European Bank
for Reconstruction and Development

Default and recovery rate analysis

May 2024

Contents

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Executive summary

Derived from nearly 30 years of experience in emerging markets, this unaudited report offers an analysis of default rates and recoveries for the European Bank for Reconstruction and Development (EBRD).

The EBRD organises its lending operations into three sector-aligned business units and six geographical business units. Together, they create a matrix and an opportunity to present the Bank's loan-book performance over time through these two lenses. The sectoral business units are industry, commerce and agribusiness; sustainable infrastructure; and financial institutions. The geographical business units are Central Asia, central and south-eastern Europe, eastern Europe and the Caucasus, the southern and eastern Mediterranean region, Türkiye, and a geographical business unit that covers past lending activity in Russia.[1] Each of these business units is defined in the "Observation composition" section of this report.

This report presents aggregate default and recovery rate statistics for these 9 business units, an internal risk rating where applicable, and statistics by country income group, using World Bank Group definitions.

- From 1995 to 2023, the EBRD experienced an overall average default rate of 2.2 per cent.[2] The highest default rates were observed in 1998 (8.3 per cent), 1999 (6.5 per cent) and 2022 (5.2 per cent). During the same period, the EBRD experienced an overall recovery rate of 68.9 per cent,[3] with the lowest recoveries observed in 2007 (30.3 per cent).
- Focusing on sectoral business unit aggregations, at 3.3 per cent, the highest default rates were observed in industry, commerce and agribusiness, which also recorded the lowest recoveries on defaulted assets, at 64.6 per cent.
- In terms of geographic business units, eastern Europe and the Caucasus experienced the highest default rate, at 4.1 per cent. In terms of recovery, the southern and eastern Mediterranean region and Russia exhibited the lowest recovery rates, at 64.6 per cent.
- Based on World Bank Group country income classifications, the EBRD experienced the highest default rate in lower middle-income countries, at 4.1 per cent, while upper middle-income countries registered the lowest recovery rate, at 66.9 per cent.
- Based on data from 2010,[4] default rates have increased as credit quality has decreased, in line with expectations.

The statistics and analysis contained in this report reflect the EBRD's experience. Greater significance can be derived from combining this information with that of similar institutions that operate in comparable regions or emerging markets more broadly. The Global Emerging Markets Risk Database Consortium (GEMs) is a collaboration of such institutions, including the EBRD, which are aggregating their data (including the data used to generate this report) to support investment and development in emerging markets. The statistics derived from GEMs will provide deeper insight into markets where it is difficult to find reliable credit information, and this report seeks to supplement these efforts.

[1] The Bank has made no new investments in Russia since 2014. In April 2022, the EBRD Board of Governors decided to suspend Russia's access to Bank resources in response to the invasion of Ukraine. The Bank has closed its offices in Moscow. Russia remains a shareholder of the EBRD.
[2] The average default rate represents the sum of all default observations over all cohorts divided by the sum of all unique counterparty observations within all cohorts.
[3] The average recovery rate represents the sum of discounted recoveries over total outstanding exposure at the time of default for the total population of defaulted and fully resolved operations.
[4] Credit quality statistics are used from 2010, which is the introduction of the EBRD's current rating scale, as published in the Bank's annual *Financial Report* (https://www.ebrd.com/news/publications.html).

Methodology

The statistics contained in this report are based on nearly 30 years of experience in emerging markets. They have been collected by the EBRD since 1995. For both its default rate analysis and recovery rate analysis, the EBRD has compiled the latest data available on default events and recoveries, drawing on the complete history of non-sovereign loan observations.[5]

The EBRD's definition of non-performing loans (NPL) is based on the principles embedded in IFRS Accounting Standards.[6] According to the currently prevailing accounting standard (IFRS 9), a loan becomes impaired when one or more events that have a detrimental impact on the estimated future cash flows of that financial asset have occurred. Specifically, the Bank designates an asset as an NPL when the issuer or borrower is 90 days or more past due on a payment to any material creditor, or the counterparty is unlikely to pay its credit obligations in full, without recourse by the Bank to other sources, such as realising security (if held), as assessed by expert judgement. Once a loan is recognised as non-performing, all underlying loans of the defaulted counterparty are also considered to be in default.

In the default rate analysis, the calculation of default rates is performed at the counterparty level, using dynamic annual cohorts. Each cohort comprises counterparts that are categorised as performing, have newly transitioned to default, have completed or have been newly added within that year. Each record of a counterparty is a unique observation within that cohort. Observations do not include defaults carried over from the previous cohort.

Counterparties may be observed in multiple cohorts if they remain active and have not defaulted. In addition, while counterparties may be observed in multiple segments if they have exposure to multiple sectoral or geographical business units, they will only be counted once per segment.

Over the 29 cohorts[7] from 1995 to 2023, the default rate analysis observes 2,725 unique counterparts, totalling 16,572 observations, among which the EBRD recorded 370 default events. Further breakdown of these statistics is provided in this report. The average default rate represents the sum of all default observations over all cohorts divided by the sum of all unique counterparty observations within all cohorts.

For the recovery rate analysis, the calculation of recovery rates is performed at the operational level, using a static cohort approach whereby each default is observed once at the point of default. With respect to the internal default definition, the observed population comprises all loans that have recorded a default and have fully completed within the report's observation period.

Observations are unique and will only appear once across all segments, as an operation cannot be assigned to more than one sectoral business unit. Where an operation may have exposure allocated across multiple geographical business units, such cases are categorised as "other" for the purposes of this analysis.

All recoveries are discounted to reflect the time value of money and write-offs are recalculated at the time of default, where applicable.

Due to the difference in focusing on fully resolved defaults, the recovery rate analysis covers 23 cohorts from 1998 to 2022, observing 278 default events. Further breakdown of these observations is provided in this report.

[5] The EBRD excludes fair valued loans, agreements under the Trade Facilitation Programme and sovereign guaranteed loans.
[6] The IFRS Foundation is a not-for-profit, public-interest organisation established to develop high-quality, understandable, enforceable and globally accepted accounting and sustainability disclosure standards (https://www.ifrs.org/).
[7] Yearly cohorts represent full-year observations and run from year end to year end, meaning 2023 would be measured from December 2022 to December 2023.

Observation composition

The following breakdowns describe the overall composition of observations across the full dataset within the EBRD's sectoral and geographical business units and World Bank Group country income classifications, in line with the default rate analysis methodology used in this report.[8]

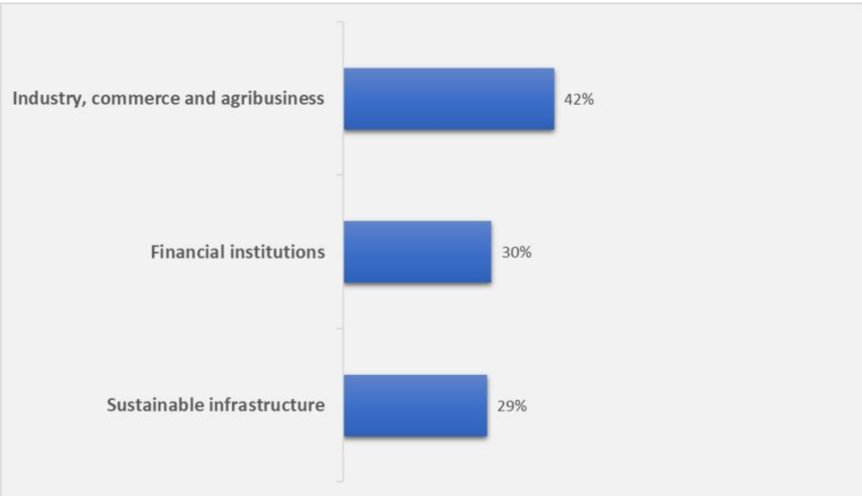
Sectoral business units

Standard industry codes assigned to each investment operation are grouped into industry sectors. Business sector units comprise one or more industry sectors. Current business sector units include:

- **Industry, commerce and agribusiness (ICA)**: Agribusiness, equity funds, information and communications technology, manufacturing and services, property and tourism, and natural resources.
- **Sustainable infrastructure**: Energy, municipal and environmental infrastructure, and transport.
- **Financial institutions**: Depository credit (banks), leasing finance, non-depository credit (non-bank) and insurance, pension and mutual funds.

ICA accounts for the highest concentration of observations at 42 per cent.

Figure 1. EBRD business sector observation concentration



[8] Note that the data used for the default rate analysis is a better representation of overall ERBD portfolio composition. The data used for the recovery rate analysis is a subset and therefore less representative for composition analysis.

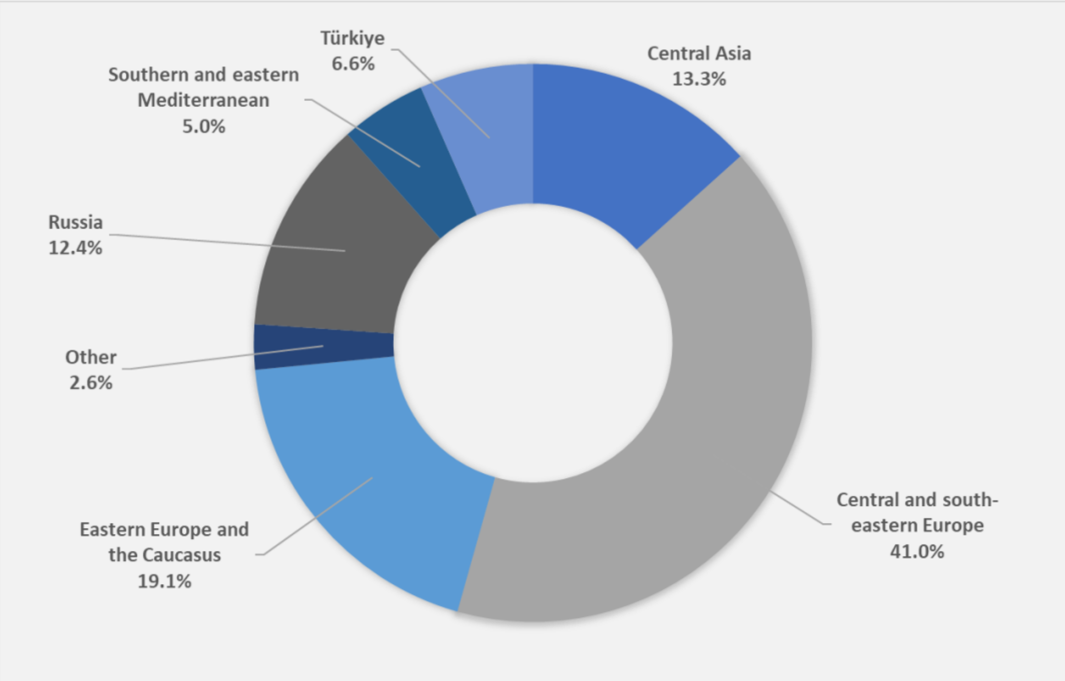
Geographical business units

The EBRD's internal business units are structured to cover six different geographical regions:

- **Central Asia** (Kazakhstan, Kyrgyz Republic, Mongolia, Tajikistan, Turkmenistan and Uzbekistan)
- **Central and south-eastern Europe** (Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czechia, Estonia, Greece, Hungary, Kosovo, Latvia, Lithuania, Montenegro, North Macedonia, Poland, Romania, Serbia, the Slovak Republic and Slovenia)
- **Eastern Europe and the Caucasus** (Armenia, Azerbaijan, Belarus,[9] Georgia, Moldova and Ukraine)
- **Southern and eastern Mediterranean** (Egypt, Jordan, Lebanon, Morocco, Tunisia and the West Bank and Gaza)
- **Türkiye**
- **Russia** (reflecting the performance of a geographical business unit that operated until 2014, when it entered a "run-off" phase)[10]
- Where an operation may have exposure across multiple countries, such cases are categorised as **"other"** for the purposes of this analysis.

At 41 per cent, central and south-eastern Europe has the highest concentration of observations for this analysis.

Figure 2. EBRD business region observation concentration (end 2023)



[9] In April 2022, the EBRD Board of Governors decided to suspend Belarus' access to Bank resources in response to the invasion of Ukraine. The Bank has closed its offices in Minsk. Belarus remains a shareholder of the Bank.

[10] The Bank has made no new investments in Russia since 2014. In April 2022, the EBRD Board of Governors decided to suspend Russia's access to Bank resources in response to the invasion of Ukraine. The Bank has closed its offices in Moscow. Russia remains a shareholder of the EBRD.

World Bank country income classification

The following distribution of counterparty and operational observations are based on the World Bank's country classifications by income level for FY2024 (1 July 2023 to 30 June 2024).[11] Any statistics aggregated in this way, therefore, are based on the current view and not representative of country income classification at the point of observation. The data are presented using World Bank Group definitions to enable a direct comparison to supplement the report published by the International Finance Corporation (IFC) on 28 March 2024.[12]

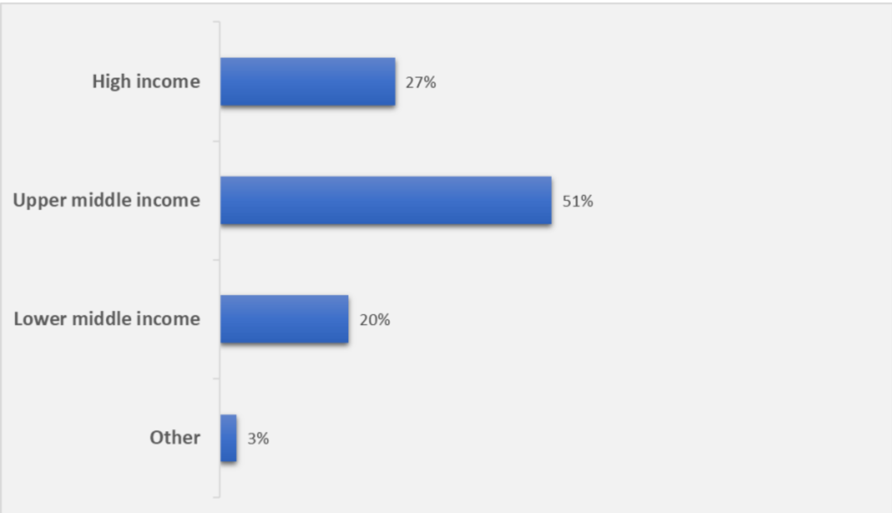
The World Bank Group splits the world's economies into four income groups – low, lower middle, upper middle and high. The classifications are updated each year on 1 July, based on the gross national income (GNI) per capita of the previous calendar year and derived according to the Atlas method.

Each category is expressed in US dollars. Low-income economies are those with a GNI per capita of less than US$ 1,136; lower middle-income economies are those with a GNI per capita of US$ 1,136 to US$ 4,465; upper middle-income economies have a GNI between US$ 4,466 and US$ 13,845; and high-income economies are those with a GNI per capita greater than US$ 13,845.

Note that none of the EBRD business-unit regions are currently categorised in the low-income category.

Based on this designation, the highest concentration of default rate analysis and recovery rate analysis observations are in the upper middle-income bracket (50.8 per cent and 57.3 per cent, respectively).

Figure 3. World Bank country income classification observation concentration (end 2023)



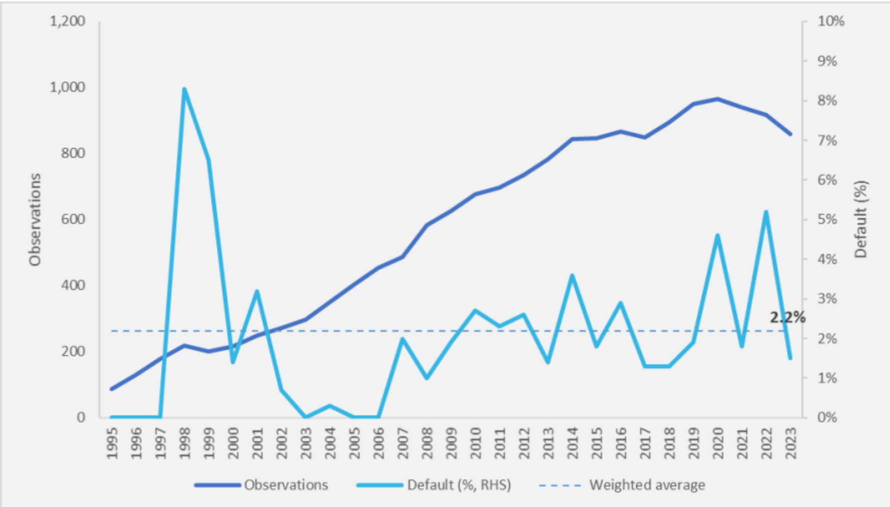
[11] World Bank (2023), World Bank Group country classifications by income level for FY24 (July 1, 2023-June 30, 2024), Washington, DC. Available at: https://blogs.worldbank.org/en/opendata/new-world-bank-group-country-classifications-income-level-fy24.
[12] IFC (2024), IFC Portfolio Default Rate Analysis. Washington, DC. Available at: https://www.ifc.org/en/insights-reports/2024/ifc-portfolio-default-rate-analysis.

Default rate analysis

For the default rate analysis, the calculation of default rates is performed at the counterparty level, using annual cohorts (29 cohorts from 1995 to 2023). Counterparties may be observed in multiple cohorts if they remain active and have not defaulted. In addition, while counterparties may be observed in multiple segments, if they have exposure to multiple countries or sectors, they will only be counted once per segment.

The growing scale and maturity of the Bank's loan book translate into an increase in the average default rate over time. However, it is still low compared with the average credit quality of the non-sovereign loan book, which stood at B+ at end 2023. A full breakdown of internal through-the-cycle probability of default (TTC PD) matrices can be found in Annex 1. This section breaks down the EBRD's default rate experience by observations per year, the EBRD's sectoral and geographical business units, World Bank country income classification and ratings category.

Figure 4. Breakdown of counterparty observations and default rate, by year



Year	Total observations	Default observations	Default (%)
1995	86	0	0.0%
1996	131	0	0.0%
1997	178	0	0.0%
1998	218	18	8.3%
1999	200	13	6.5%
2000	216	3	1.4%
2001	250	8	3.2%
2002	272	2	0.7%
2003	297	0	0.0%
2004	351	1	0.3%
2005	404	0	0.0%
2006	453	0	0.0%
2007	488	10	2.0%
2008	582	6	1.0%
2009	626	12	1.9%
2010	677	18	2.7%
2011	697	16	2.3%
2012	735	19	2.6%
2013	783	11	1.4%
2014	843	30	3.6%
2015	847	15	1.8%
2016	866	25	2.9%
2017	848	11	1.3%
2018	894	12	1.3%
2019	949	18	1.9%
2020	966	44	4.6%
2021	939	17	1.8%
2022	916	48	5.2%
2023	860	13	1.5%
Total	**16,572**	**370**	**2.2%**

Figure 5. Default rate by business region (end 2023)

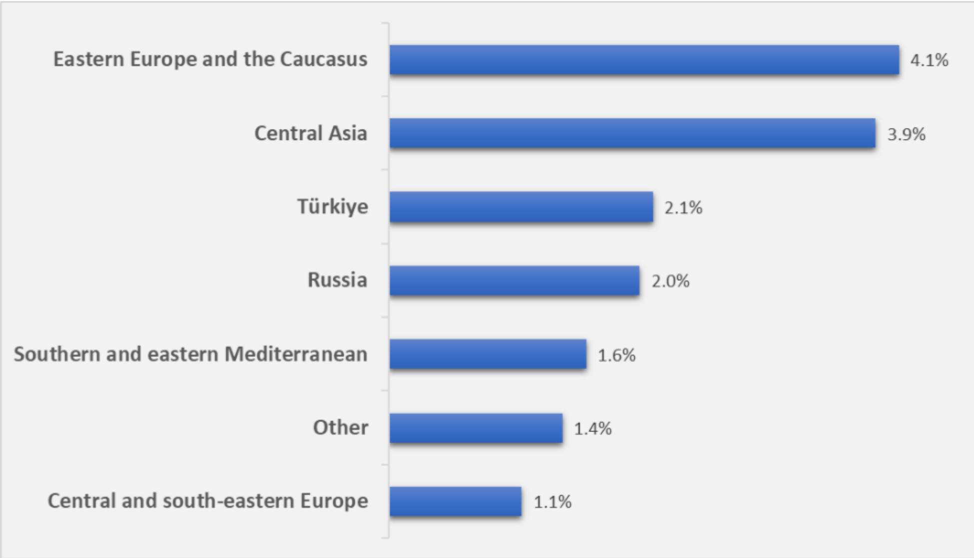


Figure 6. Default rate by business sector unit (end 2023)

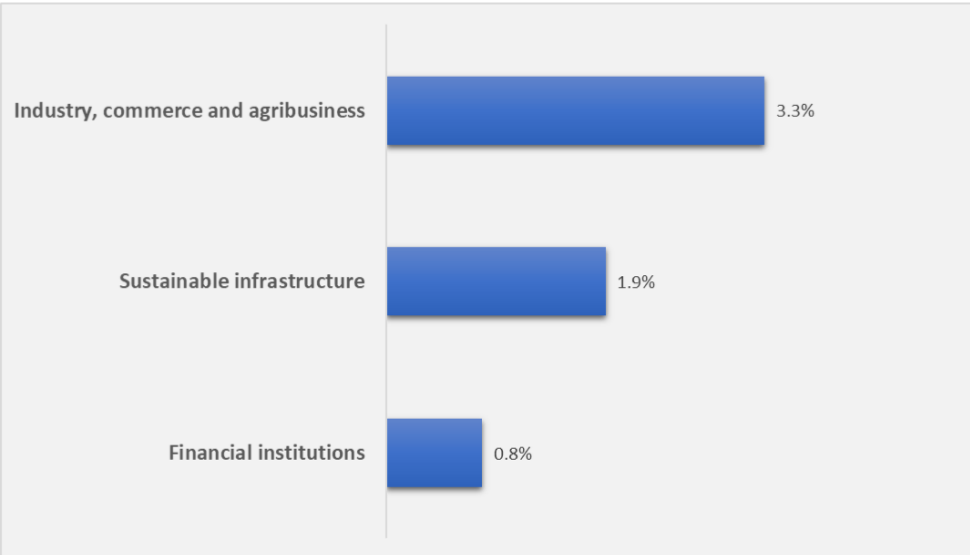


Figure 7. Default rate by World Bank income group (end 2023)

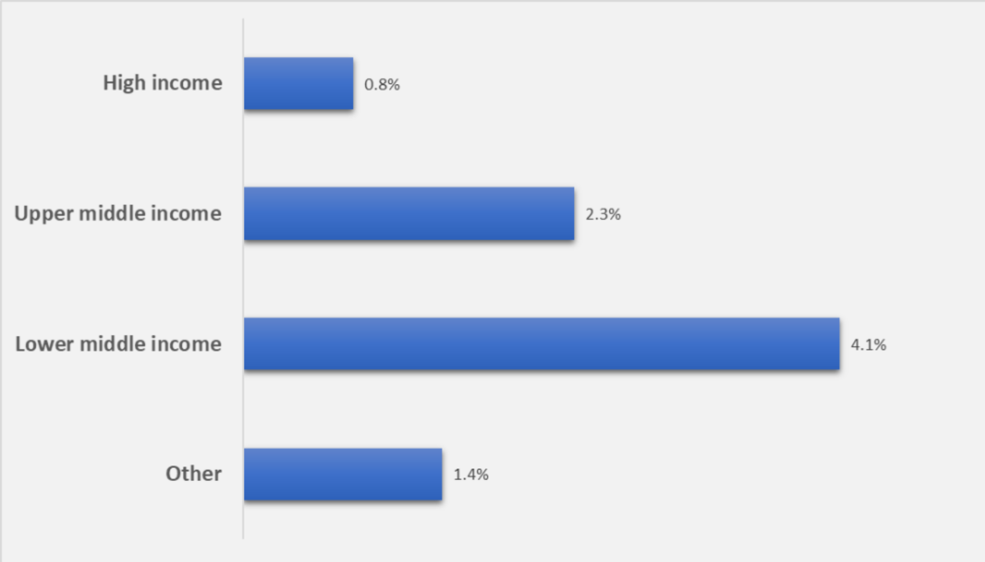
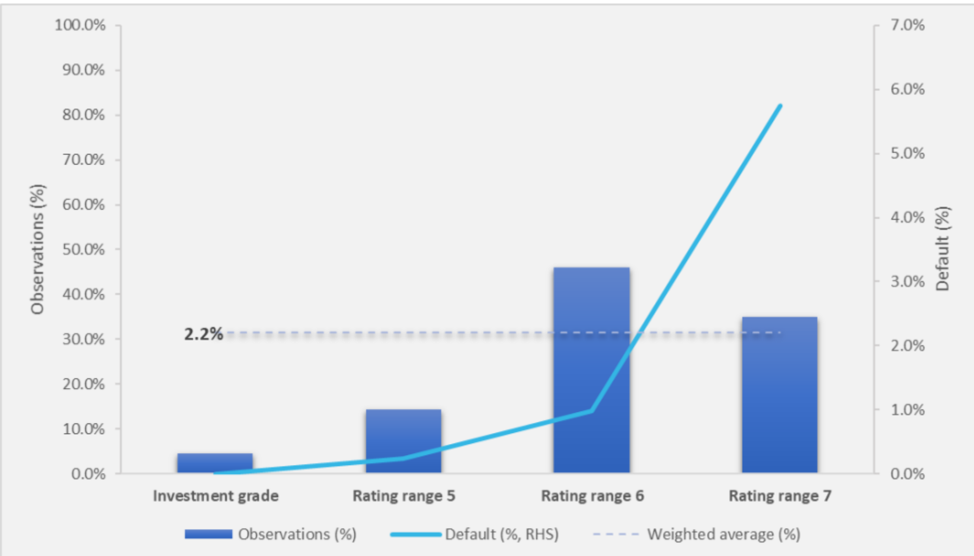


Figure 8. Default rate by ratings category (end 2023)

The EBRD's internal rating categories are defined as:

- Investment grade: PD 1.0 – 4.3 (AAA – BBB-)
- Rating range 5: PD 4.7 – 5.3 (BB+ - BB-)
- Rating range 6: 5.7 – 6.3 (B+ - B-)
- Rating range 7: 6.7 – 7.3 (CCC+ - CCC-)

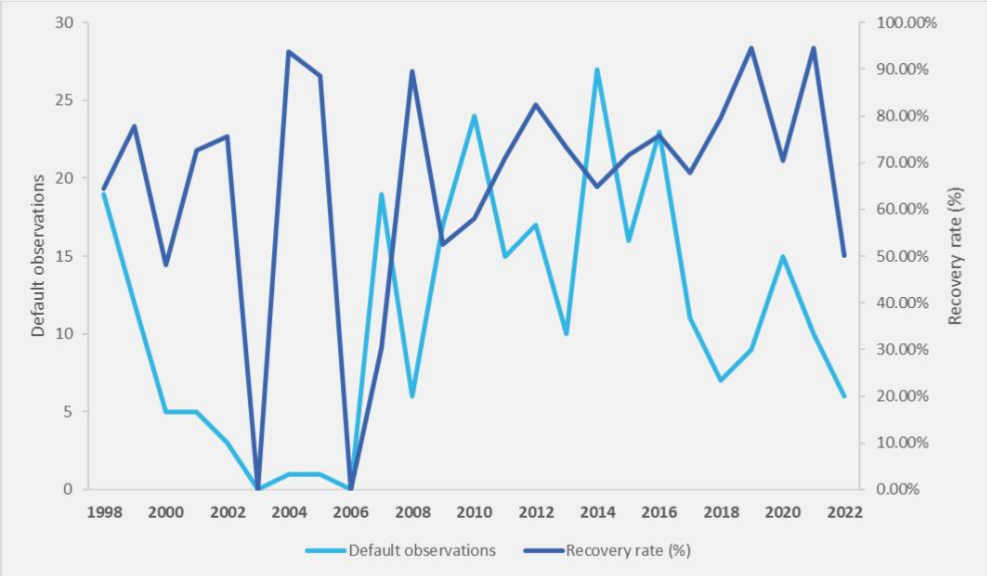


Recovery rate analysis

For this analysis, the calculation of recovery rates is performed at the operational level using a static cohort approach, with each default observed once at the point of default. In terms of internal default definition, the observed population comprises all loans that have recorded a default and have fully completed as of year-end 2023.

This section breaks down the EBRD's recovery rate experience by EBRD business unit.

Figure 9. Breakdown of counterparty observations and recovery rate, by year



	Default observations	Recovery rate (%)
1998	19	64.4%
1999	12	77.8%
2000	5	48.0%
2001	5	72.7%
2002	3	75.7%
2003	0	-
2004	1	93.8%
2005	1	88.7%
2006	0	
2007	19	30.3%
2008	6	89.6%
2009	17	52.4%
2010	24	58.1%
2011	15	71.1%
2012	17	82.4%
2013	10	73.2%
2014	27	64.8%
2015	16	71.7%
2016	23	75.8%
2017	11	67.8%
2018	7	79.6%
2019	9	94.5%
2020	15	70.5%
2021	10	94.5%
2022	6	50.0%
Total	**278**	**68.9%**

Figure 10. Recovery rate by business region (end 2023)

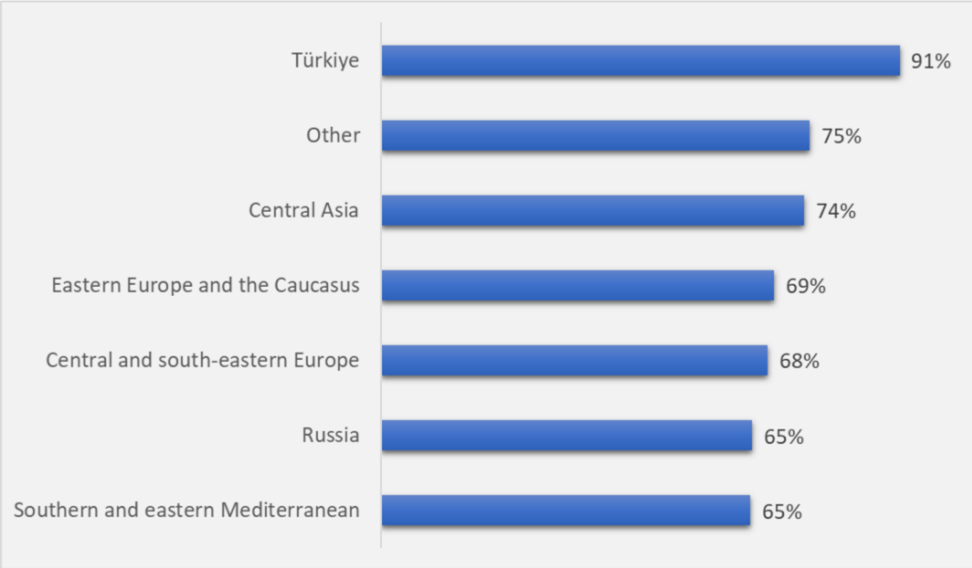
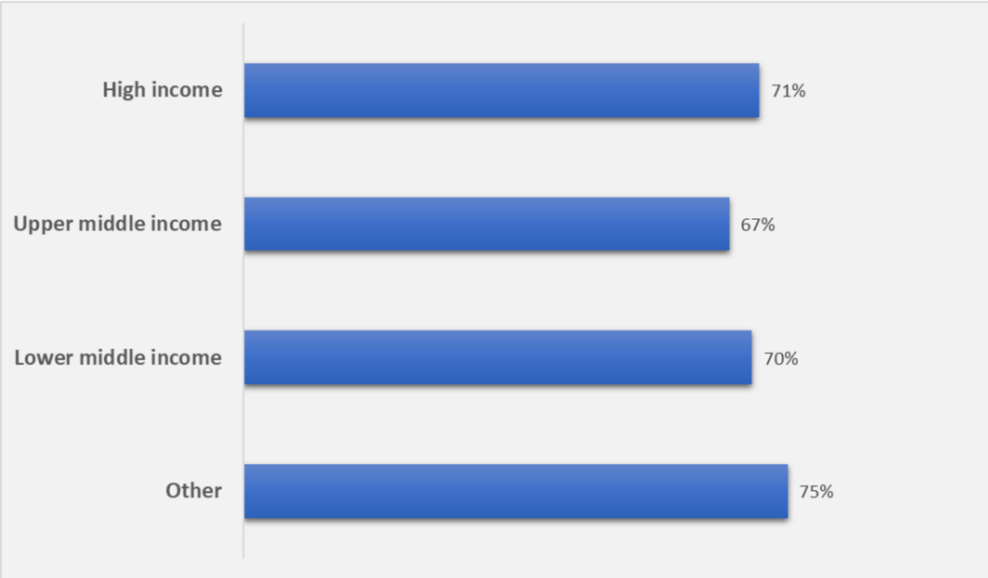


Figure 11. Recovery rate by business sector unit (end 2023)

Figure 12. Recovery rate by World Bank income group (end 2023)



Annex 1

Below are the EBRD's internal TTC PD rates, which express the likelihood of a default based on long-term credit risk trend rates and are constructed using external benchmarks for investment grades and internal default experience for sub-investment grades. These are then adjusted based on analysis of the Bank's historical default experience in relation to the macroeconomic environment prevailing at the time of default. The cumulative TTC PD rates are set out by internal rating grade below, including mapping to external rating equivalent.

Industry, commerce and agribusiness

2023 PD rating	External rating equivalent	1-yr horizon	2-yr horizon	3-yr horizon	4-yr horizon	5-yr horizon	6-yr horizon	7-yr horizon	8-yr horizon	9-yr horizon	10-yr horizon
1.0	AAA	0.01%	0.04%	0.14%	0.25%	0.36%	0.48%	0.57%	0.69%	0.78%	0.87%
1.7	AA+	0.01%	0.05%	0.16%	0.27%	0.37%	0.49%	0.58%	0.70%	0.80%	0.88%
2.0	AA	0.02%	0.06%	0.17%	0.28%	0.41%	0.57%	0.77%	0.95%	1.11%	1.28%
2.3	AA-	0.04%	0.08%	0.18%	0.29%	0.42%	0.58%	0.78%	0.97%	1.12%	1.29%
2.7	A+	0.05%	0.10%	0.22%	0.36%	0.47%	0.59%	0.80%	0.98%	1.13%	1.30%
3.0	A	0.06%	0.14%	0.25%	0.39%	0.52%	0.69%	0.86%	1.05%	1.29%	1.54%
3.3	A-	0.07%	0.21%	0.31%	0.45%	0.62%	0.80%	1.06%	1.27%	1.39%	1.56%
3.7	BBB+	0.11%	0.30%	0.54%	0.76%	1.03%	1.36%	1.62%	1.91%	2.27%	2.70%
4.0	BBB	0.14%	0.41%	0.68%	1.11%	1.54%	2.00%	2.49%	2.93%	3.40%	3.86%
4.3	BBB-	0.30%	0.88%	1.68%	2.61%	3.58%	4.48%	5.25%	6.01%	6.71%	7.35%
4.7	BB+	0.36%	1.00%	1.86%	2.85%	3.89%	4.84%	5.67%	6.49%	7.25%	7.95%
5.0	BB	0.42%	1.12%	2.04%	3.09%	4.19%	5.20%	6.09%	6.98%	7.80%	8.56%
5.3	BB-	0.48%	1.24%	2.22%	3.33%	4.49%	5.56%	6.52%	7.46%	8.34%	9.16%
5.7	B+	0.54%	1.36%	2.40%	3.57%	4.79%	5.93%	6.94%	7.94%	8.88%	9.76%
6.0	B	0.58%	1.42%	2.58%	3.81%	5.09%	6.29%	7.36%	8.42%	9.42%	10.37%
6.3	B-	2.05%	5.58%	9.22%	11.68%	14.33%	16.98%	18.95%	22.00%	23.91%	24.77%
6.7	CCC+	4.79%	9.87%	15.33%	20.66%	24.62%	27.53%	30.20%	31.75%	33.11%	34.17%
7.0	CCC	7.45%	12.99%	18.32%	23.37%	26.93%	29.73%	32.46%	33.93%	35.50%	36.81%
7.3	CCC-	10.93%	16.82%	22.27%	27.84%	31.79%	35.00%	38.43%	39.76%	40.85%	41.66%

Sustainable infrastructure

2023 PD rating	External rating equivalent	1-yr horizon	2-yr horizon	3-yr horizon	4-yr horizon	5-yr horizon	6-yr horizon	7-yr horizon	8-yr horizon	9-yr horizon	10-yr horizon
1.0	AAA	0.01%	0.03%	0.12%	0.21%	0.30%	0.40%	0.47%	0.57%	0.65%	0.72%
1.7	AA+	0.01%	0.04%	0.13%	0.22%	0.31%	0.41%	0.48%	0.58%	0.66%	0.73%
2.0	AA	0.02%	0.05%	0.14%	0.23%	0.34%	0.47%	0.64%	0.79%	0.92%	1.06%
2.3	AA-	0.03%	0.07%	0.15%	0.24%	0.35%	0.48%	0.65%	0.80%	0.93%	1.07%
2.7	A+	0.04%	0.08%	0.18%	0.30%	0.39%	0.49%	0.66%	0.81%	0.94%	1.08%
3.0	A	0.05%	0.12%	0.21%	0.32%	0.43%	0.57%	0.71%	0.87%	1.07%	1.28%
3.3	A-	0.06%	0.17%	0.26%	0.37%	0.51%	0.66%	0.88%	1.05%	1.15%	1.29%
3.7	BBB+	0.09%	0.25%	0.45%	0.63%	0.85%	1.13%	1.34%	1.58%	1.88%	2.24%
4.0	BBB	0.12%	0.34%	0.56%	0.92%	1.28%	1.66%	2.06%	2.43%	2.82%	3.20%
4.3	BBB-	0.25%	0.73%	1.39%	2.16%	2.97%	3.71%	4.35%	4.98%	5.56%	6.09%
4.7	BB+	0.30%	0.83%	1.54%	2.36%	3.22%	4.01%	4.70%	5.38%	6.01%	6.59%
5.0	BB	0.35%	0.93%	1.69%	2.56%	3.47%	4.31%	5.05%	5.78%	6.46%	7.09%
5.3	BB-	0.40%	1.03%	1.84%	2.76%	3.72%	4.61%	5.40%	6.18%	6.91%	7.59%
5.7	B+	0.45%	1.13%	1.99%	2.96%	3.97%	4.91%	5.75%	6.58%	7.36%	8.09%
6.0	B	0.48%	1.18%	2.14%	3.16%	4.22%	5.21%	6.10%	6.98%	7.81%	8.59%
6.3	B-	1.70%	4.63%	7.64%	9.68%	11.87%	14.07%	15.70%	18.23%	19.81%	20.53%
6.7	CCC+	3.97%	8.18%	12.70%	17.12%	20.40%	22.81%	25.03%	26.31%	27.44%	28.32%
7.0	CCC	6.18%	10.77%	15.18%	19.36%	22.32%	24.63%	26.89%	28.12%	29.42%	30.50%
7.3	CCC-	9.06%	13.94%	18.45%	23.07%	26.34%	29.01%	31.84%	32.95%	33.85%	34.52%

Financial institutions

2023 PD rating [13]	External rating equivalent	1-yr horizon	2-yr horizon	3-yr horizon	4-yr horizon	5-yr horizon	6-yr horizon	7-yr horizon	8-yr horizon	9-yr horizon	10-yr horizon
1.0	AAA	0.01%	0.02%	0.09%	0.16%	0.23%	0.30%	0.35%	0.43%	0.49%	0.54%
1.7	AA+	0.01%	0.03%	0.10%	0.17%	0.23%	0.31%	0.36%	0.44%	0.50%	0.55%
2.0	AA	0.02%	0.04%	0.11%	0.17%	0.26%	0.35%	0.48%	0.59%	0.69%	0.80%
2.3	AA-	0.02%	0.05%	0.11%	0.18%	0.26%	0.36%	0.49%	0.60%	0.70%	0.80%
2.7	A+	0.03%	0.06%	0.14%	0.23%	0.29%	0.37%	0.50%	0.61%	0.71%	0.81%
3.0	A	0.04%	0.09%	0.16%	0.24%	0.32%	0.43%	0.53%	0.65%	0.80%	0.96%
3.3	A-	0.05%	0.13%	0.20%	0.28%	0.38%	0.50%	0.66%	0.79%	0.86%	0.97%
3.7	BBB+	0.07%	0.19%	0.34%	0.47%	0.64%	0.85%	1.01%	1.19%	1.41%	1.68%
4.0	BBB	0.09%	0.26%	0.42%	0.69%	0.96%	1.25%	1.55%	1.82%	2.12%	2.40%
4.3	BBB-	0.19%	0.55%	1.04%	1.62%	2.23%	2.78%	3.26%	3.74%	4.17%	4.57%
4.7	BB+	0.23%	0.62%	1.16%	1.77%	2.42%	3.01%	3.53%	4.04%	4.51%	4.94%
5.0	BB	0.26%	0.70%	1.27%	1.92%	2.60%	3.23%	3.79%	4.34%	4.85%	5.32%
5.3	BB-	0.30%	0.77%	1.38%	2.07%	2.79%	3.46%	4.05%	4.64%	5.18%	5.69%
5.7	B+	0.34%	0.85%	1.49%	2.22%	2.98%	3.68%	4.31%	4.94%	5.52%	6.07%
6.0	B	0.36%	0.88%	1.61%	2.37%	3.17%	3.91%	4.58%	5.24%	5.86%	6.44%
6.3	B-	1.28%	3.47%	5.73%	7.26%	8.90%	10.55%	11.78%	13.67%	14.86%	15.39%
6.7	CCC+	2.98%	6.14%	9.53%	12.84%	15.30%	17.11%	18.77%	19.73%	20.58%	21.24%
7.0	CCC	4.63%	8.07%	11.38%	14.52%	16.74%	18.48%	20.17%	21.09%	22.06%	22.88%
7.3	CCC-	6.79%	10.45%	13.84%	17.30%	19.76%	21.75%	23.88%	24.71%	25.39%	25.89%

[13] The Bank's internal PD rating scale is explained on page 36 of the "Risk management" section of the EBRD Annual Financial Report 2023 (https://www.ebrd.com/news/publications.html)

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