

ARTHALAND
BUILDING SUSTAINABLE LEGACIES

ASEAN Green Bonds Impact Report

Financial Year 2023

Executive Summary

The 2023 Environmental Impact Report is prepared for two (2) Eligible Green Projects¹, namely Arthaland Century Pacific Tower (ACPT) and Cebu Exchange (CebEx), both of which have received disbursements from Green Funding. A project becomes an eligible Green Project when it meets, at a minimum, the stringent criteria outlined by esteemed green building standards such as LEED Gold, BERDE 4-Star, EDGE certification, or other comparable benchmarks.

The environmental impact assessment in this report quantifies savings realized through the Green Projects' operational efficiencies compared to the consumption levels anticipated if constructed conventionally or in adherence to a reference standard. It is imperative to recognize that CebEx operates at partial occupancy levels. Consequently, the performance metrics and savings attributed to CebEx do not accurately reflect its anticipated operational outcomes under full occupancy. This nuance underscores the necessity for contextual interpretation when evaluating the reported data.

Table 1 below shows the performance impact per impact indicator per Eligible Green Project.

Table 1: Summary of Environmental Impact Report					
Green Project	Gross Floor Area (m ²)	Status of Green Building Certification/s	Impact Indicators		
			Total Water Savings (m3)	Total Energy Savings (kWh)	Total GHG Emissions Avoided (kg CO2e)
Arthaland Century Pacific Tower	34,295	LEED Platinum, BERDE 5-Star, EDGE Zero Carbon, WELL HSR	54,570	10,441,083	12,686,903
Cebu Exchange	108,564	LEED Gold, BERDE 5-Star, EDGE Advanced, WELL Precertified	2,222	5,654,474	4,027,116
Total	142,859		56,792	16,095,557	16,714,019

¹ No projected impact yet for Project Olive (previously disclosed as Manila Long Term Project in the Final Prospectus in the ASEAN Green Bonds offer dated 20 January 2020).

Key Highlights

The reporting development portfolio saves about 0.4 m³/m² potable water consumption, 113 kWh/m² energy consumption, and 117 kg CO₂e/m² GHG emission. The savings rate is calculated based on the total portfolio savings over the gross floor area.

Table 2: Key Impact Highlights			
	Water Consumption Savings (m ³ /m ²)	Energy Consumption Savings (kWh)	Avoided GHG Emissions (kg CO ₂ e)
Average per square meter in 2023	0.4	113	117

The 16,714,019 kilograms of avoided GHG emissions are equivalent² to 69 million km driven by an average gasoline-powered passenger vehicle or 276,000 tree seedlings grown for ten years.

Introduction

Arthaland Corporation ("Arthaland") is a world-class boutique real estate developer of enduring and sustainable properties. The organization built its mark in the Philippine real estate market by committing to sustainability, innovation, and developing and managing properties that adhere to global standards in green and healthy buildings.

Incorporated on August 10, 1994, under EIB Realty Developers, Inc., Arthaland became a publicly listed company on the Philippine Stock Exchange on March 19, 1996, under the stock symbol "ALCO".

Sustainable Certifications

The organization accelerates climate action by designing and managing certified sustainable projects. Its commitment to sustainability manifests in its development portfolio, which is composed entirely of certified sustainable projects from globally recognized certification programs. The sustainable certifications are from the Leadership for Energy and Environmental Design™ (LEED™) rating system of the U.S. Green Building Council (USGBC), the Building for Ecologically Responsive Design Excellence (BERDE) rating system of the Philippine Green Building Council (PHILGBC), the Excellence for Design and Greater Efficiencies (EDGE) rating system of the International Finance Corporation (IFC), and the WELL Building Standard™ (WELL™) rating system of the International WELL Building Institute™ (IWBI™).

To achieve these certifications, the projects must adhere to mandatory requirements and earn a minimum building performance per respective standards. The requirements address sustainability issues such as carbon, energy, water, materials, transportation, and indoor conditions. Depending on the project's performance level, these rating systems push sustainability boundaries by awarding projects

² The equivalence is provided to translate an abstract measurement into concrete terms that is easily understood by many. The equivalence is calculated by the Greenhouse Gas Equivalence Calculator of the US Environmental Protection Agency.

in different ratings (highest to lowest) - LEED with Platinum, Gold, Silver, and Certified; BERDE from 5 to 1 Star; EDGE from Zero Carbon, Advanced, and Certified; and WELL from Platinum, Gold, Silver, and Bronze.

Verification Process

Every project undergoes a rigorous evaluation process conducted by impartial third-party certification bodies authorized by the relevant certification systems. These certification bodies boast skilled technical assessors equipped with the expertise to meticulously validate project claims. This verification process encompasses comprehensive documentary reviews, meticulous visual inspections, and rigorous on-site performance testing, among other thorough evaluation methodologies. Such a procedure ensures the integrity and accuracy of the certified project's claims, instilling confidence in stakeholders and facilitating transparency within the certification process.

Green Bonds

The ASEAN Green Bonds are bonds that comply with ASEAN Green Bonds Standards; the proceeds will be exclusively applied to finance or refinance, in part or in full, new and/or existing *Green Projects*. Eligible Green Projects qualify for the use of proceeds for as long as these meet minimum eligibility requirements, which include the following standards for the development of new buildings, acquisition, and renovation of completed buildings (commercial and residential) compliant with any of the following standards: LEED Gold, BERDE 4-Star, EDGE certified, BREEAM Excellent, GRESB, or equivalent.

Projects are viable for certification review and award only when the project has significantly completed its construction. However, projects may acquire LEED Precertification, BERDE Stage 1 certification, and EDGE Preliminary certification before construction completion. These precertifications demonstrate that the project's commitments will likely be certified when constructed. The proceeds from the ASEAN Green Bonds are dispersed to projects that have achieved precertification at the level committed.

Creating positive impact

Certified sustainable projects create a positive environmental impact through resource efficiency in water and energy and reduced greenhouse gas (GHG) emissions produced during operations. Arthaland applies an "efficiency-first" principle to gain the optimum environmental benefit. Efficiency is only recognized according to the following chronological steps:

- 1) **Efficient by Design.** Reduce building overall energy demand by applying passive design strategies and specifying active technologies as early as the project's design stage.
- 2) **Alternative Source.** Alternative sources, such as renewable energy and graywater, can be used to supply the building's operation.

Strategies and features incorporated in Arthaland projects are high thermal performance façade, energy-efficient lighting and mechanical systems, water-efficient plumbing systems, installation of native and local plants that demand less compared to imported species, and smart systems that increase the operational efficiency of the project. At the same time, alternative supply comes from renewable energy and graywater recycling, either on-site or off-site. The increase in the project's water and energy efficiency innately reduces the project consumption demand and GHG emissions and conserves natural resources, creating a healthier living environment for people.

Methodology

This Report expresses the Green Projects' environmental impact by quantifying savings in potable water and energy consumption and mitigating greenhouse gas (GHG) emissions. These impact indicators are assessed on a comprehensive project-wide scale and have not been proportionally adjusted for the contribution of the green bond's allocation.

Aligned with the established framework of green building rating systems, these impact indicators are evaluated based on the variance between the project's performance and the prescribed standard baseline.

$$\text{Impact Savings} = \text{Baseline performance ("Baseline")} - \text{Building performance ("Actual")}$$

The *Baseline Performance*, denoted as "Baseline," predicts the building's resource consumption within the Green Project if constructed according to the reference building standard. The impact indicators below provide more information regarding the reference standard. The *Building Performance*, termed "Actual," refers to the operational performance of the Green Project as discerned from its utility bills during the reporting year.

Assumptions. The Baseline represents a calculated performance predicated upon a range of underlying assumptions. While technical experts aim to make sound and reasonable assumptions based on the information available at the time, the actual performance may diverge from the projections due to various factors. Behavioral changes or shifts in baseline conditions can cause discrepancies between projected and realized outcomes.

In the context of Green Projects, the verified baseline from the certification is established to forecast performance upon full operationalization. However, as the Green Projects commence operations, the baseline is proportionally adjusted to align with CebEx's 2023 occupancy rate and ACPT's average operating hours. This calibration is essential to mitigate reliance on assumptive data and facilitate a more precise reflection of performance expectations.

Comparability. It is imperative to exercise caution when comparing projects and assessing their impact, as various factors exhibit considerable variability. These factors encompass but are not limited to the hours of operations, the number of building occupants, individual occupant usage patterns, and the references for establishing baselines.

Furthermore, it is crucial to acknowledge that the current performance metrics observed with CebEx's partial operations do not accurately represent its full operational capacity. As such, the performance indicators in this report do not indicate the normative operational standards. These metrics are anticipated to undergo notable divergence in the forthcoming years until CebEx achieves a substantial occupancy rate commensurate with its intended functionality.

Water Consumption

The total reduced water consumption is the difference between the Baseline and the Actual water consumption of the Green Project, extracted from their corresponding water bills.

The Baseline computation adheres to the Basic Indoor Water Use Reduction Calculation³ and the WaterSense Water Budget Tool methodologies, guided by the design standards delineated in the Uniform Plumbing Code 2006. While there is a more recent version of the Code, this version ensures consistency and alignment with the prescribed standards during the certification process.

Energy Consumption

The total reduced energy consumption is the difference between the Baseline and the building's Actual energy consumption, lifted from their respective energy bills.

The Baseline calculation uses the Building Performance Rating Method delineated in Appendix G of ASHRAE Standard 90.1-2007, employing a dynamic simulation model of rigorous precision. Notably, while subsequent versions of ASHRAE 90.1 exist, utilizing this specific edition is paramount to adhere to the reference standard outlined by the prevailing green building rating system during the certification year of the Green Projects.

ASHRAE 90.1 is a globally recognized benchmark for energy-efficient building practices. Its Appendix G serves as a definitive guide delineating the requisite simulation software specifications and modeling protocols crucial for accurately projecting the calculated building energy performance.

GHG Emissions

The total avoided greenhouse gas (GHG) emissions, expressed in carbon dioxide equivalence, hinges on the GHG Protocol's methodology. This approach integrates the projects' energy conservation efforts and the aggregate utilization of renewable energy sources.

The data utilized for emissions calculations are sourced from the Philippines' Department of Energy's comprehensive records, which encompass the published national grid emissions factor from 2015 to 2017 and the GHG Protocol's emissions factor categorized by fuel type.

It's crucial to note that no additional reduction in emissions is factored into the equation for projects under construction, irrespective of the developer's commitment to sourcing 100% renewable energy. Renewable energy's impact is only warranted once the project has successfully secured a contractual agreement with its designated renewable energy provider.

³ Methodology used in the LEED rating system to calculate a building's water consumption.

Green Projects

Arthaland Century Pacific Tower

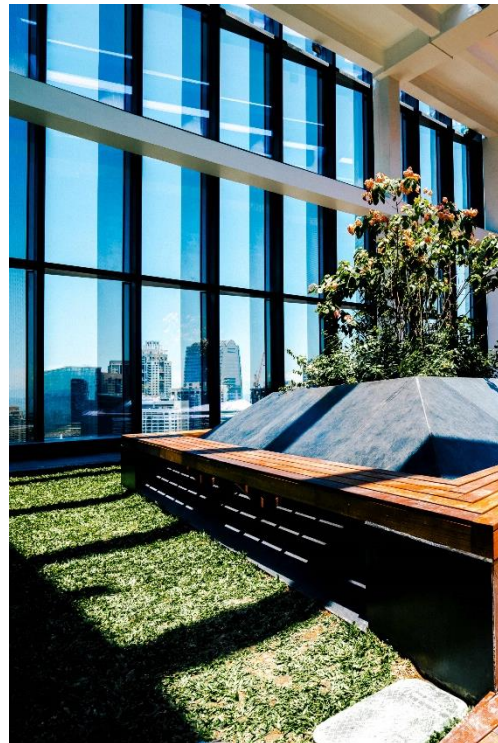
Designed by Skidmore Owings & Merrill LLP, the same group behind One World Trade Center in New York City and Burj Khalifa in Dubai, ACPT is one of the first premium-grade offices in BGC. It is located along 5th Avenue within BGC's E-Square, opposite The Shangri-la at the Fort, and near the Philippine Stock Exchange.

In October 2019, the World Bank Group, through its subsidiary, the IFC, recognized ACPT as the world's first net zero carbon certified project under its EDGE green building rating system. This recognition is in addition to the LEED™ Platinum rating and the BERDE 5-star certifications it had achieved previously. In 2020 and 2021, ACPT was awarded the WELL™ Health-Safety Rating seal, which certifies the building's safe operations even during global pandemics.

Development Type	Premium Grade Office
Status	Fully leased in 2019 Operational
Location	5TH Avenue corner 30TH Street, Bonifacio Global City, Taguig
Gross Floor Area	34,295 sq.m.
Number of Stories	30
Certifications	LEED Platinum, BERDE 5-Stars, EDGE Zero Carbon, WELL HSR



ACPT Exterior Façade



ACPT Crown Terrace

Sustainability Features



ENERGY EFFICIENT BUILDING ENVELOPE



HOME TO INDIGENOUS PLANTS



ENERGY-EFFICIENT AIR-CONDITIONING WITH
ENERGY RECOVERY VENTILATION SYSTEMS



BUILDING MATERIALS WITH
RECYCLED CONTENT



DEMAND-CONTROLLED VENTILATION
WITH HIGHLY EFFICIENT FILTRATION SYSTEM



FOREST STEWARDSHIP COUNCIL (FSC)
CERTIFIED WOOD MATERIALS



AUTOMATIC LIGHTING WITH DAYLIGHT
AND OCCUPANCY SENSORS



LOW-EMITTING AND NON-TOXIC
BUILDING MATERIALS



LOW-FLOW WATER-EFFICIENT AND CONTACTLESS
PLUMBING FIXTURES



MATERIALS RECOVERY FACILITY (MRF)



BICYCLE RACKS AND SHOWER FACILITIES



RAINWATER HARVESTING AND CONDENSATE
WATER RECOVERY SYSTEMS



LOW-EMITTING AND FUEL-EFFICIENT
VEHICLE (LEFEV) PARKING



LANDSCAPED GARDENS AT THE EXECUTIVE DECK,
AND CROWN TERRACE



100% SUPPLIED BY OFF-SITE RENEWABLE
ENERGY SOURCE

Cebu Exchange

Cebu Exchange, Arthaland's first venture in the southern Philippines, is a multi-awarded premium commercial office space and business ecosystem. It is situated at the gateway of Cebu I.T. Park in Cebu City, one of the country's most preferred investment regions. It is quickly emerging as a top global I.T. and Business Process Outsourcing (BPO) destination.

It is a multi-certified sustainable flagship development, earning LEED™ Gold, BERDE 5-Star, EDGE Advanced, and WELL Precertification. The building is poised to be net zero energy by 2030.

Development Type	Grade A Office Condominium
Status	Under Construction
Location	Salinas Drive, Lahug, Cebu City
Gross Floor Area	108,564 sq.m.
Number of Stories	39
Certifications	LEED Gold, BERDE 5-Star, EDGE Advanced, WELL Precertified



Cebu Exchange Exterior Façade



Cebu Exchange Terrace Garden

Sustainability Features



ENERGY EFFICIENT BUILDING ENVELOPE



HOME TO INDIGENOUS PLANTS



ENERGY EFFICIENT AIR-CONDITIONING SYSTEMS



BUILDING MATERIALS RECYCLED CONTENT



EFFICIENT FILTRATION FOR THE VENTILATION SYSTEM



LOW-EMITTING AND NON-TOXIC BUILDING MATERIALS



ENERGY EFFICIENT LIGHTING



MATERIALS RECOVERY FACILITY (MRF)



LOW-FLOW WATER-EFFICIENT AND CONTACTLESS PLUMBING FIXTURES



BICYCLE RACKS AND SHOWER FACILITIES



GREYWATER RECYCLING SYSTEM



LOW-EMITTING AND FUEL-EFFICIENT VEHICLE (LEFEV) PARKING



LANDSCAPED DECK AT THE TERRACE GARDEN, SKY PARK, AND PENTHOUSE DECK

Performance Data

The tables below show the baseline and the 2023 building performances in water, energy, and GHG emissions reductions of the respective projects.

Table 3: Water Consumption (m ³) Performance Data			
Green Project	2023 Baseline	2023 Actual Performance	2023 Water Savings
ACPT	63,317	8,747	54,570
Cebu Exchange	19,921	17,699	2,222
Total	83,238	26,446	56,792

Table 4: Energy Consumption (kWh) Performance Data			
Green Project	2023 Baseline	2023 Actual Performance	2023 Energy Savings
ACPT	17,813,680	7,372,597	10,441,083
Cebu Exchange	11,875,536	6,221,062	5,654,474
Total	29,689,216	13,593,659	16,095,557

Table 5: GHG Emissions (kg CO ₂ e) Performance Data			
Green Project	2023 Baseline	2023 Actual Performance	2023 GHG Emissions Avoided
ACPT	12,686,905	2	12,686,903
Cebu Exchange	8,457,765	4,430,649	4,027,116
Total	21,144,670	4,430,651	16,714,019