

ARTHALAND
BUILDING SUSTAINABLE LEGACIES

ASEAN Green Bonds Impact Report

Financial Year 2021

Environmental Impact Report

The Environmental Impact Report 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 reflected for ACPT is based on the actual building performance for the year 2021 while the data for CebEx is projected once the building is operational. Phase 1 of CebEx was handed over to buyer in September 2020 and Phase 2 is expected to be handed over in April 2022. It is important to note that the COVID-19 pandemic in 2021 affected the physical occupancy of ACPT, which in turn affected its performance.

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	13,857	1,627,148	1,482,903
Cebu Exchange	108,564	LEED Pre-certified Gold, BERDE Design 5-Star, WELL Pre-certified, on track for EDGE	49,406	60,695,694	20,803,482
Total	142,859		63,263	62,322,842	22,286,385

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 0.44 m³/m² potable water consumption, 436 kWh/m² energy consumption, and 156 kg CO₂e/m² GHG emission.

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 2021	0.44	436	156

The 22.3 gigagram of avoided GHG emissions is equivalent² to:



Introduction

Arthaland Corporation accelerates climate action by designing and managing certified sustainable projects, recognized by local and global rating systems. Arthaland’s firm commitment to sustainability is manifested in its development portfolio which is composed entirely of certified sustainable projects. All its projects adhere to global and national standards for green buildings through the Leadership for Energy and Environmental Design™ (LEED™) rating system of the U.S. Green Building Council (USGBC) and the Building for Ecologically Responsive Design Excellence (BERDE) rating system of the Philippine Green Building Council (PHILGBC). Since 2019, Arthaland has expanded its sustainability commitment by pursuing additional green building rating tools, specifically 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).

These green building rating systems push the boundaries on sustainability by awarding projects in different ratings (highest to lowest) - LEED with Platinum, Gold, Silver, and Certified; BERDE from 5 to 1 Star; and EDGE from Zero Carbon, Advanced, and Certified. Under Arthaland’s Green Finance Framework, the use of proceeds from the ASEAN Green Bonds is limited to projects that are compliant, at minimum, LEED Gold, BERDE 4-Star, or EDGE certified.

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.

Green building certifications are only eligible for review and award when the project has significantly completed its construction. Prior to certification, projects may acquire a pre-certification, others refer to as "Design stage, Stage 1, or Preliminary Stage, to demonstrate the commitments of the project which is likely to achieve certification when constructed. The proceeds from the ASEAN Green Bonds are dispersed to projects that have achieved pre-certification at the level committed.

Creating positive impact

Certified sustainable projects create positive environmental impact through their resource efficiency in water and energy and reduction in greenhouse gas (GHG) emissions during their operations. Arthaland designs its projects to reduce their overall water and energy demand through passive and active design strategies, then sources alternative supply to further aggregate resource demand.

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 imported species, smart systems that increases the operational efficiency of the project, while alternative supply come from renewable energy and graywater recycling sourced either on-site or off-site. The increase in the project's water and energy efficiency innately reduces the project consumption demand, GHG emissions, and conserves natural resources, creating a healthier living environment for people.

Methodology

Arthaland presents its reporting development portfolio's environmental impact through the total volume of potable water saved, the total energy saved and total GHG emissions avoided. The key impact indicators are measured in 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 of the building performance to the prescribed standard baseline. A baseline is the projected building performance of the project if built according to the reference building standard. More information about the reference standard in the discussion of the impact indicators below.

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

The building performance is the actual operations of the project in the reporting year, as reflected in the building energy and water bills from the utility providers. However, for the projects that are still under construction, the building performance is calculated using the same method to estimate the baseline performance but based on the actual project design.

Assumptions. Calculated performances are based on a number of 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. In general, the behavioral changes or shifts in baseline conditions can cause deviations from projections.

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 the baseline references.

Water Consumption

The total reduced water consumption is the difference of the baseline water performance and the actual water consumption (water bills) of the buildings. For projects still under construction, it is measured by the difference of the baseline water performance and the calculated building design water performance.

The calculated building water performance is measured according to the Basic Indoor Water Use Reduction Calculation³ and the WaterSense Water Budget Tool. The baseline water performance is guided by the design standards set by the Uniform Plumbing Code 2006. While there is a more recent version of the Code, the 2006 version is used to follow the reference standard of the green building rating system during the certification year of the projects.

The calculated building water performances are the total of the verified water performance results based on the respective project certification. The results are verified by the certifying bodies of the respective rating systems.

Specific to ACPT, the baseline is adjusted to reflect the actual average operation hours of the building. ACPT's verified results was under the assumption that the building will operate for 12 hours per day, 5 days a week, but the actual average operating hours for 2021 is 10 hours per day, 5 days a week.

Energy Consumption

The total reduced energy consumption is the difference of the baseline energy performance and the actual energy consumption (energy bills) of the buildings. For projects still under construction, it is measured by the difference of the baseline energy performance and the calculated building design energy performance.

The calculated building energy performance is measured 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 design of the baseline. The Appendix G identifies the simulation software requirements and the modeling guidelines for the projection of the calculated building energy performance.

The calculated building energy performances are verified results by the certifying bodies of the respective rating systems during their certification year.

Specific ACPT, the baseline is adjusted to reflect the actual average operation hours of the building. ACPT's verified results was under the assumption that the building will operate for 12 hours, but the actual average operating hours for 2021 is 10 hours per day, 5 days a week .

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

GHG Emissions

The total avoided GHG emissions, in carbon dioxide equivalence, is calculated using the methodology of the GHG Protocol based on the reduced energy consumption and the renewable energy use of the projects. The data used to calculate the emissions are from the Philippines’ energy mix from the latest Power Situation Report of the Philippines’ Department of Energy and the GHG Protocol’s emissions factor by fuel type.

The GHG emission from the renewable energy usage is based on the total renewable energy consumption of the projects as billed by their respective Renewable Energy Supplier. For projects still under construction, it is measured according to the intended renewable energy to be supplied in the project. The renewable energy however is only considered in the impact calculations when either the intent is verified by any of the certifying bodies or when a contract with the renewable energy supplier has been signed.

Reporting Development Portfolio

Arthaland Century Pacific Tower

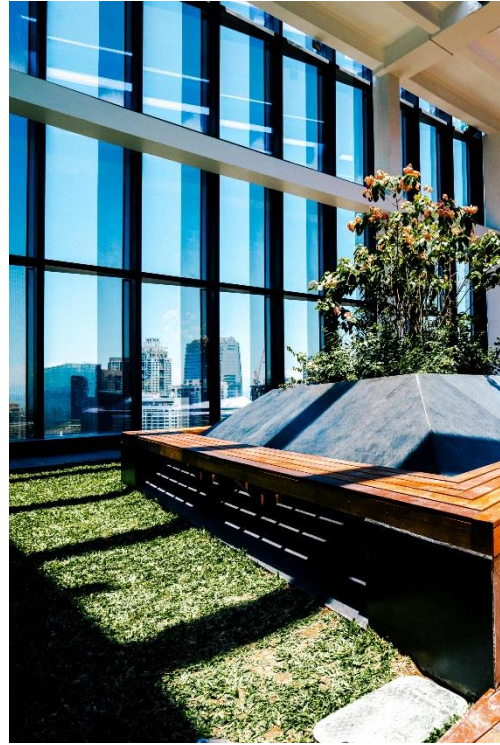
Designed by Skidmore Owings & Merrill LLP, the same group behind One World Trade Center in New York City and Burj Khalifa in Dubai, ACPT is one of the first premium grade offices in BGC. It is located along the prime 5th Avenue within BGC’s E-Square, opposite The Shangri-la at the Fort and proximate 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 program. This recognition is in addition to the LEED Platinum rating and the BERDE 5-star certification it had achieved previously. In 2020 and 2021, ACPT was awarded with the WELL Health-Safety Rating seal which certifies the building’s safe operations even during the COVID-19 pandemic.

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



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)



RAINWATER HARVESTING AND CONDENSATE WATER RECOVERY SYSTEMS



BICYCLE RACKS AND SHOWER FACILITIES



LANDSCAPED GARDENS AT THE EXECUTIVE DECK, AND CROWN TERRACE



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



100% SUPPLIED BY OFF-SITE RENEWABLE ENERGY SOURCE

Cebu Exchange

Cebu Exchange is currently being built on an 8,440 sqm property located along Salinas Drive across the Cebu IT Park in Cebu City. It will be a 38-storey office building with retail establishments at the ground level and lower floors, one of the largest and tallest office developments in Cebu with total NSA of almost 90,000 sqm. ALCO’s design for Cebu Exchange gives it the flexibility to serve the wide office space market in Cebu: (i) The Cebu Exchange will have a lower office zone of three levels which will have floorplates of around 5,900 sqm, which is targeted to cater to larger BPOs that may benefit from consolidating their operations; (ii) The project will have a middle zone of nineteen levels with floorplates of approximately 3,400 sqm, which will cater to conventional offices and BPOs; and (iii) a high zone of eight levels with floorplates of approximately 2,200 sqm, which is intended to cater to start-up businesses.

Cebu Exchange has achieved LEED Gold pre-certification, BERDE Design 5-Star and is also WELL pre-certified. It is also on-track to achieve EDGE Zero Carbon certification under the IFC’s EDGE program.

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 Pre-certified Gold, BERDE Design 5-Star, WELL Pre-certified, on track for EDGE



Cebu Exchange Exterior Façade
(Artist’s Perspective)



Cebu Exchange Retail Façade
(Artist’s Perspective)

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 2021 building performances in water, energy and GHG emissions reductions of the respective projects.

Table 3: Water Consumption (m ³) Performance Data			
Development Portfolio	2021 Baseline	2021 Performance	2021 Water Savings
ACPT	24,167	10,310	13,857
Cebu Exchange*	95,384	45,978	49,406
Total	119,551	56,288	63,263

*Ongoing construction

Table 4: Energy Consumption (kWh) Performance Data			
Development Portfolio	2021 Baseline	2021 Performance	2021 Energy Savings
ACPT	6,799,115	5,171,967	1,627,148
Cebu Exchange*	95,384,000	34,688,306	60,695,694
Total	102,183,115	39,860,273	62,322,842

*Ongoing construction

Table 5: GHG Emissions (kg CO ₂ e) Performance Data			
Development Portfolio	2021 Baseline	2021 Performance	2021 Total GHG emissions avoided
ACPT	1,485,596	2,692	1,482,903
Cebu Exchange*	20,803,482	-	20,803,482
Total	22,289,078	2,692	22,286,385

*Ongoing construction