Enabel

Annex 7 – Green targets and adopted measures

Enabel in Palestine

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Public works contract for the 'Construction of Al-Bakri Green Girls' School in Hebron'

Location: Palestine – Hebron
Navision code: PSE22001-10075

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1. General

TS-1 This document outlines the sustainability framework guiding the design and construction of the school building. The project is conceived to establish exemplary educational facility that significantly outperform conventional school designs in terms of environmental performance, user comfort, and resource efficiency, while remaining socially inclusive and economically replicable.

TS-2 To achieve this ambition, a set of specific targets has been defined across environmental, social, and economic dimensions. These targets translate the project's vision into measurable objectives, ensuring that sustainability principles are systematically integrated into all stages of design, construction, and operation.

TS-3 The following table presents each target alongside the corresponding adopted measures and design strategies required to meet them. Together, they form a comprehensive roadmap for delivering high-performance, climate-responsive, and resource-efficient school buildings that can serve as scalable models for future developments funded by Palestinian public authorities and international partners

TS-4 Contractor shall be responsible for compliance with Construction activity pollution prevention mandatory requirements as specified in the PGBC guidelines. This includes:

2. List of green targets and their adopted measures

#	Target	Unit	Target Value	Adopted measures	Status	Comment
1	Net Energy Demand	kWh/(m². year)	-40%	• External walls are constructed with 25 cm reinforced concrete + 7 cm sprayed polyurethane insulation + 10 cm hollow block internal layer. • Roof with 5 cm polyurethane foam insulation and sloped screed. • Floor slabs insulated with rigid polystyrene boards. • High-performance double-glazed aluminum windows (Uw ≤ 1.3 W/m²K). • Airtight façade connections at joints and frame interfaces. • U-values of: Wall 0.34 W/m²K, Roof 0.25 W/m²K, Glazing 1.3 W/m²K	Achieved	
2	Net Energy Requirement for Cooling	kWh/ (m². year)	-40%	• Same thermal envelope as Target 1. • Roof surface with high Solar Reflectance Index (SRI ≥ 85). • External shading devices over windows (orientation-based design). • Limited use of high-efficiency inverter split units (COP ≥ 3.5). • LED lighting, efficient pumps, and smart electrical boards reduce internal loads.	Achieved	
3	Envelope Airtightness	vol/h	0.5 air changes at 50 Pascals	• Airtight window frames with EPDM seals and polyurethane foam backing. • Expansion joints sealed with insulation and aluminum cover plates. • Airtight screed and wall-roof connection details.	Partially Achieved	• Airtightness testing (blower door) will be performed; target value = 0.5 ACH at 50 Pa.

4	Overheating Risk	%	<20% of overheating during operational times	• Passive cooling measures include optimized orientation, thermal mass, cross-ventilation, and ex-ternal shading devices (overhangs, fins, recessed windows). • Shading elements were designed to follow the recommended minimum shading percentages per façade from the Green Building Guidelines. • Dynamic simulation (uploaded separately) confirms that overheating is sufficiently reduced in occupied spaces. • No mechanical cooling is used in baseline operation.	Achieved	
5	Primary Energy Consumption	kWh/ (m². year)	-40%	• LED lighting throughout the building. • High-COP (≥ 3.5) inverter AC units. • Smart electrical distribution with circuit optimization and energy metering.	Achieved	
6	On-site Renewable Energy Coverage	% of total energy needs	100	• Grid-connected solar PV system (approx. 22.86 kWp) sized to offset all electricity consumption. • Net metering system is integrated for surplus export and nighttime import. • PV monitoring screen installed in circulation space for students and visitors.	Achieved	
7	Non-Energy CO2 Reduction	%	-20% compared to baseline	• Reduction of concrete quantities through optimized structural layouts and slab systems, • Use of locally sourced natural stone and masonry to reduce transport-related emissions, • Preference for hollow concrete blocks and lighter wall systems where structurally feasible, • Reuse of excavated site stone in gabion walls and landscape structures, • Avoidance of high-embodied-carbon façade systems.	Achieved	

8	Drinking Water Standards Compliance	Qualitative	Meets Palestinian standards	• Centralized filtration in pump room. • Triple-stage treatment: sediment filter, activated carbon, and UV sterilizer.	Achieved	
9	Drinking Water Wastewater Reuse	%	-40%	• Dual-flush WCs (3/6 liters). • Water-saving faucets (4 L/min). • Condensate recovery from HVAC units. • Rainwater conveyed via downpipes to collection network. • Irrigation network ready for non-potable supply.	Achieved	
10	Virgin Material Reduction	%	≥ 20 compared to baseline	• Reuse of excavated stone materials from the site in gabion walls and landscape retaining structures (minimum 50% site stone content). • Reuse of excavated soil for backfilling when geotechnically acceptable. • Use of locally sourced natural stone façade cladding instead of imported materials. • Preference for hollow concrete blocks (lower material mass) for non-structural partitions.	Partially achieved	• To be confirmed by claculations
11	Local Ecosystem Impact	Qualitative	Positive or neutral	• Topsoil (vegetal layer) removed, stored, and reused in landscaping. • New planting (olive, citrus, evergreen) across the site (shown on site plan). • 50 cm agricultural soil layer in green areas. • The green façade where applicable • Perimeter rainwater drainage system to avoid erosion and foundation damage.	Achieved	
12	Local Material Use	%	≥30	• Structural concrete and aggregates sourced from local Palestinian suppliers. • Stone façade and boundary walls are made from local stone.	Achieved	

				• Masonry blocks, plasters, tiles are all regionally produced.		
13	Controlled Waste Disposal	% of waste	100	• Reusing on-site stones for gabions for reduced transport waste. • Topsoil preservation for reduced landfill disposal. • Non-reusable waste transported to municipal approved landfill.	Partially Achieved	• To be closely monitored
14	EDGE Advanced Certification	Qualitative	EDGE Advanced Certification Achieved	• High-performance building envelope (optimized walls, roof insulation, and glazing), • Passive design measures reducing heating and cooling demand, • High-efficiency lighting and electrical systems, • Efficient cooling systems with high COP values, • On-site renewable energy generation via a photovoltaic (PV) system.	Partially achieved	• To be obtained after the construction and operation
15	Palestinian Green Building Gold Standard	Qualitative	Certification achieved	• As illustrated in Targets to Achieve Gold Certificate document	Partially achieved	• To be obtained after the construction and operation
16	Classroom CO_2 Levels	ppm	≤1000 PPM	• Natural cross-ventilation through operable windows on opposing walls. • Exhaust fans are installed in toilets, science labs, and kitchens. • No usage of VOC-heavy adhesives or paints.	Achieved	• Meters will be installed to monitor the CO_2 values
17	VOC Emission Minimization	Qualitative	Minimized VOC levels	• Interior wall and ceiling finishes specified as water-based acrylic low-VOC paints (≤50 g/L VOC content). • Sealants and adhesives for windows, tiles, doors use low-VOC polyurethane/silicone products.	Achieved	

				• No solvent-based varnishes, lacquers or oil-based coatings are specified. • Furniture is not included in the BoQ package, but contractor is instructed to use low-VOC finishes for joinery and furniture.		
18	Thermal comfort	PMV	-0.5 to +0.5	• Optimized building envelopes with thermal mass and insulation. • Shading elements designed for each façade orientation (EPS shading + stone lintels). • Cross ventilation in classrooms (opposite operable windows). • Ceiling height (3.2–3.5 m) allows warm air stratification. • Use of limited, high-efficiency AC only during extreme temperature peaks. • Using tilt-turn windows.	Achieved	
19	Cost of innovations	% extra cost	< 15%	• Optimized building envelops with thermal mass and insulation. • Shading elements designed for each façade orientation (EPS shading + stone lintels). • Cross ventilation in classrooms (opposite operable windows). • Ceiling height (3.2–3.5 m) allows warm air stratification. • Use of limited, high-efficiency AC only during extreme temperature peaks.	Achieved	