

Infrastructure Asset-Backed Securities: New Asset Class for Asia

Summary

Asset Class	Credit
Quality	Investment Grade
Geography	Asia Pacific; Middle East
Sector	Structured Finance
Date	30 DEC 2020

Executive Summary

This is the first in a series of reports on Infrastructure Asset-Backed Securities (IABS) in Asia Pacific. The purpose of this report is to provide an overview of the IABS asset class, which remains relatively new to Asia. An IABS transaction involves a sponsor and/or manager sourcing project and infrastructure loans from originators (i.e. banks), underwriting them and issuing securitized notes backed by these assets to investors. This helps originators recycle their balance sheets, while offering investors exposure to these projects and infrastructure loans in a credit-enhanced format, enabling them to originate more project and infrastructure loans. For the Asia Pacific region, IABS can help bridge a funding gap for infrastructure financing, which according to the Asian Development Bank (ADB) in 2017, amounts to USD 467bn per annum.

IABS is typically backed by a diversified portfolio of project and infrastructure loans. Long-term investors such as life insurers and pension funds can benefit from matching their long-dated liabilities with longer-dated IABS. An investment-grade credit rating for IABS would also fit into the investment mandates of life insurers, pension funds and asset managers. In addition, investors benefit from instant diversification across projects, sectors and geographies/regions, compared to investing directly in individual loans or projects. Furthermore, the elevated credit profile of a senior tranche minimizes the capital cushion that an institutional investor may need to put up against its investments. Last but not least, IABS offers institutional investors access to an asset class with significant barriers to entry, managed by an experienced collateral manager.

As with any credit product, IABS is not risk-free and, depending on how each IABS is structured, IABS could be exposed to loans without public ratings, concentration risk (in certain sectors, countries, guarantors, offtakers and projects), political risk, operational risk of a collateral manager, counterparty risk from loan participation exposures, and prolonged recovery periods in case of loan defaults. It should be noted that such risks are generally taken into consideration in the ratings process of IABS, either through the credit estimate (i.e. private ratings) assigned to the underlying loans or the stress testing of the loan portfolio and IABS structure.

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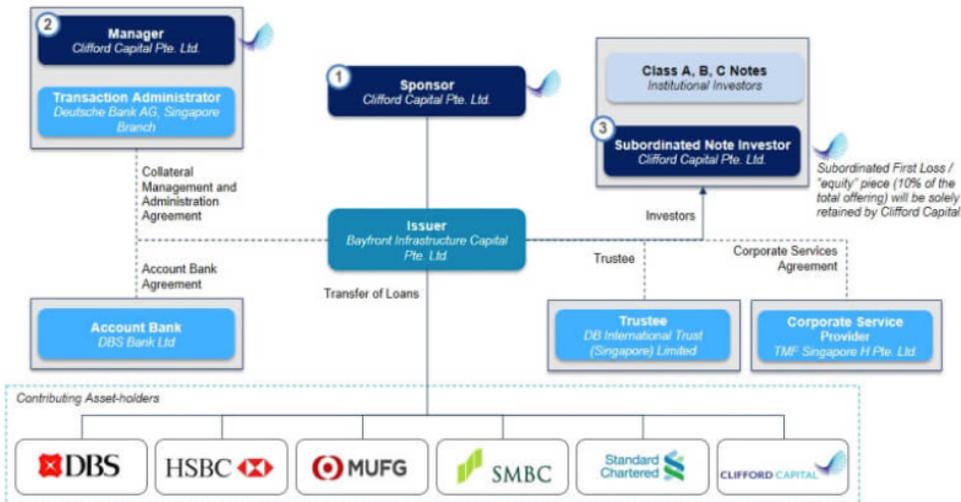
In this report, we will explain the underlying features of IABS in terms of: (1) Asset type; (2) Asset risk analysis; and (3) Structure analysis. Our focus is on Asia as a potential IABS market for institutional investors. Throughout the report, we use the example of Bayfront Infrastructure Capital Pte. Ltd. (BIC)'s USD 458m IABS, launched in July 2018. The transaction was the first-ever infrastructure and project finance securitization in Asia Pacific (EXHIBIT 1).

Sponsored by Clifford Capital Pte. Ltd. (Clifford Capital), BIC issued four classes of notes, backed by a USD 458m portfolio of 37 project and infrastructure loans from 30 projects across 16 countries and from 8 industry sectors in Asia Pacific and the Middle East. The three rated tranches were listed on the Singapore Exchange (SGX), with the subordinated tranche being fully retained by Clifford Capital.

Clifford Capital is wholly-owned by Clifford Capital Holdings (CCH), whose ultimate shareholders are Temasek Holdings, Asian Development Bank, DBS Bank, Standard Chartered Bank, Sumitomo Mitsui Banking Corporation, Prudential and Manulife.

Following BIC's success, CCH established and launched Bayfront Infrastructure Management Pte. Ltd. (Bayfront) in November 2019 with a 70% / 30% ownership by CCH and the Asian Infrastructure Investment Bank (AIIB), respectively. The new Bayfront platform was established to structure and manage future IABS issuances. We believe the IABS asset class will benefit both investors and infrastructure project sponsors/borrowers in Asia Pacific, but investor education is key to expanding the IABS market.

EXHIBIT 1: Transaction Structure Overview of the USD458m BIC IABS



Source: Clifford Capital

Asset Type

The underlying assets of IABS are project and infrastructure loans that an IABS sponsor sources from banks, multilateral financial institutions and/or project/infrastructure debt funds. The loans are then used to underpin the issuance of notes with different credit ratings according to the expected loss (EL) of each tranche.

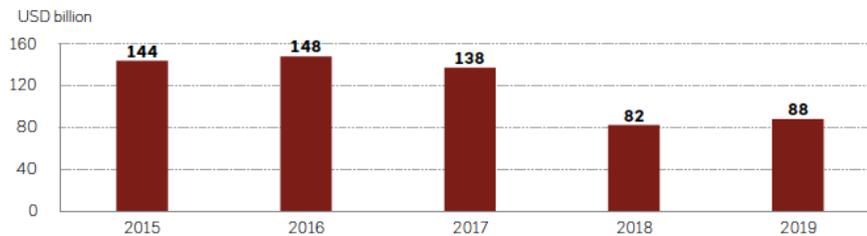
Project and infrastructure loans have very different characteristics to traditional corporate loans. Project and infrastructure loans are generally backed by long-term offtake contracts, with loans structured based on expected project cash flows. Project and infrastructure loans are secured by projects themselves and/or by sponsors' interests in the project. These elements require specialist expertise to diligence and price appropriately. That said, IABS is typically structured to help investors address these credit considerations through specialists' credit review/ underwriting, diversification, and credit enhancement.

The key elements of IABS' underlying assets are the following:

1. Overall trend

In recent years, the volume of syndicated loans-to-infrastructure projects has dropped due to a change in banks' strategic direction to originate and distribute rather than to use their own balance sheet (EXHIBIT 2), which is partly driven by credit risk capital charges under the Basel III rules. Hence, IABS will play a pivotal role to help banks recycle capital, thereby facilitating the origination of new loans. This will also offer an opportunity for institutional investors to participate in this asset class, which had been traditionally dominated by banks.

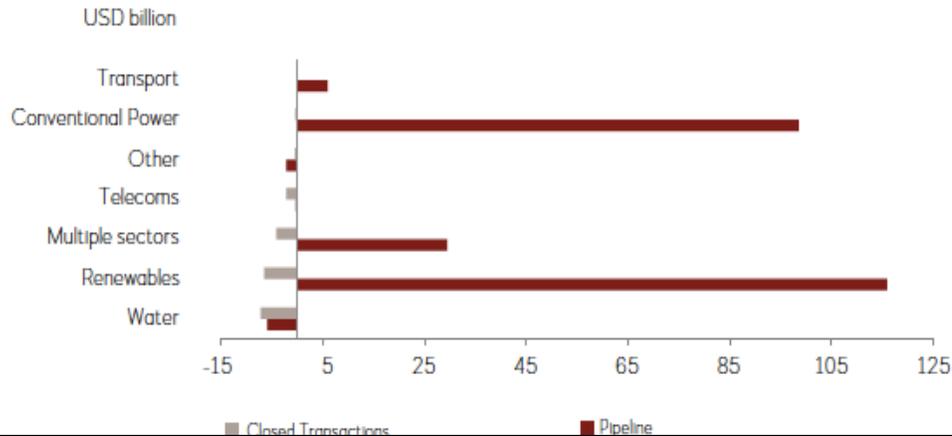
EXHIBIT 2: Syndicated Infrastructure Loan Volume in Asia



Source: Refinitiv

In reviewing the pipeline of private transactions versus closed transactions (EXHIBIT 3), we clearly see the need to finance more renewable, conventional power, and transport sectors in Asia.

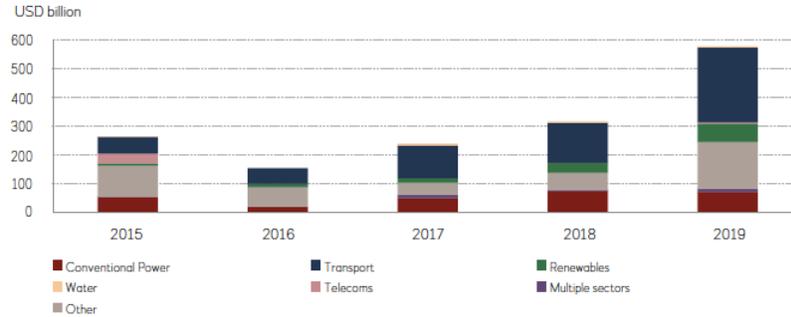
EXHIBIT 3: A Decline in Closed Private Transactions vs. an Increase in the Project Pipeline in Asia, 2018-2019



Source: IJ Global

EXHIBIT 4 shows the private financing opportunities in Asia between 2015 and 2019, which hints at the sectors of focus for opportunities going forward for Asian IABS.

EXHIBIT 4: Value of Open and Announced Private Transactions in Asia, 2015-2019



Source: IJ Global

2. Countries of Risk

Traditional collateralized debt obligations (CDO) usually contain debt concentrated within a small number of countries or only in one investment-grade country. While IABS can span a region to benefit from country diversification, an Asian IABS can have more pronounced country risks and/or exposure to non-investment grade countries.

Also, IABS with various country exposures will require analysts to conduct country risk assessments in terms of macroeconomic, political and currency transfer and convertibility risks. EXHIBIT 5 shows the country distribution of the BIC IABS, where the majority of exposure was in investment-grade countries. For the BIC IABS, country concentration risk was mitigated by an appropriate level of credit enhancement, including support provided through the retention of the Subordinated Notes by Clifford Capital, acting as a first loss buffer for the holders of the senior and mezzanine tranches. In addition, such country risk was mitigated as some loans in the portfolio were covered by political or commercial risk insurance provided by highly rated export credit agencies, insurers or multilateral financial institutions.

EXHIBIT 5: Country Distribution of the BIC IABS

Country of Project	Foreign Currency Country Ceiling	Foreign Currency Country Rating	% of Identified Pool	Covered Sub-Pool*	Uncovered Sub-Pool*
Australia	Aaa	Aaa	19.5%	5.2%	14.4%
Hong Kong	Aaa	Aa2	2.2%	0.0%	2.2%
Singapore	Aaa	Aaa	3.7%	0.0%	3.7%
Kuwait	Aa2	Aa2	4.4%	0.0%	4.4%
Malaysia	A1	A3	2.5%	0.0%	2.5%
Saudi Arabia	A1	A1	3.3%	0.0%	3.3%
Thailand	A2	Baa1	0.5%	0.0%	0.5%
Indonesia	A3	Baa2	14.2%	2.5%	11.7%
India	Baa1	Baa2	3.3%	0.0%	3.3%
Oman	Baa2	Baa3	10.7%	0.0%	10.7%
Jordan	Ba1	B1	4.4%	4.1%	0.2%
Bangladesh	Ba2	Ba3	2.2%	0.0%	2.2%
Vietnam	Ba2	B1	14.0%	13.7%	0.2%
Sri Lanka	Ba2	B1	2.2%	2.1%	0.1%
Papua New Guinea	B1	B2	5.5%	0.0%	5.5%
Mongolia	B1	B3	7.5%	2.7%	4.8%
Total			100.0%	30.4%	69.6%

* Covered sub-pool includes the covered portion of loans in the identified portfolio that are covered by external credit providers under certain types of guarantees or insurance policies. Uncovered portion of the covered loans are included in the uncovered sub-pool.

Source: Moody's

EXHIBIT 6 highlights the quality of infrastructure in Asian countries versus 2018 GDP per capita (Purchasing Power Parity) and shows that Asian countries on the left side of the chart clearly need to improve their infrastructure. However, all the countries left of the Philippines are rated sub-investment grade and it may be difficult for these countries to be able to borrow much on their own, which increases reliance upon third-party capital for infrastructure development.

EXHIBIT 6: Infrastructure Quality Index vs. 2018 GDP per Capita



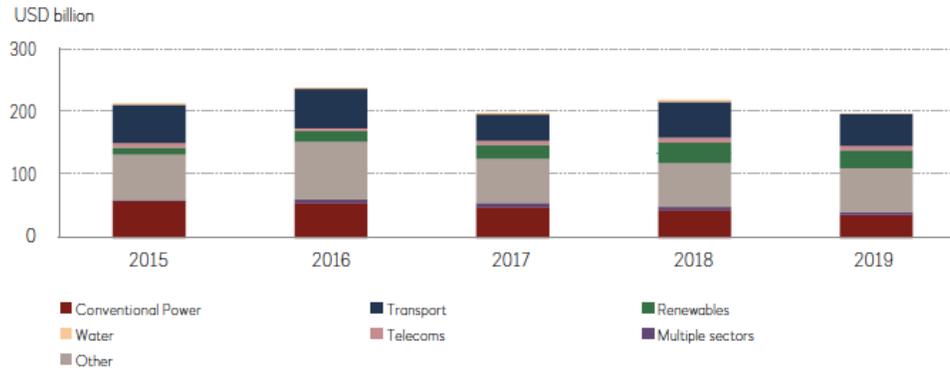
Source: World Economic Forum, World Bank, AIB

Therefore, we expect IABS transactions to be collateralized more by project and infrastructure loans from countries to the right of the Philippines (i.e. potentially investment-grade rated loans) than from countries to the left of the Philippines (i.e. potentially sub-investment-grade rated loans). However, in the latter case of sub-investment grade rated countries, such loans are often covered by political or commercial risk insurance provided by export credit agencies or multilateral financial institutions.

3. Sector

Project and infrastructure financing in Asia has historically covered projects within sectors such as conventional power, transport, and renewables. 2019 has seen a drop in private sector infrastructure financing activities in Asia (EXHIBIT 7) with the bulk of the decline in financing of conventional power projects. On the other hand, the renewable energy sector has grown steadily since 2015 and we expect greater environmental awareness amongst market participants to drive further 'green' loan volumes in the near future.

EXHIBIT 7: Private Sector Infrastructure Financing Activities in Asia



Source: IJ Global

EXHIBIT 8 shows the sector breakdown of project and infrastructure loans underlying the BIC IABS.

EXHIBIT 8: BIC IABS' Sector Breakdown

Sectors and Sub-sectors	% of Identified Pool	Covered Sub-Pool*	Uncovered Sub-Pool*
Oil/Gas and Commodities	39.5%	9.7%	29.8%
LNG	22.8%	5.2%	17.6%
OIL	16.7%	4.5%	12.2%
Power Generation Non-Renewables	28.4%	8.5%	19.9%
Power- Electricity Contracted (Coal/Gas)	28.4%	8.5%	19.9%
Power Generation Renewables	13.1%	2.0%	11.1%
Power-Renewables: Hydro	7.6%	0.0%	7.6%
Power-Renewables: Wind	3.3%	0.0%	3.3%
Power-Renewables: Solar	2.2%	2.0%	0.2%
Large Infrastructure (Market Risk)	12.7%	8.2%	4.5%
LNG Terminal (other non-regulated gas or electricity infrastructure asset)	7.0%	2.5%	4.5%
Toll road networks, tunnels, bridges, car parks	5.7%	5.7%	0.0%
Regulated Assets/Utilities	6.3%	2.1%	4.3%
Water, Sewage	4.1%	0.0%	4.1%
Regulated Airports	2.2%	2.1%	0.1%
Total	100.0%	30.4%	69.6%

* Covered sub-pool includes the covered portion of loans in the identified portfolio that are covered by external credit providers under certain types of guarantees or insurance policies. Uncovered portion of the covered loans are included in the uncovered sub-pool.

Source: Moody's

4. Tenor and cashflow stability

Project and infrastructure loans contained in IABS offer investors more consistent cashflows compared to corporate loans - especially in times of crises such as the current COVID-19 pandemic. The consistent cashflow, often contracted under long term offtake contracts, compensates investors for the longer tenor of project and infrastructure loans compared to usual corporate loans. In the case of the BIC IABS, the weighted average life (WAL)¹ was 5.4 years at the time of issuance, which is roughly 2x longer than what corporate loans usually offer.

¹ Weighted average life (WAL) = Average length of time that each dollar of unpaid principal on a loan that remains outstanding

5. Implicit/explicit supports and/or guarantees

Project and infrastructure loans offer consistent and predictable cashflows, often with strong implicit support from governments, high-quality sponsors and/or guarantees from export credit agencies or multilateral financial institutions.

IABS can contain project and infrastructure loans for which borrowers enter into concession agreements or offtake power purchase agreement (PPA) with government-owned entities, both of which in our view could be construed as implicit government support in certain Asian jurisdictions where the offtakers (e.g. utilities or power distribution companies) are usually state-owned enterprises.

6. Limited construction risk

IABS can contain both operational projects and projects under construction, but predominantly the former since they are cash generative and exclude construction risk. In the BIC transaction, the loan portfolio at inception contained predominantly seasoned loans that had passed the project construction phase and were already operational. Operational projects have a better chance to be rated investment grade by rating agencies as there is more certainty around project cash flow timing. We note that projects under construction can require extensive diligence on construction execution. In particular, Asian country risk varies and project completion risk tends to be greater in countries with greater political risk, which can be difficult to hedge and analyze. In the case of the BIC IABS, 24.4% of the portfolio at inception was under construction, with construction risk mitigated through external credit support. We understand that any construction projects that BIC acquired had some form of completion guarantee or sponsor support as a mitigant for investors.

Asset Risk Analysis

We see the following risk factors when it comes to analyzing the underlying assets of IABS:

Credit Risk

Credit risk of IABS is measured by a credit rating of each tranche. IABS' credit ratings of senior tranches are intended to be investment grade (i.e. ratings above Baa3/BBB-). Rating agencies use various internal models to simulate default scenarios on the underlying portfolio to calculate expected loss (EL)² of each tranche of IABS. Essentially, each scenario estimates incoming cashflow from the underlying assets (i.e. project and infrastructure loans) versus the outgoing payments to third parties (i.e. fees and expenses) and noteholders (i.e. interests).

In general, the incoming cashflow is affected by the following:

1. **Exposure at default (EAD)** or each loan's outstanding principal
2. **Probability of Default (PD)** which is signified by a public credit rating or a private credit estimate of each loan inside the portfolio. PD of each loan emanates from the risk that borrowers of the underlying loans cannot make principal and/or interest payments or trigger credit events such as covenant breaches and cross default from other loans. In essence, PD should reflect the estimated ability of a borrower to pay in the future, not in the past.

² Expected losses (EL) = Probability of Default (PD) X Loss Given Default (LGD) X Exposure at Default (EAD) while LGD = (1- Recovery Rate (RR)).

PD of a project or infrastructure loan reflects the project's contractual framework with any offtakers, operational performance, corporate governance, financial performance, and construction risk. Factors that may affect a project's operating environment include country of operations, sector, and commodities related to a borrower's operations. Market-driven factors such as foreign exchange, interest rate, and commodity price movements can also influence the credit risk level of each loan, project, and the overall IABS portfolio.

In addition to a credit rating of each IABS tranche, investors should pay attention to originators of the loans (i.e. commercial bank and debt funds) in terms of (1) their loan underwriting standards and (2) their track record of retaining part of the loans to demonstrate the alignment of their interest in underlying loans.

3. Recovery Rate (RR)

We note that credit rating agencies review underlying assets on a case-by-case basis using the factors below:

- Seniority of the loans (i.e. senior, junior, subordinated)
- Project operational risk (often associated with sector and complexity of operations)
- Country of project
- Construction phase of each project (operational or under construction)
- Degree of government support including for offtake contracts
- Extremal credit support such as guarantee or surety bonds on the loans
- Legal and operational risk in each project

EXHIBIT 9 shows Moody's recovery rate assumptions among sectors within public-private partnerships (PPP), private finance initiatives (PFI), and non-PPP/PFI Market risk project finance (PF)/Infrastructure. In addition to recoveries of underlying assets, a rating agency also considers the following on a portfolio basis:

- Correlation between recoveries, which could be based on different projects sharing similar features such as the same construction company or same offtaker
- Recovery period after a loan default, which may stem from (1) the workout period in countries and jurisdictions where each loan is located and (2) liquidity of each loan. A loan under a non-investment grade country and in an unfavorable sector will take longer to recover after a default, in our view.

EXHIBIT 9: Moody's Recovery Rate Assumption

Asset Classes	Sectors/Sub-Sectors	Recovery Rate	
		In Construction	In Operation
Availability based PPP/PFI	Airports	65%	75%
	Electric Utilities	65%	75%
	Telecoms	65%	75%
	LIFT	65%	75%
	Schools/Education	65%	75%
	Waste Management	65%	75%
	Rail	65%	75%
	NHS – Hospitals, Care Home, Healthcare	65%	75%
	Roads – Availability-Based	65%	75%
	Roads (Real toll, shadow, minimum traffic guarantee)	65%	75%
	Leisure/conference facilities (i.e. non-essential infrastructure)	65%	75%
	Defense/Military	65%	75%
	Office/Campus/Other Accommodation	65%	75%
	Street lighting	65%	75%
	Transportation	65%	75%
	Courts	65%	75%
	Prisons	65%	75%
NON PPP/PFI - Market Risk PF/Infrastructure	Sector: Regulated Assets		
	Sub-Sectors:		
	Gas distribution or transmission	65%	65%
	Regulated Airports	65%	65%
	Water, Sewage	65%	65%
	Electricity distribution or transmission	65%	65%
	Regulated Telecom	65%	65%
	Airport navigation and other regulated services	65%	65%
	Other Utilities	65%	65%
	Toll Roads	65%	65%
	Sector: Large Infrastructure (not regulated/not PPP) – market demand risk		
	Sub-Sectors:		
	Airports/Ports	65%	65%
	Rail	65%	65%
	Toll road networks, tunnels, bridges, car parks	65%	65%
	Sector: Oil and Gas		
	Sub-Sector: Energy/Commodity		
	LNG	65%	65%
	Oil	65%	65%
	Sector: Power Generation		
	Sub-Sectors:		
	Power-Electricity Contracted (Coal/Gas)	N/A	75%
	Power-Electricity Merchant (Coal/Gas)	N/A	75%
	Power –Renewables: Wind	N/A	65%
	Power –Renewables: Solar	N/A	65%
	Power –Renewables: Hydro	N/A	65%

Source: Moody's

4. Loan and Asset Life

The longer the life and duration of the loans in the portfolio, the higher the overall risk level in the portfolio. However, if the remaining life of the loans is too short, then reinvestment and prepayment risks become an issue. The life of the IABS' collateral pool is measured by its Weighted Average Life (WAL),

which is the average length of time that each dollar of unpaid principal on a loan remains outstanding. We note that WAL does not include interest payments.

5. Asset Correlation and Concentration Risk

A default of a single loan in a certain industry or country can be correlated to other loans inside an IABS portfolio, so asset correlation must be measured. IABS can offer diversification in terms of countries and sectors but an IABS' portfolio exposure can also be concentrated in a few countries and sectors. EXHIBITs 5 and 8 have listed countries and sectors to which the BIC IABS portfolio had exposure to at the time of issuance. Rating agencies apply their independent models to measure correlations of the underlying assets in the same sectors and countries as well as projects with the same counterparties.

On a portfolio basis, in addition to asset correlation or concentration risk, an external credit support (such as standby letters of credit (SBLC), surety bonds, and/or credit derivatives) affects the credit risk of IABS. Moreover, the counterparties of each IABS transaction must be analyzed to gauge the possibility that they may not be able to perform their duties as expected. In our view, all counterparties need to be assessed for operational risk as well as credit/market risk that may impact their operational performance. Operational risk analysis of each counterparty includes a review of the manager's track record/investment strategies and corporate governance, which should entail transactional experience in securitization and project and infrastructure loans.

An IABS may have multiple tranches with differing seniority and credit profiles. Investors can invest in the specific tranche most suited to their risk-return parameters. An IABS can contain sub-investment grade-rated underlying assets, often driven by sub-investment grade sovereign ratings. The exposure to sub-investment grade credit risk can increase overall credit risk of an IABS, however the diversity provided by the IABS portfolio and the transaction's internal credit enhancement provide mitigants. IABS investors such as life insurers and pension funds that may not be equipped with resources to analyze sub-investment grade credit risk may benefit from investing in the IABS format given the specialist expertise of the IABS sponsor, the diversity of the portfolio and the transaction's internal credit enhancement

Market Risk

IABS is subject to market movements, which could result in losses. We see the following major market risks:

1. Foreign Exchange Risk

Foreign exchange risk with IABS lies in the currency of the IABS versus the currency of the project and infrastructure loans and the main operating currency of each infrastructure project itself. We are of the opinion that the currency of the IABS needs to remain in G3 currencies such as USD to be most attractive to the widest possible pool of investors. As such, an IABS could be limited to acquiring USD denominated loans to mitigate any inherent foreign exchange risk. Including project and infrastructure project loans that are denominated in local currencies would introduce foreign exchange mismatches that need to be mitigated. We note that, in our BIC IABS example, the foreign exchange risk was mitigated by matched currencies – USD denominated loan assets and USD denominated tranches.

In addition, underlying projects could have a foreign exchange mismatch between its revenues and its debt payments, leading to rising default risk at the time of currency fluctuation. Most syndicated project and infrastructure loans in Asia-Pacific and the Middle East address this risk by requiring the borrower/project company to hedge a material portion (e.g. at least 75%) of its foreign currency risk through hedging instruments such as swaps or options with a hedging bank with strong credit ratings.

2. Interest Rate Risk

IABS' senior tranches typically pay floating-rate interest coupons, based off a floating benchmark such as LIBOR (and potentially SOFR in future post-2021). This is because most project and infrastructure loans are also priced on a floating rate basis. In the event that some or all of the underlying project and/or infrastructure loans are priced on a fixed rate basis, a sponsor will need to enter into an interest rate swap agreement or structure a fixed rate tranche.

Even if all of the underlying loans are priced on a floating-rate term, there could be basis risk with (1) different benchmarks of IABS and the loans (i.e. LIBOR vs. SOFR) and (2) different periods of benchmarks of IABS and the loans (i.e. 6-month LIBOR vs. 3-month LIBOR).

Operational Risk

IABS' operational risk emanates from a failure to execute or monitor IABS properly. The transfer of loans to be packaged as underlying assets of IABS can carry additional operational risk in case an issuer enters into master participation agreements instead of purchasing the loans outright. The loan participation adds extra counterparty risk of banks that an issuer participates with, in terms of information flow, complying with all the covenants and having a proper procedure to pass on each loan's cashflow to IABS.

In general, if an IABS or any ABS is structured properly, investors will only experience losses if there is a default in the loan portfolio. IABS is administered by a collateral manager, an issuer, a trustee, and a transaction administrator. Any miscommunication or negligence among the participants can lead to unnecessary losses. EXHIBIT 10 highlights participants in the BIC IABS.

EXHIBIT 10: Participants in the BIC IABS

Key Parties	
Issuer	Bayfront Infrastructure Capital Pte. Ltd.
Collateral Manager	Clifford Capital Pte. Ltd.
Trustee	DB International Trust (Singapore) Limited
Transaction Administrator	Deutsche Bank AG, Singapore Branch
Joint Global Coordinators	Citigroup Global Markets Singapore Pte. Ltd, Standard Chartered Bank
Lead Managers	Citigroup Global Markets Singapore Pte. Ltd., Standard Chartered Bank, DBS Bank Ltd., The Hongkong and Shanghai Banking Corporation Limited and SMBC Nikko Capital Markets Limited
Co-Manager	MUFG Securities EMEA plc

Source: Moody's

We believe the complexity of project and infrastructure loans makes it difficult to segregate risk into tranches with accuracy. Hence, we believe experience in the infrastructure and project lending area is crucial for the success of an IABS transaction. Investors need to review the experience of the transaction counterparties in terms of internal control, liquidity management, country of operations, and related regulatory framework.

Legal Risk

IABS' legal risk lies in its structure and each underlying project and/or infrastructure loan. Asia's disparity in culture and legal systems make it difficult for an IABS credit rating to reflect all the legal risks of loans within the instrument. Hence, we expect Asian IABS demand to concentrate in jurisdictions where investors are more familiar with the legal system such as Singapore, Hong Kong, Korea, Japan, and Taiwan.

Structure Analysis

Similar to other types of asset-backed securities (ABS), IABS exhibits the following structural features:

Subordination

Similar to other ABS types, IABS provides investors with tranching exposures, ranging from senior to subordinated/equity tranches. EXHIBIT 11 shows an example of the capital structure. In a default event, the loss incurred will impact the lowest or most subordinated tranche (i.e. tranche D) first and any outstanding loss will continue to be applied against more senior tranches up the capital structure in a sequential manner. Lower ranked tranches form part of the credit enhancement to more senior ranked tranches, in exchange for higher returns.

As a result, the more senior the tranche, the more its principal is protected in a case of default. The sponsor of IABS usually retains an equity or subordinated tranche (i.e. tranche D) as a cushion against non-payment and sells the senior (and mezzanine) tranches (i.e. tranche A-1 to B-2) to investors, who can take comfort from a higher recovery value and a lower probability of default (EXHIBIT 11). Credit enhancement percentage reflects a level of subordination below a given tranche and the level of maximum expected loss reflects the corresponding credit rating for each tranche.

EXHIBIT 11: Example of Capital Structure³

Note class	Rating	Percentage of Structure	Par Value in €	Coupon	Credit Enhancement	Max Expected Loss
A-1	AAA	63%	176,400,000	LIBOR + 210bps	38.0%	0.0036%
A-2	AA	11%	30,800,000	LIBOR + 300bps	25.3%	0.0743%
A-3	A	6%	16,800,000	LIBOR + 400bps	18.4%	0.4560%
B-1	BBB	5%	14,000,000	LIBOR + 500bps	13.1%	1.5675%
B-2	BB	5%	14,000,000	LIBOR + 600bps	8.8%	6.4130%
D	Unrated	10%	28,000,000	Excess spread	N/A	8.6540%
Total		100%	280,000,000			

Source: Deloitte

Overcollateralization

Overcollateralization (OC) occurs when the underlying collateral value exceeds the face value of securities (i.e. IABS). Rating agencies stress test structures with sufficient overcollateralization to achieve the IABS tranches' target high investment grade ratings. There are ongoing minimum overcollateralization tests that need to be met by the transaction, which if breached, will divert cash flow to pay down notes' principal as a means to protect investors. In an OC test, the trigger is based on the underlying assets' par amount to the outstanding principal amount of each tranche, except the equity (subordinated) tranche, with a haircut for defaulted or distressed assets. Any breach of the trigger will divert interest cashflow to pay off the outstanding principal of the most senior tranche first until the breached OC ratio meets the trigger level.

³ EXHIBIT 11 reflects a typical capital structure example, whereas the BIC IABS only had investment grade-rated senior and mezzanine tranches, in addition to the subordinated/equity tranche.

Interest Coverage

An IABS transaction also has interest coverage (IC) tests to ensure that there is sufficient interest income from the underlying loans to cover the interest expense on the senior and mezzanine tranches. Similar to an OC test, if the IC level is below the IC trigger for any given tranche, IABS will be required to divert cashflow to repay the outstanding principal of the most senior tranche until the breached IC ratio meets the trigger level.

EXHIBIT 12 highlights key OC and IC triggers in the BIC IABS at the time of issuance in August 2018.

EXHIBIT 12: OC and IC Trigger in the BIC IABS at Issuance

Tests	Trigger Level	Initial level
Class A/B OC Test	111.5%	116.5%
Class C OC Test	106.6%	111.1%
Class A/B IC Test	110.0%	n/a
Class C IC Test	105.0%	n/a

IC tests are applicable starting from the second notes payment date.

Source: Moody's

Collateral Management

IABS is managed by a collateral manager who is responsible for the following:

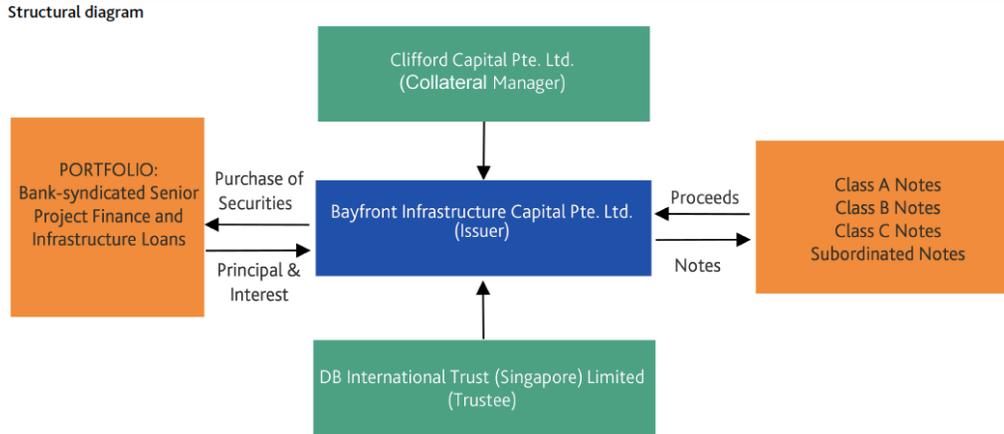
1. Underlying asset selection prior to launch and within the reinvestment period (using receipt of unscheduled prepaid principal collections and proceeds from the asset sales) provided that there is no default, coverage test violation, or reduction of a credit rating of each tranche
2. Credit-impaired and defaulted asset disposal, depending on the OC and IC tests
3. Compliance with contractual obligations and reporting requirements
4. Coordination with rating agencies on the initial rating and periodic rating monitoring of the underlying assets (each rating agency must also be informed on any asset addition or replacement in order to assign a credit rating or credit estimate (in case there is no public rating) to the new asset)

In most cases, we see the following as indicators of a competent collateral manager:

- Past experience in investing and managing project and infrastructure loans
- Past experience in managing a large-scale ABS transaction
- Sizeable loan portfolio under management
- Ability to administer and analyze large scale of information
- Strong credit fundamentals (e.g. credit ratings) of a collateral manager
- Demonstrated understanding of sectors and countries of underlying assets

EXHIBIT 13 shows Clifford Capital’s role as a collateral manager for the BIC IABS.

EXHIBIT 13: Structural Diagram in the BIC IABS



Source: Moody's

About Author: Warut Promboon

Warut Promboon leads Bondcritic’s credit research and consulting practice. Prior to Bondcritic, he led Dagong Hong Kong’s Asian credit rating team, which produces credit research and rating reports across various industries. Prior to Dagong Hong Kong, he was a Director of Asian Credit Research at Societe Generale and ING as well as a Head of ALM Credit Analysis at Standard Chartered Bank. His credit research career spans over 26 years in the US, Hong Kong, Singapore, and Thailand, and entails various capabilities including structured finance, project finance, leverage finance, credit risk management, sell-side credit research, treasury, and rating advisory. His experience also spans different geographical specializations (North America, Europe, and Asia) and various industries of both financial institutions and corporates. Warut has been a speaker in fixed income investment events as a moderator and as a panelist. He has also been a guest lecturer on Asian credit research topics at Hong Kong University of Science and Technology, Chitlada Institute of Technology, and Naresuan University. In 2008, he was ranked 4th best Asian fixed income analyst by FinanceAsia’s investors’ survey.

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