisions for future integration of renewable systems	Mostadam BD+C

1. Energy

KPI 1.1 Energy Performance

Target
≥15% reduction in modeled EUI compared to ASHRAE 90.1-2013 baseline.

Key Performance Indicator
Percentage reduction in modeled Energy Use Intensity (EUI) relative to the defined baseline, validated through building energy performance simulations.

KPI Description
This KPI requires all new construction projects to undergo energy performance modeling to measure efficiency against defined baselines. For commercial and mixed-use projects, the baseline is ASHRAE Standard 90.1-2013. For low-rise residential projects, the baseline is the Saudi Building Code (SBC 602).

KPI Importance
The KPI establishes a clear, measurable performance requirement for energy efficiency in new projects. It ensures that energy demand is systematically reduced through design and engineering measures, while also accounting for long-term building resilience under projected climate conditions.

Implementation Requirements
- Energy modeling must begin at the concept stage and be updated through schematic design, detailed design, and construction.
- Modeling shall follow ASHRAE Standard 209-2018 protocols and use ASHRAE-compliant software such as EnergyPlus or IES-VE.
- Saudi climate-adjusted weather files must be applied to reflect local climatic zones.
- Models must integrate envelope, HVAC, lighting, plug loads, occupancy schedules, and renewable energy systems.
- Energy Conservation Measures (ECMs) must be analysed individually and in combination.
- Final models must be calibrated using commissioning data to confirm accuracy and compliance.

Planning Submission
- Baseline model setup with assumptions (envelope, HVAC, occupancy).
- Preliminary list of ECMs considered.
- Confirmation of Saudi climate-adjusted weather file use.

Design Submission
- Updated energy model results showing percentage reduction in EUI.
- Documentation of modeling inputs, assumptions, and ECM performance.
- Integration of results into design specifications (e.g., HVAC sizing, envelope requirements).
- Assessment of performance under projected climate conditions.

Construction Submission
- Final calibrated energy model reflecting as-built systems.
- Commissioning report verifying system performance.
- End-use energy breakdown (HVAC, lighting, plug loads, renewables).

1. Energy

KPI 1.2 Energy Management

Target
≥90% of connected loads sub-metered by end-use category (lighting, fans, cooling, water heating, renewable energy, and plug loads).

Key Performance Indicator
Percentage of connected loads sub-metered by defined end-use categories, validated through installation records and commissioning reports.

KPI Description
This KPI requires that new construction projects implement detailed energy management through sub-metering of end-use categories. All loads greater than 10 kW must be sub-metered, ensuring coverage of major building systems, including lighting, HVAC fans, cooling equipment, service water heating, renewable energy generation, and plug loads. An Energy Management System (EMS) or Building Management System (BMS) must be implemented in all multi-residential and commercial assets. The EMS/BMS shall enable smart scheduling, real-time demand response, and optimisation of part-load performance for mechanical equipment.

KPI Importance
By requiring sub-metering of end-use categories, this KPI creates transparency in how energy is consumed within buildings and allows for targeted efficiency improvements. It ensures that Retal's projects move beyond whole-building metrics to detailed monitoring, providing actionable data for reducing energy demand. The EMS/BMS integration further enhances operational performance, while recommissioning ensures long-term reliability of systems.

Implementation Requirements
- Sub-metering shall be applied to all major end-use categories (lighting, fans, cooling, water heating, renewable energy, and plug loads).
- At least 90% of the total connected load must be sub-metered.
- EMS/BMS must be configured to provide real-time monitoring, trend analysis, and demand-side management.
- Preventive Maintenance Plans must be prepared pre-handover.

Planning Submission
- Sub-metering strategy with end-use categories clearly identified.
- Preliminary EMS/BMS integration plan.
- Load schedules and identification of >10 kW equipment.

Design Submission
- Updated electrical and mechanical drawings showing sub-meter locations.
- EMS/BMS functional specifications, including smart scheduling and demand-response features.
- Documentation of monitoring points for each end-use category.

Construction Submission
- As-built documentation verifying installation of submeters for all required categories.
- EMS/BMS commissioning report with functional test results.

1. Energy

KPI 1.3 Renewable Energy Supply

Targets
All new projects must conduct a detailed renewable energy feasibility study and include design provisions for future integration of renewable systems.

Key Performance Indicator
Percentage of projects that complete a renewable energy feasibility assessment and incorporate design-ready infrastructure (e.g., roof and parking space allocation, electrical conduit, and system readiness) for solar photovoltaic (PV) or solar thermal systems.

KPI Description
This KPI promotes the early evaluation and integration of renewable energy opportunities within project design. Instead of requiring immediate system installation, it ensures that projects assess feasibility and allocate adequate space and infrastructure to enable future deployment of renewable technologies, such as photovoltaic panels or solar hot water systems.

The Mostadam BD+C baseline reference emphasises renewable-readiness as part of sustainable building design.

KPI Importance
Conducting renewable energy feasibility studies during the planning and design stages allows Retal to make informed investment decisions while maintaining flexibility in implementation. It also ensures that projects are technically and spatially prepared for future renewable energy integration, aligning with long-term decarbonisation objectives and Saudi Vision 2030 clean energy goals.

Implementation Requirements
- Feasibility Study: Assess potential for on-site solar PV and solar hot water generation, including energy yield, cost-benefit, and grid integration.
- Design Provisions:
  - Allocate ≥25% of available roof and parking area for potential renewable installation.
  - Provide electrical and structural readiness (e.g., conduit, mounting supports, space for inverters).
  - Incorporate solar hot water infrastructure provisions sufficient to supply ≥50% of domestic hot water demand when implemented.
- Include renewable readiness in tender and design documentation for verification.

Planning Submission
- Submission of a renewable energy feasibility study with key assumptions, site constraints, and solar potential mapping.
- Preliminary identification of roof and parking allocation for renewable systems.
- Confirmation of conduit and infrastructure readiness in preliminary design drawings.

Design Submission
- Finalised feasibility report with energy generation estimates and financial analysis.
- Updated design drawings showing allocated roof/parking provisions and electrical routing.
- Inclusion of renewable readiness requirements in construction specifications.

Construction Submission
- Verification of as-built readiness infrastructure (e.g., conduits, reserved space, and structural supports).
- Contractor's confirmation report that renewable provisions align with approved design documentation.
- Photo and inspection records validating compliance with renewable readiness requirements.

2. Water

Water is a critical resource in the Kingdom's arid climate, and Retal places strong emphasis on conservation, efficiency, and reuse. Water KPIs address reduction of potable water demand, integration of smart monitoring systems, and maximisation of recycling and reuse strategies. They align with local regulations, Mostadam, and global best practices, ensuring resilience against water scarcity and climate risks.

KPI Code	Title	Target	Baseline
KPI 2.1	Water Management	• 100% of new commercial assets equipped with automated water controls and smart metering. • Sub-meters must cover all major end-uses.	Mostadam BD+C
KPI 2.2	Water Conservation	• Reduce potable water demand in new construction projects through high-efficiency fixtures and water-conserving systems. • Achieve a minimum 20% total water use reduction (including indoor and outdoor demand) compared to the Mostadam BD+C baseline.	Mostadam BD+C
KPI 2.3	Irrigation Systems	Ensure water-efficient landscape irrigation through native planting and optimised irrigation systems, reducing demand by at least 50% from midsummer baseline levels.	Mostadam BD+C
KPI 2.4	Water Recycling	100% of HVAC condensate and greywater captured, treated, and reused for non-potable applications.	Mostadam BD+C

2. Water

KPI 2.1 Water Management

Target
- 100% of new commercial assets equipped with automated water controls and smart metering. Residential assets are encouraged but not mandated.
- Sub-meters must cover all major end-uses (irrigation, indoor fixtures, cooling towers, greywater, and recycled water systems).

Key Performance Indicator
Percentage of water end-uses sub-metered with smart-enabled systems capable of remote monitoring and data storage for at least three years.

KPI Description
This KPI establishes minimum requirements for efficient water management in new construction projects. It mandates smart sub-metering, leak detection, and automated controls to minimise water wastage and ensure accountability of consumption across all major end-uses. For commercial projects, automated fixtures such as sensors and timed valves are required; for residential projects, these are recommended.

Water management performance must be measured through smart meters capable of remote monitoring and long-term data storage. Landscaping systems must incorporate water-efficient technologies, including rain sensors, soil moisture sensors, and smart irrigation controllers.

KPI Importance
This KPI ensures that projects actively reduce potable water demand, optimise irrigation, and maximise reuse. By requiring comprehensive sub-metering and data-driven monitoring, it enables proactive leak detection, improves accountability, and supports long-term conservation strategies aligned with national water sustainability targets.

Implementation Requirements
- Develop a comprehensive metering strategy covering irrigation, indoor fixtures, cooling towers, greywater, and recycled water systems.
- Install smart-enabled sub-meters with remote monitoring capability and a minimum of three-year data storage.
- Equip commercial assets with automated controls for fixtures (sensors, timed valves).
- Encourage adoption of automated water controls in residential assets.
- Integrate soil moisture sensors and smart irrigation controllers into landscaping systems.
- Document water-saving measures in design and procurement specifications.

Planning Submission
- Water management strategy, including identified end-uses and proposed sub-metering coverage.
- Preliminary irrigation and landscaping efficiency strategy.
- Confirmation of smart metering system capabilities (remote monitoring, data storage).

Design Submission
- Detailed metering and control system design.
- Specifications for automated fixtures and irrigation systems.
- Documentation of greywater and recycled water integration.

Construction Submission
- As-built verification of installed sub-meters and automated controls.
- Commissioning report confirming functionality of irrigation and water-saving systems.
- Sustainability Consultant verification of compliance with KPI targets.

2. Water

KPI 2.2 Water Conservation

Target
- Reduce potable water demand in new construction projects through high-efficiency fixtures and water-conserving systems.
- Achieve a minimum 20% total water use reduction (including indoor and outdoor demand) compared to the Mostadam BD+C baseline.

Key Performance Indicator
Percentage compliance of installed water fixtures and systems with defined efficiency thresholds (toilets, faucets, showerheads, ablution fixtures, swimming pools, and water features) and measured percentage reduction in total water use relative to the baseline.

KPI Description
This KPI requires that all new construction projects integrate water-efficient fixtures and conservation measures to minimise potable water demand. Efficiency thresholds are aligned with international benchmarks such as LEED and Saudi Arabia's Mostadam rating system. In addition to fixture performance, design strategies must ensure that swimming pools and decorative water features incorporate evaporation minimisation systems and leak prevention measures.

KPI Importance
Freshwater scarcity is a major challenge in Saudi Arabia, where per capita consumption rates are among the highest globally. By embedding efficiency requirements into design and construction, this KPI ensures water resilience, reduces stress on municipal infrastructure, and supports national water sustainability objectives. It also creates accountability for developers and contractors to adopt cost-effective conservation measures from the outset.

Implementation Requirements
- Specify low-flow, high-efficiency fixtures for all building types.
- Apply water conservation standards consistently across residential, commercial, and public facilities.
- Integrate evaporation control and leak detection systems for swimming pools and water features.
- Design to achieve ≥20% total water-use reduction from the Mostadam BD+C baseline through fixture efficiency, irrigation optimisation, and smart water management controls.
- Document water conservation measures in design and tender specifications.
- Verify compliance during procurement and installation stages.

Planning Submission
- Water conservation strategy and preliminary list of compliant fixtures.
- Outline of design measures for swimming pools and water features.
- Confirmation of alignment with LEED and Mostadam fixture requirements.
- Preliminary water balance analysis showing projected total water-use reduction compared to the baseline.

Design Submission
- Detailed specifications of all water fixtures and fittings.
- Calculated water use estimates showing expected reductions in potable water demand.
- Finalised design measures for evaporation and leak control.

Construction Submission
- As-built documentation of installed fixtures with manufacturer certifications.
- Commissioning report verifying proper installation and functionality.
- Site inspection evidence for evaporation and leak control systems.
- Contractor declaration of compliance with conservation requirements.
- Sustainability Consultant verification of compliance with KPI targets.

2. Water

KPI 2.3 Irrigation Systems

Target
Ensure water-efficient landscape irrigation through native planting and optimised irrigation systems, reducing demand by at least 50% from midsummer baseline levels.

Key Performance Indicator
Percentage of landscaped areas planted with native, drought-tolerant, or saline-tolerant species, and percentage reduction in irrigation demand compared to baseline.

KPI Description
This KPI establishes requirements for water-efficient irrigation design in new construction projects. To minimise long-term water use, landscapes must prioritize native, drought-tolerant, or saline-tolerant species. Irrigation demand must not exceed 1.5 liters per square meter per day or 50% of midsummer baseline demand. Recycled water sources, such as greywater or treated wastewater, must be prioritised wherever feasible to fully offset irrigation needs.

KPI Importance
By mandating native planting and efficient irrigation, this KPI reduces reliance on potable water, lowers operational costs, and ensures climate resilience. It also enhances biodiversity by integrating native species, which are better adapted to local conditions and require fewer resources to maintain.

Implementation Requirements
- A minimum of 80% of all planted species must be native, drought-tolerant, or saline-tolerant.
- Irrigation systems must use smart controllers, rain sensors, and/or soil moisture sensors.
- Reduce irrigation water use by at least 50% from the midsummer baseline through the use of native or drought-tolerant species and efficient irrigation technologies. (Mostadam BD+C)
- Recycled water sources (treated wastewater, greywater, or HVAC condensate) must be integrated wherever feasible.
- Landscaping and irrigation design must be documented in the tender and construction specifications.

Planning Submission
- Preliminary landscape plan showing proportion of native/drought-tolerant species.
- Irrigation demand estimate compared to midsummer baseline.
- Identification of potential recycled water sources.

Design Submission
- Finalised landscape plan with plant species list and percentage breakdown.
- Irrigation system design including smart controls, sensors, and zoning strategy.
- Calculated irrigation demand demonstrating compliance with KPI targets.
- Design documentation of recycled water integration strategy.

Construction Submission
- As-built landscape plan with verification of species compliance.
- Commissioning report confirming installation of irrigation controls and sensors.
- Evidence of connection to recycled water supply (where feasible).
- Contractor declaration of compliance with irrigation demand targets.
- Sustainability Consultant verification of compliance with KPI targets.

2. Water

KPI 2.4 Water Recycling

Target
100% of HVAC condensate and greywater captured, treated, and reused for non-potable applications.

Key Performance Indicator
Percentage of HVAC condensate and greywater recycled for uses such as irrigation and WC flushing.

KPI Description
This KPI establishes the requirement to recycle water generated within buildings, specifically HVAC condensate and greywater, in all new construction projects, limited to commercial developments. Both streams must be fully captured, treated, and reused for non-potable purposes such as irrigation and toilet flushing. By mandating reuse of these reliable water sources, the KPI reduces dependence on municipal potable water and enhances water resilience across Retal's developments.

KPI Importance
Greywater and HVAC condensate represent consistent and predictable water sources in arid climates like Saudi Arabia. Their reuse reduces overall potable water demand, supports water conservation targets, and ensures long-term project sustainability. This KPI also aligns with recognised frameworks such as Mostadam and LEED, strengthening compliance and certification outcomes.

Implementation Requirements
- HVAC Condensate: 100% captured and reused for irrigation or WC flushing.
- Greywater: 100% collected, treated, and reused on-site.
- Treatment Systems: Greywater and condensate treatment facilities must meet national health and safety standards.
- Design Integration: Reuse infrastructure must be documented in plumbing, irrigation, and drainage plans.

Planning Submission
- Preliminary water balance study estimating volumes of HVAC condensate and greywater.
- Concept design of condensate and greywater reuse systems.

Design Submission
- Finalised plumbing and drainage drawings showing greywater collection and treatment systems.
- HVAC design detailing condensate recovery systems and non-potable reuse connections.
- Technical specifications for treatment systems ensuring compliance with national standards.

Construction Submission
- As-built drawings of installed condensate and greywater reuse systems.
- Commissioning reports verifying operational performance of systems.
- Testing and certification of treated water quality.
- Sustainability Consultant verification of compliance with KPI targets.

3. Circular Economy

Circular economy practices ensure that resources are conserved, waste is minimised, and materials are kept in productive use for as long as possible. Retal applies these principles across all project phases — design, construction, operations, and decommissioning — with KPIs focusing on waste reduction, responsible procurement, material reuse, and life-cycle performance.

KPI Code	Title	Target	Baseline
KPI 3.1	Construction Waste Management	• ≤ 12 kg/m² of total construction waste generation • ≥ 50% diversion of non-hazardous waste from landfill	Mostadam BD+C and Saudi Environmental Law (Royal Decree M/165, 2020)
KPI 3.2	Operational Waste Management	≥ 50% diversion of operational waste (by weight) from landfill through recycling, composting, and donation for new assets	Mostadam BD+C and Mostadam O+E
KPI 3.3	Sustainable Materials	• ≥ 20% of materials regionally sourced • ≥ 25% recycled content for key materials • 100% certified sustainable timber and low-VOC finishes in new construction projects	LEED v4.1 and Mostadam BD+C

3. Circular Economy

KPI 3.1 Construction Waste Management

Target
- ≤ 12 kg/m² of total construction waste generation
- ≥ 50% diversion of non-hazardous waste from landfill

Key Performance Indicator
Waste generation intensity per gross floor area (kg/m²) and percentage of non-hazardous construction waste diverted from landfill.

KPI Description
This KPI ensures that construction projects actively implement Retal's existing Construction Waste Management Plan (CWMP). It establishes quantitative performance requirements for limiting waste generation and maximising diversion from landfill through reduction, reuse, and recycling strategies. The KPI is aligned with LEED v4 Materials and Resources credits and Saudi municipal waste regulations.

KPI Importance
Effective waste management reduces the environmental footprint of construction, conserves natural resources, and promotes circular economy principles. By enforcing compliance with CWMP, this KPI supports Saudi Vision 2030 goals for waste minimisation and ensures that contractors adopt standardised procedures for sustainable materials management.

Implementation Requirements
- Mandatory compliance with CWMP for all new construction projects.
- Total construction waste must not exceed 12 kg/m² of gross floor area.
- At least 50% of non-hazardous waste (by weight) must be diverted from landfill.
- Contractors must conduct source separation for metals, paper/cardboard, plastics, concrete, and timber.
- Concrete and masonry waste must be reused as aggregate for non-structural works wherever feasible.
- Only licensed waste haulers and approved recycling facilities verified by the Saudi Ministry of Municipal and Rural Affairs and Housing shall be used.

Planning Submission
- Confirmation of adoption of CWMP.
- Preliminary waste forecasts with categories and diversion strategies.
- Identification of approved recycling facilities and licensed haulers.

Design Submission
- Updated CWMP integrated into project specifications and contractor tendering documents.
- Design-stage waste minimization measures (e.g., modular construction, prefabrication).

Construction Submission
- Final CWMP compliance report prepared by the contractor.
- Documentation of waste generation (kg/m²) and diversion rate (%).
- Evidence of reuse of concrete/masonry aggregates.
- Waste receipts and certificates from licensed facilities.
- Sustainability Consultant verification of compliance with KPI targets.

3. Circular Economy

KPI 3.2 Operational Waste Management

Target
≥ 50% diversion of operational waste (by weight) from landfill through recycling, composting, and donation for new assets.

Key Performance Indicator
Percentage of operational waste diverted from landfill for new assets.

KPI Description
This KPI applies to new assets only and establishes requirements for effective management of waste streams during the operational phase, including municipal solid waste, recyclables, organics, hazardous materials, and e-waste. It ensures that waste minimisation and circular economy principles are embedded into facility operations from handover. The KPI is aligned with the Saudi Environmental Law 2020 and international good practices for resource recovery.

KPI Importance
Operational waste represents one of the largest ongoing environmental challenges for real estate assets. Addressing it at the design and pre-handover stages ensures that facilities are prepared to manage waste streams responsibly from day one. This KPI supports Retal's sustainability objectives by minimising landfill dependency, reducing greenhouse gas emissions from organic waste, and promoting recycling and reuse practices.

Implementation Requirements
- An Operational Waste Management Plan (OWMP) must be developed for every new asset before handover.
- Segregated bins must be distributed throughout buildings (residential, commercial, mixed-use) with bilingual signage (Arabic and English).
- A minimum of 50% of operational waste (by weight) must be diverted from landfill through recycling, composting, and donation.
- Organic waste must be composted onsite or diverted to an approved composting facility.
- Hazardous waste must be managed in compliance with the Saudi Environmental Law 2020.
- Public buildings must provide water bottle refilling stations to reduce single-use plastics.
- E-waste recycling programmes must be implemented using certified recycling facilities.

Planning Submission
- Draft OWMP outlining waste categories, diversion strategies, and compliance with Saudi Environmental Law.
- Identification of recycling, composting, and hazardous waste partners.
- Waste bin placement plan with signage design.

Design Submission
- Integration of OWMP requirements into facility management manuals and specifications.
- Finalised bin placement and signage layouts.
- Provisions for water bottle refilling stations and e-waste collection points.

Construction Submission
- Final OWMP handed over to facility management.
- Evidence of installed waste segregation infrastructure.
- Contracts or agreements with certified recyclers and composting facilities.
- Documentation verifying provision of refilling stations and e-waste programmes.

3. Circular Economy

KPI 3.3 Sustainable Materials

Target
- ≥ 20% of materials regionally sourced
- ≥ 25% recycled content for key materials
- 100% certified sustainable timber and low-VOC finishes in new construction projects

Key Performance Indicator
Percentage of materials meeting regional sourcing, recycled content, certification, and low-VOC criteria.

KPI Description
This KPI applies to new construction assets and establishes procurement requirements that reduce embodied carbon, promote regional economic value, and enhance occupant health. It ensures that materials are responsibly sourced, contain recycled content where possible, and meet sustainability certification standards. The KPI is aligned with LEED Materials and Resources credits, CARES certification for steel, FSC standards for timber, and international VOC regulations (South Coast Air Quality Management District Rule 1168 and Directive 2004/42/CE).

KPI Importance
Sustainable materials selection reduces the environmental burden of construction, strengthens circular economy practices, and safeguards occupant well-being through reduced chemical emissions. This KPI also supports local industries by prioritising regional suppliers and ensuring transparency and traceability of material origins through internationally recognised certification systems.

Implementation Requirements
- At least 20% of all materials must be regionally sourced within 800 km of the project site.
- 90% of reinforcing steel and 50% of structural steel must contain ≥ 25% post-consumer recycled content and be CARES-certified or equivalent.
- 100% of timber and wood-based products must be FSC-certified or equivalent.
- At least 25% of all permanently installed products must contain recycled content.
- All paints, adhesives, sealants, and coatings must comply with VOC limits set by South Coast Air Quality Management District Rule 1168 and Directive 2004/42/CE.

Planning Submission
- Draft material procurement strategy identifying regional sourcing opportunities.
- Preliminary list of materials with expected recycled content and certifications.
- VOC compliance criteria incorporated into project specifications.

Design Submission
- Finalised material schedule indicating percentage of regional, recycled, and certified products.
- Product data sheets demonstrating FSC, CARES, or equivalent certifications.
- Updated procurement specifications with VOC limits.

Construction Submission
- Procurement records (invoices, delivery slips) verifying regional sourcing and recycled content percentages.
- Certificates of compliance for FSC timber, CARES steel, and VOC-compliant finishes.
- Contractor's material compliance report aligned with KPI targets.
- Sustainability Consultant verification of compliance with material sustainability requirements.

4. Climate Change & GHG

Retal recognizes climate change as both a material risk and a driver of innovation. The KPIs in this section ensure alignment with Saudi Arabia's Vision 2030, the Saudi Green Initiative, and international best practices (GHG Protocol, ISO standards, and Paris Agreement commitments).

KPI Code	Title	Target	Baseline
KPI 4.1	GHG Accounting	Comprehensive accounting of Scope 1, Scope 2, and Scope 3 emissions during the construction stage for all new assets.	GHG Protocol Corporate Standard (Scopes 1, 2, and 3) and the Saudi Environmental Law (2020) reporting requirements
KPI 4.2	Operational Carbon & Scope 1 and 2 Emissions	Achieve 63% reduction in Scope 1 and Scope 2 emissions by 2035 compared to Retal's 2024 GHG baseline.	Science-Based Targets initiative (SBTi) Absolute Contraction Approach
KPI 4.3	Embodied Carbon & Scope 3 Emissions (Life Cycle Assessment)	Achieve ≥40% reduction in embodied carbon (Scope 3 emissions) by 2035 compared to the baseline.	Benchmarks from the World Green Building Council (WGBC) and sustainability standards for the built-environment

4. Climate Change & GHG

KPI 4.1 GHG Accounting

Target
Comprehensive accounting of Scope 1, Scope 2, and Scope 3 emissions during the construction stage for all new assets.

Key Performance Indicator
Completion and reporting of GHG inventory covering fuel use, electricity consumption, waste transport, material deliveries, and worker commuting during construction.

KPI Description
This KPI requires new construction projects to measure and report greenhouse gas emissions generated during the construction stage. Emissions must be categorised according to the Greenhouse Gas Protocol standards: Scope 1 (direct emissions), Scope 2 (indirect electricity-related emissions), and Scope 3 (other indirect emissions related to the materials, supply chain, and logistics).

- Scope 1 includes fuel used by on-site generators and construction vehicles.
- Scope 2 covers electricity used in temporary site offices and facilities (if any).
- Scope 3 covers emissions from construction materials such as steel, concrete, and cement, waste generated and transport, material deliveries, and worker commuting.

The KPI ensures consistent reporting across projects and alignment with Saudi Arabia's Nationally Determined Contributions (NDCs), Vision 2030 climate commitments, and international best practices such as the GHG Protocol Corporate Standard.

KPI Importance
GHG emissions from construction activities represent a significant portion of the life-cycle carbon footprint of buildings and infrastructure. Systematic accounting allows Retal to identify key emission sources, improve efficiency, and support national and international climate objectives.

Implementation Requirements

- All projects must prepare a construction-stage GHG inventory following the GHG Protocol standards.
- Scope 1: Record fuel consumption for generators, construction vehicles, and on-site equipment.
- Scope 2: Monitor and report electricity consumption in site offices and temporary facilities.
- Scope 3: Quantify emissions from construction materials such as steel, concrete, and cement, waste transport, material deliveries, and worker commuting.
- Use standard emission factors from IPCC Guidelines or the Saudi Energy Efficiency Center (SEEC).
- GHG accounting must be integrated into contractor reporting obligations and verified by the project's sustainability consultant.

Planning Submission

- Draft GHG accounting methodology aligned with the GHG Protocol.
- List of data sources (fuel logs, utility bills, transport records).
- Proposed emission factors for each scope.

Design Submission

- Updated GHG accounting framework included in contractor specifications.
- Baseline estimates of construction-related emissions.
- Plan for data collection and reporting responsibilities.

Construction Submission

- Final construction-stage GHG inventory, disaggregated by Scope 1, 2, and 3.
- Evidence of data collection (fuel receipts, electricity bills, transport logs).
- GHG report verified by a climate change consultant or third-party auditor.
- Comparison of actual emissions against baseline estimates, with recommendations for reduction in future projects.

4. Climate Change & GHG

KPI 4.2 Operational Carbon & Scope 1 and 2 Emissions

Target
Achieve 63% reduction in Scope 1 and Scope 2 emissions by 2035 compared to Retal's 2024 GHG baseline.

Key Performance Indicator
Percentage reduction in operational (Scope 1 and 2) greenhouse gas emissions relative to Retal's baseline, covering fuel combustion, refrigerant leakage, and electricity use.

KPI Description
This KPI measures reductions in direct (Scope 1) and indirect (Scope 2) emissions from building operations and construction activities. It aligns with Retal's Decarbonisation Strategy and SBTi methodology, ensuring progress toward science-based reduction milestones. Emission sources include on-site fuel use, grid electricity, and refrigerants.

KPI Importance
Operational emissions represent the largest controllable component of a building's carbon footprint. This KPI drives measurable decarbonisation across project portfolios, ensuring energy efficiency, renewable energy adoption, and transition from fossil fuel dependence in line with Retal's 2035 corporate emission reduction targets.

Implementation Requirements
- Apply the Science-Based Targets initiative (SBTi) Absolute Contraction Approach to Scope 1 and 2 emission tracking.
- Use Retal's corporate GHG baseline as the reference for reduction calculations.
- Prohibit new fossil-fuel-based systems (e.g., gas-fired boilers, heaters, or appliances).
- Electrify all new buildings using high-efficiency HVAC, heat pumps, and induction systems.
- Integrate renewable energy systems (e.g., solar PV, solar thermal) into design where feasible.
- Implement energy monitoring through EMS/BMS for ongoing performance tracking.
- Conduct annual performance audits to verify reduction against modeled targets.

Planning Submission
- GHG reduction strategy aligned with Retal's Decarbonisation Framework.
- Preliminary energy model estimating Scope 1 and 2 emissions.
- Documentation of fuel phase-out measures and renewable integration.

Design Submission
- Updated energy model and emissions projection showing alignment with 63% reduction target.
- System selection documentation confirming full electrification.
- Integration of smart monitoring systems for performance tracking.

Construction Submission
- Commissioning reports validating system performance.
- Emission factor calculations and performance test data.
- Third-party verification of installed energy systems.

4. Climate Change & GHG

KPI 4.3 Embodied Carbon & Scope 3 Emissions (Life Cycle Assessment)

Target
Achieve ≥40% reduction in embodied carbon (Scope 3 emissions) by 2035 compared to the baseline.

Key Performance Indicator
Percentage reduction in embodied carbon emissions (kg CO_2e/m^2 GFA) relative to a Saudi Building Code (SBC)-compliant baseline building, as verified through Life Cycle Assessment (LCA).

KPI Description
This KPI ensures that Retal's new construction projects quantify and reduce embodied carbon associated with materials, construction activities, and end-of-life processes. Projects must conduct a cradle-to-grave Life Cycle Assessment (LCA) to evaluate environmental impacts across structure, envelope, finishes, and construction logistics. The KPI also covers Scope 3 emissions under Retal's Decarbonisation Strategy, ensuring the embodied carbon intensity of new assets decreases in line with science-based decarbonisation trajectories.

KPI Importance
Embodied carbon represents a major share of total life cycle emissions in buildings, particularly during the design and construction stages. By requiring comprehensive LCA and targeted reduction, this KPI integrates Scope 3 management into project-level decision-making, supporting Retal's broader goal of supply-chain decarbonisation and responsible material sourcing.

Implementation Requirements
- Conduct full cradle-to-grave LCA in accordance with ISO 14040/44 and ASTM E2921-16a.
- Use an SBC-compliant baseline building as the reference case for comparison.
- Model at minimum the following life cycle stages: A1–A5 (product and construction), B1–B7 (use phase), C1–C4 (end of life), and D (benefits beyond system boundary).
- Include impacts across at least five key categories: global warming potential, eutrophication, acidification, ozone depletion, and smog formation.
- Demonstrate ≥40% reduction in embodied carbon (Scope 3) by 2035 from the baseline through material optimisation, reuse, low-carbon procurement, and supplier engagement.
- Validate results through third-party review or recognised LCA platforms (e.g., One Click LCA).

Planning Submission
- Preliminary LCA scoping and baseline definition (SBC-compliant reference).
- Inventory of major materials and expected emission factors.
- List of potential embodied carbon reduction strategies.

Design Submission
- Updated LCA model showing comparative performance to baseline.
- Detailed documentation of material substitutions and low-carbon sourcing.
- Modeled percentage reduction in embodied emissions.

Construction Submission
- Final LCA report reflecting as-built materials and construction methods.
- Third-party verification report confirming reduction achievement.
- Supplier declarations for recycled or low-carbon materials.

Monitoring, Reporting, and Compliance

Monitoring, Reporting, and Compliance

Monitoring, reporting, and compliance form the operational backbone of Retal's Sustainable Development Framework. This chapter establishes how Retal collects, validates, and communicates sustainability-related data across project phases such as planning, design, and construction, ensuring alignment with Retal's sustainability targets and project-level commitments.

The approach is built on three pillars:

- **Monitoring** – systematic collection and verification of sustainability performance data across all project stakeholders, including design teams, contractors, subcontractors, suppliers, sustainability consultants, and Independent Commissioning Agents (ICAs).
- **Reporting** – transparent and timely communication of results to internal and external stakeholders.
- **Compliance** – adherence to local and international standards, with corrective actions to address gaps or delays.

Reporting Frequency

Retal mandates structured reporting at defined project milestones to ensure sustainability integration is not an afterthought but a continuous process:

- **Planning & Design Approval Stage:** Verification that sustainability strategies, KPIs, and certification pathways (LEED, Mostadam, WELL, etc.) are embedded in design documentation and contractor tender requirements.
- **Construction Start:** Evidence of site preparedness, approved environmental management plans, material submittals, and waste management protocols.
- **Mid-Construction:** Progress reports from contractors detailing sustainable material use, waste diversion, energy efficiency measures, water conservation strategies, and safety compliance.
- **Commissioning & Testing:** Validation of system performance against design intent, including documentation from Sustainability Consultants and ICAs.
- **Handover:** Final sustainability performance report consolidating certifications, KPIs achieved, and operations manuals for ongoing performance.
- **Post-Handover Transition Report:** A closing report from project managers documenting sustainability measures in place, before responsibility shifts to operations teams.

Submission Protocols

To ensure consistency and comparability across projects, Retal adopts standardised submission protocols:

- **Templates:** All submissions must use pre-defined digital templates that reflect KPI categories.
- **Platforms:** Data is stored and managed within Retal's central Sustainability Data Management System, ensuring secure access, traceability, and version control.
- **Submission Owners:** Project Managers (design and construction), Contractors (waste, materials, site data), and Sustainability Consultants (modeling, certification evidence) are responsible for timely data collection and submission.
- **Evidence Types:**
    - Green Building Certificates (LEED, Mostadam, WELL, etc.)
    - Modelling reports (Energy Performance, Life Cycle Assessments, GHG Accounting)
    - Procurement records and supplier declarations
    - Site audits, photographs, and inspection reports
    - Commissioning reports and ICA documentation

All evidence must be verifiable, dated, and stored for a minimum of five years to support audits and recertifications.

Escalation and Accountability

Retal adopts a tiered escalation framework to ensure compliance with sustainability reporting obligations:

- **Tier 1 – Reminder Notices:** Automated reminders are issued to responsible stakeholders prior to submission deadlines.
- **Tier 2 – Internal Escalation:** Non-compliance is escalated to the Project Management Office (PMO) and ESG Taskforce for intervention.
- **Tier 3 – Formal Escalation:** Persistent delays or non-compliance are escalated to the ESG Committee and Executive Management.
- **Tier 4 – Corrective Actions:** Includes the implementation of recovery plans, reallocation of resources, or contractor/consultant penalties.

This escalation structure ensures accountability at every level, protecting both project delivery timelines and Sustainability performance integrity.

Compliance Verification

Compliance is ensured through a layered system of internal audits, external certifications, and independent oversight:

- **Internal Audits:** Conducted quarterly by the ESG Taskforce to validate reported data, verify accuracy, and identify areas for improvement.
- **Third-Party Certifications:** Green building certifiers (e.g., Mostadam, LEED, WELL) provide independent validation of project performance.
- **Independent Commissioning Agents (ICAs):** Oversee technical compliance, systems testing, and performance validation.
- **Legal and Regulatory Audits:** Compliance with the Saudi Environmental Law (2020), Saudi Building Code (SBC), and other applicable national regulations.
- **Performance Verification:** Following the International Performance Measurement and Verification Protocol (IPMVP), energy and water savings must be verified with data-driven methods.

Continuous Improvement

The Monitoring, Reporting, and Compliance framework is not static. Retal mandates annual reviews of reporting protocols, verification tools, and compliance requirements. Lessons learned from project-level feedback and audit findings are incorporated into updated procedures. Where gaps are identified, new KPIs, metrics, or reporting methods will be introduced to maintain leadership in sustainable development.

Tools, Standards & Reference Documents

International Standards and Certifications

Regional and National Frameworks

ESG Reporting Frameworks

Digital Tools and Data Management

Tools, Standards & Reference Documents

A robust sustainability framework requires not only governance structures and performance metrics but also a strong foundation of tools, standards, and reference documents. These resources provide the methodologies, compliance requirements, and best practices that ensure consistency, credibility, and alignment with international, regional, and national sustainability goals. For Retal, adherence to recognised standards and adoption of advanced tools will facilitate transparent reporting, measurable outcomes, and continuous improvement across projects focused on sustainable development.

International Standards and Certifications

Retal benchmarks its projects against internationally recognised sustainability standards to ensure alignment with global best practices. These frameworks provide structured methodologies and performance criteria that enhance credibility, comparability, and market recognition.

- **LEED (Leadership in Energy and Environmental Design, US Green Building Council):** Evaluates sustainable building design, construction, and operations across categories such as energy efficiency, water savings, materials selection, and indoor environmental quality.

- **WELL Building Standard (International WELL Building Institute):** Focused on health and well-being, WELL ensures projects address air quality, water quality, lighting, thermal comfort, and other occupant-related factors.

Technical Standards and Protocols

- **ASHRAE Standards (American Society of Heating, Refrigerating and Air-Conditioning Engineers):**
    - *ASHRAE 90.1* – Establishes minimum energy efficiency requirements for buildings.
    - *ASHRAE 209-2018* – Provides advanced methodologies for energy performance modelling.

- **ASTM E2921-16a (American Society for Testing and Materials):** Defines the minimum criteria for conducting Life Cycle Assessments (LCAs) in construction, ensuring consistency and comparability of results.

Tools, Standards & Reference Documents

- **ISO Standards:**
  - *ISO 14040/44* – Life Cycle Assessment frameworks

- **GHG Protocol (Greenhouse Gas Protocol):**
  - Corporate Standard – For organisational emissions accounting.
  - Cities Protocol – For community-scale GHG accounting and inventories.

- **IPMVP (International Performance Measurement and Verification Protocol):** Provides standardised methods for verifying energy savings and performance improvements in efficiency projects.

These international standards form the backbone of Retal's compliance with both operational performance and global sustainability disclosures.

Tools, Standards & Reference Documents

Regional and National Frameworks

To align with Saudi Arabia's Vision 2030 and national regulations, Retal adopts regional sustainability rating systems and codes that are tailored to the local context.

- **Mostadam (Saudi Arabia):** The Kingdom's official green building rating system, covering new construction and existing buildings with criteria on energy, water, materials, and waste.
- **Saudi Building Code (SBC):** Establishes safety, energy efficiency, and environmental requirements for building performance. SBC 602 focuses on energy efficiency standards.
- **Saudi Green Initiative (SGI):** The national framework for carbon reduction, renewable integration, and nature-positive targets.
- **Saudi Environmental Law (2020):** Establishes binding requirements for waste management, hazardous materials handling, and environmental protection in all development projects.

ESG Reporting Frameworks

Transparent reporting of ESG performance is essential for credibility with investors, regulators, and stakeholders. Retal integrates its KPIs with globally recognised disclosure standards:

- **Global Reporting Initiative (GRI Standards)** – Comprehensive disclosures across environmental, social, and governance topics.
- **Sustainability Accounting Standards Board (SASB Standards)** – Sector-specific reporting standards tailored for real estate and construction.
- **Global Real Estate Sustainability Benchmark (GRESB)** – The industry-leading benchmark for assessing and comparing the ESG performance of real estate portfolios and infrastructure assets. Retal's adoption of GRESB ensures that projects are evaluated against international peers, enhancing transparency and investor confidence.
- **UN Sustainable Development Goals (SDGs)** – Alignment with the 17 global goals for sustainable development.

Tools, Standards & Reference Documents

Digital Tools and Data Management

Digitalisation supports real-time monitoring, analysis, and reporting of project sustainability performance.

- **Building Information Modelling (BIM):** Integrates sustainability metrics into design and construction workflows, supporting lifecycle energy and materials assessments.
- **Energy Management Systems (EMS) / Building Management Systems (BMS):** Smart monitoring and optimisation platforms for real-time energy and water efficiency.
- **Environmental Data Management Platforms:** Cloud-based systems for data aggregation, analytics, and ESG reporting.
- **Commissioning Tools:** Software for validating performance of building systems against design intent and sustainability KPIs.

Reference Documents

- ASTM E2921-16a – Minimum criteria for Life Cycle Assessments (LCAs) in construction
- ASHRAE 90.1 – Energy efficiency standards for buildings
- ASHRAE 209-2018 – Energy performance modeling guidelines
- GHG Protocol – Corporate Standard and Cities Protocol
- Global Real Estate Sustainability Benchmark (GRESB) Guidelines
- Global Reporting Initiative (GRI Standards)
- IPMVP (International Performance Measurement and Verification Protocol)
- ISO 14040/44 – Life Cycle Assessment frameworks
- LEED v4.1 Reference Guides (USGBC)
- Mostadam Design and Operations Guidelines
- Saudi Building Code (SBC)
- Saudi Environmental Law (2020)
- Saudi Green Initiative (SGI) Strategy and Progress Reports
- Saudi Vision 2030
- UN Sustainable Development Goals (SDGs)
- WELL Building Standard v2 Manuals (IWBI)

Appendix

Appendix 1: Version History and Change Log

Appendix 2: Stakeholder Engagement Matrix

Appendix 1: Version History and Change Log

Version	Date	Summary of Changes	Approved By	Document Owner
1.0	November 2025	First Draft		Sustainability

Appendix 2: Stakeholder Engagement Matrix

Stakeholder Group	Engagement Role	Phase Involved
ESG Department	Owner / Reviewer	All phases
Project Management	Reporting lead	Execution
Design Consultants	KPI design integration	Design
Contractors	On-site KPI compliance	Construction
Third-Party Auditors	Certification validation	Final review

800 3030 888

info@retal.com.sa
retal.com.sa