

Financing the Blue Economy in Asia

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About Sasakawa Peace Foundation

The Sasakawa Peace Foundation (SPF), established in 1986, is a Think, Do, and Innovate-Tank that envisions a more harmonious, sustainable, and inclusive future. In 2017, SPF adopted five priority goals, one of which is women's empowerment. SPF created the Gender Investment and Innovation Program, which strives to reshape Asian society through economic empowerment and gender equality projects, as well as the Asia Women Impact Fund, an initiative to invest in funds to support women's economic empowerment and gender equality.

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Acknowledgments

We would like to thank the following experts and organizations for their time, guidance and valuable insights on sustainable finance, without whom this initiative would not have been possible.

Name	Title	Organization
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Glossary

ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
AUD	Australian dollar
bps	Basis points
BRL	Brazilian Real
CBI	Climate Bonds Initiative
CGT	Common Ground Taxonomy
CIB	Crédit Agricole Corporate and Investment Bank
CNY	Chinese Yuan
DFI	Development Finance Institution
DJSI	Dow Jones Sustainability Index
EAP	East Asia & Pacific
EC	European Commission
EIB	European Investment Bank
ESG	Environmental, Social and Governance
EUR	Euro
GBP	Green, Social and Sustainability Bond Principles
GSSS	Green, Social, Sustainability and Sustainability-linked
ICMA	International Capital Markets Association
IFC	International Finance Corporation
IMF	International Monetary Fund
JPY	Japanese Yen
LMA	Loan Management Association
MXN	Mexican Peso
NOK	Norwegian Krone
NZD	New Zealand Dollar
SAS	South Asia
SDGs	Sustainable Development Goals
SEK	Swedish Krona
SIDS	Small Island Developing States
SMEs	Small and Medium Enterprises
SPT	Sustainability Performance Targets
THB	Thai Baht
UN	United Nations
UNCSD	United Nations Conference on Sustainable Development
UNEP-FI	United Nations Environment Program Finance Initiative
UNGC	United Nations Global Compact
USD	United States Dollar
WB	World Bank
WRI	World Resources Institute
WWF	World Wild Fund

Foreword

We are delighted to publish this study on the back of World Ocean Day, celebrated on and around June 8th for the past 15 years, and rallying the world to protect and restore our blue planet. The conservation action focus in 2023 is to prioritize the 30x30 goal, building on the global commitment from world leaders at COP 15 in December 2022 to protect at least 30% of our lands, waters, and ocean by 2030.

This recent momentum, together with the UN's adoption of the High Seas Treaty, has formed a major turnaround in bringing ocean and climate action to the forefront, enabling more knowledge and advocacy work to shape discussions on the importance of sustainable finance mechanisms for a thriving blue economy. Asia & Pacific is arguably the region where this topic is of utmost importance, with the blue financing gap estimated at USD 5.5 trillion, and the region and its population being heavily interlinked with ocean-based sectors, resources, and socio-economic functioning.

It is encouraging to see that these financing gaps are being addressed through blue-labeled financing mechanisms that have been flourishing over the past five years, building on the growth trajectory witnessed by green issuances for over a decade. However, a lack of timely data and information, impact accountability, transparency, and standard language are often seen as impediments to attracting impactful capital at a large scale in any given sector. Blue-related projects are no exception, and their limited adoption in investor portfolios intensifies these concerns.

Another concern we had was if gender considerations were sufficiently integrated into the current discourse of blue-related projects. As women and girls are often silent participants in the blue economy with their concerns and considerations being overlooked, we believe that it is crucial to integrate gender considerations in sustaining the achieved results and effectively address the interrelated dynamics of SDGs 5 (Gender Equality),

6 (Clean Water and Sanitation), 13 (Climate Action), and 14 (Life below Water).

The first blue bond was introduced by the Government of Seychelles five years ago. Looking ahead to the first half of 2023, nearly USD 10 billion has been raised worldwide through blue-labeled instruments, supporting sectors such as fishing, aquaculture, tourism, maritime transport, and offshore renewable energy, among others. With Asia leading the way by attracting over 50% of this market, it rightfully remains at the center of ongoing conversations, and should also lead the way in raising awareness on the need to apply a gender lens within blue financing.

Given the current commitments and policy advancements aimed at preserving our oceans and ensuring the well-being of women and households dependent on marine resources, the potential for further progress is limitless. As the blue finance market continues to advance towards greater standardization and transparency, we hope this report provides sufficient validation of the importance of financing the blue economy in Asia and applying a gender lens to it, along with actionable points to turn the tide towards a healthy and productive ocean for all of us.

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Market context

The concept of the “blue economy” was first coined at the Rio+20 United Nations Conference on Sustainable Development (UNCSD) in 2012.¹ During the preparatory process for Rio+20, many coastal countries questioned the applicability of the green economy to their local contexts and advocated for the prominence of a blue economy approach. Human dependence on ocean resources is central to the blue economy perspective, with clear interplays between blue and green. While recognition of the blue economy in literature and practice has grown since conception, there is no universally accepted definition today of what the blue economy entails. For example, the World Bank defines the blue economy as “the sustainable use of ocean resources for economic growth, improved livelihoods and jobs, and ocean ecosystem health”.²

As such, our oceans and seas are backbones of the world’s economy, contributing to the growth of sectors like tourism, fisheries and international shipping. They are also fundamental in providing food, income and improved livelihoods for people living in coastal areas, representing roughly 40% of the world’s population.³ Despite its critical role as a repository of biodiversity and services that support human well-being, the ocean ecosystem is under threat from increasing human activity, leading to climate change, pollution and nature loss.⁴ While Life Below Water (SDG 14) remains the most underfunded of all the SDGs,⁵ it is arguably the most interdependent with the other goals.

With renewed focus on ocean and water-related issues, the first quarter of 2023 marked a big step forward in ocean protection. In March 2023, more than 190 countries reached an agreement on the text surrounding the UN High Seas Treaty to protect the world’s oceans after nearly two decades of negotiations.⁶ The agreement aims to set 30% of high seas⁷ into protected areas by 2030, out of which only 1.2% are protected today.⁸ The treaty—yet to be legally ratified and implemented—is a key milestone for ocean protection and crucial to enforce recent pledges from the 2022 UN Convention on Biodiversity. The treaty also paved way for the UN Water Conference in late March. As witnessed by the adoption of the Water Action Agenda—containing almost 700 commitments from the non-profit, public and private sectors to protect water resources—at the UN 2023 Water Conference,⁹ water in its many forms has become the cornerstone of economic, social and political agendas globally.

With climate action inextricably tied to these commitments and targets in emerging market economies, allocating financial flows for blue priorities, projects and activities has never been more pressing. The blue economy currently integrates traditional marine-based sectors, such as fishing, maritime transport, and tourism, with new marine activities, like aquaculture, biotechnology, offshore renewable energy, and bioprospecting.¹⁰ However, these sectors remain severely underfinanced today. The blue financing gap

1 United Nations (2014). *Blue Economy Concept Paper*

2 World Bank (2017). *Infographic: What is the Blue Economy?*

3 United Nations Ocean Conference (2017). *Factsheet: People and Oceans*

4 United Nations Environment Programme Finance Initiative (2021). *Turning the Tide: How to Finance a Sustainable Ocean Recovery*

5 World Economic Forum (2022). SDG14 Financing Landscape Scan: *Tracking Funds to Realize Sustainable Outcomes for the Ocean*

6 Vox (2023). *The Largest Habitat on Earth Is Finally Getting Protection*

7 High seas are international waters where all countries are allowed to pursue marine activities as for example fishing, shipping and research activities such as deep sea mining.

8 BBC (2023). *Ocean Treaty: Historic Agreement Reached after Decade of Talks*

9 UN News (2023). *New Agenda Sets Sail with Bold Action as Un Water Conference Closes*

10 ADB Institute (2022). *Blue Economy and Blue Finance: Toward Sustainable Development and Ocean Governance*

is estimated at USD 5.5 trillion in Asia and the Pacific¹¹ alone (\$2.3 trillion in South Asia, \$2.1 trillion in Southeast Asia and \$1.1 trillion in the Pacific).¹² Notably, resilient port infrastructure, or the capacity and capability of a port (a conduit for a majority of the world's raw materials, goods and passengers) to withstand and recover from physical and operational shocks, accounts for two-thirds of this gap.

The underfinancing of blue themes and segments presented in Figure 1 also influences inclusiveness within the blue economy. Women are indispensable to the

informal and formal sectors of the blue economy—making up 20% of the workforce in fishing and aquaculture and more than 90% of secondary level jobs such as fish processing, marketing and maintenance—but earn on average 35% less than men for the same types of jobs in aquaculture.¹³ Gender equity also plagues the maritime industry, where women only make up 1% of seafarers globally¹⁴ and hold an insignificant share of decision-making power on corporate boards and management positions in the seafood industry. Addressing this gender gap is an imperative to reducing the financing gap for the blue economy.



Photo by Quang Nguyen Vinh on Pexels

11 We refer to Asia-Pacific as the grouping of “South Asia” + “East Asia & Pacific” regions according to the World Bank’s classification.

12 ADB (2022). *Financing the Blue Economy: Investments in Sustainable Blue SMEs and Projects in the Asia & Pacific*

13 OECD (2021). *Gender and the Environment: Building Evidence and Policies to Achieve the SDGs*

14 The Economist (2022). *Addressing the Gender Gap in Ocean-Based Careers*

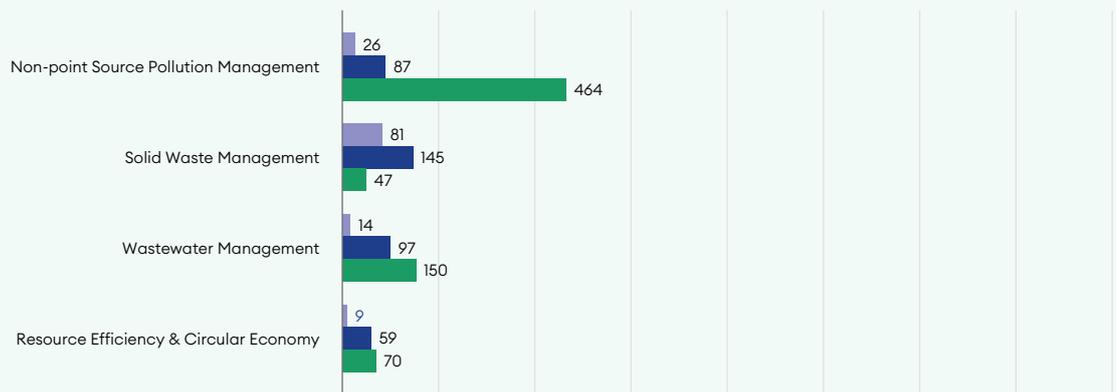
Figure 1: Finance gap by region: investments needed by 2030 to meet the SDGs (in USD billion)

Source: Asian Development Bank and Ocean Assets Institute

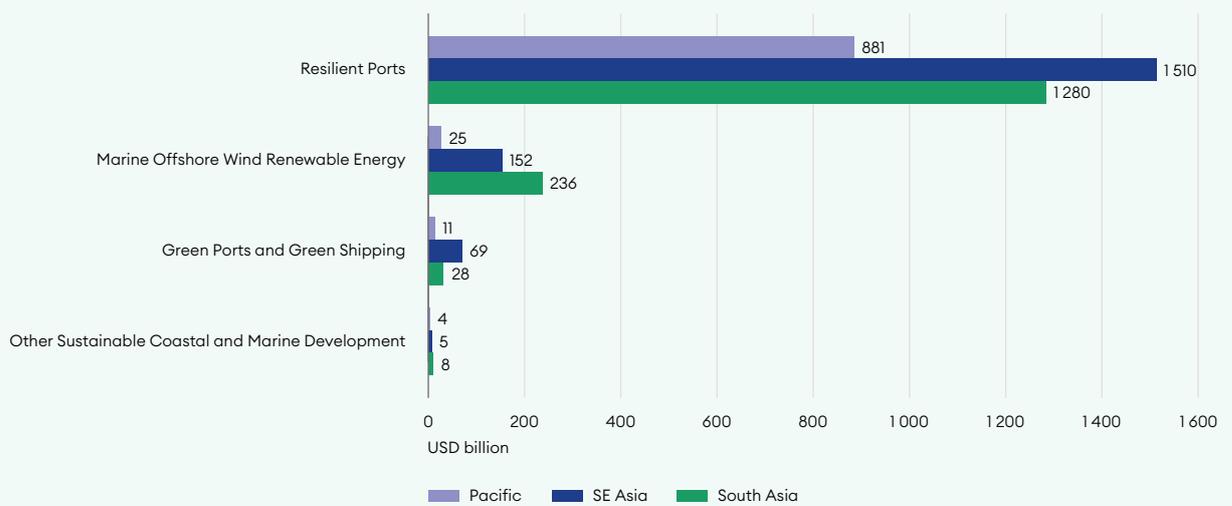
Ecosystem and Natural Resource Management



Pollution Control



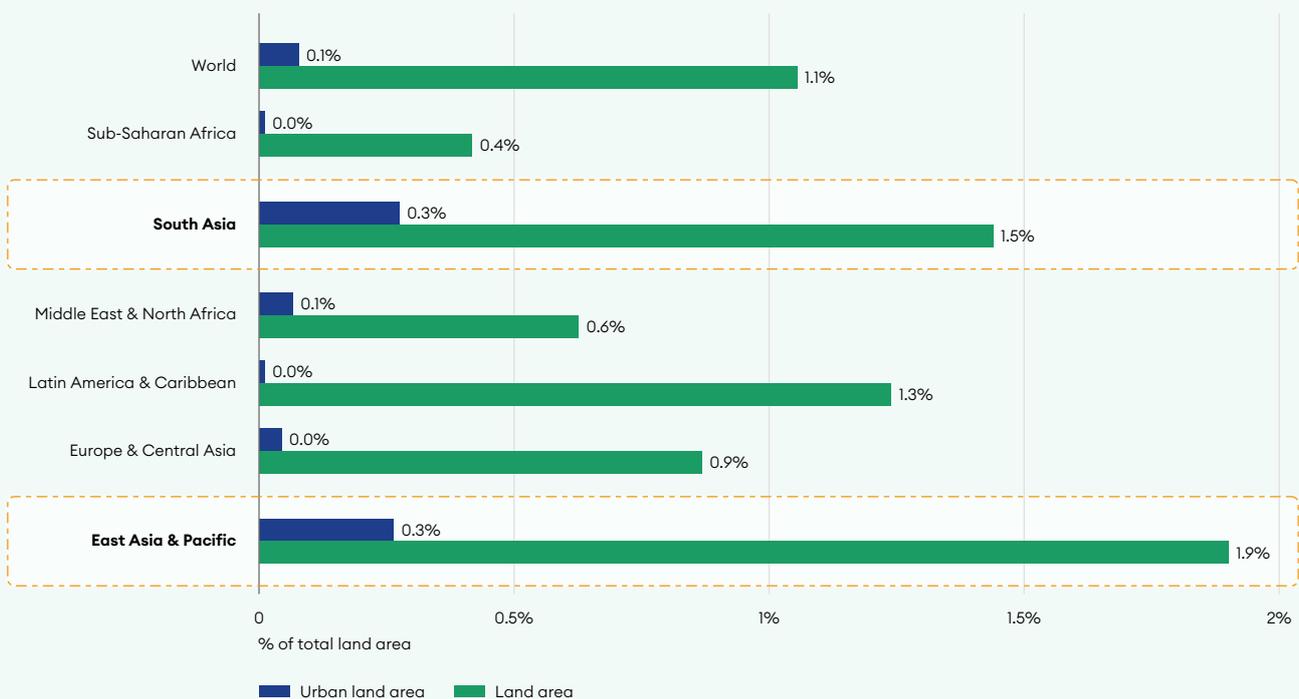
Sustainable Coastal and Marine Development



Women are also disproportionately affected by the water-related impacts of climate change disasters, particularly in the Asia-Pacific region, which is highly vulnerable to sea level rise. The percentage of land area where elevation is below five meters is greatest in this region than anywhere else in the world (Figure 2).¹⁵ More than 80% of the natural hazard events in Asia in 2021 were caused by floods and storms.¹⁶ Home to many islands and coastal economies, Asia and the Pacific

relies heavily on the blue economy, with its contribution to GDP estimated as high as 23% in Malaysia, and even higher for a few island nations (87% in Timor Leste).¹⁷ The region is the heart of marine biodiversity globally, native to a third of the world’s mangroves, seagrass beds and coral reefs, accounts for 80% of global aquaculture and 60% of the world’s capture fisheries, and is the shipping conduit for 90% of world trade.¹⁸

Figure 2: Areas where elevation is below five meters (% of total land area)



15 World Bank (2023). World Development Indicators Database

16 World Meteorological Organization (2022). *State of the Climate in Asia 2021*

17 The Energy and Resources Institute (2021). *Contextualising Blue Economy in Asia-Pacific Region: Exploring Pathways for a Regional Cooperation Framework*

18 ADB Southeast Asia Development Solutions (2022). *Breaking the Waves: Kickstarting the Global Sustainable Blue Economy in Southeast Asia*

To reduce the environmental and economic burdens induced by climate change on blue natural assets and promote a sustainable blue economy, public and private capital have begun to accelerate, develop and deploy innovative blue finance mechanisms. With the evolution of sustainable finance, particularly green debt in the global capital markets, a variety of financing instruments and structures have become applicable and available to blue finance.

Since 2007, the green finance market predominantly made up of green bond and green loan issuances, has galvanized debt financing for sustainable blue projects. The interactions and synergies between the environment, climate, ocean, and water have enabled green finance to play a catalytic role in channeling capital toward the blue economy. In the third quarter of 2022, cumulative green bond issuances surpassed USD 2 trillion, representing more than 19 currencies, with green bonds originating in China as the third largest source of issuances.¹⁹ The broad successes of green finance have given rise to a labeled blue market, with

the launch of the pioneering sovereign blue bond in 2018 for sustainable marine and fisheries. In the past five years since, Development Finance Institutions (DFIs) and sovereigns as first-movers, have conditioned and developed the blue finance market as advisors, arrangers and investors of blue bonds and blue loans. Blue finance has also attracted capital from institutional investors, including banks, impact asset managers, and insurance companies.

As the labeled blue finance market is nascent, limited information is available in the form of 'state of the market' summaries that synthesize knowledge about successful issuances and qualifying blue projects in Asia. The aim of this research is to bridge this knowledge gap by providing an overview of blue financing mechanisms in Asia, with a focus on blue bonds and blue loans. The research also aims to understand the suitability of these instruments for different segments of the blue economy and links to gender issues, and identifies current challenges and opportunities in the blue market.

19 Climate Bonds Initiative (2022). *Sustainable Debt Market: Summary Q3 2022*

Study methodology

Tameo conducted desk reviews and stakeholder interviews to inform this research during the months of February to April 2023.

Desk reviews enabled Tameo to understand the current state of the market for blue finance instruments used in Asia, with a specific focus on blue bonds and blue loans. The team aggregated quantitative information about these blue labeled issuances and relevant non-labeled issuances from two sources:

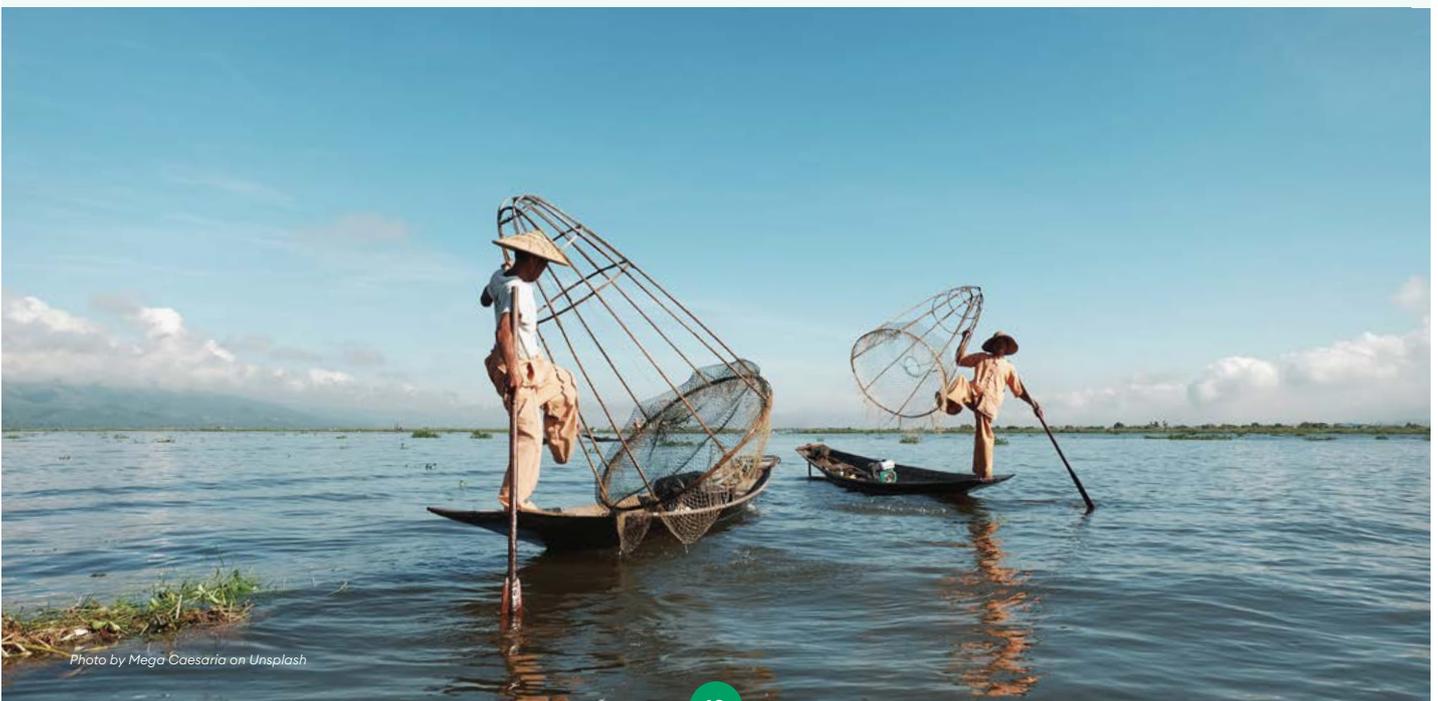
1. Publicly available data such as press releases, offering documents, reports and issue briefs;
2. Data from Refinitiv Workspace about green bonds issued for blue-aligned use of proceeds and relevant blue economy sectors.

The desk research led to the identification of key stakeholders active in the blue finance market, some of whom Tameo reached out to for one-to-one interviews. The purpose of these targeted stakeholder interviews

was to verify and expand on qualitative information related to the processes, challenges, and opportunities in blue financing. Tameo organized 20 interviews in total.

Identified stakeholders included issuers, arrangers, investors, verifiers, and thought leaders, who provided unique perspectives and insights into the issuance process and eligible projects, financial conditions, and regulatory landscape for blue instruments. The interviews also referenced the broader sustainable debt finance market, including green, social, sustainability and sustainability-linked (GSSS) instruments and the role of new blue labeled issuances within this market. Finally, the nexus between blue finance and gender was explored in some interviews as a niche cross-thematic area within the blue economy.

After aggregating and synthesizing the qualitative information from the interviews, Tameo developed a consolidated market sentiment with key takeaways linking the desk research to the interviews.



State of the market on blue financing

THE EVOLUTION OF BLUE FRAMEWORKS

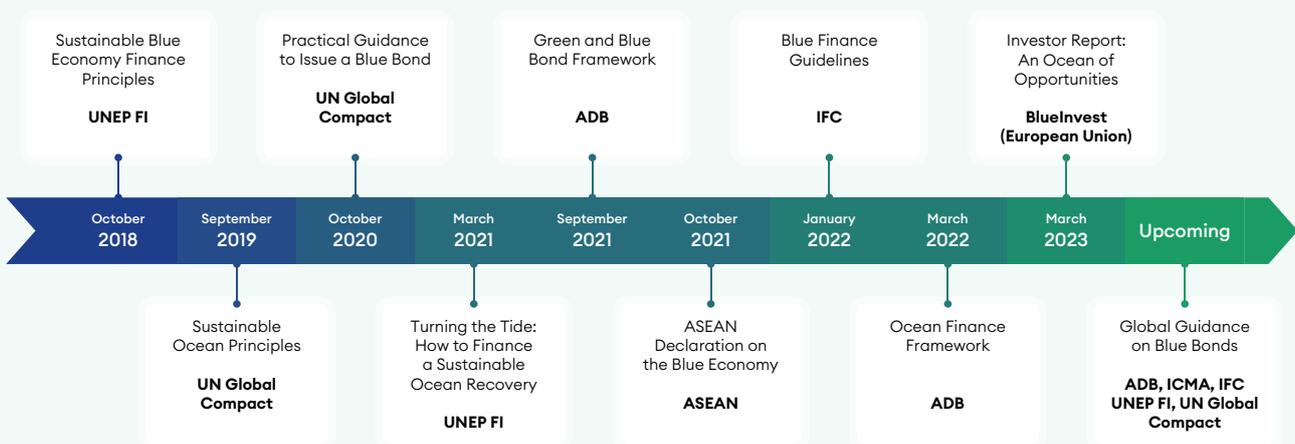
Blue debt finance instruments are an emerging source of sustainable financing for projects that support a healthy ocean economy.²⁰ The ocean economy includes a wide range of activities that stem from ocean-based industries such as fishing, tourism, shipping and offshore wind production—as well as those that impact our marine ecosystems, the aquatic life they nurture, and the natural assets (such as mangroves and coral reefs) they harbor. In line with this, blue financing can be used for a broad set of eligible projects. While there is no global standard or “eligibility criteria” to define projects that are considered blue in the market today, there are a few promising blue finance guidelines and frameworks to reference at this early stage.

The world’s first sovereign blue bond issued by the Government of Seychelles in 2018 spurred the development of several blue finance guides, which attempt to describe what constitutes blue projects and activities, in order to maintain the integrity of sustainable

blue financing. Several global entities including UN organizations, DFIs, and ocean economy industry bodies have published guidelines and frameworks to support the growth of blue bond issuances, as shown in the timeline in Figure 3. These entities have also played an active role in conditioning and developing the blue finance market over the past five years. In particular, five organizations—The International Finance Corporation (IFC), International Capital Markets Association (ICMA), United Nations Global Compact (UNGC), United Nations Environment Program Finance Initiative (UNEP FI), and Asian Development Bank (ADB)—are collaborating to create the first global practitioner’s guide for blue bonds, which will aim to provide market participants with clear criteria, practices, and examples for blue bond issuances. As of mid-2022, the organizations were seeking input on the guide from the financial markets and ocean industry, although it is unclear when the final edition will be available for public access.

Figure 3: Timeline of key blue finance guides and frameworks

Additional details about these resources can be found in Annex 1.



20 Ocean economy and blue economy are terms that are often used interchangeably, with the latter being defined in chapter 1.

LABELED BLUE ISSUANCES

A variety of labeled blue debt financing instruments or structures have been used to raise money for blue economy initiatives. These include blue use-of-proceeds bonds and loans, sustainability-linked bonds and loans with blue performance targets, as well as innovative mechanisms such as sovereign debt-swaps for climate, adaptation and nature-based solutions (collectively referred to as “blue bonds” in this research).

Our desk review shows that cumulatively since 2018, labeled blue issuances in the global debt market have amounted to USD 9.7 billion in size and 51 in number. In Asia alone, 22 issuances amounted to USD 5.1 billion (or 53% of the total volume).

Figure 4: Total blue bond issuances

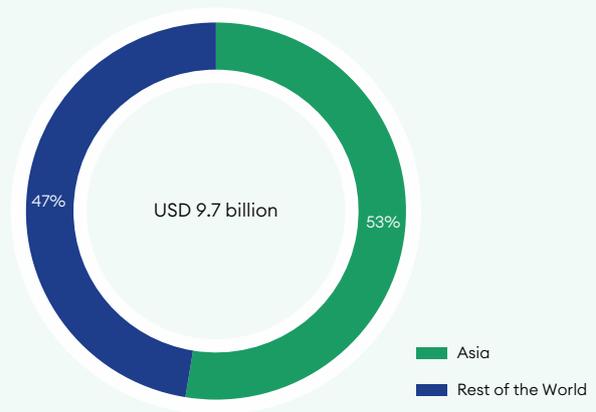
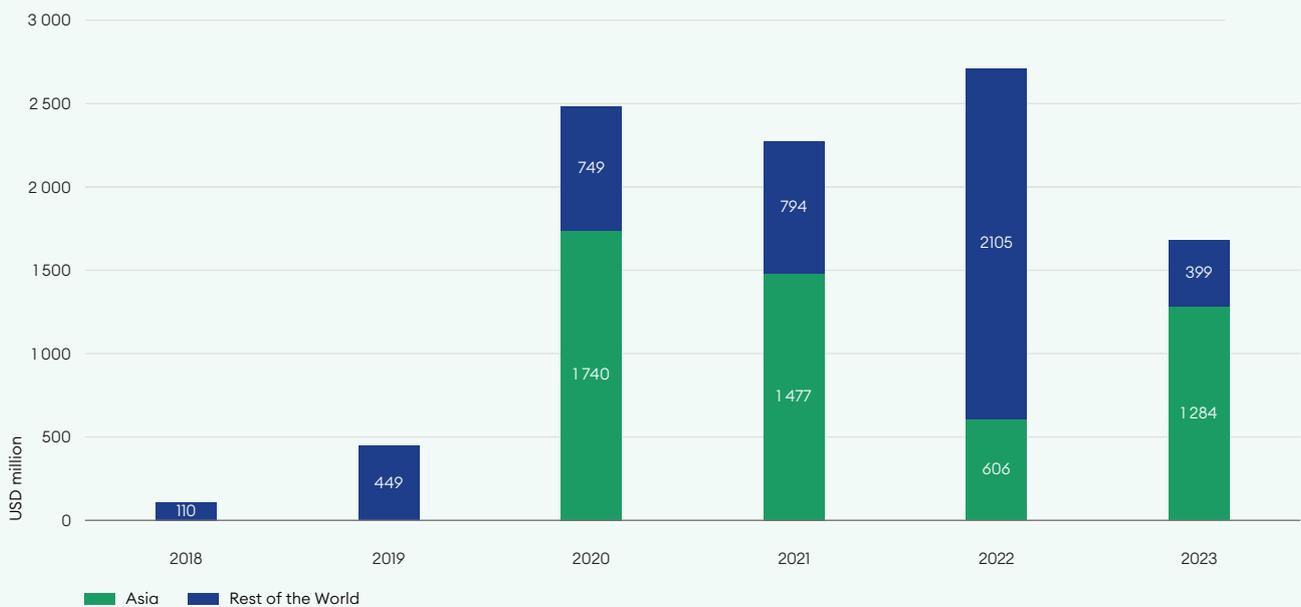


Figure 5: Annual blue bond issuances (in USD million)



While blue bonds have been issued in 11 different currencies, most are denominated in USD (6.0 billion; 24 issuances), followed by the Euro (USD 868 million

equivalent; 5 issuances) and Thai Bhat (USD 734 million equivalent; 4 issuances).

Figure 6: Blue bond issuances by currency



The blue finance market has welcomed a diverse group of issuers across sovereigns, corporates, commercial banks, DFIs, and government entities such as state-owned enterprises. These issuers have used blue bonds to finance different types of blue projects, as summarized below:

- **Sovereign states** aiming to finance blue infrastructure (e.g., water sanitation, sustainable shipping and port logistics) and large-scale ocean conservation projects (e.g., marine ecosystem protection and restoration);
- **DFIs** aiming to finance the blue economy and ocean-related projects, including biodiversity and ecosystem conservation projects and

infrastructure projects; private companies active in the circular economy (e.g., plastic waste recycling technologies); sustainable ports and shipping; and sustainable seafood industry practices to prevent ocean pollution;

- **Commercial banks** aiming to finance private companies active in the blue economy and infrastructure projects. For example, the Chinese government highlighted the blue economy as a national development priority in 2019 and 2020, mandating the insurance and banking sectors to explore innovative sustainable finance instruments such as blue bonds to support a low-carbon, circular economy.²¹ Several financial institutions, including commercial banks, responded by launching blue

21 Crédit Agricole CIB, (2020). *Bank of China issues Asia's very first blue bonds*

bonds to finance projects in offshore wind energy, wastewater treatment, sustainable shipping and fishing, and the circular economy; and

- **Corporates** aiming to finance their own sustainable blue strategy or activities. This includes companies in the recycling, water supply, shipping and seafood sectors to expand operations and/or finance specific projects (e.g., seawater desalination projects, solar panel installation), or broader ocean protection objectives.

Further details about the profile and use of proceeds for labeled blue bonds issued in Asia are referenced in Annex 2.

To finance a labeled blue bond through the capital markets, an issuer will typically conduct pre-issuance analysis to develop an appropriate blue framework (steps 1-4 in Figure 7). In the absence of a globally-accepted blue standard, an issuer of a blue bond is expected to develop a blue framework aligned with the voluntary **ICMA Green Bond Principles (GBP)** and any relevant regional and/or national green bond standards. Once finalized, the issuer’s blue framework governs the assessment and selection process to identify a portfolio of blue projects in need of financing. Depending on the scale of bankable projects and breadth of blue objectives to be met, an issuer may opt to develop a green framework with eligible blue projects as a subset of a broader pool of green projects. The blue (or green) framework should also include details on how the financing will be allocated and managed (management of proceeds), via a Blue or Green Bond Register, to track and monitor financial flows.

Figure 7: The blue issuance process



Prior to issuance, and as per current market expectations, an issuer’s blue framework will need to undergo external review (step 4 in Figure 7) to confirm compliance with voluntary market guidelines such as the GBP, CBI²² or any other standards deemed relevant by the issuer. Second-party opinions are the most accepted type of external review in Asia; other types of reviews include green bond ratings, assurance and certification.²³ Sustainalytics and CICERO (recently acquired by S&P Global) have commonly provided second party opinions for blue deals in Asia so far, while RAM Malaysia, Carbon Trust, and Vigeo Eiris are also active in the market.²⁴

22 Climate Bonds Initiative’s Climate Bonds Standard

23 Asian Bonds Online: <https://asianbondsonline.adb.org/green-bonds/gbfactsheet7.html>

24 CBI (2021). *ASEAN Sustainable Finance State of the Market 2020*

Once the bond is issued and subscribed, the issuer is expected to collect data and report on the impact of the funded projects. The [ICMA Handbook for Impact Reporting and related guidance](#) is a widely accepted starting point for this.

After a successful first issuance, the potential to scale a blue financing model through repeat issuances is high as the issuer's blue finance framework and relevant monitoring systems should be in place to support future offerings. Issuers can use the base-case to attract more investments through a longer-capital planning period. Apart from the issuer, there are a few other key actors who are involved in the successful closing of a blue transaction. These include underwriters, arrangers, legal advisors, verifiers and investors, who engage and provide feedback specifically during debt origination (step 5 in Figure 7), and throughout the lifecycle of a blue issuance.

An arranger brings deep expertise in capital markets finance and works closely with the issuer to structure a blue deal. This includes assessing the creditworthiness of the issuer, identifying the correct financial structure for the deal, accurately pricing the issuance, and marketing the transaction to potential investors. For a blue issuance, the arranger may also play an integral role in developing the blue framework that governs the use of proceeds or projects eligible for financing. While most deals have a sole arranger, larger transactions may have multiple arrangers who act as joint-arrangers, while others may have international and domestic arranger(s) respectively to cater to both offshore and onshore investor expectations and financial regulations.

For the blue transactions issued in Asia, Crédit Agricole Corporate and Investment Bank (CIB) acted as arrangers in four deals and underwriter in a corporate issuance from China. Other arrangers include Société Générale, BDO Capital & Investment Corporation (CIC), Bank

of Ayudhya, Citigroup, DBS Bank, Mizuho Bank, and Standard Chartered to name a few.

Table 1 summarizes the labeled blue issuances in Asia. More granular information on all Asian blue issuances, including the country of issuance, key actors involved in the transaction, and use of proceeds is available in Appendix 2.

Much of the rationale in the industry today for blue issuance is derived from the burgeoning green finance market, as green bonds have already been used to finance blue objectives or use of proceeds without the formalized blue label, and blue finance may be associated with a narrower set of definitions that relate to the sub-sectors of the ocean economy alone.

While there is no standardized framework in place to define the sub-sectors associated with the blue economy, a review of evolving blue frameworks (presented earlier in this chapter and in Annex 1) can provide a preliminary list of potential blue economy assets, project areas, technologies and activities that can meet the eligibility requirements of labeled blue financing. A review of the IFC Blue Finance Guidelines and ADB Ocean Finance Framework, both published in 2022, resulted in the following focus areas within the blue economy landscape as most eligible for blue financing:

- Water supply and sanitation
- Wastewater management and non-point source pollution management
- Solid waste management
- Resource efficiency and circular economy
- Sustainable shipping and port logistics
- Sustainable fisheries, aquaculture, and seafood value chain
- Sustainable coastal and marine ecosystem management, protection, and restoration
- Sustainable coastal resilience and marine tourism
- Marine and offshore renewable energy production

Given the nascence of the labeled blue market, it is important to consider the role of green bonds with blue use of proceeds in supporting the blue economy over the last decade not only worldwide, but also in Asia.

Table 1: Blue issuances in Asia

Issuer	Year	Use of Proceeds <i>(Summary)</i>	Size <i>(USD M)</i>
Bank of China	2020	Offshore wind power and wastewater treatment	943
Indorama Ventures	2020	PET recycling	300
Industrial Bank	2020	Marine renewable energy, sewage pipelines and sewage treatment, shipping and port pollution prevention and control, and urban flood control facilities in coastal areas	450
Qingdao Water Group	2020	Expansion project of Qingdao Baifa desalination plant to increase freshwater reserves	47
Asian Development Bank	2021	Ecosystem restoration, natural resources management, sustainable fisheries and aquaculture, reduction of coastal pollution, circular economy, marine renewable energy, and green ports and shipping	151
CSSC (Hong Kong) Shipping Company Limited	2021	Sustainable maritime transportation and renewable energy (low-carbon fuel use and energy efficiency); pollution prevention and waste; sustainable water and wastewater management	500
Thai Union	2021	Sustainability Performance Targets include remaining in the Dow Jones Sustainability Index (DJSI) Emerging Markets and ranking in the top 10 companies for the DJSI Food Products Industry Index; reducing Thai Union’s Scope 1 and Scope 2 carbon emissions from manufacturing operations by 4% annually (carbon intensity); and increasing the percentage of tuna purchased from vessels equipped with electronic monitoring and/or human observers by 5 percent each year from a 75 percent baseline in 2020.	147
Thai Union	2021	Please refer to above issuance from Thai Union.	176
Thai Union	2021	Please refer to above issuance from Thai Union.	352
Bank of Qingdao	2022	Sustainable shipping and port logistics; fisheries and seafood processing; chemical waste and plastics management and treatment; ocean- and water-friendly products; water supply and treatment; sustainable tourism services; offshore wind energy facilities	150

BDO Unibank	2022	Water conservation, wastewater treatment, plastic recycling, sustainable tourism, fisheries, and sustainable seafood processing	100
Far Eastern New Century Corporation (FENC)	2022	PET recycling (expansion of collection system network and production capacity) and related ocean protection projects	34
Maruha Nichiro Corporation	2022	Environmentally sustainable fisheries and aquaculture operations	38
People’s Government of Hainan Province	2022	Water sanitation, sustainable shipping and port logistics, fisheries and seafood value chain, and marine ecosystem restoration	175
Thai Union	2022	Please refer to above issuance from Thai Union.	59
TMBThanachart Bank (ttb)	2022	Marine plastic recycling, water conservation and wastewater treatment	50
Export-Import Bank of Korea	2023	Sustainable marine transportation (e.g., construction, design and maintenance of clean and sustainable vessels; retrofitting of the engines of existing vessels with alternative fuels)	1’000
Vista Shipping (joint venture between Hafnia and CSSC Shipping Hong Kong)	2023	Purchase two liquefied natural gas (LNG)-dual fueled vessels; SLL targets on annual efficiency ratio and sulfur oxide emissions over a 10-year period	90
Bank of Ayudhya	2023	Water supply, fisheries and aquaculture	50
Republic of Indonesia	2023	Ocean conservation and climate change mitigation programs	102
Republic of Indonesia	2023	Ocean conservation and climate change mitigation programs	42

Green finance for blue sectors

Until the recent advent of blue finance, green bonds have been used to finance blue sectors and use of proceeds. To understand and estimate the potential of the evolving blue market, Tameo analyzed issuance data from the green bond market for eligible blue use of proceeds as designated in existing green bond frameworks such as GBP, CBI and those individually developed by issuers. As the basis for analysis, Tameo used the Green and Sustainable Bonds data set from the Refinitiv Workspace (“database”), which is sourced from the [Climate Bonds Initiative Green Bond Database](#) (Climate Bonds GBDB). What follows is a brief description of the methodology used by CBI to develop the Climate Bonds GBDB (database source data) and how Tameo adapted the data set to define a global blue bond universe.

According to the Climate Bonds GBDB, the [climate-aligned universe](#) of global green issuance consists of nearly eight thousand self-labeled instruments (or “green bonds” for the purposes of this section). The database is not limited to bonds and includes other debt instruments such as loans, medium-term notes and asset-backed securities that are aligned with the GBP or [Climate Bonds Standard and Taxonomy](#).

The Climate Bonds GBDB identifies a broad set of green-eligible sectors including energy, transport, water, buildings, land use and marine resources, and waste, which are used to classify low carbon assets, projects and activities (“use of proceeds”) that are financed by green bonds. Most green bond financing has been allocated to climate change mitigation to date, but use of proceeds can also be accounted for climate change adaptation and resilience measures.²⁵

For green bonds issued since 2007 (inception of the Climate Bonds CBDB), Tameo identified 70 unique use of proceeds in the database. Based on eligibility definitions from existing blue frameworks, Tameo adapted and classified the following seven use of proceeds as “blue-aligned” to create an initial universe of green bonds with labeled blue use of proceeds:

- Aquatic biodiversity conservation
- Circular economy and resource efficiency
- Environmental protection projects
- Pollution prevention and control
- Sustainable shipping and port logistics
- Sustainable water and wastewater management
- Solid waste management

For all other use of proceeds (63 inclusive), Tameo assessed the issuer’s sector and industry classification (defined as The Refinitiv Business Classifications (TRBC) in the database), to determine which green issuances could be re-classified as “blue-aligned.” The rationale for re-classifying these bonds to expand the initial universe of green bonds with labeled blue use of proceeds was twofold:

1. More than 20% of the green bonds in the database were classified as “climate change adaptation” and “eligible green projects,” use of proceeds external to the initial blue-aligned universe. By excluding one-fifth of the bonds in the database, a large universe of the potentially blue-aligned green bonds would have been overlooked. The TRBC analysis confirmed that a portion of these use of proceeds could have been allocated to blue themes, thereby adapting the respective bonds to the blue-aligned universe.

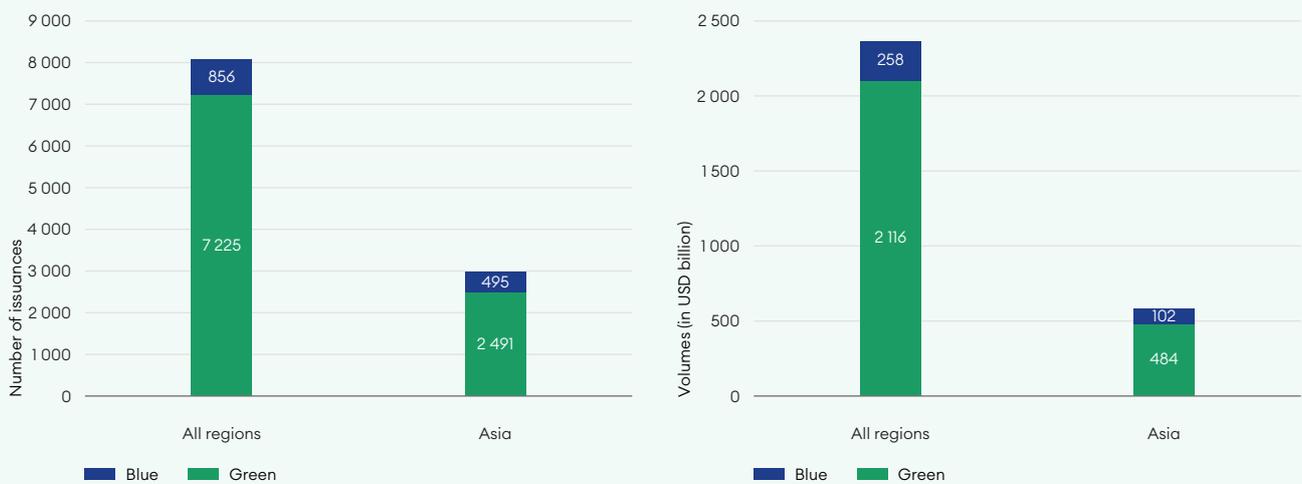
25 CBI (2022). [Green Bond Database Methodology](#)

2. As the database uses GBP and CBI definitions for eligibility, it is possible that green bonds not aligned to these frameworks may have been misclassified, based on lack of publicly available information at the time of analysis or due to the case-by-case nature of the analysis. For example, Hangzhou Water Group (a state-owned enterprise in China with parent companies in the urban construction sector) issued a green bond in 2022 with eligible use of proceeds for “sustainable water and wastewater management” and “pollution prevention and control” per the bond offering document. The use of proceeds for this bond was classified as “China urban construction” in the database, which would have been excluded in our blue-aligned universe if not for the re-classification method described above. The TRBC re-classification also allowed inclusion of bonds that may have used a framework different from GBP or CBI to self-certify.

Of the 269 issuer TRBCs identified in the database, 40 were classified by Tameo as potentially blue-aligned (e.g., deep sea freight, fishing and farming, plastic containers and packaging, sewage treatment facilities, marine port services). The final sample of 856 blue-aligned bonds, resulted from aggregating the green bonds with labeled blue use of proceeds with the green bonds issued by entities in blue-themed sectors. The adapted blue use of proceeds for these bonds is shown in Figure 10.

Indicative of historic market size and emerging blue themes, the estimated universe of blue-aligned bonds cumulatively size at USD 258 billion, or one-tenth of the cumulative green bond universe. Blue deals originating in Asia amounted to USD 102 billion, or 40% of the blue-aligned universe.

Figure 8: Blue-aligned green bond issuances



Within this universe of blue-aligned bonds, 11 South and Southeast Asian countries have issued green bonds for blue use of proceeds. China issued the highest volume

and number of blue-aligned bonds at USD 67 billion and 327 respectively.

Figure 9: Blue-aligned bonds by country in Asia

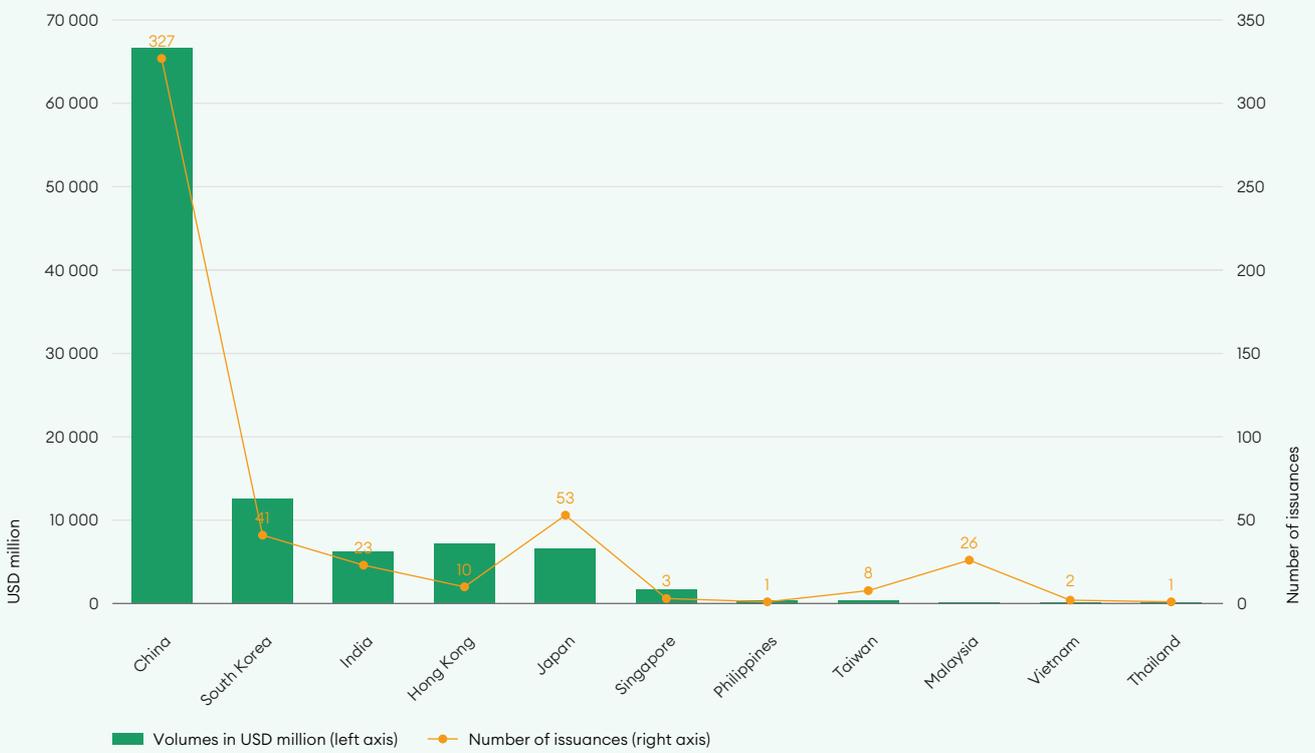


Table 2: Characteristics of blue-aligned bonds by country

	No. of bonds	Volumes in USD million					Avg Tenor (year)
		Total	Avg	Median	Min	Max	
China	327	66 523	211	144	0.05	2 876	9.0
South Korea	41	12 667	309	300	23	1 000	7.9
Hong Kong	10	7 094	709	725	144	1 200	6.4
Japan	53	6 563	124	73	26	750	13.1
India	23	6 204	270	60	3	965	9.7
Singapore	3	1 715	572	561	561	593	3.9
Philippines	1	500	500	500	500	500	7.0
Taiwan	8	470	59	33	23	163	4.7
Vietnam	2	147	74	74	21	126	4.5
Malaysia	26	137	5	5	0	14	5.5
Thailand	1	52	52	52	52	52	5.0

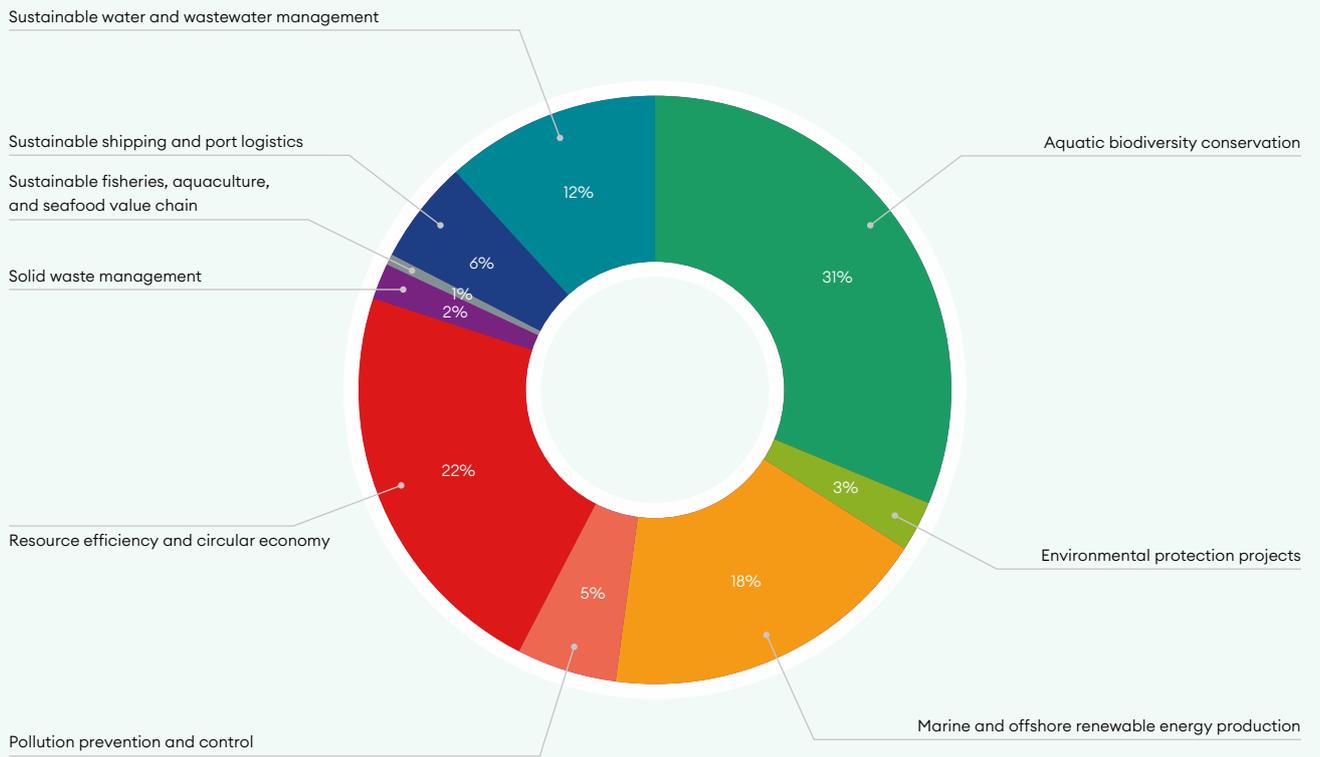
On a global scale, the most number of blue-aligned issuances are directed towards marine and offshore renewable energy production, with 215 transactions out of 856. This is followed by sustainable water and wastewater management (154 issuances) and circular economy and resource efficiency (148 issuances).

In terms of volumes, aquatic biodiversity conservation absorbs most of the funding at USD 81 billion, or 31% of the total blue volume. Resource efficiency and circular economy ranks second, with 22% of the market, and marine and offshore renewable energy production completes the podium (USD 47 billion, 14%). At the other end of the spectrum, sustainable fisheries, aquaculture, and seafood value chain is the least attended thematic, with 7 issuances and a cumulative issuance size of USD 1.6 billion.

In Asia, the ranking is relatively similar albeit the importance of sustainable shipping and port logistics, ranking third in terms of transactions (69 issuances), but only accounts for 3% of all Asian blue-aligned green bonds.

While the assessment of the blue-aligned bonds universe provides an illustrative snapshot of various blue themes and issuance volumes, it is not meant to describe the current or future market potential of blue bonds. The analysis does not consider blue themes that were excluded from the historical green finance landscape, or market gaps and projections of blue sectors to understand the full potential of blue financing.

Figure 10: Green bonds for adapted blue themes



Market sentiment

With the hike in interest rates and sectoral credit events across the globe, international bond issuances in Asia experienced a decline for the first time over the last five years in 2022. However, the proportion of sustainable bonds within international bond issuances rose from 16% to 23% in 2022, signifying the attractiveness of sustainable bonds as a financing instrument for issuers.²⁶

Within this context, the current debate on the nexus between green and blue will help deepen the breadth and themes explored by sustainable finance investments. While GSSS bond issuance in the sustainable finance market has been recorded for blue themes, use of proceeds and activities, explicit blue labeling of issuances is new and will pick up pace as this subset of the market matures to recognize what is considered blue and how to measure the impacts of blue initiatives.

Macroeconomic factors will also play a role in advancing the blue agenda. As the negative impacts of climate change are disproportionately felt by developing countries in the Asia-Pacific region and small island developing states (SIDS) that control 30 per cent of all oceans and seas²⁷, financing for the ocean economy will continue to gain traction within the development finance and impact investing communities. Regulatory policy on green and blue finance, knowledge and capacity building at the national and industry levels, and de-risking strategies will support innovation and experimentation with blue financing structures.

During this study, Tameo discussed with market practitioners to build on their expertise and knowledge about the opportunities and challenges in developing the sustainable blue debt finance market in Asia. Interviews also tackled the relevance of gender in these investments and what it will take to mainstream

gender into the rhetoric on blue finance. This chapter consolidates the market sentiment of 20 stakeholder interviews, as outlined in Chapter 2 (study methodology). The qualitative insights gained from the interviews amplified the desk research and data analysis conducted as part of this research.

KEY POINTS

The blue debt finance market is poised to leverage the successes and lessons learned from sustainable debt financing, including: a variety of issuance structures in the form of green, social, sustainability and sustainability-linked bonds; innovative projects, technologies, and activities that deliver green and blue climate-aligned outcomes; proliferation of standards, guidelines and taxonomy to ascertain investment criteria and credentials; and emerging best-practices in impact reporting for post-issuance analysis.

However, several market conditions need to be met or improved for blue issuances to mirror the growth witnessed over the years by their labeled green counterparts. Based on in-depth conversations with issuers, investors, verifiers and thought leaders, the following conditions will influence the integrity, replicability and scalability of blue finance in Asia and beyond.

Reference to a global standard that defines eligible use of proceeds or sustainability-linked outcomes for blue issuance.

Sustainable blue debt issuance without the formal blue label has historically been a subset of the broader green finance market, which has been governed by

²⁶ ICMA (2023). *The Asian International Bond Markets: Development and Trends*

²⁷ UN News (2022). *Sustainable blue economy vital for small countries and coastal populations*

the voluntary GBP. These principles were developed by a diverse group of investors, issuers and advocacy organizations active in the capital markets, and will continue to serve as global guidance for issuers looking to develop their own blue frameworks. ICMA is presently working with ADB, IFC, UNEPFI and UNGC (as mentioned earlier in the “State of the market on blue financing”) to provide additional clarification and guidance for blue issuance, based on a review of existing knowledge and resources for blue finance. As local sustainable debt finance markets evolve in Asia, national and regional green bond frameworks will also continue to be developed so that deals can be done in local currency, adhere to national regulations for disclosure, and meet the Environmental, Social and Governance (ESG) objectives of Asian companies and investors. Sector-specific ESG issues and materiality implications in Asian countries may be remarkably different from those in developed economies, and sustainable finance regulations around transparency and disclosure aim to address those variances. This should be encouraging for issuers and investors, as the absence of a global blue framework should not preclude the demand for blue financing as witnessed by extant blue labeled deals.

As developing countries make advances in sustainable finance policy, preparing, implementing, and mainstreaming green frameworks can prioritize and enable climate-friendly investments inclusive of strategic blue finance commitments. According to a majority of the Sustainable Banking Network member countries, promoting green finance such as green bonds and green loans and developing a national sustainable finance roadmap to support adoption are top priorities to realize new investment opportunities in green and sustainable debt finance. This investment potential in emerging markets cities in the Asia-Pacific region was estimated to be USD 675 billion in 2018 for urban climate-smart water and waste alone.²⁸

In line with this, Asian countries that have developed a national green bond or sustainable finance guidance also applicable to blue finance include Japan, Korea, Hong Kong, Thailand, China, Singapore, Bangladesh, Cambodia, Mongolia, Malaysia, Philippines and India; Nepal’s Green Finance Taxonomy is under development this year and forthcoming (Table 3).

28 IFC and Sustainable Banking Network (2020). *Necessary Ambition: How Low-Income Countries Are Adopting Sustainable Finance to Address Poverty, Climate Change, and Other Urgent Challenges*

Table 3: Green standards and guidelines relevant to the Asian market

Global	<ul style="list-style-type: none"> • ICMA Green, Social and Sustainability Bond Principles (GBP) • ICMA Handbook: Harmonized Framework for Impact Reporting • Climate Bonds Initiative (CBI) Standards and sector criteria • European Green Bond Standard and EU Taxonomy • ISO 14030 Environmental Performance Evaluation - Green debt instruments taxonomy
Regional	<ul style="list-style-type: none"> • ACMF ASEAN Green Bond Standards • ACMF ASEAN Social Bond Standards 2018 • ACMF ASEAN Sustainability Bond Standards 2018 • ASEAN Taxonomy for Sustainable Finance • IPSF Common Ground Taxonomy (CGT)
National	<ul style="list-style-type: none"> • Japan Green Bond Principles 2017 (updated 2022) • Korea Development Bank Green Bond Framework 2017 • Hong Kong Green Bond Framework 2019 (updated 2022) • Thailand Sustainable Financing Framework 2020 • China Green Bond Principles 2022 and Green Bond Endorsed Projects Catalogue 2021 • Singapore Green Bond Framework 2022 and Green Finance Industry Taskforce’s Third Consultation on Green and Transition Taxonomy underway • Bangladesh Policy on Green Bond Financing 2022 and Sustainable Finance Policy for Banks and Financial Institutions 2020 • Cambodia Green Bond Issuance Handbook 2022 (additional reference) • Mongolian Green Taxonomy 2019 (forthcoming draft on SDG Finance Taxonomy) • Malaysia Sustainable and Responsible Investment Sukuk Framework 2014 and Malaysia Climate Change and Principle-based Taxonomy 2021 • Philippines Sustainable Finance Framework 2021, Philippines Sustainable Finance Guiding Principles 2021 and Philippines Sustainable Finance Roadmap 2022 • Sri Lanka Green Finance Taxonomy 2022 • India Sovereign Green Bonds Framework 2022 • Nepal Green Finance Taxonomy is under development in 2023 (builds on the Nepal Guideline on Environmental and Social Risk Management (2018) and Policy Paper on Green Financing in Nepal 2022)

While some Asian countries are more advanced in establishing green finance policies and programs, others are testing out enabling conditions through pilot initiatives. For example, the Government of Indonesia's Ministry of Finance issued its first sovereign green sukuk (Islamic Bond) under The Green Bond and Green Sukuk Initiative in 2018, signaling that additional guidance may follow. Indonesia has also joined The Blue Finance Accelerator, a UN program that aims to increase national and local government capacity and awareness of the blue economy and improve access to finance for blue sector start-ups and Small and Medium Enterprises (SMEs).²⁹ With some of the highest lending rates in ASEAN and a rich blue economy landscape particularly for marine fisheries and aquaculture, marine plastics and waste management, and marine tourism and conservation, Indonesia is heavily reliant on public international finance for blue financing presently supplemented by commercial banks for sourcing private funds.³⁰

A recent green bond survey conducted by ADB highlighted that greater policy clarity from the government and regulators is critical for the development of the green bond market in Indonesia, along with preferential buying by institutional investors and an increased pipeline of green projects to create the supply of green bonds issued in Indonesia.³¹ In 2022, ADB also conducted green bond surveys for Singapore, Malaysia, Laos, Cambodia, Philippines, Japan and Thailand, to understand the development priorities and market conditions for green issuance in each Asian country.³² These surveys complement Tameo's study on blue finance in Asia and comprise a pertinent knowledge base from interviews with local investors, issuers, arrangers, underwriters, and industry associations.

The need for a steady supply of scalable blue projects to meet the debt profile for bond financing.

As reflected by the extensive nature of the blue economy inclusive of natural ecosystems and built infrastructure, the universe of financeable blue projects is large and diverse. Depending on the terms of financing, the scale, maturity, and breadth of blue projects may seek different types of innovative funding structures and amounts. Factors such as the scale of sustainable blue infrastructure projects, maturity of decarbonization technologies (i.e., proof of concept to evidence-based success models), and breadth of ecosystem preservation and protection activities, define how blue an investment is and the best financial terms to capture its risks and benefits. Since the first USD 15 million blue bond issued by Seychelles, the smallest transaction recorded in Asia is a blue loan issued at USD 33.65 million by Far Eastern New Century Corporation (FENC) in Taiwan, for PET recycling, specifically expansion of collection system network and production capacity, and related ocean protection projects.

Corporate issuers in Asia display the potential to support smaller blue deals that add up to meet larger blue finance objectives over time. During the two-year period from 2021 to 2023, Thai Union issued a short-term blue loan and three sustainability-linked blue loans worth over USD 700 million in total, signaling a commitment to track and measure Sustainability Performance Targets (SPT) per their blue Sustainability-Linked Financing Framework for "Healthy Living, Healthy Oceans." Thai Union's SPT include remaining in the Dow Jones Sustainability Index (DJSI) Emerging Markets and ranking in the top 10 companies for the DJSI Food Products Industry Index; reducing Scope 1 and Scope

29 UNDP (2022). *United Nations Fast-tracks Indonesia's Blue Economy Development Through the "Blue Finance Accelerator" Program*

30 Climate Policy Initiative (2022). *Indonesia Blue Finance Landscape*

31 ADB (2022). *Green Bond Market Survey for Indonesia*

32 Asian Bonds Online: *Sustainable Bond Related Publications (ADB and ADBI)*

2 carbon emissions from manufacturing operations by 4% annually; and increasing the percentage of tuna purchased from vessels equipped with electronic monitoring and/or human observers by 5 percent each year from a 75% baseline in 2020.³³ In contrast, some of the largest blue issuance volumes came from China and Hong Kong for offshore renewables, sustainable maritime transportation (low-carbon fuel use and energy efficiency), pollution prevention and control in ports, and urban flood control facilities in coastal areas.

As shown by the aforementioned labeled blue deals, the capital markets have financed different volumes of blue deals for varied project types and issuers. While sovereigns and public entities are likely to finance large blue infrastructure and conservation projects, the commercial blue economy in Asia is composed of many small, family-led companies with modest financing needs. Decentralized innovative business models that cater to domestic water needs like water kiosks or single-use water filters will typically require small loans, or equity financing as seed funding to meet early-stage product commercialization needs. On the contrary, large renewable projects or capital-intensive infrastructure such as new wastewater treatment plants or piped water assets benefitting multiple constituents (e.g., communities, industry, and nature) must be matched with permanent revenue sources to ascertain long-term operations and maintenance and will therefore require bigger ticket bond or loan financing from the capital markets.

Due to the fixed costs inherent to the bond issuance process, the average minimum ticket size for a bond transaction in the international capital markets is estimated at USD 100 million. Individual blue projects that do not meet this size criteria may have to be bundled and scaled so that the investable

portfolio is attractive and diverse from a risk-reward perspective, and the revenues from the projects are quantifiable by the issuer to repay the debt.

Increasing investor confidence in blue finance through labeling and verification, consistent with expectations in green financing.

Blue finance is increasingly being seen as one of many tools in the broader sustainable finance toolkit. The growth of labeled blue instruments can help diversify a sustainable finance portfolio with investments in a diverse array of projects, assets and ESG considerations. While proliferating labels may need aligning to catalogue comparable cross-sectoral investments that meet the profile of both blue and green finance, labeling can help differentiate impact themes based on investor appetite; provide access to a larger, more sophisticated pool of investors in comparison to a vanilla issuance; add depth to investment characteristics within a sector to support research and development or new project categories (e.g., in its infancy, green finance was focused solely on renewables and grew to cover other types of assets like green vehicles and energy efficiency strategies); and meaningfully enhance the rhetoric on impact measurement and metrics for biodiversity projects.

Investor demand for sustainable finance debt assets has been evidenced by the “greenium” (green premium) for global themed issuance in comparison to conventional bonds, with spread compressions initially at 5-10 bps. Anecdotally, while this greenium is now lower at 3-5 bps, it has not yet presented for green bonds issued specifically in Asia. It also could be argued that the lack of market depth in liquidity in secondary markets for green bonds leads to a premium over mainstream

33 Thai Union Group Public Company Limited: *Sustainable Finance – “Blue Finance”*

equivalents.³⁴ A recent market study on a Euro-denominated investment grade senior corporate bond universe, found the greatest evidence of greenium amongst some of the harder-to-abate sectors, which typically have a greater intensity of greenhouse gas (GHG) emissions, adjusting for operational scale.³⁵ While the greenium may also be associated with a supply-demand mismatch for green issues relative to their non-green equivalents, emerging markets issuers with a clear sustainability mandate and commitment to climate projects will likely benefit from any greenium than those who are laggards. The blue finance market stands today where green finance was a decade ago, so it is yet to be seen if the greenium may apply to blue instruments and how blue bond pricing might evolve in the emerging markets context.

Sophisticated issuers prefer sustainability-linked financing over general-purpose debt to showcase and leverage their sustainability strategy by linking financial terms to green or blue KPIs. In this regard, blue finance deals may benefit from emerging discussions around entity-level verification in addition to the current practice of deal-level verification. For example, a first-mover in Taiwan's corporate blue market, FENC is currently the only enterprise accredited to issue four types of sustainable bonds and has built partnerships with large-scale banks aimed at realizing sustainability goals based on the core business value of vertical integration in its industrial chain.³⁶ To accommodate issuers like FENC, CBI has [expanded its standard](#) to enable "entity" certification of corporates aligned with 1.5-degree pathways, or those that will be by 2030, so

long as the entity has suitably ambitious performance targets and credible transition plans.^{37,38} This market development could streamline and reduce the volume of verifications to be done for an issuer, motioning a change in the way verifiers³⁹ have operated until now.

Innovating structures to accommodate deal flow from different types of issuers to cultivate the blue market.

Similar to the green bond market, establishing a liquid market for blue debt issuance will hinge on nurturing a consistent pipeline of sizeable, eligible projects for financing. Blue debt issued by sovereigns, corporations, regions and municipalities, or state-owned enterprises, is typically structured as a bond or loan for use-of-proceeds or sustainability-linked purposes. Innovative financial instruments such as sovereign debt-swaps (debt-for-nature, debt-for-resilience, debt-for-climate, and debt-for-adaptation swaps)⁴⁰ and Islamic *susuk* (issuer sells partial ownership of identifiable assets instead of a traditional debt obligation to investors in return for financing) instruments will continue to deepen the debt market for blue issuance. While these types of innovations may not cater to the speed and replication sought after by investors from a liquidity perspective, debt-exchange models can address the systemic change inherent to funding interconnected climate or environmental projects and losses sustained from extreme droughts, intense floods, increased coastal erosion, and extensive natural resource depletion.⁴¹ They can also help reduce the knowledge and capacity gaps hindering progress on climate goals through

34 ICMA (2021). Green and Sustainable Finance: *What Is the Role of the Repo Market?*

35 IHS Markit (2020). *Searching for "Greenium"*

36 DBS (2022). *Addressing the Blue Crisis with Taiwan's First Blue Loan*

37 CBI (2022). *Standard and Certification Scheme Set to Expand to Corporate-Entities and SLB Instruments*

38 ESG Investor (2023). *CBI Offers Company-level Certification for SLBs*

39 CBI. *Approved Verifiers under the Climate Bonds Standard*

40 Climate Policy Initiative (2021). *Debt for Climate Swaps: Supporting a Sustainable Recovery*

41 Commonwealth Secretariat (2021). *Debt-For-Climate Swaps: Innovative Financial Instruments for Public Debt Management in the Caribbean*

the development of new expertise, multi-sectoral partnerships and de-risking opportunities. This is especially true in the context of developing countries, where private investors want to invest but most climate projects are high-risk, well above what is considered “investment grade”.⁴²

Three debt-for-nature swaps were pioneered by The Nature Conservancy for the countries of Seychelles (2018), Barbados (2021) and Belize (2021), to refinance a portion of their national debt to achieve large-scale marine conservation goals.⁴³ In all transactions, DFIs provided financial and technical assistance to de-risk investments and aid in the investment decision of other investors, who would otherwise not invest in untested blue concepts, projects, or technologies they perceive as too risky due to the lack of impact data available or liquidity concerns inherent to new financial products. While debt swaps are niche, they can be a useful tool to address broad climate and environmental goals underpinning the blue economy. This is especially true in countries with strong fiscal management and policy credibility, where budgetary spending is aligned with a blue or green national strategy and can be linked to quantifiable metrics such as ocean conservation.⁴⁴

Developing verifiable metrics to quantify impact indicators and prove additionality for the blue sector.

A major differentiator of blue finance in comparison to its green counterpart is the extensive scope of biodiversity projects and impact metrics applicable to the blue economy. While the green bond market is

predominantly focused on avoided carbon emissions (from human activity) as a key metric, the blue economy is inclusive of life above and below water—and blue finance will therefore need to reference sustainability standards and metrics for a variety of nature-related outcomes that go beyond traditional built environment issues.

Biodiversity is defined as the variety of life and the interactions between living things at all levels on land, in water and in the air—genes, populations, species and ecosystems.⁴⁵ This includes terrestrial, freshwater and marine ecosystems such as forests, grasslands, wetlands, mangrove swamps and the oceans, which provide us with services essential for human well-being and are critical elements of the blue economy. Biodiversity loss both contributes to climate change and is a result of climate change.⁴⁶ To address the pace and magnitude of biodiversity loss humanity is facing, 190+ countries adopted the [Aichi Biodiversity Targets](#)—a 10-year plan with 20 targets—for protecting and conserving natural systems,⁴⁷ at the 2010 UN Convention on Biological Diversity summit in Japan. During the next decade, countries were expected to devise their own national biodiversity strategies based on The Aichi Targets, but fell short on implementation without specific accountability measures in place. According to the biodiversity community, when the targets expired in 2020, none were met due to lack of financing, stakeholder buy-in, measurable targets and accountability. The most notable Aichi objective—and one of the few to include a numerical goal—aimed to protect or conserve 17% of all land and inland waters and 10% of the ocean by the end of the decade.⁴⁸

42 Brookings (2023). *Debt-For-Adaptation Swaps: A Financial Tool to Help Climate Vulnerable Nations*

43 TNC (2022). *The Nature Conservancy Announces Its Third Global Debt Conversion in Barbados*

44 IMF Blog (2022). *Swapping Debt for Climate or Nature Pledges Can Help Fund Resilience*

45 WWF (2022). *Living Planet Report 2022: Building a Nature-Positive Society*

46 UN Climate Change (2021). *Why Biodiversity Matters*

47 Convention on Biological Diversity (2020). *Strategic Plan for Biodiversity 2011-2020, including Aichi Biodiversity Targets*

48 Reuters (2022). *Explainer: Why Did past Targets to Protect Nature Fail over the Last Decade?*

Recent discussions at the 2022 Conference of the Parties in December were as important to biodiversity as the Paris agreement is to climate,⁴⁹ where countries adopted the [Kunming-Montreal Global Biodiversity Framework \(GBF\)](#). The new framework includes four goals and 23 targets for achievement by 2030 to halt and reverse nature loss; protect 30% of lands, oceans, coastal areas, inland waters; reduce by \$500 billion annual harmful government subsidies; cut food waste in half; and increase financing to developing countries.⁵⁰ As countries, corporations and financial institutions begin to tackle these global targets, assessing, monitoring, and disclosing risks, dependencies and impacts to the blue economy will become an imperative.

In the context of blue finance, the measurement and availability of data to establish blue economy metrics is a major deterrent to market growth.⁵¹ To channel investments in blue natural capital and sustainable development in the marine economy, issuers, investors and other actors in the global financial markets must align on science-based nature-positive outcomes, impact indicators, and metrics. While impact measurement for the blue economy is far from standardized, market resources are being developed by various enabling organizations and initiatives. A few examples of recent advances include:

- [EU Sustainability Criteria for the Blue Economy](#)
- [ADB Blue Economy Metrics for SMEs in Asia and the Pacific](#)
- [1000 Ocean Startups Ocean Impact Navigator Framework and KPIs](#)
- [Arup Blue Economy Case Study Compendium](#)
- [World Bank Blue Economy Data and Tools](#)

- [Making Oceans Count: Unlocking the potential of ocean-related data to develop insightful blue metrics for financial institutions](#)
- [Taskforce on Nature-Related Financial Disclosures \(TNFD\) Nature-Related Risk & Opportunity Management and Disclosure Framework](#)
- [The Science Based Targets Network \(SBTN\) Science-Based Targets for Nature - Initial Guidance for Business](#)

As mentioned earlier in this section, forthcoming updates from ICMA and other market actors on a global practitioner's guide for blue finance will also be a first step in conditioning and directing the research on metrics for blue debt.

Integrating gender in the investment decision process for blue finance.

As issuers and investors begin to engage deeply on the sustainable blue economy ranging from industry practices and infrastructure to biodiversity issues, integration of additional ESG themes to assess the impact of these investments will become a priority. A critical cross-thematic issue for consideration in the blue economy discourse, gender inclusion underpins the vital role women in the workforce play in key sectors such as fisheries, coastal and marine tourism, and aquaculture, and how they are disproportionately affected by the risks present in ocean industries (e.g., environmental and natural disasters, illegal fishing activities that compromise women's safety in coastal communities)⁵² as well as impacts of a changing climate and resulting transition to a low-carbon economy. Gender inequalities are prevalent in ocean-related sectors, as access to

49 Springer Nature Ltd. (2020). *The United Nations Must Get Its New Biodiversity Targets Right*

50 Convention on Biological Diversity (2022). *COP15: Nations Adopt Four Goals, 23 Targets for 2030 in Landmark UN Biodiversity Agreement*

51 Deutsche Bank Wealth Management (2022). *Ensuring a Sustainable Blue Economy*

52 The Economist (2022). *Valuing Women in the Blue Economy for International Women's Day*

economic opportunities and well-paid, skilled jobs remain limited.⁵³

In developing countries, women are particularly affected by climate change, given their reliance on natural resources for subsistence, lack of access to land and control of land rights, marginalization and high levels of poverty, and exclusion in decision-making. Women are also key agents of climate mitigation and adaptation solutions. This nexus between gender and climate investments is a growing topic of interest within the sustainable finance community. The absence of gender-specific indicators for blue finance related SDGs 6 and 14 is illustrative of the gaps in sustainable debt issuance for gender-related programs. Sustainable bond financing that explicitly targets gender inequality is sparse and received only 4% of capital mobilized by GSSS bond issuances in 2022.^{54,55}

Including women in shaping policy, business decisions, and systems thinking approaches to address the stressors on the ocean ecosystem can provide unparalleled dividends. However, a lack of terminology and guidelines, as well as siloed categorization of gender bonds as subsets of social or sustainability-linked bonds, are barriers for the financial markets to account for gender equality in a systemic, inclusive, and transparent manner.⁵⁶ As witnessed by the growth of blue bonds in ocean finance, the nascency of gender considerations in climate investing has given rise to a new asset class—orange bonds—to drive financing in the capital markets for gender awareness, gender equality and women’s empowerment. While orange bonds directly contribute to SDG 5 (Gender equality), they also have the potential

to address social equity gaps in other SDG targets, including those inherent in green and blue financing. The lessons from gender-smart financing are focused on mainstreaming gender considerations (or incorporating a gender lens) by looking for opportunities to promote gender equality in sustainable bond issues, including GSSS bonds and blue bonds.⁵⁷

A few labeled blue issuances in Asia from DFIs have incorporated a gender lens in the lending process through effective gender mainstreaming⁵⁸ in project design, enumerated in gender action plans and gender-related targets. Other DFIs and funds have included gender considerations in their investment strategies in different ways, to prioritize gender in the project selection process or financing thesis. The following examples are indicative of the potential for gender lens investing globally:

- **The Cambodia Fourth Greater Mekong Subregion Corridor Towns Development project** is partially funded by a USD 78.5 million loan from ADB, of which USD 62 million is flagged as blue bond eligible. Overarching gender objectives are to target, by 2024, at least 1,500 households headed by women to be connected to the wastewater treatment system.⁵⁹ With a baseline measure at zero in 2017, the gender action plan for this loan integrates several gender targets into two project outputs, which are the improvement of urban environmental infrastructure, and enhancement of institutional capacities and national infrastructure for regional economic connectivity. Examples of gender targets include free wastewater collection

53 World Economic Forum (2022). *SDG14 Financing Landscape Scan: Tracking Funds to Realize Sustainable Outcomes for the Ocean*

54 Dechert LLP (2022). *The Growing Trend of Gender Bonds in 2022*

55 Capital Monitor (2023). *Is the Future of Sustainable Bonds Orange?*

56 Impact Investment Exchange (IIX, 2023). *Orange Bond Initiative Insights Paper: Building a Gender-Empowered Financial System*

57 GenderSmart and partners (2022). *Integrating Gender Considerations into Sustainable Bonds*.

58 ADB (2021). *Guidelines for Gender Mainstreaming Categories of ADB Projects*

59 ADB (2022). *Green and Blue Bond Impact Report*

connections for female headed households, expanded and improved solid waste collection targeted at female headed households, 30% of female staff employment in operation and maintenance, ICT management training provided to female government staff, and up to 25% women's representation in the project implementation and management units' decision-making and technical positions.⁶⁰

- ADB has committed an investment of USD 70 million in **Qingdao Bank's blue bond**, to finance loans and other debt instruments to support marine environment protection and sustainable blue economies in China. ADB's gender action plan for this investment seeks to increase women's access to blue finance by introducing a gender lens to the commercial bank's lending and through targeted outreach.⁶¹ The gender action plan, implemented through 2023, has four key components, including (1) a pilot incorporating a gender lens into Qingdao bank's lending process using a gender equality scorecard; (2) training at least 90% of loan officers originating blue finance projects on evaluating potential investments using a gender lens; (3) developing marketing materials and outreach targeted at female clients; and (4) developing a training module for loan officers on how to better serve female borrowers.
- In March 2023, IFC approved a **sustainable loan of USD 160 million to Produbanco**, an Ecuadorian bank, to support the blue economy and provide access to financing for SMEs, particularly those that are women-owned. A small portion (6%)

of the loan mobilized subordinated financing from Blue Orchard, a global impact investment firm and member of 2X Global (formerly known as the 2x Collaborative), an initiative launched in 2018 to catalyze capital for gender-smart investing.⁶² As part of the loan terms, IFC will primarily provide technical advisory services for two key subsectors of the blue economy, namely aquaculture and water treatment, and help identify blue financing opportunities for the bank's investment portfolio.

Complementary to debt financial instruments used to advance the gender agenda are new thematic collaboratives and knowledge-sharing platforms focused on best practices for integrating gender into climate investments (which are inclusive of other financing methods that go beyond the scope of this research such as private equity and debt). A few examples of these types of initiatives to educate and bring together market actors include:

- **The Women in Finance Climate Action Group**, a collective of women leaders from business, the public sector and civil society led by the Aviva Group, has come together to improve gender equality when designing, delivering and accessing climate finance.⁶³ According to a recent report published by the group, addressing barriers to implement gender-smart climate finance requires: improving women's inclusion within the financial system and ability to access climate finance; integrating gender into public and private climate policy frameworks; developing gender metrics and integrating them into climate finance reporting;

60 ADB (2018). *Fourth Greater Mekong Subregion Corridor Towns Development Project's Gender Action Plan*

61 ADB (2022). *Proposed Bond Investment Bank of Qingdao Company Limited*

62 IFC (2023). *IFC Announces a Sustainable Loan of \$160 Million to Produbanco to Support the Blue Economy in Ecuador*

63 Aviva (2023). *Women in Finance Climate Action Group*

and improving gender-balanced representation in key-decision making roles on climate finance.⁶⁴

- **The Gender & Climate Finance Community of Practice**, a working group created in 2020 by GenderSmart and 2X Collaborative (now collectively called 2X Global), mobilizes the collective influence of the 2X community to unlock capital with a gender lens within mainstream climate finance. The working group builds on the support and shared knowledge of investment pioneers, providing opportunities for collaboration, shared deal flow, illustrative case studies, tools, and frameworks.
- **The Project Sage series**, a comprehensive gender research and market analysis effort by the Wharton Social Impact Initiative, describes the evolution of gender lens investing and highlights the recent growth in climate funds that are including gender as an element in their evaluation criteria and portfolio goals.⁶⁵ Over 200 funds were assessed in the Project Sage database, representing USD 6 billion in capital raised as of June 30, 2021. This research provides a wealth of information to classify gender criteria (e.g., quantified gender mandate, gender mandate, gender consideration) and strategies used by different funds, such as advancing gender equity in company ownership, leadership, or finance; advancing products and services that improve the lives of women and girls; advancing companies that have a positive impact on the women they employ; and advancing companies that improve the lives of women in their ecosystem.⁶⁶

While these examples of gender considerations and industry initiatives are important to build evidence on the additionality of adopting a gender lens in investment strategies, integrating gender criteria in investment decisions in addition to measuring green, blue or climate impact is too restrictive for some investors. The market is yet to see a shift in gender-smart financing, as investors are preferential to climate ambition over gender issues. To move beyond the perceived complexity of integrating gender considerations in green and blue bond issuances, market actors should advocate for the selection of gender criteria that are applicable across eligible projects and elaboration of gender objectives in overarching bond frameworks. A strategic approach to gender mainstreaming will increase the relevancy of a gender analysis or gender action plan, such that it can be replicated in future bond issuances.

64 Women in Finance Climate Action Group (2021). *COP26 Report: Recommendations for Gender-Smart Climate Finance*

65 The Wharton School (2021). *New Gender Lens Investing Research: Insights from Project Sage 4.0*

66 Wharton Social Impact Initiative and Catalyst at Large (2021). *Project Sage 4.0: Tracking Venture Capital, Private Equity, and Private Debt with a Gender Lens*.

Takeaways about blue finance

In the last half a decade, blue bonds have emerged as an important sustainable debt financing instrument for projects, assets and companies that support a healthy ocean and blue economy. Labeled blue issuances have peaked at over 50 as of June 2023, with a cumulative volume of USD 9.7 billion. Asia accounts for over 50% of this market and has experienced a surge in regional issuances since 2020, from banks, DFIs, sovereigns and corporations. A region heavily dependent on marine ecosystems and industries for economic growth, the Asian sub-continent is poised to deepen its reliance on blue finance to promote the sustainable use of and impacts on ocean resources.

While the definition of what constitutes blue in terms of eligibility criteria and impact is still being debated in

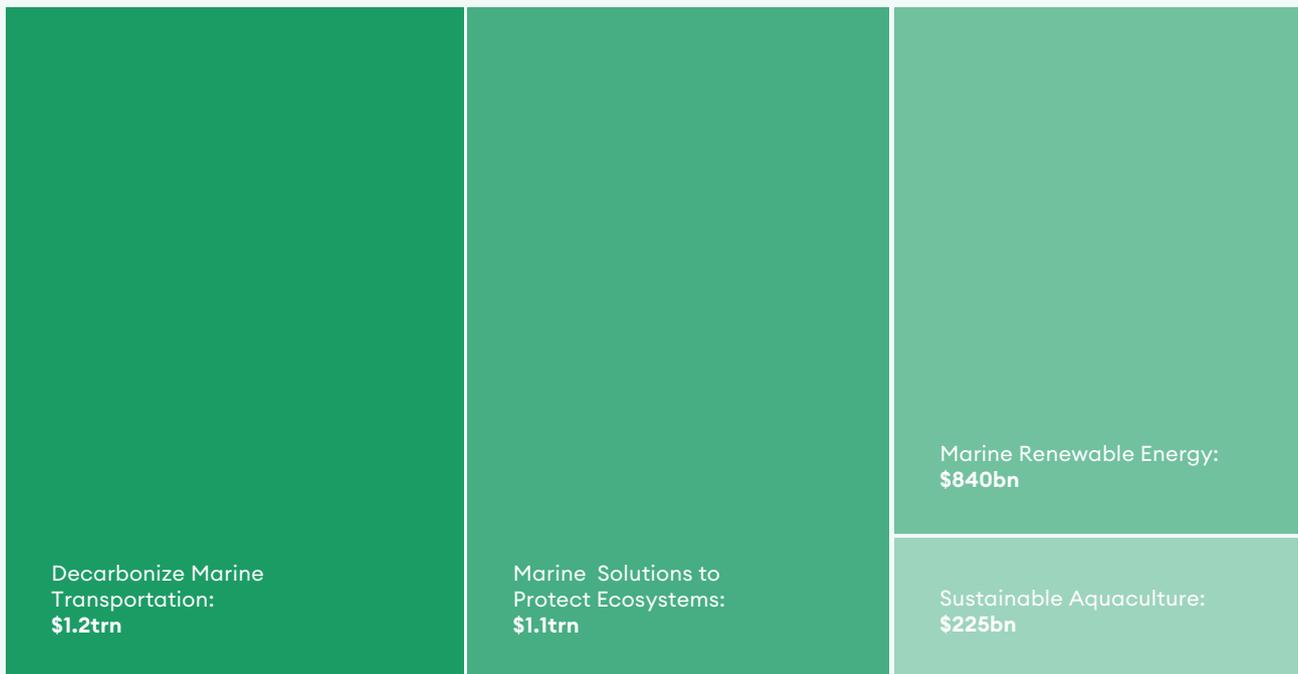
the market today, emerging blue frameworks such as those developed by IFC and ADB are a handy starting point to calibrate blue investments against their green counterparts. Blue financing also benefits from more than a decade of green issuance, which has set the stage for market expectations around the issuance process, allocation and management of proceeds, and impact reporting. Market actors are focused on deepening their understanding of traditional and new blue sectors—such as water, wastewater and waste management, fishing, maritime transport, tourism, aquaculture, biotechnology, and offshore renewable energy—and how they can become more sustainable to promote coastal and marine conservation goals as well as inclusive livelihood opportunities for those employed in the formal and informal blue economy.

Scaling up blue finance from the present billions to the needed trillions will require several market conditions to be met or improved, including:

1. Additional globally-accepted standards, guidance and criteria for blue issuances.
2. Mainstreaming of national and regional green bond frameworks to develop the sustainable finance market for green and blue priorities.
3. Innovative funding structures and de-risking mechanisms to cater to the breadth and diversity of blue stakeholders, projects, and financing needs.
4. Mass scalability of credible blue projects that have quantifiable revenue streams for debt repayment.
5. Increasing investor confidence and market transparency in blue financing through labels and verifications.
6. Specific and actionable guidance on gender lens integration into green and blue bond issuances in support of inclusive financing practices.
7. Quantifying impact through measurable, verifiable key blue performance indicators.

Figure 11: Measuring investment opportunities in the blue economy

Source: Morgan Stanley (2023). *4 Ways to Invest in a Sustainable “Blue Economy”*



Recent international deliberations such as the UN Convention on Biodiversity and UN High Seas Treaty have led to landmark commitments for ocean protection, and should reinforce issuer and investor interest in ocean-related projects. With investment opportunities

estimated at USD 3.4 trillion (Figure 11) in the fields of marine transportation, marine ecosystem protection, marine renewable energy, and sustainable aquaculture,⁶⁷ the blue finance market is well-positioned to expand in the coming years.

67 Morgan Stanley (2023). *4 Ways to Invest in a Sustainable “Blue Economy”*

Annex 1:

List of blue finance guides

Below is an overview of key blue finance guides, frameworks and initiatives, directly quoted from source documents:

- **UNEP FI Sustainable Blue Economy Finance Principles:** Launched in 2018, the principles were the first guiding framework with ocean-specific standards, developed by the European Commission, World Wildlife Fund (WWF), the World Resources Institute (WRI) and the European Investment Bank (EIB). The principles are hosted by UNEP FI as part of the Sustainable Blue Economy Finance Initiative.
- **UNGC Sustainable Ocean Principles:** These Sustainable Ocean Principles provide a framework for responsible business practices across sectors and geographies. They build upon and supplement the Ten Principles of the United Nations Global Compact on human rights, labour, environment, and anti-corruption.
- **UNGC Practical Guidance to Issue a Blue Bond:** The Practical Guidance identifies opportunities for blue bonds to secure funding for ocean-related projects and companies that contribute to the achievement of the SDGs. The guidance outlines a number of pillars of best practices, as well as benchmarks and frameworks for companies interested in issuing a blue bond aligned with a sustainability strategy to advance a healthy, productive ocean.
- **UNEP FI Turning the Tide – How to Finance a Sustainable Ocean Recovery:** This seminal guidance is a market-first practical toolkit for financial institutions to pivot their activities towards financing a sustainable blue economy. Designed for banks, insurers and investors, the guidance outlines how to avoid and mitigate environmental and social risks and impacts, as well as highlighting opportunities, when providing capital to companies or projects within the blue economy.
- **ADB Green and Blue Bond Framework:** The green and blue bond program enables ADB to support its developing member countries seeking to deliver environmentally sustainable growth to help reduce poverty and improve the quality of life of their people. The framework, consistent with the Green Bond Principles and UNEP FI Sustainable Blue Economy Finance Principles, defines project eligibility for ADB's green and blue bond investments.
- **ASEAN Declaration on the Blue Economy:** Developed by the Association of Southeast Asian Nations (ASEAN) as a commitment for regional cooperation in relation to the blue economy, to reach a common understanding on the blue economy and identify the scope of cooperation and activities that ASEAN Member States are comfortable to undertake together, and with external partners.
- **IFC Blue Finance Guidelines:** The document identifies eligible blue project categories to guide IFC's investments to support the blue economy, in line with the Green Bond Principles and Green Loan Principles. It builds on general Blue Economy Financing Principles, such as the Sustainable Blue Economy Principles and the Sustainable Ocean Principles, to provide guidelines for blue bond issuances and blue lending.
- **ADB Ocean Finance Framework:** This framework provides guidance on the types of projects that meet ADB's criteria for investments under its Action Plan for Healthy Oceans and Sustainable Blue Economies.

- **BlueInvest Investor Report – An Ocean of Opportunities:** The report is part of an investor capacity-building programme that provides market knowledge on opportunities, financial products and investment strategies related to the EU blue economy. The report aims to mobilize private capital for clean tech in the blue economy, including groundbreaking solutions that can help fight climate change and support the objectives of the EU Green Deal.
- **Global Guidance on Blue Bonds:** IFC, ICMA, UNGC, UNEP FI, and the ADB are partnering to develop a global practitioner’s guide for bonds to finance the sustainable blue economy. It will aim to provide market participants with clear criteria, practices, and examples for blue bond lending and issuances. The five organizations are currently seeking further input from the financial markets, ocean industry and global institutions with the goal of producing the final edition in Autumn 2022 – which as of today have not yet been released.



Photo by Paulo Evangelista on Unsplash

Annex 2: Details on blue labeled bonds in Asia⁶⁸

Issuer	Country	Year	Instrument type	Currency	Size (USD M)	Arranger / Structurer	Alignment with Green / Blue Principles or Guidelines
Bank of China	China	2020	Blue Bond	USD	943	Crédit Agricole CIB & Société Générale	ICMA Green Bond Principles
Indorama Ventures	Thailand	2020	Blue Loan	USD	300		ICMA Green Loan Principles, IFC Guidelines for Blue Finance
Industrial Bank	China	2020	Blue Bond	USD	450	Crédit Agricole CIB	ICMA Green Bond Principles
Qingdao Water Group	China	2020	Blue Bond	CNY	47		
Asian Development Bank	Multi-country	2021	Blue Bond	AUD	151	Citigroup Global Markets	ICMA Green Bond Principles, UNEP FI Sustainable Blue Economy Finance Principles, ADB Green and Blue Bond Framework
Asian Development Bank	Multi-country	2021	Blue Bond	NZD	151	Crédit Agricole CIB	ICMA Green Bond Principles, UNEP FI Sustainable Blue Economy Finance Principles, ADB Green and Blue Bond Framework
CSSC (Hong Kong) Shipping	China	2021	Green Bond (with eligible blue projects)	USD	500	DBS Bank	ICMA Green Bond Principles
Thai Union	Thailand	2021	Sustainability-Linked Bond	THB	147	Bank of Ayudhya	ICMA Sustainability-Linked Bonds Principles, LMA Sustainability-Linked Loan Principles
Thai Union	Thailand	2021	Sustainability-Linked Bond	THB	176	Bank of Ayudhya	ICMA Sustainability-Linked Bonds Principles, LMA Sustainability-Linked Loan Principles

⁶⁸ For each deal, information on use of proceeds is available in Table 1: Blue issuances in Asia.

Issuer	Country	Year	Instrument type	Currency	Size (USD M)	Arranger / Structurer	Alignment with Green / Blue Principles or Guidelines
Thai Union	Thailand	2021	Sustainability-Linked Bond	THB	352	Bank of Ayudhya, Mizuho Bank, and MUFG Bank	ICMA Sustainability-Linked Bonds Principles, LMA Sustainability-Linked Loan Principles
Bank of Qingdao	China	2022	Blue Loan	USD	150		ICMA Green Loan Principles, IFC Guidelines for Blue Finance
BDO Unibank	Philippines	2022	Blue Bond	USD	100	BDO Capital & Investment Corporation	ICMA Green Bond Principles, IFC Guidelines for Blue Finance
Far Eastern New Century Corporation (FENC)	Taiwan	2022	Blue Loan	USD	34		
Maruha Nichiro	Japan	2022	Blue Bond	JPY	38	Mizuho Securities	ICMA Green Bond Principles; Green Loan and Sustainability-Linked Loan Guidelines of the Ministry of Environment Government of Japan; Loan Market Association (LMA), Asia Pacific Loan Market Association (APLMA) and Loan Syndications and Trading Association (LSTA) Green Loan Principles; IFC Guidelines for Blue Finance
People's Government of Hainan Province	China	2022	Sovereign Blue Bond	CNY	175	Credit Agricole CIB	ICMA Green Bond Principles, IFC Guidelines for Blue Finance, and UNGC Sustainable Ocean Principles
Thai Union	Thailand	2022	Blue Loan	THB	59		ICMA Sustainability-Linked Bonds Principles, LMA Sustainability-Linked Loan Principles
TMBThanachart Bank (ttb)	Thailand	2022	Blue Bond	USD	50		ICMA Green Bond Principles, IFC Guidelines for Blue Finance
Export-Import Bank of Korea	Korea	2023	Blue Note	USD	1'000	ANZ, BNP Paribas, Bank of America Securities, Citigroup, HSBC, KB Securities, Morgan Stanley	ICMA Green Bond Principles, UNEP FI Sustainable Blue Economy Finance Principles
Vista Shipping	Singapore	2023	Sustainability-Linked Loan	USD	90	Standard Chartered	

Issuer	Country	Year	Instrument type	Currency	Size (USD M)	Arranger / Structurer	Alignment with Green / Blue Principles or Guidelines
Bank of Ayudhya	Thailand	2023	Blue Bond	USD	50		ICMA Green Bond Principles, IFC Guidelines for Blue Finance
Republic of Indonesia	Indonesia	2023	Blue Bond	JPY	102	Daiwa Securities, Mitsubishi UFJ Morgan Stanley Securities, Mizuho Securities and SMBC Nikko Securities	ICMA Green Bond Principles, Sustainability Bond Guidelines, Green Bond Standards (GBS), ASEAN Capital Markets Forum (“ACMF”) Social Bond Standards (SBS) and Sustainable Bond
Republic of Indonesia	Indonesia	2023	Blue Bond	JPY	42	Daiwa Securities, Mitsubishi UFJ Morgan Stanley Securities, Mizuho Securities and SMBC Nikko Securities	ICMA Green Bond Principles, Sustainability Bond Guidelines, Green Bond Standards (GBS), ASEAN Capital Markets Forum (“ACMF”) Social Bond Standards (SBS) and Sustainable Bond

