**Banking Regulation and Supervision Agency**

# POSSIBLE EFFECTS OF

# THE EUROPEAN UNION'S CARBON BORDER ADJUSTMENT MECHANISM ON THE TURKISH BANKING SECTOR CREDIT PORTFOLIO

## -IMPACT STUDY-

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# ABBREVIATIONS

EU     :     European Union

USA    :     United States of America

BRSA  :     Banking Regulation and Supervision Agency

COP    :     Conference of Parties

ETS     :     Emission Trading System

FSB     :     Financial Stability Board

G20    :     Group of 20

NDC    :     Nationally Determined Contribution

CBAM :     Carbon Border Adjustment Mechanism

NPL    :     Non-performing Loans

## 1. INTRODUCTION

Under the Paris Agreement, gradual significant reductions in greenhouse gas emissions are required to keep global temperature increase below 2 degrees and around 1.5 degrees. Türkiye, like all countries under the agreement, has committed to reducing its emissions and updated its nationally determined contribution (NDC) during the 27th Conference of Parties (COP27) held in Egypt in November 2022, pledging a 41% reduction in emissions by 2030 and achieving net zero emissions by 2053[1].

Carbon pricing mechanisms, such as emission trading systems (ETS) and carbon taxes, are among the most important tools in reducing greenhouse gas emissions. These mechanisms ensure that the carbon released in the production process is priced and taken into account in the costs, which creates a strong motivation for reducing carbon emissions (negative externalities). As of 2020, there are 61 carbon pricing initiatives in place or planned worldwide, including the European Union (EU), the United Kingdom, Canada, China, Japan, New Zealand, South Korea, Switzerland, and the United States (US). Türkiye is planning to introduce a national carbon pricing mechanism in the near future. The "Green Deal Action Plan" published by the Ministry of Commerce in 2021 outlines the government's plans to establish an ETS. The plan also includes measures to support businesses in reducing their emissions, such as providing financial assistance and technical advice.[2].

The increasing prevalence of carbon pricing applications on a global scale means that firms producing high emissions are likely to face additional costs and competitive disadvantages in both production and export processes. These additional costs and competitive disadvantages have the potential to not only affect the financial situation of these firms, but also increase the credit risk of financial institutions closely associated with them.

The most concrete development expected to have an impact on our economy in the transition to a low-carbon economy is the "Carbon Border Adjustment Mechanism (CBAM" planned to be implemented by the EU in 2026. As is known, the "European Green Deal" published by the EU Commission in 2019 sets out the vision of the Union becoming carbon-neutral by 2050[3]. The most effective tools used to realize this vision are the emission trading system, which was established in 2005 and has shown gradual development, and the CBAM, which complements this system.

Recognizing that a carbon pricing mechanism solely for the domestic market would not be sufficient to realize the "carbon-neutral continent vision", the EU has adopted the approach of imposing a carbon tax on imported products based on greenhouse gas emissions released during the production process, to prevent production from being shifted outside the Union and to protect carbon pricing mechanism-compliant producers from external competition. As a first step towards this approach, within the framework of the "Fit for 55 Package" published by the EU Commission in 2021, the CBAM is planned to be initiated primarily as an emission reporting obligation for the carbon-intensive sectors (cement, electricity, fertilizers, iron and steel, and aluminium) from 2023, followed by the application of taxes

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[1] Climate Change Directorate: News Release of 16 November 2022, https://iklim.gov.tr/turkiye-ulusal-katki-beyani-ni-cop27-de-acikladi-haber-84

[2] Ministry of Trade Green Deal Action Plan 2021, https://ticaret.gov.tr/data/60f1200013b876eb28421b23/MUTABAKAT%20YE%C5%9E%C4%B0L.pdf

[3] European Commission: The European Green Deal, Brussels, 2019, COM(2019) 640 final, https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52019DC0640&from=EN

based on this reporting system from 2026[4]. Negotiations on the regulations are ongoing, and the CBAM regulation is expected to come into effect in mid-2023 after it is officially adopted by the Parliament and the Council [5].

According to the data from the Ministry of Trade, as of 2021, approximately 42% of our country's total exports were made to EU countries [6]. In this context, when we look at the exporting sectors that will be subject to carbon tax obligation in the first stage in 2026, it is seen that approximately 50% of the iron-steel and aluminum sectors production, approximately 20% of the cement sector production, 6-7% of the fertilizer sector production and 1% of the electricity sector production are subject to export.[7]. According to the Ministry of Trade data, in 2020, 32% of the said export in the iron-steel sector, 53% in the aluminium sector, 11% in the cement sector, 23% in the fertilizer sector, and 84% in the electricity sector were made to EU countries[8].

The general upward trend in the carbon price that emerged within the scope of the EU Emissions Trading System and will be based on in the CBAM application indicates that the carbon tax corresponding to the emissions released in production processes can reach significant levels[9]. These data indicate that the CBAM may pose risks for our country's industry (especially the iron-steel, aluminium, and cement sectors) and, therefore, the financial system during the limited implementation period starting in 2026. In this regard, from a prudential and medium-long term perspective, understanding and monitoring such risks, estimating their potential effects, and taking necessary measures are crucial for the soundness and stability of financial institutions individually and the financial system as a whole.

Both the recommendations of the Basel Committee on Banking Supervision and the studies of the Financial Stability Board (FSB) established by the G20, call for monitoring, management, and supervision of climate-related risks, and these efforts are gaining momentum.


## 2. OBJECTIVE

The primary objective of this study is **to evaluate the potential impacts of the first phase of the CBAM application, which will be launched by the EU for the five carbon-intensive sectors in 2026, on the Turkish banking sector's credit portfolio.**

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[4] European Commission: "European Green Deal: Commission proposes transformation of EU economy and society to meet climate ambitions", Press Release 14/07/2021, https://ec.europa.eu/commission/presscorner/detail/en/IP_21_3541

[5] The European Parliament and Council have reached a new agreement, in December 2022 (following the completion of evaluations made by banks under this initiative), for the inclusion of hydrogen and certain intermediate products, as well as screws, bolts, and similar iron or steel items, in the scope of the initial phase of the actual tax application that will begin in 2026, marking the start of the three-year transitional (reporting) period for the SCAM on October 1, 2023. The agreement also foresees the inclusion of indirect emissions under certain conditions and the evaluation by the Commission of the inclusion of other goods that carry a carbon leakage risk, including organic chemicals and polymers, in the scope before the end of the transitional period (European Parliament: "Deal reached on new carbon leakage instrument to raise global climate ambition", Press Release 13/12/2022, https://www.europarl.europa.eu/news/pt/press-room/20221212IPR64509/deal-reached-on-new-carbon-leakage-instrument-to-raise-global-climate-ambition).

[6] Ministry of Trade: "Green Deal Action Plan and Green Deal Working Group", Presentation, December 2021

[7] The following are approximate figures compiled from relevant sectoral reports for the period 2018-2020.

[8] The presentation of the Ministry of Trade mentioned.

[9] The carbon price per ton, which was around 33 euros at the end of 2020, has risen to 98 euros as of August 2022 and is expected to be around 84 euros by the end of 2022 (EMBER: Carbon Price Viewer (https://ember-climate.org/data/carbon-price-viewer/)). Accordingly, it is estimated that a cement producer who emits more than 20% of the maximum emission level determined by the EU would face a carbon tax amount of approximately 42 USD/ton in addition to 8-9 USD/ton at the end of 2022 (based on a carbon price of 84 euros per ton).

The secondary objective is **to increase awareness and promote capacity building for understanding, monitoring, analyzing, and managing climate-related financial risks in the banking sector and indirectly in corporate sector.**

## 3. SCOPE

The study has been conducted based on the balances of cash loans granted by banks operating in Türkiye to customers engaged in the production of cement, electricity, fertilizer, iron-steel and aluminium as main activities area and exporting to the EU, as of the end of December 2021.

Although CBAM has the potential to create secondary effects on other sectors through forward and backward linkages, the study includes only the five sectors that will be primarily affected in the initial phase of the application.

## 4. METHOD

Within the scope of the impact analysis, the study attempted **to estimate the impact of the carbon tax on the current loan repayment capacities of customers whose main activity is in the five sectors and who export to the EU (assuming that all other factors remain constant**).

The study was conducted in three stages: (1) identification of the credit customers to be evaluated, (2) evaluation, and (3) aggregation and reporting of findings and estimates

### 4.1. Identification of Credit Customers

In the study, it is envisaged that assessment will be carried out by directly contacting all customers who export to the EU in the sectors defined with four-digit NACE codes[10] related to these sectors and providing additional information and documents. However, for the banks with numerous credit customers falling under this scope, working on a sample consisting of "the largest credit customers whose total credit balances will be at least 70%" was considered sufficient.

### 4.2. Evaluation and Estimation

The evaluation was conducted taking into account the (1) current financial situation of the customers, (2) level of dependency on exports to the EU, and (3) potential exposure to carbon border tax.

The customers' current financial situation was classified using on a five-point scale that is also used in reporting to the Banking Regulation and Supervision Agency (BDDK)[11]. The level of dependency on exports to the EU was evaluated by considering (1) the share of exports to the EU in total income or turnover and (2) the ability to compensate for potential losses in the EU market through other countries and/or domestic market opportunities. The potential exposure to carbon border tax was assessed by considering the following factors: (1) whether the customer's carbon emission data (Scope 1 - direct emissions) has been calculated, (2) whether the bank has access to the carbon emission data, (3) whether the carbon emission level exceeds the threshold values set by the EU, and if so, the amount of excess, (4) whether there is any indication, evidence, or information that the manufacturing process

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[10] For cement; 35.11 for electricity; 20.15 for fertilizer; 24.10, 24.20, 24.31, 24.32, 24.33, 24.34, 24.51, 24.52, 25.11, 25.12, 25.29, 25.91, 25.92 for iron and steel; 24.42 for aluminium

[11] (1) Very strong financial position, (2) Good financial position, (3) At risk in the medium and short term, (4) Under significant risk in the short term, (5) In-default

has been performed with low-carbon methods and technologies, and (5) whether there is a concrete (ongoing or planned) investment or plan that will significantly reduce carbon emissions in the next three years[12].

Within the scope of the evaluation, **it is envisaged that the scale degree reflecting the credit customer's current financial situation will be reviewed and predicted for 2026 and beyond, taking into account the level of dependency on exports to the EU and the potential exposure to carbon tax**. In this context, for example, it is envisaged that the current credit repayment capacities of customers without carbon emission data or with inaccessible data, or with emission levels above EU standards, and without a concrete investment or plan for emission reduction, will be revised negatively by 1, 2, 3 or 4 levels based on the level of their dependency on exports to the EU.

The customers for whom no other indicator, evidence, or information can be obtained regarding their low-emission production, especially those without emission data or with inaccessible data, were assumed to operate with "high carbon emissions".

It is accepted that customers who appear to be operating with high carbon emissions but have very low dependency on exports to the EU (e.g., their share in total income/turnover is 5% or less) will be negligibly affected by carbon tax, thus, their current credit payment capacity can be maintained.

Banks have been advised to develop simplified matrices or algorithms for reflecting customers' dependency on exports to the EU and potential exposure to carbon tax to their future credit repayment capacity estimates, and the following matrix has been shared with the banks as an example.

**TABLE 1: Loan Repayment Capacity Deterioration Matrix (Number of Tiers*)**

| Share of Exports to the EU in Total Income or Turnover (%X) | Those Currently Using Conventional (High Carbon Emission) Methods and Technology | | | Those currently using methods and technology in line with EU Standards |
|---|---|---|---|---|
| | Existence of a Concrete (Started or Projected) Investment or Plan to Reduce Carbon Emissions | | | |
| | None | Relative Reduction/Improvement in Emissions | Harmonization with EU Standards | |
| 0 < X ≤ 5 | 0 | 0 | 0 | 0 |
| 5 < X ≤ 15 | 1 | 0 | 0 | 0 |
| 15 < X ≤ 25 | 2 | 1 | 0 | 0 |
| 25 < X ≤ 50 | 3 | 2 | 0 | 0 |
| 50 < X ≤ 100 | 4 | 3 | 0 | 0 |

(*) The number of tiers indicates the severity of the impact of the carbon tax on the assumed deterioration in the equivalent rating on a five-point scale of banks' current assessment of the financial condition of their loan customers. For example, a tier 2 would mean that a customer currently categorized as "1-very strong financial standing" would move to "3-Financial standing at risk in the medium and short term".

The evaluation method summarized above considers the customers' accessible quantitative and qualitative information as the main evaluation criteria. It also includes subjective evaluations based on the expertise that banks have developed through long-term business relationships with their

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[12] For example, implementing modern/energy-efficient technologies, improving production processes, using alternative inputs, increasing energy efficiency, and transitioning to renewable energy usage.

customers. This study acknowledges that there may be differences among banks due to subjective evaluations. The approach above reflects the minimum evaluation framework, and banks are given flexibility to use more appropriate and advanced methods and approaches that include different parameters.

## 4.3. Aggregation and Reporting of Findings and Estimations

The basic data, findings, and estimations obtained within the scope of the study were aggregated through standard summary tables created in Excel format for each sector. The summary tables include for each sector (1) the total number of credit customers (including non-exporters) and their current credit balances by financial condition categories, (2) the total number of EU exporter credit customers and their current credit balances by financial standing categories, (3) the distribution of EU exporter customers considered in the evaluation in terms of access to emission data, determination of compliance with EU standards of accessible emission data, and the existence of a concrete investment or plan to reduce carbon emissions, and (4) the predictions of credit repayment capacities of EU exporter credit customers for the year 2026 and beyond.

Banks were given a 6-week period to complete the analysis. Some banks were granted additional time ranging from 1 to 2 weeks upon their requests.

## 5. FINDINGS AND OBSERVATIONS

### 5.1. Findings

The data presented in the reports on the sectors covered in the analysis indicates that the share of exports in total production varies significantly by sector (Table 2). Accordingly, the iron and steel sector is the sector with the highest share of production for export, accounting for approximately 57% of total production. It is followed by the aluminium sector with 53% and the cement sector with 22%. On the other hand, the fertilizer sector with 7% and the electricity sector with 1% emerge as sectors with very limited exports.

When the share of exports to EU countries is examined, data from the Ministry of Trade shows that the electricity sector is the leading sector with 84%, followed by the aluminium sector with 53% and the iron and steel sector with 32%. The fertilizer and cement sectors mainly export to non-EU countries with 23% and 11%, respectively[13].

Within the scope of the study, 1,243 customers with a total credit balance of approximately 190 billion TL were evaluated by the banks. The vast majority of the evaluated customers (67% in terms of customer count and 84% in terms of credit balance) operate in the iron and steel sector.

**TABLE 2: Summary Overview**

| | Cement | Electricity | Fertilizer | Steel-Iron | Aluminium | Total |
|---|---|---|---|---|---|---|
| **Sector Data** | | | | | | |
| Ratio of Sector Exports to Total Sector Production (%) (*) | 21.6 | 0.8 | 6.5 | 56.9 | 52.8 | - |
| Share of Exports to the EU in Total Exports of the Sector (%) (2020) (**) | 11.2 | 84.2 | 22.9 | 31.5 | 52.6 | - |
| Ratio of Exports to EU to Total Production of the Sector (%) | 2.4 | 0.7 | 1.5 | 17.9 | 27.8 | - |
| **Credit Customers (Exporter + Non-exporter) (a)** | | | | | | |
| • Number of Customers (Number) | 189 | 2,635 | 940 | 14,066 | 1,042 | 18,872 |
| • Total Loan Balance (Million TL) | 32,132 | 232,671 | 5,398 | 194,160 | 14,362 | 478,722 |

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[13] Ministry of Commerce: the presentation mentioned

| | | | | | | |
|---|---|---|---|---|---|---|
| **Number of creditor banks (***)** | 20 | 11 | 16 | 33 | 25 | - |
| **Credit Customers Exporting to the EU and Under Assessment (b)** | | | | | | |
| • Number of Customers (Number) | 57 | 12 | 45 | 828 | 301 | 1,243 |
| • Total Loan Balance (Million TL) | 15,735 | 2,640 | 1,537 | 158,883 | 10,841 | 189,636 |
| **Share of Customers Under Assessment in Total Customers (%) (b/a)** | | | | | | |
| • Number of Customers (Number) | 30.2 | 0.5 | 4.8 | 5.9 | 28.9 | 6.6 |
| • Total Loan Balance (Million TL) | 49.0 | 1.1 | 28.5 | 81.8 | 75.5 | 39.6 |

*(\*)The rates are compiled from reports and studies related to the relevant sectors for the years 2018-2020.*
*(\*\*)Ministry of Trade: Green Deal Action Plan and Green Deal Working Group Presentation, December 2021*
*(\*\*\*)Banks that provide financing to EU exporters' customers*

While the share of customers under evaluation in the relevant sectors is 6.6% of the total customers, the ratio of the total credit balance of these customers to the total credit balance in the relevant sectors is 39.6%, mainly due to the evaluation of the largest customers (the largest credit customers whose credit balances reach at least 70% of the total). Regarding the ratio of customers under evaluation, the cement and aluminium sectors are the sectors with the highest number of customers evaluated with 30.2% and 28.9%, respectively. On the other hand, the iron-steel and aluminium sectors are the sectors for which the highest amount of credit is evaluated with rates of 81.8% and 75.5%, respectively.

Considering the ratio of exports to sectoral production and the share of exports to the EU in sectoral export, it can be seen that the aluminium sector with 28% and the iron-steel sector with 18% have a relatively high dependency on exports to the EU. On the other hand, in the cement, electricity, and fertilizer sectors, where the ratio of exports to total production is approximately 1-2%, the weight of EU exports is negligible.

According to evaluations made by the banks, it is estimated that credit amounting to 4,373 million TL belonging to 107 customers in the relevant sectors can be classified as non-performing loans (Table 3). This amount includes the expected increase in non-performing loans (4,149 million TL) due to CBAM, as well as the amounts that have already defaulted but have not yet been classified as non-performing loans (225 million TL), with a prudential approach.

The sectoral distribution of the increase in non-performing loans shows that the increase is mainly due to the iron-steel sector (74%) and the aluminium sector (17%). The low level of exports to the EU in the cement, electricity, and fertilizer sectors limits the potential for non-performing loans in these sectors. Although the banks were aware that only primary aluminium production will be subject to taxation under CBAM, they projected a deterioration in the financial situation of customers who also engage in secondary aluminium production. Considering that primary aluminium production is quite limited in Türkiye, the potential increase in non-performing loans in the aluminium sector is also quite low. However, a prudential approach was adopted within the scope of summary findings and the evaluations made by the banks have been reflected as they are.

When the potential effects of CBAM on customers' risk outlook are considered, it is observed that there may be a 10.3 percentage point increase in the total share of credit balances belonging to customers in risky and default categories (Table 4). On sectoral basis, aluminium with 34.1 points, iron and steel with 9.4 points, and fertilizer with 7.3 points emerge as the sectors with the highest expected increase in the share of risky and default categories. However, considering that the aluminium sector can be affected through very limited primary aluminium production in Türkiye, and accordingly the level of impact in this sector may be much lower, it should be acknowledged that the iron and steel and fertilizer sectors are the sectors that will potentially be affected the most.

**TABLE 3: Estimates of Changes in Customers' Financial Situation by Sectors**

| Sector / Financial Status | Current Status (As of December 2021) (a) | | Estimation (2026 and beyond) (b) | | Change (b-a) | |
|---|---|---|---|---|---|---|
| | Number of clients | Loan Balance (Thousand TL) | Number of clients | Loan Balance (Thousand TL) | Number of clients | Loan Balance (Thousand TL) |
| **Cement** | **57** | **15,734,575** | **57** | **15,734,575** | **0** | **0** |
| (1) Very strong financial position | 20 | 5,365,982 | 19 | 2,642,974 | -1 | -2,723,008 |
| (2) Good financial position | 27 | 4,702,901 | 25 | 6,751,844 | -2 | 2,048,943 |
| (3) At risk in the medium and short term | 8 | 5,626,092 | 8 | 5,721,617 | 0 | 95,526 |
| (4) Under significant risk in the short term | 2 | 39,600 | 2 | 236,982 | 0 | 197,382 |
| (5) In-default | 0 | 0 | **3** | **381,158** | 3 | 381,158 |
| | | | | | | |
| **Electricity** | **12** | **2,639,999** | **12** | **2,639,999** | **0** | **0** |
| (1) Very strong financial position | 3 | 1,845,189 | 2 | 1,839,848 | -1 | -5,341 |
| (2) Good financial position | 6 | 726,375 | 6 | 726,375 | 0 | 0 |
| (3) At risk in the medium and short term | 3 | 68,435 | 4 | 73,776 | 1 | 5,341 |
| (4) Under significant risk in the short term | 0 | 0 | 0 | 0 | 0 | 0 |
| (5) In-default | 0 | 0 | **0** | **0** | 0 | 0 |
| | | | | | | |
| **Fertilizer** | **45** | **1,537,084** | **45** | **1,537,084** | **0** | **0** |
| (1) Very strong financial position | 12 | 261,920 | 10 | 157,527 | -2 | -104,393 |
| (2) Good financial position | 21 | 1,217,234 | 12 | 1,209,905 | -9 | -7,329 |
| (3) At risk in the medium and short term | 11 | 56,687 | 8 | 51,070 | -3 | -5,617 |
| (4) Under significant risk in the short term | 1 | 1,243 | 11 | 102,210 | 10 | 100,966 |
| (5) In-default | **0** | **0** | 4 | 16,373 | **4** | **16,373** |
| | | | | | | |
| **Steel-Iron** | **828** | **158,882,935** | **828** | **158,882,935** | **0** | **0** |
| (1) Very strong financial position | 287 | 52,502,880 | 172 | 19,619,667 | -115 | -32,883,214 |
| (2) Good financial position | 433 | 31,695,024 | 324 | 49,584,350 | -109 | 17,889,326 |
| (3) At risk in the medium and short term | 90 | 71,993,067 | 140 | 77,779,157 | 50 | 5,786,090 |
| (4) Under significant risk in the short term | 16 | 2,604,529 | 140 | 8,674,436 | 124 | 6,069,907 |
| (5) In-default | 2 | 87,435 | **52** | **3,225,326** | 50 | 3,137,891 |
| | | | | | | |
| **Aluminium** | **301** | **10,841,142** | **301** | **10,841,142** | **0** | **0** |
| (1) Very strong financial position | 87 | 2,635,577 | 45 | 1,290,680 | -42 | -1,344,897 |
| (2) Good financial position | 178 | 6,956,105 | 132 | 4,606,894 | -46 | -2,349,212 |
| (3) At risk in the medium and short term | 32 | 1,095,883 | 55 | 2,649,580 | 23 | 1,553,698 |
| (4) Under significant risk in the short term | 2 | 16,489 | 21 | 1,543,705 | 19 | 1,527,216 |
| (5) In-default | 2 | 137,088 | **48** | **750,283** | 46 | 613,194 |
| | | | | | | |
| **Total** | **1,243** | **189,635,736** | **1,243** | **189,635,736** | **0** | **0** |
| (1) Very strong financial position | 409 | 62,611,548 | 248 | 25,550,696 | -161 | -37,060,853 |
| (2) Good financial position | 665 | 45,297,639 | 499 | 62,879,368 | -166 | 17,581,728 |
| (3) At risk in the medium and short term | 144 | 78,840,164 | 215 | 86,275,201 | 71 | 7,435,038 |
| (4) Under significant risk in the short term | 21 | 2,661,861 | 174 | 10,557,332 | 153 | 7,895,471 |
| (5) In-default | 4 | 224,523 | **107** | **4,373,139** | 103 | 4,148,616 |

**TABLE 4: Distribution of Loan Balances according to the Financial Status of Customers**

| Sector/Financial Status | Distribution of Credit Balance by Financial Status of Customers | | | Total Increase Estimation of Risky Categories (Points) (*) |
|---|---|---|---|---|
| | Current Status (%) (As of December 2021) (a) | Estimation (%) (2026 and beyond) (b) | Change (Score) (b-a) | |
| **Cement** | **100.0** | **100.0** | **0.0** | **4.3** |
| (1) Very strong financial position | 34.1 | 16.8 | -17.3 | |
| (2) Good financial position | 29.9 | 42.9 | 13.0 | |
| (3) At risk in the medium and short term | 35.8 | 36.4 | 0.6 | |
| (4) Under significant risk in the short term | 0.3 | 1.5 | 1.3 | |
| (5) In-default | 0.0 | 2.4 | 2.4 | |
| | | | | |
| **Electricity** | **100.0** | **100.0** | **0.0** | **0.2** |
| (1) Very strong financial position | 69.9 | 69.7 | -0.2 | |
| (2) Good financial position | 27.5 | 27.5 | 0.0 | |
| (3) At risk in the medium and short term | 2.6 | 2.8 | 0.2 | |
| (4) Under significant risk in the short term | 0.0 | 0.0 | 0.0 | |
| (5) In-default | 0.0 | 0.0 | 0.0 | |
| | | | | |
| **Fertilizer** | **100.0** | **100.0** | **0.0** | **7.3** |
| (1) Very strong financial position | 17.0 | 10.2 | -6.8 | |
| (2) Good financial position | 79.2 | 78.7 | -0.5 | |
| (3) At risk in the medium and short term | 3.7 | 3.3 | -0.4 | |
| (4) Under significant risk in the short term | 0.1 | 6.6 | 6.6 | |
| (5) In-default | 0.0 | 1.1 | 1.1 | |
| | | | | |
| **Steel-Iron** | **100.0** | **100.0** | **0.0** | **9.4** |
| (1) Very strong financial position | 33.0 | 12.3 | -20.7 | |
| (2) Good financial position | 19.9 | 31.2 | 11.3 | |
| (3) At risk in the medium and short term | 45.3 | 49.0 | 3.6 | |
| (4) Under significant risk in the short term | 1.6 | 5.5 | 3.8 | |
| (5) In-default | 0.1 | 2.0 | 2.0 | |
| | | | | |
| **Aluminium** | **100.0** | **100.0** | **0.0** | **34.1** |
| (1) Very strong financial position | 24.3 | 11.9 | -12.4 | |
| (2) Good financial position | 64.2 | 42.5 | -21.7 | |
| (3) At risk in the medium and short term | 10.1 | 24.4 | 14.3 | |
| (4) Under significant risk in the short term | 0.2 | 14.2 | 14.1 | |
| (5) In-default | 1.3 | 6.9 | 5.7 | |
| | | | | |
| **Total** | **100.0** | **100.0** | **0.0** | **10.3** |
| (1) Very strong financial position | 33.0 | 13.5 | -19.5 | |
| (2) Good financial position | 23.9 | 33.2 | 9.3 | |
| (3) At risk in the medium and short term | 41.6 | 45.5 | 3.9 | |
| (4) Under significant risk in the short term | 1.4 | 5.6 | 4.2 | |
| (5) In-default | 0.1 | 2.3 | 2.2 | |

*(*)Represents the total increase in the share of the categories "(3) Medium and short term at risk", "(4) Short term at large risk and "(5) In-default".*

Based on the NPL increase estimates summarized above, it is predicted that CBAM will cause a 0.94 point increase in the total NPL ratios of the five sectors under review, resulting in a potential increase from 3.83% to 4.77% by the end of 2021. Looking at the sectors individually, it is predicted that CBAM will not have any effect on the electricity sector's NPL, and may have manageable effects on the already low NPL ratios of the fertilizer and cement sectors (with increases of 0.26 and 1.20 points, respectively). The aluminium sector, which is predicted to increase from 2.17% to 6.65% (an increase of 4.48 points), and the steel sector, which is predicted to increase from 2.13% to 5.05% (an increase of 2.92 points), are the sectors with the highest potential for NPL increases. However, taking into account the situation previously mentioned regarding the aluminium sector, it is considered that the steel sector will be the main sector where a significant increase in NPL ratio could occur (Table 5).

These increases indicate that the impact of NPL increases in the five sectors on the total NPL ratio of the banking sector will be quite limited. It is predicted that the NPL ratio of the Turkish banking sector, which is currently at 3.16% as of the end of 2021, could increase to around 3.25% due to CBAM's influence, with an increase of approximately 0.09 points.

**TABLE 5: Estimates of Change in Non-Performing Loans Ratio by Sectors**

| Sectors | Current Status (December 2021) (a) | Estimation (2026 and beyond) (b) | Change (b-a) |
|---|---|---|---|
| Cement | 0.00 | 1.20 | 1.20 |
| Electricity | 5.02 | 5.02 | 0.00 |
| Fertilizer | 0.68 | 0.94 | 0.26 |
| Iron and Steel | 2.13 | 5.05 | 2.92 |
| Aluminium | 2.17 | 6.65 | 4.48 |
| **Total (Five Sectors)** | **3.83** | **4.77** | **0.94** |
| **Total Loans** | **3.16** | **3.25** | **0.09** |

## 5.2. Observations

The basic findings and observations made within the scope of the study can be summarized as follows:

- It has been observed that banks have not yet developed their own evaluation and analysis approaches/methodologies for the possible impacts of CBAM application during the design and implementation phases of the analysis study. No feedback was received from banks that a more advanced or unique approach has been applied by banks beyond the recommended minimum evaluation methodology within the scope of the study.

- The study found that banks with high awareness and performance in the sustainability field, who are in the process of capacity building and generally large-scale, made a careful and meticulous effort to contact customers and conduct expertise-based evaluations for future financial condition projections. However, the study also found that some banks did not sufficiently internalize the "Study Framework" document, which reveals the background, purpose, scope, and minimum methodological approach of the study. Instead, they adopted a wholesale and mechanical approach rather than customer-based evaluations for future financial condition projections. For example, many banks disregarded the fact that secondary aluminium production will not be subject to the carbon tax.

- The biggest challenge encountered within the scope of the study was the access to information and data, particularly verified emission data that will be used to evaluate the potential exposure of

customers to carbon tax. It has been reported by the banks that emission data of only 23% of the firms' was accessed. In addition, problems have been encountered in evaluating the accessible emission data in accordance with the criteria determined within the EU Taxonomy (such as not being able to identify the criteria corresponding to the emission data declared by customers).

- Despite some problems and deficiencies mentioned above, there have been feedback that the study contributed to an increase in knowledge and awareness on the subject, especially among small-scale banks and customers contacted by banks for information purposes.


## 6. CONCLUSION AND RECOMMENDATION

The study conducted regarding the possible effects of the CBAM application, which is expected to be implemented from 2026 onwards, on the Turkish banking sector's credit portfolio highlights the following issues:

- **It is estimated that the disruptive effect of the first phase of CBAM, which is expected to be implemented in five sectors in 2026, will be limited on the Turkish banking sector's credit portfolio**. Based on the end-of-2021 data, it is evaluated that there may be a 0.09 point increase in the banking sector's NPL ratio.

- **The iron and steel sector is expected to be the most affected sector by CBAM in terms of both export level to the EU and total credit size**. The low export share to the EU in the cement, electricity, and fertilizer sectors prevent the Turkish banking sector's credit portfolio from experiencing a significant deterioration through these sectors. On the other hand, although the aluminium sector has the highest export share to the EU, it does not pose a significant potential for deterioration for the banking sector as primary aluminium production is very limited.

- **Although the first phase of the CBAM application seems to have limited potential impact on the Turkish banking sector, it is understood that the effects arising from CBAM and similar applications will rapidly and significantly increase in the medium and long term**. As stated in the "Introduction" section, the June 2022 decision of the EU Parliament and Council to expand the sectors and emission scopes included in the first phase of CBAM and integrate the CBAM system into the EU Emissions Trading System (ETS) for all sectors until 2032 is an important indication to understand this increase. In addition, the presence of intentions and initiatives to implement similar applications in countries such as the US, Canada, and Japan suggests that the effects arising from carbon pricing mechanisms may rapidly increase. **Therefore, it is of great benefit for both manufacturing sectors that may be subject to such applications and financial institutions to develop awareness in this regard and to start the necessary compliance process rapidly**.

- The problem of "access to emissions data", which is the biggest problem faced by banks, is of critical importance in terms of analysis, monitoring and management of climate-related financial risks, especially in the context of transition risks. The "Monitoring, Reporting and Verification System for Greenhouse Gas Emissions" located under the Ministry of Environment, Urbanization, and Climate Change enables the production of verified data for a significant portion of emissions within the country's borders. However, access to this data outside the Ministry is only possible with the written consent of the relevant firm or under legal obligation. On the other hand, emission data has become an indispensable and critical data for the analysis and effective management of climate-related risks, especially credit and market risks, in the context of transition risks for banks. Access to this data by financial institutions during the credit allocation and monitoring process is essential for the confidence and stability of both financial institutions and the financial system as a whole.

Therefore, it is beneficial to evaluate mechanisms and/or regulatory alternatives that will motivate firms or impose sharing obligations to ensure banks' access to emission data within the financing process.

- **To increase awareness of climate-related risks, especially among small-scale banks, and promote better understanding and effective management of such risks in the Turkish banking sector, it will be useful to create guidelines that set out expectations and best practices in this area, and conduct more pilot studies similar to CBAM impact analysis.**

- As in the rest of the world, firms in Türkiye need to invest a significant amount to make their production technologies and methods compatible with the requirements of a low-carbon economy. **Establishing awareness and capacity regarding the transformation process, building the necessary institutional infrastructure including corporate governance and reporting, and creating investment plans and projects without delay, are critical for accessing the financing required for such investments.**