



ARTHALAND
BUILDING SUSTAINABLE LEGACIES

ASEAN Green Bonds Impact Report

Financial Year 2022

Executive Summary

The Environmental Impact Report for 2022 is prepared for two (2) Eligible Green Projects¹, Arthaland Century Pacific Tower (ACPT) and Cebu Exchange (CebEx), where the Green Funding has been disbursed. In brief, a project is considered an Eligible Green Project when, at minimum, compliant with LEED Gold, BERDE 4-Star, EDGE certified, or other equivalent green building standards.

The data of ACPT reflects the actual building consumptions, while the data of CebEx is the design building since CebEx only operated partially for the reporting year. It is good to note that ACPT has not reached the occupant density pre-pandemic levels, affecting the overall performance of the building.

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

Table 1: Summary of Environmental Impact Report					
Development Portfolio	Gross Floor Area (m ²)	Status of Green Building Certification/s	Impact Indicators		
			Total Water Savings (m ³)	Total Energy Savings (kWh)	Total GHG Emissions Avoided (kg CO ₂ e)
Arthaland Century Pacific Tower	34,295	LEED Platinum, BERDE 5-Star, EDGE Zero Carbon, WELL HSR	35,735	5,873,764	9,754,336
Cebu Exchange	108,564	LEED Pre-certified Gold, BERDE Design 5-Star, WELL Pre-certified, on track for EDGE	49,406	22,172,571	17,294,605
Total	142,859		85,141	28,046,335	27,048,942

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 0.6 m³/m² potable water consumption, 196 kWh/m² energy consumption, and 189 kg CO₂e/m² GHG emission. The rate of savings 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 2022	0.6	196	189

The 27,048,942 kilograms of avoided GHG emissions are equivalent² to 108 million km driven by an average gasoline-powered passenger vehicle or 447,257 tree seedling grown for 10 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 and national 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, 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

The project undergoes through third-party verification and review process by the respective authorized bodies of the certification systems. These certification bodies have technical assessors who conduct the review and verification of the project claims through but are not limited to, documentary review, visual inspection, and performance testing.

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 or compliant, BREEAM Excellent, GRESB, or equivalent.

The 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 are likely to 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.** Use alternative sources, such as renewable energy and graywater, for the natural resources the building needs to operate.

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 which 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

Arthaland reports its development portfolio's environmental impact through savings in potable water and energy consumption and avoided GHG emissions. These critical impact indicators are measured on a per-whole project basis and have not been prorated for the portion of the green bond's contribution.

Following the framework of the green building rating systems, the impact indicators are measured by the difference in the building performance to the prescribed standard baseline.

$$\text{Impact Savings} = \text{Baseline performance} - \text{Building performance}$$

A baseline is the projected building performance of the project if built according to the reference building standard. More information about the reference standard is in the discussion of the impact indicators below.

The building performance is the actual operations of the project in the reporting year, as reflected in the utility bills. While the performance of projects under construction is calculated similarly to the baseline but modeled according to the project design. This performance is referred to as the "design performance."

Assumptions. Calculated performances are based on several 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. Behavioral changes or shifts in baseline conditions can generally cause deviations from forecasts.

To reduce the assumptive data in the baseline performance, the baseline reflected for this year is adjusted to reflect the actual average operating hours of the building. ACPT's verified results were under the assumption that the building will operate for 60 hours per week, but the actual average operating hours for 2022 is 92 hours per week.

Comparability. Caution should be taken in comparing projects and impact results because factors vary significantly, such as hours of operations, number of building occupants, individual occupant usage, and baseline references.

Although Cebu Exchange began to partially operate in 2022, this report reflects the design performance since the actual performance is not representative of normal operations yet.

Water Consumption

The total reduced water consumption is the difference between the baseline and the buildings' actual water consumption, lifted from their water bills. Water savings from projects under construction are measured by the difference between the baseline and the design performance.

The baseline and design performances are calculated according to the Basic Indoor Water Use Reduction Calculation³ and the WaterSense Water Budget Tool methodology. The design standards of

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

the Uniform Plumbing Code 2006 guide the baseline performance. While there is a more recent version of the Code, the 2006 version follows the reference standard of the green building rating system during the certification year of the projects.

The design performance is the total of the water performance results based on the project certification. The authorized certifying bodies of the respective rating systems verified the results during the certification verification process.

Energy Consumption

The total reduced energy consumption is the difference between the baseline and the building's actual energy consumption, lifted from their energy bills. Energy savings from projects under construction are measured by the difference between the baseline and the design performance.

The baseline and design performances are calculated according to the Building Performance Rating Method in Appendix G of ASHRAE Standard 90.1-2007 using a dynamic simulation model. While there is a more recent version of the ASHRAE 90.1, the 2007 version is used to follow the reference standard of the green building rating system during the certification year of the projects.

ASHRAE 90.1 is an international standard for energy-efficient buildings, which, in this report, is used to define the baseline design. Appendix G identifies the simulation software requirements and the modeling guidelines for projecting the calculated building energy performance.

The authorized certifying bodies of the respective rating systems verified the results during the certification verification process.

GHG Emissions

The total avoided GHG emissions, in carbon dioxide emissions equivalence, is calculated using the methodology of the GHG Protocol based on the energy savings and total renewable energy use of the projects. The data used to calculate the emissions are from the Philippines' Department of Energy's published national grid emissions factor for 2015-2017 and the GHG Protocol's emissions factor by fuel type.

No further reduction in emissions is considered for projects under construction despite the developer's intent to source 100% renewable energy. The impact of renewable energy is only accounted for when the project has contracted its renewable source.

Reporting Development Portfolio

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 the prime 5th Avenue within BGC’s E-Square, opposite The Shangri-la at the Fort, and proximate to 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-certified building 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, on track for WELL



ACPT Exterior Façade



ACPT Crown Terrace

Sustainability Features



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, Cebu City, one of the most preferred investment regions in the country. It is quickly emerging as one of the top global I.T. and Business Process Outsourcing (BPO) destinations.

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

Development Type	Grade A Office Condominium
Status	Completed in 2022
Location	Salinas Drive, Lahug, Cebu City
Gross Floor Area	108,564 sq.m.
Number of Stories	39
Certifications	LEED Gold, BERDE 5-Star, WELL Precertified, EDGE Preliminary Certified



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 2022 building performances in water, energy, and GHG emissions reductions of the respective projects.

Table 3: Water Consumption (m ³) Performance Data			
Development Portfolio	2022 Baseline	2022 Performance	2022 Water Savings
ACPT	44,467	8,732	35,735
Cebu Exchange	95,384	45,978	49,406
Total	139,851	54,710	85,141

Table 4: Energy Consumption (kWh) Performance Data			
Development Portfolio	2022 Baseline	2022 Performance	2022 Energy Savings
ACPT	12,510,371	6,636,607	5,873,764
Cebu Exchange	56,860,877	34,688,306	22,172,571
Total	69,371,248	41,324,913	28,046,335

Table 5: GHG Emissions (kg CO ₂ e) Performance Data			
Development Portfolio	2022 Baseline	2022 Performance	2022 Total GHG emissions avoided
ACPT	9,754,755	419	9,754,336
Cebu Exchange	44,351,484	27,056,879	17,294,605
Total	54,106,239	27,057,298	27,048,942