

CREDIT OPINION

12 September 2024

Update



RATINGS

Ticino, Republic and Canton of

Domicile	Switzerland
Long Term Rating	Aa2
Type	LT Issuer Rating - Fgn Curr
Outlook	Stable

Please see the [ratings section](#) at the end of this report for more information. The ratings and outlook shown reflect information as of the publication date.

Contacts

Emanuela Colzani +33.1.5330.3392
AVP – Analyst
emanuela.colzani@moodys.com

Ester Berlot +49 69.70730.921
Sr Ratings Associate
ester.berlot@moodys.com

Massimo Visconti, +39.02.9148.1124
MBA
VP-Sr Credit Officer/Manager
massimo.visconti@moodys.com

CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454

Republic and Canton of Ticino (Switzerland)

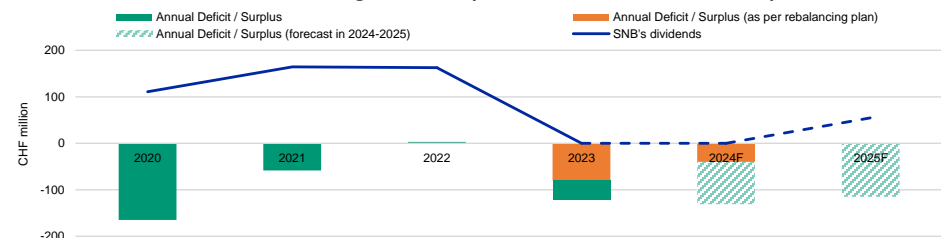
Update to scorecard factors following methodology update

Summary

The credit profile of the [Republic and Canton of Ticino](#) (Ticino or the canton, Aa2 stable) is underpinned by its wealthy economy, very strong governance and high degree of fiscal flexibility, which supports financial results. To rebalance its financial performance by 2025 — hurt by the pandemic-induced revenue deterioration and growing expenditures — the canton is implementing a spending review. The dividend shortfall from the Swiss National Bank (SNB) makes the rebalancing plan increasingly ambitious, but Ticino's stance towards fiscal consolidation remains strong. The canton's credit profile also reflects its conservative debt management and good access to financial markets, which mitigate risks stemming from its moderate debt burden, high financing needs and large contingent liabilities. The ratings also factor in a moderate likelihood of support from the [Government of Switzerland](#) (Aaa stable) if the canton were to face acute liquidity stress.

Exhibit 1

The SNB dividend shortfall challenges Ticino's plan to rebalance its financial performance



The forecasts (F) are our opinion and do not represent the views of the issuer.
Source: Issuer and Moody's Ratings

Credit strengths

- » Strong stance towards fiscal consolidation, driven by a constitutional requirement
- » A high degree of fiscal flexibility, combined with sound management practices
- » A wealthy economy

Credit challenges

- » Increasing debt levels, although manageable
- » Sizeable exposure to contingent liabilities

Rating outlook

The stable outlook reflects Ticino's capacity to rebalance its financial performance over the medium term and keep manageable debt levels. The canton's commitment to financial equilibrium will continue to support financial results, as well as its resilient and wealthy economy.

Factors that could lead to an upgrade

The ratings could be upgraded as a result of one or a combination of the following: a structural improvement of the gross operating balance, and a significant reduction in leverage.

Factors that could lead to a downgrade

Negative pressure on the ratings could be exerted by one or a combination of the following: a significant deterioration in Ticino's operating performance sustained over time; a substantially higher-than-expected net direct and indirect debt-to-operating revenue ratio; and significant financial pressure arising from contingent liabilities. In addition, although not likely, a sovereign downgrade could also result in a downgrade of Ticino's ratings.

Key indicators

Exhibit 2

Republic and Canton of Ticino

Year ending 31 December

	2020	2021	2022	2023	2024F	2025F
Net Direct and Indirect Debt as a % of Operating Revenue	88.1%	96.8%	114.6%	126.6%	133.4%	137.2%
Operating Margin (Primary operating balance as a % Operating Revenue)	-1.4%	1.5%	3.5%	0.4%	0.4%	0.9%
Interest burden (Interest payments as a % of Operating Revenue)	0.6%	0.5%	0.5%	0.7%	0.9%	0.9%
Intergovernmental revenue as a % of Operating Revenue	30.7%	32.6%	29.8%	32.5%	31.8%	32.4%
Capital expenses as a % of Total Expenses	9.2%	8.9%	10.3%	10.4%	10.2%	9.4%
Liquidity ratio (Cash and Cash equivalents as % of Operating revenue)	3.1%	2.8%	1.2%	4.1%	-	-
Regional income (Regional GDP per capita in terms of purchasing power parity (PPP), in international dollars)	74351.2	87568.9	95808.9	99755.7	-	-

The forecasts (F) are our opinion and do not represent the views of the issuer. The Financing Surplus (Deficit) in the table above does not correspond to the Annual Deficit / Surplus considered by the canton and reported in Exhibit 1. The Financing Surplus (Deficit) in the table above results from the difference between the gross operating balance and the capital balance. The net direct and indirect debt in 2023 includes an estimate of unfunded pension liabilities and EOC's financial debt, as the realized data for 2023 are not yet available.

Sources: Issuer and Moody's Ratings

Detailed credit considerations

The credit profile of the Republic and Canton of Ticino, as expressed in its Aa2 stable rating, combines a Baseline Credit Assessment (BCA) of aa2 and a moderate likelihood of extraordinary support from the Swiss Confederation if the canton were to face acute liquidity stress.

Baseline Credit Assessment

Strong stance towards fiscal consolidation, driven by a constitutional requirement

Despite the spending containment measures implemented during the year and tax receipts exceeded expectations, the canton registered a slightly negative gross operating balance (GOB) in 2023, amounting to CHF -12.9 million. The GOB-to-operating revenue ratio contracted, moving to -0.3% in 2023 from 3% in 2022, while the primary operating balance (POB) amounted to 0.4% of operating revenue¹. This contraction is largely attributable to a shortfall in dividend distributions from the Swiss National Bank (SNB)². Reduced car circulation tax receipts and rising social spending also contributed, though to a lesser extent, to the deterioration of the operating balance.

In 2022, Ticino initiated a plan to rebalance its financial performance via a spending review. This review focused primarily on personnel spending, the cost of goods and services, and transfers. The canton set a target to gradually reduce its annual deficit to CHF 80 million in 2023, CHF 40 million in 2024 and to achieve a balanced financial performance by 2025 (see Exhibit 1). However, given the shortfall in SNB dividends, this plan presents some challenges. In 2023, the canton fell short of its annual target by approximately CHF 40 million.

This publication does not announce a credit rating action. For any credit ratings referenced in this publication, please see the issuer/deal page on <https://ratings.moody.com> for the most updated credit rating action information and rating history.

We expect POB-to-operating revenue to be near 0% in 2024 and 2025. The canton would require approximately CHF 90 million of additional resources in 2024 and CHF 115 million in 2025, corresponding to roughly 2% and 3% of operating revenue respectively, to achieve the targets set in the rebalancing plan. Ticino has been demonstrating a strong commitment to financial equilibrium, an objective enshrined in the cantonal constitution. We will be monitoring how the cantonal strategy evolves to manage budgetary pressures, its capacity to successfully implement the spending review as well as the development of realized revenue and expenditures.

A high degree of fiscal flexibility, combined with sound management practices

Ticino benefits from a high degree of fiscal flexibility. The canton, like its national peers, has ample autonomy in setting tax rates, and the cantonal law provides for an adjustment of the fiscal coefficient to meet financial targets, if other measures, such as spending review or other revenue increase, are not sufficient. Ticino also benefits from a robust intercantonal revenue equalisation system, which provides stability to the cantons' finances. Tax receipts account for the highest proportion of operating revenue (54% in 2023), followed by transfers. Moreover, the canton has strong flexibility on the expenditure side, even if social spending is a sizeable and a rigid budget item with cost pressures associated with an ageing population.

Ticino's governance and management practices are strong. Financial planning is robust with in-year monitoring, fiscal targets are defined, and the degree of transparency is high. Debt and investment management are conservative and based on clear guidelines. The debt structure is simple with long-term debt mainly consisting of bonds at fixed rate. Ticino's debt management targets a smooth amortisation profile, avoiding very long tenors, with a cap of CHF250 million per year on long-term debt repayment. Ticino takes a proactive approach to treasury management. Treasury budgets are carefully planned and monitored during the year taking into consideration scheduled liquidity inflows and outflows.

A wealthy economy

Ticino is a medium-sized canton, located in the southern part of Switzerland. It shares its border with the [Region of Lombardy \(Italy\)](#) (Baa2 stable), the wealthiest region in Italy. Ticino benefits from a wealthy and diversified economy, which supports financial results.

Accounting for 4% of the national GDP, the canton's GDP per capita is slightly above the Swiss average (see Exhibit 2), which exceeds the European average. The cantonal economy is mainly driven by the service industry (77% of the cantonal value added), followed by manufacturing. Wholesale, financial activities, information technology and tourism are relevant in the tertiary sector, while electromechanical and pharmaceutical chemical industries have a leading role in the secondary sector. Life science and high tech are increasing in importance. The cantonal economic strategy is focused on promoting innovation and attracting new businesses, and benefits from the presence of important universities and renowned research institutions.

Ticino's financial performance is sensitive to the economic cycle and has been negatively impacted by the COVID pandemic. This sensitivity had led to revenue shortfalls and increased spending needs over the last four years. After the pandemic-induced economic contraction, the Swiss economy recovered gradually supporting the cantonal fiscal results. We expect a real GDP growth rate of 1.2% in 2024 and 1.6% in 2025 at the national level³. The favorable economic prospects support our expectation that tax receipts should exceed that cantonal prudent forecasts in 2024 and 2025.

Increasing debt levels, although manageable

In 2023, Ticino's net direct and indirect debt (NDID) amounted to around CHF5 billion, exceeding 120% of operating revenue. We expect the NDID-to-operating revenue ratio to exceed 130% in both 2024 and 2025. This forecast is due to the canton's sustained investment plan, its weak operating balance, and a rise in indirect debt.

In 2023, long-term direct debt made up 46% of Ticino's NDID, while short-term direct debt accounted for 20%. The direct debt rose to CHF3.3 billion from CHF2.9 billion in 2022, representing about 80% of operating revenue. Short-term borrowing remained high at CHF1 billion, exceeding the cantonal threshold⁴, a credit negative. The canton uses short-term debt to manage cash flow imbalances due to mismatches in inflow and outflow, as well as the canton's sustained investment plan. Good access to financial markets and careful cash monitoring support the Ticino's cash position and mitigate risks stemming from the low cash on hand levels (4.1% of operating revenue in 2023). The canton's low-interest spending and simple debt profile mitigate risks associated with its moderate, but growing, financial debt.

Indirect debt accounts for a significant 33% of Ticino's NDID and is primarily composed of liabilities tied to the cantonal pension fund, Istituto di Previdenza del Cantone di Ticino (IPCT). Ticino guarantees IPCT's future payments to beneficiaries. Thus, we include in the indirect debt both the amortising financial liability granted to IPCT since 2013 (CHF380.5 million in 2023), and our estimate

of the additional coverage needed to reach the 80% minimum coverage ratio⁵. The remainder of the pension deficit is incorporated into contingent liabilities (see "Sizeable exposure to contingent liabilities"). Our estimate of the additional coverage needed increased significantly in 2022 due to unfavourable market conditions, which adversely affected the pension fund results⁶.

Sizeable exposure to contingent liabilities

In 2023, Ticino's contingent liabilities were five times its operating revenue, primarily due to obligations from the cantonal bank, BancaStato⁷. Ticino fully owns BancaStato and guarantees the bank's liabilities, which amounted to 4.3 times the cantonal operating revenue in 2023. We assess the risks associated with these liabilities to be moderate, reflecting the bank's solid credit profile and close supervision by FINMA (the Swiss Financial Market Supervision Authority).

Ticino's contingent liabilities also include the financial debt of its fully owned electricity wholesaler, Azienda Elettrica Ticinese (AET). AET's leverage significantly increased to 26% of the cantonal operating revenue in 2022 from 9% in 2021. This was due to higher short-term debt and increased working capital outflow amidst rising energy prices. AET's financial results became negative in 2022 due to lower hydroelectric production and higher costs for energy purchases from international markets. We will monitor how AET's performance will evolve as well as its ability to handle the energy sector's current challenges.

We include among contingent liabilities Ticino's exposure to the remaining unfunded part of IPCT (needed to attain a 100% coverage ratio, see "Increasing debt levels, although manageable"). This amounts to around 40% of the cantonal operating revenue. Despite the large deficit of the cantonal pension fund, its impact could be lessened if needed, as Ticino has the ability to retroactively adjust pension levels by law. In an effort to reduce the pension fund imbalances, IPCT has decided to gradually lower the conversion rate of retirement savings starting in 2024.

Ticino's good access to financial markets and conservative debt management mitigate the risks stemming from large contingent liabilities. Should contingent liabilities expand, the value of cantonal guarantees will grow proportionally, a credit negative.

Extraordinary support considerations

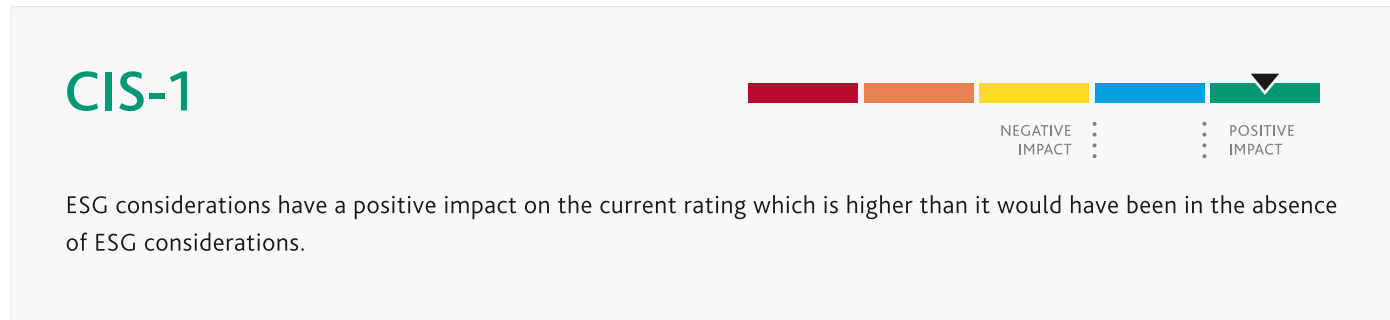
Ticino has a moderate likelihood of receiving extraordinary support from the Swiss Confederation. This reflects Swiss cantons' ample autonomy, and the strongly decentralised relationship between the cantons and the Swiss Confederation.

ESG considerations

Ticino, Republic and Canton of's ESG credit impact score is CIS-1

Exhibit 3

ESG credit impact score



Source: Moody's Ratings

Ticino's ESG Credit Impact Score is **CIS-1**, reflecting a very strong governance profile and muted exposure to environmental and social risks.

Exhibit 4

ESG issuer profile scores



Source: Moody's Ratings

Environmental

Ticino's environmental issuer profile score (**E-2**) factors in a non-material exposure to environmental risks such as carbon transition, water management, natural capital and waste & pollution. Ticino has a moderate exposure to physical climate risks, due to increasingly volatile weather conditions and rising temperatures. Climate change related environmental trends may cause losses in productivity, weigh on investment and put pressure on the cantonal revenue base.

Social

Ticino's social issuer profile (**S-2**) reflects an overall non-material exposure to social considerations. The canton has a high level of education and overall strong levels of public health & safety. Residents benefit of a good access to basic services. Labor & income indicators are favorable, reflecting a relatively diversified service-based economy and a low unemployment rate. Ticino has a moderate credit exposure to demographics challenges, due to population ageing. We foresee a persistently high, although manageable, future demand for healthcare and social services with implications on public spending. High housing costs imply a moderate credit exposure to housing risk.

Governance

Ticino's highly transparent and very strong management and governance practices are captured by a governance issuer profile of **G-1**. Strong stance towards fiscal consolidation, driven by a constitutional requirement in terms of financial equilibrium, will perdure and will contribute to Ticino's ability to meet its fiscal targets. Sound debt management, combined with very good access to financial markets, support liquidity and mitigate risks stemming from its moderate debt levels and contingent liabilities, which will remain manageable.

ESG Issuer Profile Scores and Credit Impact Scores for the rated entity/transaction are available on Moodys.com. In order to view the latest scores, please click [here](#) to go to the landing page for the entity/transaction on MDC and view the ESG Scores section.

Rating methodology and scorecard factors

The assigned BCA of aa2 is close to the BCA scorecard-indicated outcome of aa3.

For details about our rating approach, please refer to [Rating Methodology: Regional and Local Governments](#), published on 28 May 2024.

Exhibit 5

Republic and Canton of Ticino Regional & Local Governments

Baseline Credit Assessment – Scorecard	Score	Value	Sub-factor Weighting	Sub-factor Score	Factor Weighting	Total
Factor 1: Economy					25%	0.68
Regional Income [1]	0.50	99755.67	15%	0.08		
Economic Growth	9.00	baa	5%	0.45		
Economic Diversification	3.00	aa	5%	0.15		
Factor 2: Institutional Framework and Governance					30%	0.60
Institutional Framework	1.00	aaa	15%	0.15		
Governance	3.00	aa	15%	0.45		
Factor 3: Financial Performance					20%	2.10
Operating Margin [2]	12.24	0.37%	10%	1.22		
Liquidity Ratio [3]	14.59	4.09%	5%	0.73		
Ease of Access to Funding	3.00	aa	5%	0.15		
Factor 4: Leverage					25%	1.44
Debt Burden [4]	8.33	126.59%	15%	1.25		
Interest Burden [5]	1.89	0.69%	10%	0.19		
Preliminary BCA Scorecard-Indicated Outcome (SIO)						(4.82) a1
Idiosyncratic Notching						-1.0
Preliminary BCA SIO After Idiosyncratic Notching						(5.82) a2
Sovereign Rating Threshold						Aaa
Operating Environment Notching						2.0
BCA Scorecard-Indicated Outcome						(3.82) aa3
Assigned BCA						aa2

[1] Regional GDP per capita in terms of purchasing power parity (PPP) terms, in international dollars

[2] Primary Operating Balance / Operating Revenue

[3] Cash and Cash Equivalents / Operating Revenue

[4] Net Direct and Indirect Debt / Operating Revenue

[5] Interest Payments / Operating Revenue

Source: Moody's Ratings; Fiscal 2023.

Ratings

Exhibit 6

Category	Moody's Rating
TICINO, REPUBLIC AND CANTON OF	
Outlook	Stable
Baseline Credit Assessment	aa2
Issuer Rating	Aa2
Senior Unsecured -Dom Curr	Aa2

Source: Moody's Ratings

Endnotes

- 1 In 2022, the operating balance increase is mainly driven by higher-than-expected dividends from the SNB.
- 2 The SNB did not distribute dividends in 2023 due to the loss recorded in 2022. It could opt for a more cautious approach to profit distribution in the future, which may result in no or low dividends in 2024.
- 3 Moody's forecasts as of August 2024.
- 4 According to the cantonal threshold, short-term debt should remain below 20% of direct debt.
- 5 The 80% minimum coverage ratio is required by the federal law on pension funds.
- 6 The higher than expected unfunded pension liabilities realized in 2022 explains the higher NDID-to-operating revenue ratio compared to the last published credit opinion.
- 7 BancaStato is an autonomous institution under public law, which aims to promote Ticino's economic development through mortgage lending and asset management. Its activities cover all the operations of a universal bank.

© 2024 Moody's Corporation, Moody's Investors Service, Inc., Moody's Analytics, Inc. and/or their licensors and affiliates (collectively, "MOODY'S"). All rights reserved. CREDIT RATINGS ISSUED BY MOODY'S CREDIT RATINGS AFFILIATES ARE THEIR CURRENT OPINIONS OF THE RELATIVE FUTURE CREDIT RISK OF ENTITIES, CREDIT COMMITMENTS, OR DEBT OR DEBT-LIKE SECURITIES, AND MATERIALS, PRODUCTS, SERVICES AND INFORMATION PUBLISHED OR OTHERWISE MADE AVAILABLE BY MOODY'S (COLLECTIVELY, "MATERIALS") MAY INCLUDE SUCH CURRENT OPINIONS. MOODY'S DEFINES CREDIT RISK AS THE RISK THAT AN ENTITY MAY NOT MEET ITS CONTRACTUAL FINANCIAL OBLIGATIONS AS THEY COME DUE AND ANY ESTIMATED FINANCIAL LOSS IN THE EVENT OF DEFAULT OR IMPAIRMENT. SEE APPLICABLE MOODY'S RATING SYMBOLS AND DEFINITIONS PUBLICATION FOR INFORMATION ON THE TYPES OF CONTRACTUAL FINANCIAL OBLIGATIONS ADDRESSED BY MOODY'S CREDIT RATINGS. CREDIT RATINGS DO NOT ADDRESS ANY OTHER RISK, INCLUDING BUT NOT LIMITED TO: LIQUIDITY RISK, MARKET VALUE RISK, OR PRICE VOLATILITY. CREDIT RATINGS, NON-CREDIT ASSESSMENTS ("ASSESSMENTS"), AND OTHER OPINIONS INCLUDED IN MOODY'S MATERIALS ARE NOT STATEMENTS OF CURRENT OR HISTORICAL FACT. MOODY'S MATERIALS MAY ALSO INCLUDE QUANTITATIVE MODEL-BASED ESTIMATES OF CREDIT RISK AND RELATED OPINIONS OR COMMENTARY PUBLISHED BY MOODY'S ANALYTICS, INC. AND/OR ITS AFFILIATES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND MATERIALS DO NOT CONSTITUTE OR PROVIDE INVESTMENT OR FINANCIAL ADVICE, AND MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND MATERIALS ARE NOT AND DO NOT PROVIDE RECOMMENDATIONS TO PURCHASE, SELL, OR HOLD PARTICULAR SECURITIES. MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND MATERIALS DO NOT COMMENT ON THE SUITABILITY OF AN INVESTMENT FOR ANY PARTICULAR INVESTOR. MOODY'S ISSUES ITS CREDIT RATINGS, ASSESSMENTS AND OTHER OPINIONS AND PUBLISHES OR OTHERWISE MAKES AVAILABLE ITS MATERIALS WITH THE EXPECTATION AND UNDERSTANDING THAT EACH INVESTOR WILL, WITH DUE CARE, MAKE ITS OWN STUDY AND EVALUATION OF EACH SECURITY THAT IS UNDER CONSIDERATION FOR PURCHASE, HOLDING, OR SALE.

MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS, AND MATERIALS ARE NOT INTENDED FOR USE BY RETAIL INVESTORS AND IT WOULD BE RECKLESS AND INAPPROPRIATE FOR RETAIL INVESTORS TO USE MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS OR MATERIALS WHEN MAKING AN INVESTMENT DECISION. IF IN DOUBT YOU SHOULD CONTACT YOUR FINANCIAL OR OTHER PROFESSIONAL ADVISER.

ALL INFORMATION CONTAINED HEREIN IS PROTECTED BY LAW, INCLUDING BUT NOT LIMITED TO, COPYRIGHT LAW, AND NONE OF SUCH INFORMATION MAY BE COPIED OR OTHERWISE REPRODUCED, REPACKAGED, FURTHER TRANSMITTED, TRANSFERRED, DISSEMINATED, REDISTRIBUTED OR RESOLD, OR STORED FOR SUBSEQUENT USE FOR ANY SUCH PURPOSE, IN WHOLE OR IN PART, IN ANY FORM OR MANNER OR BY ANY MEANS WHATSOEVER, BY ANY PERSON WITHOUT MOODY'S PRIOR WRITTEN CONSENT. FOR CLARITY, NO INFORMATION CONTAINED HEREIN MAY BE USED TO DEVELOP, IMPROVE, TRAIN OR RETRAIN ANY SOFTWARE PROGRAM OR DATABASE, INCLUDING, BUT NOT LIMITED TO, FOR ANY ARTIFICIAL INTELLIGENCE, MACHINE LEARNING OR NATURAL LANGUAGE PROCESSING SOFTWARE, ALGORITHM, METHODOLOGY AND/OR MODEL.

MOODY'S CREDIT RATINGS, ASSESSMENTS, OTHER OPINIONS AND MATERIALS ARE NOT INTENDED FOR USE BY ANY PERSON AS A BENCHMARK AS THAT TERM IS DEFINED FOR REGULATORY PURPOSES AND MUST NOT BE USED IN ANY WAY THAT COULD RESULT IN THEM BEING CONSIDERED A BENCHMARK.

All information contained herein is obtained by MOODY'S from sources believed by it to be accurate and reliable. Because of the possibility of human or mechanical error as well as other factors, however, all information contained herein is provided "AS IS" without warranty of any kind. MOODY'S adopts all necessary measures so that the information it uses in assigning a credit rating is of sufficient quality and from sources MOODY'S considers to be reliable including, when appropriate, independent third-party sources. However, MOODY'S is not an auditor and cannot in every instance independently verify or validate information received in the credit rating process or in preparing its Materials.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability to any person or entity for any indirect, special, consequential, or incidental losses or damages whatsoever arising from or in connection with the information contained herein or the use of or inability to use any such information, even if MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers is advised in advance of the possibility of such losses or damages, including but not limited to: (a) any loss of present or prospective profits or (b) any loss or damage arising where the relevant financial instrument is not the subject of a particular credit rating assigned by MOODY'S.

To the extent permitted by law, MOODY'S and its directors, officers, employees, agents, representatives, licensors and suppliers disclaim liability for any direct or compensatory losses or damages caused to any person or entity, including but not limited to by any negligence (but excluding fraud, willful misconduct or any other type of liability that, for the avoidance of doubt, by law cannot be excluded) on the part of, or any contingency within or beyond the control of, MOODY'S or any of its directors, officers, employees, agents, representatives, licensors or suppliers, arising from or in connection with the information contained herein or the use of or inability to use any such information.

NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE ACCURACY, TIMELINESS, COMPLETENESS, MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OF ANY CREDIT RATING, ASSESSMENT, OTHER OPINION OR INFORMATION IS GIVEN OR MADE BY MOODY'S IN ANY FORM OR MANNER WHATSOEVER.

Moody's Investors Service, Inc., a wholly-owned credit rating agency subsidiary of Moody's Corporation ("MCO"), hereby discloses that most issuers of debt securities (including corporate and municipal bonds, debentures, notes and commercial paper) and preferred stock rated by Moody's Investors Service, Inc. have, prior to assignment of any credit rating, agreed to pay to Moody's Investors Service, Inc. for credit ratings opinions and services rendered by it. MCO and Moody's Investors Service also maintain policies and procedures to address the independence of Moody's Investors Service credit ratings and credit rating processes. Information regarding certain affiliations that may exist between directors of MCO and rated entities, and between entities who hold credit ratings from Moody's Investors Service, Inc. and have also publicly reported to the SEC an ownership interest in MCO of more than 5%, is posted annually at www.moody's.com under the heading "Investor Relations — Corporate Governance — Charter Documents - Director and Shareholder Affiliation Policy."

Moody's SF Japan K.K., Moody's Local AR Agente de Calificación de Riesgo S.A., Moody's Local BR Agência de Classificação de Risco LTDA, Moody's Local MX S.A. de C.V., I.C.V., Moody's Local PE Clasificadora de Riesgo S.A., and Moody's Local PA Calificadora de Riesgo S.A. (collectively, the "Moody's Non-NRSRO CRAs") are all indirectly wholly-owned credit rating agency subsidiaries of MCO. None of the Moody's Non-NRSRO CRAs is a Nationally Recognized Statistical Rating Organization.

Additional terms for Australia only: Any publication into Australia of this document is pursuant to the Australian Financial Services License of MOODY'S affiliate, Moody's Investors Service Pty Limited ABN 61 003 399 657AFSL 336969 and/or Moody's Analytics Australia Pty Ltd ABN 94 105 136 972 AFSL 383569 (as applicable). This document is intended to be provided only to "wholesale clients" within the meaning of section 761G of the Corporations Act 2001. By continuing to access this document from within Australia, you represent to MOODY'S that you are, or are accessing the document as a representative of, a "wholesale client" and that neither you nor the entity you represent will directly or indirectly disseminate this document or its contents to "retail clients" within the meaning of section 761G of the Corporations Act 2001. MOODY'S credit rating is an opinion as to the creditworthiness of a debt obligation of the issuer, not on the equity securities of the issuer or any form of security that is available to retail investors.

Additional terms for India only: Moody's credit ratings, Assessments, other opinions and Materials are not intended to be and shall not be relied upon or used by any users located in India in relation to securities listed or proposed to be listed on Indian stock exchanges.

Additional terms with respect to Second Party Opinions (as defined in Moody's Investors Service Rating Symbols and Definitions): Please note that a Second Party Opinion ("SPO") is not a "credit rating". The issuance of SPOs is not a regulated activity in many jurisdictions, including Singapore. JAPAN: In Japan, development and provision of SPOs fall under the category of "Ancillary Businesses", not "Credit Rating Business", and are not subject to the regulations applicable to "Credit Rating Business" under the Financial Instruments and Exchange Act of Japan and its relevant regulation. PRC: Any SPO: (1) does not constitute a PRC Green Bond Assessment as defined under any relevant PRC laws or regulations; (2) cannot be included in any registration statement, offering circular, prospectus or any other documents submitted to the PRC regulatory authorities or otherwise used to satisfy any PRC regulatory disclosure requirement; and (3) cannot be used within the PRC for any regulatory purpose or for any other purpose which is not permitted under relevant PRC laws or regulations. For the purposes of this disclaimer, "PRC" refers to the mainland of the People's Republic of China, excluding Hong Kong, Macau and Taiwan.

CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454