

# ttb Green and Blue Bond Framework

August 2022

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# ttb Green and Blue Bond Framework

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## Introduction

### About ttb

Founded in 1957, ttb (TMBThanachart Bank Public Company Limited or the Bank) is the sixth largest commercial bank in Thailand by asset size. We offer wide range of financial products and services for our retail and commercial customers including but not limited to deposit, loan, payment and collection, international trade, insurance, etc. Our vision is 'to be the most recommended bank of choice by our customers'. Our actions and strategies are guided by the Bank's philosophy 'Make REAL Change' where we aim to create positive impacts for wider society and environment.

### Sustainability at ttb

We integrate sustainability into our business decision and strategy to ensure that our strategic objectives would not only fulfill the short-term goals, but also contribute to the long-term sustainable growth. We are committed to conducting our business in a socially responsible and ethical manner and our efforts relating to sustainability are based on applicable laws, regulations, internal policies, and international standards and/or best practices.

Our Sustainability Framework consists of four key dimensions: Corporate Governance and Business Ethics, Business Sustainability, Environmental Sustainability and Social Sustainability. Each dimension has pre-defined sustainability key measurements which are part of the corporate KPIs to measure the progress of sustainability performance against our targets and commitments.

For more details of our sustainable performance and direction, visit our website

<https://www.ttbank.com/en/sustainability>

### Sustainable, Green and Blue Lending

Under the Environmental Sustainability pillar of our Sustainability Framework, we manage the environmental and social impacts from our lending business through responsible lending and sustainable finance. For responsible lending, the Bank has Environmental and Social Responsibility (ESR) Policy that is in line with The Thai Bankers Association's Sustainable Banking Guidelines – Responsible Lending and the internationally accepted guidelines and standards that enhance our lending criteria to carefully assess environmental and social risks. The ESR Policy also include Exclusion List consisting of business activities with high environmental and/ or social risks that ttb will not finance. All lending must pass environmental and social risk assessment as stated in the ESR Policy. In 2020, the Bank also established commitment not to finance any new coal-fired power plant projects and to exit from tobacco sector by 2023. For sustainable finance, ttb acknowledges the importance of our role as a financial institution to facilitate and influence businesses to shift to sustainability. The Bank has been active in promoting sustainable finance through a

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variety of products including green loan, blue loan, sustainability-linked loan, loans with positive environmental and social impacts, green bond, and blue bond. ttb was the first commercial bank in Thailand to issue the USD 60 million green bond in 2018, the second green bond in 2021 at USD 100 million, and the USD 50 million blue bond in 2022 where IFC was the sole investor of all the bonds. The pioneering green and blue bonds further stimulate private investments in renewable energy, energy efficiency, ocean- and water-related solutions, and marine protection and restoration, which will ultimately benefit both the environment and the economy.

For more details of our ESR Policy, visit our website [https://media.ttbbank.com/1/sustainability/en\\_esr\\_policy.pdf](https://media.ttbbank.com/1/sustainability/en_esr_policy.pdf)

The environmental objectives which the Bank recognizes for sustainable financing are climate change mitigation and adaptation, pollution and waste management, environmental and natural resources conservation and restoration where ttb aims to promote businesses that are in line with these objectives. Also, the three objectives will bring upon positive impact to contribute to the Sustainable Development Goals as follows (see appendix I):



## Green and Blue Bond Framework

ttb Green and Blue Bond Framework is established in alignment to the internationally accepted International Capital Market Association (ICMA)'s Green Bond Principles (GBP) June 2021 (with June 2022 Appendix 1) and International Finance Corporation (IFC) Guidelines for Blue Finance to support the future issuance of green and blue bonds when offered by investors and ensure quality transparency and disclosure.

The framework consists of four core components of the GBP:

1. Use of Proceeds
2. Process for Project Evaluation and Selection
3. Management of Proceeds
4. Reporting

The framework also describes the approach to External Review, as recommended by the GBP. The framework will apply to any green and blue financing instrument issued by ttb and will be updated to align with the most updated version of ICMA's GBP.




## Use of Proceeds

The proceeds will be exclusively used to finance or refinance, in whole or in part, new or existing, projects, assets or activities that meet **Eligibility Criteria**. The **Eligibility Criteria** are used to define green loans that promote climate change mitigation, low carbon transition, and environmental protection, and blue loans, a subset of green loan that exclusively focus and contribute to ocean- and water-related solutions and marine protection and restoration. The **Eligibility Criteria** of both green and blue loans are guided by the ICMA GBP (June 2021 (with June 2022 Appendix 1))'s eligible Green Projects categories, China Green Bond Endorsed Projects Catalogue (2021 Edition), Climate Bonds Taxonomy (January 2021), IFC Guidelines for Blue Finance (January 2022), and Asian Development Bank's Green and Blue Bond Framework (September 2021).

Refinancing projects that meet Eligibility Criteria will have a look-back period (the length of time in the past that such projects were completed) of no longer than 5 years.








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Eligibility Criteria: Description of projects eligible for green and blue bond financing





Category	Type of Bond (Green/Blue)	Eligible Criteria	Alignment with UN SDGs	Environmental objectives
Renewable energy		<ul style="list-style-type: none"> <li>● Acquisition, development, operation, and maintenance of equipment, system, licenses, or Power Purchase Agreement, that generate or transmit renewable energy including:               <ul style="list-style-type: none"> <li>○ Solar energy (photovoltaic generation and concentrated solar power facilities (onshore)) where facilities should not have more than 15% of electricity generated from non-renewable sources.<sup>1</sup></li> <li>○ Wind energy.</li> <li>○ Geothermal energy.</li> <li>○ Bio-energy e.g., facilities producing biofuel, biomass, biogas including fuel preparation process facilities, pretreatment facilities and biorefinery facilities (if ≥50% biomass based products produced for energy use), bioenergy power generation facilities. Biofuel and biomass must be sourced from a sustainable feedstock.</li> </ul> </li> <li>● Facilities and infrastructure for the above mentioned e.g., storage, distribution and wholesale and retail facilities, transmission and supporting infrastructure/ system/ technology (such as wind turbine generators, solar generators, and photovoltaic power generation equipment).</li> </ul>	 	<p>Climate change mitigation and adaption</p> <p>Environmental and natural resources conservation and restoration</p>

<sup>1</sup> Climate Bonds Initiative (CBI)'s Climate Bond Taxonomy September (2021), [https://www.climatebonds.net/files/files/Taxonomy/CBI\\_Taxonomy\\_Tables-08A%20%281%29.pdf](https://www.climatebonds.net/files/files/Taxonomy/CBI_Taxonomy_Tables-08A%20%281%29.pdf)

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Category	Type of Bond (Green/Blue)	Eligible Criteria	Alignment with UN SDGs	Environmental objectives
		<ul style="list-style-type: none"> <li>● Acquisition, development, operation, and maintenance of equipment, system, licenses, or Power Purchase Agreement, that generate or transmit renewable energy including:               <ul style="list-style-type: none"> <li>○ Offshore wind, offshore solar, tidal, wave, or ocean thermal energy that do not harm marine ecosystems and may include additional measures promoting marine biodiversity (e.g., fisheries' sanctuaries for juveniles, no-fishing zones, and artificial reefs contributing to natural resource conservation and biodiversity, etc.).</li> </ul> </li> <li>● Facilities and infrastructure for the above mentioned e.g., storage, distribution and wholesale and retail facilities, transmission and supporting infrastructure/ system/ technology (such as wind, tidal, and wave turbine generators).</li> </ul>	  	
Energy efficiency		<ul style="list-style-type: none"> <li>● Projects or investments that improve energy efficiency by at least 20% compared to baseline including industrial energy efficiency retrofit (such as energy-saving transformation, energy-efficient upgrade of boiler, etc.) or modification of green lighting in facility (such as LED, other lighting facilities using natural light sources).</li> <li>● Manufacture of energy efficiency equipment/technology/product that meet national/international energy efficiency standards/ certification/ label (e.g. Label No.5 by Electricity Generating Authority of Thailand and Ministry of Energy, Thailand).</li> </ul>	 	Climate change mitigation and adaptation




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Category	Type of Bond (Green/Blue)	Eligible Criteria	Alignment with UN SDGs	Environmental objectives
Sustainable water and wastewater management		<ul style="list-style-type: none"> <li>• New, expansion, rehabilitation or retrofit of water treatment infrastructure, including but not limited to construction, development, installation, operation and maintenance of infrastructure or equipment for collection, treatment, recycling or reuse water, rainwater, or wastewater.</li> <li>• Production, treatment, storage, monitoring, distribution, and supply infrastructure of drinking water.</li> <li>• Investment or development of water efficiency technologies and equipment to reduce water footprint at least 20% from a baseline year (e.g., water saving, water use efficiency in production, discharged wastewater recovery, water-saving cooling water).<sup>2</sup></li> <li>• Business activities mentioned above must be greater than 50 kilometers of the coast and/or the marine environment.</li> </ul>		<p>Pollution and waste management</p> <p>Environmental and natural resources conservation and restoration</p>
		<ul style="list-style-type: none"> <li>• Business activities mentioned above in the green criteria must be within 50 kilometers of the coast and/or the marine environment.</li> <li>• Infrastructure aims to prevent or minimize discharges of plastics and chemicals into water sources (e.g., construction and operation of recycling and treatment facilities for packaging waste such as plastic packaging containers, plastic materials, plastic agricultural films, etc.).<sup>2</sup></li> <li>• Investment in water treatment of shipping and port logistics activities, which comply with national/international standards (e.g., International Convention for the Control and Management of Ships' Ballast Water and Sediments), including but not limited to:               <ul style="list-style-type: none"> <li>○ Ballast water treatment and shipping vessels to avoid spread of invasive alien species.</li> <li>○ Blackwater and greywater generated from ports and all vessels.</li> </ul> </li> </ul>		





<sup>2</sup> Green Bond Endorsed Projects Catalogue (2021 Edition), <https://www.climatebonds.net/files/files/the-Green-Bond-Endorsed-Project-Catalogue-2021-Edition-110521.pdf>






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Category	Type of Bond (Green/Blue)	Eligible Criteria	Alignment with UN SDGs	Environmental objectives
		<ul style="list-style-type: none"> <li>○ Bilge water treatment in shipping vessels.</li> </ul>		
Pollution prevention and waste management		<ul style="list-style-type: none"> <li>● Waste management including waste preparation (i.e., collection, sorting, and material recovery)/ prevention/ reduction/ treatment/ storage/ recycling.</li> <li>● Acquisition, development, operation, and maintenance of equipment/ system, that produce or transmit waste-to-energy.</li> <li>● Treatment of land contamination, air pollution, volatile organic compounds (VOCs), and others (e.g., noise, odor).</li> <li>● Farmland pollution and agricultural waste pollution reduction by comprehensive prevention and control measures at the source, during the process and at the end (e.g., agricultural clean production technology applications, crop diseases and insect pest prevention and management, etc.).</li> <li>● Comprehensive treatment projects to improve the living environment in rural areas (e.g., construction and operation of rural domestic garbage and sewage treatment facilities, comprehensive treatment of rural rivers, toilet sewage treatment, improvement of village appearance, and construction and operation of rural drinking water safety projects).</li> <li>● Business activities mentioned above must be greater 50 kilometers of the coast or a river that drains to the ocean.</li> </ul>	 	Climate change mitigation and adaptation  Pollution and waste management  Environmental and natural resources conservation and restoration

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Category	Type of Bond (Green/Blue)	Eligible Criteria	Alignment with UN SDGs	Environmental objectives
		<ul style="list-style-type: none"> <li>● Business activities mentioned above in the green criteria must be within 50 kilometers of the coast or a river that drains to the ocean.</li> <li>● Research, design, manufacturing, trade, or retail of biodegradable plant-based or compostable plastics and packaging.</li> <li>● Research, design, manufacturing, trade, or retail of personal care and household products, including but not limited to:               <ul style="list-style-type: none"> <li>○ Biodegradable and phosphate-free detergents, soaps, shampoos, and cleaners.</li> <li>○ Biodegradable and phosphate-free cleaner bars and cosmetics without plastic packaging.</li> <li>○ Microbead-free toothpaste in non-plastic container.</li> </ul> </li> <li>● Use of recycled or reused plastics for manufacturing, plastics collection and recycling facilities, substitution of plastics packaging with sustainable and biodegradable materials, and reuse of plastics in areas connected to water basins.</li> <li>● Research, design, manufacturing, trade, and retail of essential components of the value chain of alternative low carbon and biodegradable materials (e.g., Lyocell) used in medical, apparel, and other industries. The alternative low carbon and biodegradable materials have received or are expected to receive local or international standards/certification/label such as ASTM D6400, ISO17088, TIS 17088, and Carbon Footprint Reduction Label by The Thailand Greenhouse Gas Management Organization.</li> <li>● Reduction or replacement of phosphate- or nitrogen-based synthetic fertilizers with alternative sustainable and organic fertilizers in areas connected to water basins. The alternative sustainable</li> </ul>	  	







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Category	Type of Bond (Green/Blue)	Eligible Criteria	Alignment with UN SDGs	Environmental objectives
		<p>and organic fertilizers meet the organic fertilizer standard by The Office of Agricultural Regulation, Department of Agriculture, Thailand.</p> <ul style="list-style-type: none"> <li>• Investments in improvement of oil spill management, prevention, and recovery facilities.</li> <li>• Waste disposal facilities at ports and terminals for the collection.</li> </ul>		
Clean transportation		<ul style="list-style-type: none"> <li>• Acquisition costs and research and development in and for the design, development, manufacturing, and retail use of non-fossil or hybrid transportation, technologies, components (e.g., EV batteries and powertrains) and related infrastructures and facilities (e.g., EV charging stations).</li> <li>• Electric or hybrid public transport (e.g., rail, bus, trams, trolleybuses, and cable cars).</li> <li>• Electrified or non-electrified freight rail (use fossil fuel less than 25% of the freight transported (in ton/km)).</li> </ul>	 	Climate change mitigation and adaptation

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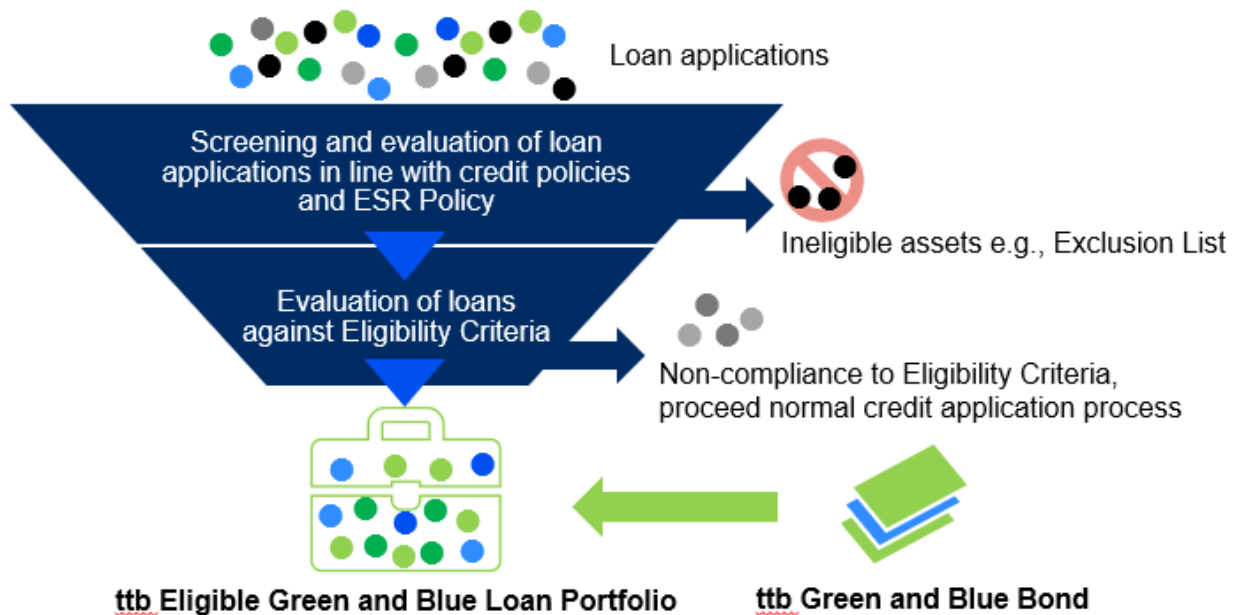
Category	Type of Bond (Green/Blue)	Eligible Criteria	Alignment with UN SDGs	Environmental objectives
Green buildings		<ul style="list-style-type: none"> <li>• Development of commercial or residential buildings which have received or are expected to receive national, regional or internationally recognized standards or certifications (i.e., LEED (Silver and above), BREEAM (Good and above), DGNB (Bronze and above), and IFC's Excellence in Design for Greater Efficiencies (EDGE) Certificate).</li> <li>• Design and construction of renewable energy application systems for buildings using solar photovoltaic power generation devices installed on the roofs and walls of buildings to provide electricity to buildings as well as renewable energy building application renovation activities.</li> <li>• Energy saving and environmental-friendly renovation for existing buildings which comply with national/international energy-saving standards or green labels.</li> <li>• Construction, operation and renovation of logistics warehouses which have received or are expected to receive national, regional or internationally recognized standards or certifications for green buildings (i.e., LEED (Silver and above), BREEAM (Good and above), DGNB (Bronze and above), and IFC's Excellence in Design for Greater Efficiencies (EDGE) Certificate).</li> <li>• Manufacturing of green building materials/products (e.g., energy-saving wall materials, exterior wall thermal insulation materials, energy-saving glass, prefabricated building components, and other relating green building materials). The properties of products and technical specifications should meet relevant green building material standard and technical requirement (e.g. Thailand Greenhouse Gas Management Organization's Carbon Label)</li> </ul>		Climate change mitigation and adaptation

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Category	Type of Bond (Green/Blue)	Eligible Criteria	Alignment with UN SDGs	Environmental objectives
Sustainable management of natural resources		<ul style="list-style-type: none"> <li>Operations, facilities, and production that promote sustainable agriculture (e.g., energy-efficient and climate change resilient agriculture, organic/natural weed and pest control) and sustainable animal husbandry (e.g., efficient management of waste and pollution generated by large-scale livestock and poultry production), as per relevant national/ international standard and/ or certification (e.g., Bonsucro, The Roundtable on Sustainable Palm Oil (RSPO), Five Freedoms of Animal Welfare, etc.).</li> <li>Environmentally sustainable forestry, including afforestation or reforestation, and preservation or restoration of natural landscapes.</li> </ul>		<p>Climate change mitigation and adaptation</p> <p>Pollution and waste management</p>
		<ul style="list-style-type: none"> <li>Investments in fisheries or aquaculture to meet or maintain international standards such as the Marine Stewardship Council certification standard, Aquaculture Stewardship Council standard or equivalent.</li> <li>Production, trade, or retail of seafood products with the blue Marine Stewardship Council or Aquaculture Stewardship Council labels.</li> <li>Investment in technology, systems, and instruments to measure, track, monitor, and report physical and chemical indicators of water body to attain sustainable fishery and aquaculture management, water-related ecosystem restoration, and disaster resilience. This might include, among other things, drone systems, autonomous sailing vessels and underwater vehicles, and ocean buoys.</li> <li>Global Sustainable Tourism Council or equivalent certified tourism such as resorts, hotels, boat operators, sailing schools, and diving centers in the vicinity of marine conservation areas, within 20 kilometers from the coastal or marine-protected areas (e.g., marine natural parks of Thailand and internationally recognized marine-protected areas such as Ramsar Sites).</li> <li>Investment, development, or projects that conserve, improve, or restore mangrove forest, estuary ecosystems, coral reefs, wetlands, marine and coastal ecosystems.</li> </ul>	  	<p>Environmental and natural resources conservation and restoration</p>

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## Process for Project Evaluation and Selection



A dedicated green and blue bond governing body is setup (Green and Blue Bond Working Team) to meet at least bi-annually to review and validate the selection of the eligible projects in alignment with the Green and Blue Bond Framework and Principles. Green and Blue Bond Working Team is comprised of members from the following top executive committees and departments across the Bank:

- Chief Executive Committee (CEC) - the top executives who are responsible for overseeing the Bank's business plans and execution including sustainability are responsible for review and approval of Green and Blue Bond Framework. CEC is also responsible for the review and approval of the framework with significant changes in revision.
- Chief Finance Officer or Head of Balance Sheet Management - has been delegated by CEC to review and approve the framework revision with no significant change.
- Asset and Liability Management Committee (ALCO) – is responsible for approving the issuance of any bonds (including green and blue bonds) and review of the green and blue bond report.
- Balance Sheet Management (BSM) – is responsible for managing and monitoring the use of proceeds and approving the final list of eligible green and blue projects. BSM regularly reports the progress of green and blue bond allocation to the ALCO.
- Commercial and Retail Segments – are responsible for screening credits that meet the **Eligibility Criteria** and tracking of **Eligible Green and Blue Loan Portfolio**.
- Investor Relations – maintain the Green and Blue Bonds Report (i.e., allocation and impact reporting) on an annual basis and publicly disclose on company website.

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- Sustainability – is responsible for the update of Green and Blue Bond Framework to ensure an alignment with global standards and provide consultation to the business segments regarding the project evaluation and selection. Sustainability will also support Investor Relations for the consolidation of information for Green and Blue Bond Report.

For project evaluation and selection, Commercial and Retail Segments are responsible for screening of loan applications that have passed ESR Policy and meet the **Eligibility Criteria** and tracking of **Eligible Green and Blue Loan Portfolio**. To evaluate associated environmental and social risks from lending business, Environmental and Social Responsibility (ESR) Policy is applied to any credit application. Only those that pass the following evaluation steps will be included in **ttb Eligible Green and Blue Loan Portfolio**:

1. The Exclusion List in ESR Policy
2. Environmental and Social Due Diligence to assess any potential environmental and social risks associated with business activities and/or transactions with site visits, Specific Questionnaire, assessing the environmental and social risks on specific industries, and General Questionnaire, assessing the general environmental and social risks (including environment, human and labour rights, land acquisition and involuntary resettlement, community health, safety and security, indigenous people, and cultural heritage). Once assessed, a risk rating will be generated where all medium- and high-risk credit applications without proper risk mitigation are not allowed to further proceed for credit approval.
3. For high risk applications, external consultation is required to conduct due diligence on environmental and social risks.
4. **Eligibility Criteria** of Green and Blue Bond Framework.

**ttb Eligible Green and Blue Loan Portfolio** is preserved for the use of proceeds for green and blue bonds. ESR Policy already incorporates assessments to ensure compliance to national and/ or international environmental and social standards and local laws and regulations.

For more details of our ESR Policy, visit our website [https://media.ttbank.com/1/sustainability/en\\_esr\\_policy.pdf](https://media.ttbank.com/1/sustainability/en_esr_policy.pdf)

Commercial and Retail Segments will annually review the list of **ttb Eligible Green and Blue Loan Portfolio** against the **Eligibility Criteria** and ESR Policy. If a project no longer meets the **Eligibility Criteria** set forth in this framework, the project will be removed from the register and replaced as soon as a substitute has been identified.

Once screened and approved, Balance Sheet Management (BSM) will track use of green and blue bond proceeds on the **ttb Eligible Green and Blue Loan Portfolio** using internal systems.

**ttb Eligible Green and Blue Loan Portfolio** and use of proceeds will be presented to ALCO on a regular basis.

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## Management of Proceeds

The issuance of bonds and management of proceeds are clearly defined and formalized in ttb's Equity Investment Policy and Operational Guidelines.

The net proceeds from any green and blue bond issue will be deposited in account under BSM's supervision and amount equal to the net proceeds will be reserved for allocation to **Eligible Green and Blue Loan Portfolio**.

The green and blue bond proceeds will be managed by ttb in a portfolio approach. ttb expects to allocate at least 50% of the bond proceeds within 12 months after the issuance of the bond and 100% within 24 months after the issuance.

ttb will hold and/ or invest at its own discretion, in its treasury liquidity portfolio, in cash or other short term and liquid instruments, the balance of net proceeds not yet allocated to the **Eligible Green and Blue Loan Portfolio**.

In the event of divestment, if an asset fails to ensure continued compliance with the **Eligibility Criteria**, or if early repayment of a loan occurs, ttb commits to replacing the asset with another from **Eligible Green and Blue Loan Portfolio** as soon as possible.

## Reporting

The annual Green and Blue Bond Report for every green and blue bond issuance will include allocation reporting and impact reporting. ttb will disclose the Green and Blue Bond Report a year after from the issuance which will be updated annually until full allocation. All data will be reported at a portfolio level for each eligible category and anonymized for confidentiality reasons. Green and Blue Bond Framework and Green and Blue Bond Report will be publicly disclosed on ttb website:

- Sustainability and Publication page, <https://www.ttbank.com/en/sustainability/policies-and-reporting/reporting-and-publications>
- IR page, <https://www.ttbank.com/en/ir/credit-rating-and-debenture/green-bond>

### Allocation reporting:

- The amount of proceeds allocated to the **Eligibility Criteria**
- Portion of financing and refinancing
- The amount of unallocated proceeds
- The amount of **Eligible Green and Blue Loan Portfolio**
- Percentage of green and blue bond as of **Eligible Green and Blue Loan Portfolio**



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## Impact reporting:

- ttb will apply nationally and/ or internationally accepted methodologies for calculating the environmental impacts with the objective to disclose the environmental impact of green and blue bonds financed under this Framework, subject to data availability. The impact assessment is provided with the reservation that not all related data can be covered and that calculations will therefore be on a best effort basis.
- Impacts from green and blue bond proceeds financed or refinanced is reported based on the shared of the investment cost that has been financed by ttb. The reported impact is based on amounts disbursed and outstanding to a project as opposed to amounts committed.
- ttb will disclose both expected and actual impacts of projects financed and refinanced.
- Few examples of business cases with significant impacts with description of projects and impacts.

Examples of indicators are listed below which is based on ICMA's Harmonized Framework for Impact Reporting (revision 2022) and can be used to monitor impacts from green and blue bond.

Category	Indicators
Renewable energy	<ul style="list-style-type: none"> <li>● Capacity of renewable power projects (MW/Year)</li> <li>● Generation of renewable energy (MWh/year)</li> </ul>
Energy efficiency	<ul style="list-style-type: none"> <li>● Energy saving (MWh/year)</li> <li>● Energy efficiency certificate/label</li> <li>● Annual production of energy efficient products (units/year)</li> </ul>
Sustainable water and wastewater management	<ul style="list-style-type: none"> <li>● Annual water saving (m<sup>3</sup>/year)</li> <li>● Annual production of drinking water (m<sup>3</sup>/year)</li> <li>● Annual catchment of water (m<sup>3</sup>/year)</li> <li>● Annual avoided/reduced of chemical/plastics/harmful substances (tons/year)</li> <li>● Number of people (persons) or number of enterprises (enterprises)</li> <li>● Annual volume treated (m<sup>3</sup>/year) or annual volume reused (m<sup>3</sup>/year) or annual volume avoided (m<sup>3</sup>/year) or annual volume runoff (m<sup>3</sup>/year)</li> </ul>
Pollution and waste management	<ul style="list-style-type: none"> <li>● Annual production of biodegradable/sustainable products (tons/year)</li> <li>● Annual amount of oil spill (tons/year)</li> <li>● Annual pollution reduction (tons/year)</li> <li>● Annual volume of wastewater treated or avoided (m<sup>3</sup>/year)</li> <li>● Annual avoided/reduced of chemical/plastics/harmful substances (tons/year)</li> <li>● Annual plastic recycled amount (tons/year), or annual plastic reused (tons/year)</li> <li>● Annual use of alternative low carbon and organic materials (tons/year)</li> </ul>

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Category	Indicators
	<ul style="list-style-type: none"> <li>● Annual savings (tons/year) or added monetary value created using waste (baht/year)</li> <li>● Annual waste separated amount (tons/year) or annual waste collected amount (tons/year) or annual waste treated (tons/year)</li> <li>● Annual waste prevented amount (tons/year) or annual waste minimized amount (tons/year) or annual waste recycled amount (tons/year), or annual waste reduced</li> <li>● Annual plastic avoided amount (tons/year) or annual plastic treated amount (tons/year) or annual plastic collected (tons/year) or annual plastic replaced amount (tons/year)</li> <li>● Annual energy generation by electricity (MWh/year), annual energy generation by other energy (GJ/year), type of waste and annual amount (tons/year), waste heat recovery (GJ/year)</li> </ul>
Clean transportation	<ul style="list-style-type: none"> <li>● Annual EV car unit in retail lending (units/year)</li> <li>● Annual production (units/year)</li> </ul>
Green buildings	<ul style="list-style-type: none"> <li>● Capacity of renewable energy (MW/year)</li> <li>● Generation of renewable energy (MWh/year)</li> <li>● Energy saving (MWh/year)</li> <li>● Annual production of green building materials/products (units/year)</li> <li>● GHG emissions reduction (ton CO<sub>2</sub>e/year)</li> <li>● Green building certification scheme (LEED, BREEAM, DGNB, EDGE)</li> </ul>
Sustainable management of natural resources	<ul style="list-style-type: none"> <li>● Area covered of sustainable agriculture (km<sup>2</sup>)</li> <li>● Annual production of sustainable agriculture (tons/year)</li> <li>● Number of personnel trained in biodiversity conservation</li> <li>● Annual pollution reduction (tons/year) or area covered (km<sup>2</sup>)</li> <li>● Marine water quality index (MWQI) in line with local/global standards</li> <li>● Absolute number of indigenous species restored through the project*</li> <li>● Maintenance/safeguarding/increase of marine ecosystem/habitats in km<sup>2</sup></li> <li>● Maintenance/safeguarding/increase of marine environment area in km<sup>2</sup></li> <li>● Absolute number of protected and/or priority species/indigenous species, that are deemed sensitive in protected area before and after the project*</li> <li>● Maintenance/safeguarding/increase of natural landscape area (including forest) in km<sup>2</sup></li> </ul>

Remark:

\* Protected and/or priority species should comply with the local and international laws and regulations such as Reserved and Protected Wildlife of Thailand under Wild Animal Reservation and Protection Act, Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and IUCN Red List of Threatened Species.

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## External Review

### Second Party Opinion

ttb Green and Blue Bond Framework 2022 has been reviewed by S&P Global Ratings who has issued Framework Alignment Opinion (a Second Party Opinion of the Green Bond Framework's alignment with ICMA's GBP version June 2021 (with June 2022 Appendix 1)) which is publicly available on ttb website:









- Sustainability and Publication page, <https://www.ttbank.com/en/sustainability/policies-and-reporting/reporting-and-publications>
- IR page, <https://www.ttbank.com/en/ir/credit-rating-and-debenture/green-bond>










### External Review (post-issuance)

The Bank may request on a limited assurance report of the internal tracking and allocation of the bond proceeds to Eligible Projects on annual basis provided by an external auditor. ttb shall disclose the external review report publicly on our website, if any.

## Appendices

Appendix I – Mapping of Contribution from Green and Blue Bond to UN Sustainable Development Goals and Targets

Category	UN SDGs	UN SDGs Target
Renewable energy	  	<p><b>Target 7.2</b> – by 2030, increase substantially the share of renewable energy in the global energy mix</p> <p><b>Target 13.1</b> – strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.</p> <p><b>Target 14.2</b> - by 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.</p>
Energy efficiency	 	<p><b>Target 7.3</b> - by 2030, double the global rate of improvement in energy efficiency.</p> <p><b>Target 9.4</b> – by 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.</p>
Sustainable water and wastewater management		<p><b>Target 6.1</b> - by 2030, achieve universal and equitable access to safe and affordable drinking water for all</p> <p><b>Target 6.3</b> – by 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.</p> <p><b>Target 6.4</b> – by 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.</p>
Pollution and waste management	 	<p><b>Target 6.3</b> – by 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.</p> <p><b>Target 9.4</b> – by 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and</p>

	 	<p>greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.</p> <p><b>Target 12.4</b> - by 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.</p> <p><b>Target 14.1</b> – By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution.</p>
Clean transportation	 	<p><b>Target 9.4</b> – by 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.</p> <p><b>Target 11.2</b> – by 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.</p>
Green buildings		<p><b>Target 7.3</b> - by 2030, double the global rate of improvement in energy efficiency.</p>
Sustainable management of natural resources	   	<p><b>Target 11.4</b> – strengthen efforts to protect and safeguard the world’s cultural and natural heritage.</p> <p><b>Target 12.2</b> – by 2030, achieve the sustainable management and efficient use of natural resources.</p> <p><b>Target 12.4</b> - by 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.</p> <p><b>Target 12.5</b> - by 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse.</p>

		<p><b>Target 14.2</b> - by 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans.</p> <p><b>Target 14.4</b> - by 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics.</p> <p><b>Target 14.6</b> - by 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.</p> <p><b>Target 15.1</b> – by 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetland, mountains and drylands in line with obligations under international agreements.</p> <p><b>Target 15.2</b> - by 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.</p> <p><b>Target 15.5</b> - take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.</p> <p><b>Target 15.a</b> – mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems.</p>
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## Appendix II – The Exclusion List of ttb Environment and Social Responsibility Policy

The Exclusion List is a part of ESR policy, consisting of business activities with high environmental and/ or social risks that the bank will not finance. All lending must pass environmental and social risk assessment as stated in the ESR Policy. For more details of ESR Policy, visit [https://media.ttbank.com/1/sustainability/en\\_esr\\_policy.pdf](https://media.ttbank.com/1/sustainability/en_esr_policy.pdf).

Area	Exclusion List	
1. Gambling	1) Gambling, casinos, and equivalent enterprises	
2. Pornography	2) Pornography, prostitution, and adult entertainment	
3. Animal welfare	3) Trade in wildlife and / or wildlife products	
	4) Production or trade in any product or activity deemed illegal under Thai laws or regulations or international conventions and agreements, or subject to international bans, such as wildlife or products regulated under Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), IUCN Red List	
	5) Animal testing for cosmetic purposes	
	6) Fur farms, the manufacturing nor trading of fur products	
	7) Production and processing of Angora wool	
	8) Support of any type of animal fights for entertainment	
	9) Shark finning and shark fin products	
	10) Commercial whaling	
	4. Controversial weapons	11) Controversial weapons (anti-personnel landmines, cluster weapons, biological or chemical weapons, depleted uranium or plutonium weapons, and nuclear weapons) or Key Components thereof
		12) Arms and weapons trade to countries listed in UN/EU Embargo
5. Energy	13) Nuclear energy	
	14) Oil sand	
	15) Coal-fired power plants (applicable only for project finance)	
6. Fishery	16) Drift net fishing in the marine environment using nets in excess of 2.5 km. in length	
	17) The use of dynamite or poison related to the catching of fish or shellfish	
7. Forestry	18) Commercial logging operations for use in primary tropical moist forest.	
	19) Production or trade in wood or other forestry products other than from sustainably managed forests	
	20) Own any plot of land for forestry and/or plantation that is suspected to be located inside or overlapped with a national protected area	
	21) Deforestation and/or burning of tropical rain forest.	
8. Genetic engineering	22) The development of Genetic Engineering or Genetic Modification on humans	
	23) The development of Genetic Engineering or Genetic Modification on plants and animals which harmful to humankind or used immorally	
9. Materials	24) Production or trade in any product or activity deemed illegal under Thai laws or regulations or international conventions and agreements, or subject to international bans, such as pharmaceuticals, pesticides / herbicides, ozone depleting substances, PCB	
	25) Production or trade in or use of unbounded asbestos fibers. This does not apply to the purchase and use of bounded asbestos cement sheeting where the asbestos content is less than 20%	
10. Coal mining	26) Activities related to coal mining, exploration and applicable to the coal mining entity	

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Area	Exclusion List
11. Protected areas	27) Activities resulting in conversion or degradation of protected areas or critical habitats i.e. UNESCO World Heritage Sites Protected areas, Wetlands registered by the Ramsar Convention, High Conservation Value Forest (HCVF)