

# Impact Report for Bonds

## OCBC Sustainability Bond Framework



### Impact Summary

**Evaluation Date** August 7, 2024

**Issuer Location** Singapore

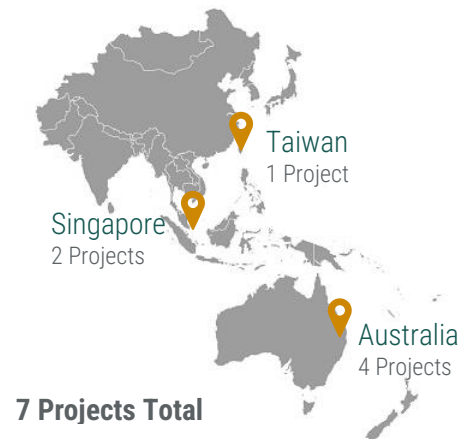
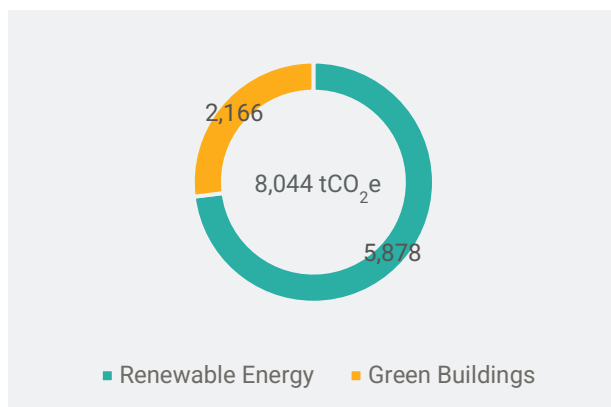
Sustainalytics has calculated the estimated impact achieved from the projects financed by the green bonds issued by OCBC between August 2021 and May 2023. The green bonds outstanding as of 31 December 2023 amounted to AUD 1.5 billion. OCBC has allocated AUD 1.6 billion to projects in Australia, Singapore and Taiwan in the Renewable Energy and Green Buildings categories. For a representative year during the bond's term to maturity, Sustainalytics has calculated 8,044 tonnes of carbon dioxide equivalents in avoided GHG emissions.



**Emissions avoided equivalent to:**

- A\$ 1.6B**  
Allocated to green projects
- 1.7K**  
Cars driven for one year
- 8,044**  
Annual GHG emissions avoided (tCO<sub>2</sub>e)
- 531K**  
Trees, yearly sequestration
- 7**  
Projects
- 18.6K**  
Barrels of oil equivalent

### Avoided GHG emissions by Use of Proceeds Category and Number of Projects by Geography



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## Introduction

OCBC is the longest established Singapore bank, formed in 1932 from the merger of three local banks, the oldest of which was founded in 1912. It is the second largest financial services group in Southeast Asia by assets, with close to 420 branches and representative offices in 19 countries and regions. In 2019, Sustainalytics provided a Second-Party Opinion on the Sustainability Bond Framework proposed by OCBC, evaluating it as credible, impactful and aligned with the Green Bond Principles 2018.<sup>1</sup> In 2023, Sustainalytics provided a Second-Party Opinion on OCBC's updated Framework evaluating it as credible, impactful and aligned with the Green Bond Principles 2021,<sup>2</sup> Social Bond Principles 2021<sup>3</sup> and Sustainability Bond Guidelines 2021.<sup>4</sup>

OCBC engaged Sustainalytics to quantify the environmental benefits of the projects financed with the proceeds from OCBC's bonds issued under the OCBC Sustainability Bond Framework. This report covers proceeds raised from the AUD 1.5 billion green bonds issued between August 2021 and May 2023.<sup>5</sup> Using established methodologies, Sustainalytics has estimated avoided emissions from OCBC's Renewable Energy and Green Buildings projects. This report presents the details of our findings, including a description of the methodology used to calculate the impacts.

## Scope of Work and Limitations

OCBC has engaged Sustainalytics to calculate the environmental impacts of the projects financed through the green bonds issued. For this work, Sustainalytics relied on the data provided by OCBC on the amounts allocated and the available technical data on the financed projects. Where necessary, Sustainalytics has supplemented technical data provided by OCBC with data from publicly available databases.

Sustainalytics' impact reporting is aligned with ICMA's Harmonised Framework for Impact Reporting as of June 2024.<sup>6</sup> The methodology used and the assumptions made for the impact calculation are outlined in the methodology section below.

As part of this engagement, Sustainalytics exchanged information with various members of OCBC's team to understand the sustainability impact of its projects. Through these exchanges, OCBC's representatives have confirmed that:

- (1) They understand it is the sole responsibility of OCBC to ensure that the information provided by them is complete, accurate and up to date;
- (2) They have provided Sustainalytics with all materially relevant information;
- (3) Any provided material information has been duly disclosed in a timely manner.

Sustainalytics also reviewed relevant public documents and non-public information.

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<sup>1</sup> The Green Bond Principles are administered by the International Capital Market Association and are available at <https://www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks/>

<sup>2</sup> Ibid.

<sup>3</sup> The Social Bond Principles are administered by the International Capital Market Association and are available at <https://www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks/social-bond-principles-sbp/>

<sup>4</sup> The Sustainability Bond Guidelines are administered by the International Capital Market Association and are available at <https://www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks/sustainability-bond-guidelines-sbg/>

<sup>5</sup> While the total issuance of the green bonds raised AUD 1.5 billion, the total amount allocated is AUD 1.6 billion so the financed assets match the total proceeds from the bonds.

<sup>6</sup> ICMA, Handbook - Harmonised Framework for Impact Reporting (2024), at: <https://www.icmagroup.org/assets/documents/Sustainable-finance/2024-updates/Handbook-Harmonised-Framework-for-Impact-Reporting-June-2024.pdf>

## Impact Findings

For reporting, Sustainalytics follows the ICMA Harmonised Framework for Impact Reporting<sup>7</sup>, which synthesizes market expectations and outlines recommendations for impact reporting to create a standardized reporting structure and to enhance the understanding of the impact to all stakeholders including investors.

Table 1 below provides a summary of the impacts at the portfolio level which Sustainalytics calculated from the allocation of proceeds from OCBC's green bonds. Tables 2-3 show the impact calculated for the projects financed by these bonds. These metrics correspond to a representative year during the bond's term to maturity (bond tenor) and are based on the share of project financing.

**Table 1: Summary of impact - portfolio level<sup>8</sup>**

Use of Proceeds	Allocated Amount	Bond Tenor	Financed Emissions Avoided	Financed Emissions Avoided/AUD million
	AUD million	Years	tCO <sub>2</sub> e/year	tCO <sub>2</sub> e/year/AUD million
Renewable Energy	142	3	5,878	41.28
Green Buildings	1,467	3	2,166	1.48
Total	1,609	3	8,044	5.00

**Table 2: Impact of renewable energy projects by technology**

Geography	Technology	Allocated Amount	Financed Generation	Financed Capacity	Financed Emissions Avoided	Financed Emissions Avoided/AUD million
		AUD million	MWh	MW	tCO <sub>2</sub> e/year	tCO <sub>2</sub> e/year/AUD million
Taiwan	Offshore Wind	142	11,257	19	5,878	41.28

**Table 3: Impact of green buildings projects by building type**

Geography	Building Type	Allocated Amount	Gross Building Area	Financed Energy Reduction	Financed Emissions Avoided	Financed Emissions Avoided/AUD million
		AUD million	m <sup>2</sup>	MWh	tCO <sub>2</sub> e/year	tCO <sub>2</sub> e/year/AUD million
Australia	Office	706	222,427	3,377	2,025	2.87
Singapore	Office <sup>9</sup>	760	265,961	454	141	0.19

<sup>7</sup> ICMA, Handbook - Harmonised Framework for Impact Reporting (2024), at: <https://www.icmagroup.org/assets/documents/Sustainable-finance/2024-updates/Handbook-Harmonised-Framework-for-Impact-Reporting-June-2024.pdf>

<sup>8</sup> Tables 1 – 3 summarize projects by Use of Proceeds that have been rounded to the nearest integer and may be subject to rounding errors.

<sup>9</sup> Both mixed-development buildings in Singapore were assumed as office buildings in the impact calculation, given that retail makes up less than 10% of the GBA for both buildings.

## Methodology

Sustainalytics developed its own methodologies for quantifying GHG avoidance and other metrics, including leveraging publicly available best-in-class methodologies, protocols and frameworks that are currently industry best practice. Our estimation practices and general principles rely on the GHG Protocol.<sup>10</sup> Our methodologies are based on guidance provided by the International Financial Institutions<sup>11</sup> on calculation methodology and global emissions. In addition, we rely on the Partnership for Carbon Accounting Financials' Global Accounting Standard<sup>12</sup> for guidance on estimation where data is not readily available and assumptions must be made. Finally, the UN's Clean Development Mechanism<sup>13</sup> provides guidance and information, serving as the foundation for these and other methodologies, including those implemented in this report.

## Renewable Energy

It is assumed that energy generated by the projects crowd out a mix of current and upcoming planned generation capacity, and therefore, associated emissions. The approach taken to derive the greenhouse gas emissions avoidance uses:

- a) The emissions of the renewable energy projects, which is often (but not always) zero; and
- b) The baseline emissions or emissions occurring in the absence of the project. For electricity generation, these emissions are based on the energy mix used to supply electricity to the local grid.
- c) Financed project avoided emissions are calculated by using the share of project financing of the total project emissions avoided from the above calculations.

## Data Sources and Assumptions

- For the projects included in this report, data on the energy generation (MWh) and capacity (MW) was provided by OCBC.
- The emissions for projects generating energy from wind are assumed to be 0 kgCO<sub>2</sub>e per unit of generation.
- The baseline emission factors for the countries where projects are located were sourced from IFI.<sup>14</sup> To account for emissions from upstream activities, Sustainalytics applies an additional indirect emissions factor.<sup>15</sup>

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<sup>10</sup> Greenhouse Gas Protocol, "About Us", at: <https://ghgprotocol.org/>

<sup>11</sup> International Financial Institutions, "Members of the International Financial Institutions on Greenhouse Gas Accounting", at: [https://unfccc.int/sites/default/files/resource/IFIs\\_membership\\_for\\_UNFCCC\\_%27white\\_pages%27\\_0.pdf](https://unfccc.int/sites/default/files/resource/IFIs_membership_for_UNFCCC_%27white_pages%27_0.pdf)

<sup>12</sup> Partnership for Carbon Accounting Financials, "About", at: <https://carbonaccountingfinancials.com/>

<sup>13</sup> UNFCCC, "CDM Methodology Booklet", (2022), at: <https://cdm.unfccc.int/methodologies/documentation/index.html>

<sup>14</sup> UNFCCC, "The IFI Dataset of Default Grid Factors", at: [https://unfccc.int/sites/default/files/resource/Harmonized\\_IFI\\_Default\\_Grid\\_Factors\\_2021\\_v3.2\\_0.xlsx](https://unfccc.int/sites/default/files/resource/Harmonized_IFI_Default_Grid_Factors_2021_v3.2_0.xlsx)

<sup>15</sup> UK Government, Department for Business, Energy & Industrial Strategy, "Government conversion factors for company reporting of greenhouse gas emissions", at: <https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting>

## Green Buildings

It is assumed that new buildings consume less energy than a mix of existing buildings and new construction. The avoidance of greenhouse gas emissions is calculated using:

- a) The emissions of the green building projects. To the extent available, the reporting is based on metered energy consumption. If such information is not available, estimates for the relevant projects are based on the building certificates, standards or country-level averages.
- b) The baseline emissions or emissions occurring in the absence of the projects. This figure is based on the estimated energy intensity of comparable buildings or, in the case of refurbishments, the prior emissions.
- c) Financed project avoided emissions are calculated by using the share of project financing of the total project emissions avoided from the above calculations.

## Data Sources and Assumptions

- For the projects included in this report, building data including gross building area, location and green building certificates were provided by OCBC and used as inputs for the calculations.
- Sustainalytics has performed calculations based on the most recent available green building certificates or energy performance certificates for each property.<sup>16</sup>
- In the absence of data to compute the building's energy use intensity (EUI), it is assumed that a building has an intensity equal to that of the maximum permissible EUI under the same green building certification scheme and rating.<sup>17</sup>
- Based on location and building characteristics such as type and size, the EUI of a baseline building is estimated using a combination of country averages<sup>18,19</sup> and publicly available statistical models.<sup>20</sup>
- The emissions factors for the project and baseline properties are based on the average energy mix for buildings in the relevant country.<sup>21,22</sup>
- The grid emissions factors for the countries in which the projects are located were sourced from IFI.<sup>16</sup> To account for emissions from upstream activities, Sustainalytics applies an additional, indirect emissions factor.<sup>17</sup>

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<sup>16</sup> NABERS, "Find a current rating", at: <https://www.nabers.gov.au/ratings/find-a-current-rating>

<sup>17</sup> Singapore Building and Construction Authority, "Green Mark 2021 Energy Efficiency", (2021), at: [https://www1.bca.gov.sg/docs/default-source/docs-corp-buildsg/sustainability/20211027\\_energy\\_simplified\\_ver1.pdf](https://www1.bca.gov.sg/docs/default-source/docs-corp-buildsg/sustainability/20211027_energy_simplified_ver1.pdf)

<sup>18</sup> Singapore Building and Construction Authority, "BCA Building Energy Benchmarking Report (Statistics and Figures) 2023", (2023), at: <https://www1.bca.gov.sg/docs/default-source/docs-corp-buildsg/sustainability/bca-building-energy-benchmarking-report-2023.pdf>

<sup>19</sup> Australia Department of Climate Change, Energy, the Environment and Water, "Commercial Building Baseline Study 2022 Final Report", (2022), at: <https://www.dcceew.gov.au/sites/default/files/documents/commercial-buildings-energy-consumption-baseline-study-2022.pdf>

<sup>20</sup> IFC's EDGE model is used for statistical modelling of buildings. EDGE, at: <https://app.edgebuildings.com/project/allBuildings>

<sup>21</sup> Singapore Building and Construction Authority, "BCA Building Energy Benchmarking Report (Statistics and Figures) 2021", (2021), at: [https://www1.bca.gov.sg/docs/default-source/docs-corp-buildsg/sustainability/bca-building-energy-benchmarking-report-\(bebr\)-2021.pdf?sfvrsn=1f6d0bdc\\_0](https://www1.bca.gov.sg/docs/default-source/docs-corp-buildsg/sustainability/bca-building-energy-benchmarking-report-(bebr)-2021.pdf?sfvrsn=1f6d0bdc_0)

<sup>22</sup> Australia Energy Efficiency Council, "Determining office tenancies energy and use", (2021), at:

<https://www.dcceew.gov.au/sites/default/files/documents/determining-office-tenancies-energy-end-use.pdf>

## Appendix 1: Infographic conversion table

Financed Emissions Avoided (tCO <sub>2</sub> e)	Number of Cars Driven for One Year <sup>23</sup>	Number of Trees, Annual Sequestration <sup>24</sup>	Barrels of Oil Equivalent <sup>25</sup>
8,044	1,749	530,917	18,624

<sup>23</sup> Based on the annual average mileage per car in Singapore. Government of Singapore, Land Transport Data Mall, at: <https://datamall.lta.gov.sg/content/datamall/en/static-data.html>

<sup>24</sup> Based on the average CO<sub>2</sub> uptake of 15.2 kg per mature tree, based on the US EPA estimation for carbon sequestration by trees in an average US forest. US Environmental Protection Agency, "Greenhouse Gases Equivalencies Calculator - Calculations and References", at: <https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#pineforests>

<sup>25</sup> The combustion of 1 barrel of oil emits approximately 0.43 tCO<sub>2</sub>e. US Environmental Protection Agency, "Greenhouse Gases Equivalencies Calculator - Calculations and References", at: <https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references#oil>

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