



# Principles for Responsible Banking

Founding Signatory of:



PRINCIPLES FOR RESPONSIBLE BANKING

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## Climate Risk Management Model (CRMM)

Piraeus Bank in the context of the EU Life project (Climabiz), developed the **Climate Risk Management Model (CRMM)** to estimate, in monetary terms, the risks and opportunities deriving from climate change, for economic sectors and businesses in which the Bank has a significant exposure.

The CRMM uses climate scenarios, which simulate both the historical (period 1961-1990) and the future (period 2021-2050) climate across the country. The observed changes in a number of climatic parameters (temperature, rainfall, sunshine, etc.), are entered in specialized computational models, which in turn provide estimations of the impact of these climatic changes on production activities.

The simulation of the business borrowers' risks and opportunities deriving from climate change is performed by using Standard Units. These are standard, modeled representatives of production units for the relative economic sectors, appropriately adapted to the Greek environment. In other words, the Standard Units are illustrations of an "average" Greek company operating in an economic sector / sub-sector.

The profile (structure) of the Standard Units is shaped by various characteristics, including the location of the business, the amount of raw materials and energy consumed, the capacity and the technologies used, the type and quantity of products and the company's turnover.

The CRM Model is able to identify and analyse for each economic sector and business borrower two main categories of risks and opportunities related to climate change:

- **Physical Risk**, is the financial impact that a company may have due to the change of climatic conditions, such as increase / decrease of the average temperature or the average rainfall, rise in sea levels, extreme weather conditions, such as heat waves, floods, etc.
- **Transition Risk** derives from the additional costs incurred by a company in the context of its transition to a low-carbon economy, due to the reform of the regulatory framework, the risks arising from fast technology developments, changes in market operating conditions and consumer preferences, etc.

In this context, the Climate Risk Management Model assesses in monetary terms the climate risk of companies (from specific sectors) operating in Greece. More specifically, the CRM Model can be applied to calculate the following parameters for the Bank's business borrowers:

- The cost of physical and transition risk related to climate change at economic sector, sub-sector and business level
- The cost and benefits of measures that can be implemented by a business borrower in order to reduce its climate risk and
- The environmental footprint of the sector (gaseous emissions, liquid waste, solid waste) at sub-sector and business level.

The assessment of the business borrowers' climate risk is based on its turnover, as well as other parameters related to the specific sector or subsector of the economic activity:

### Indicatively:

1. For the **Agriculture Sector**: the type and method of cultivation, geographical region
2. For **Services**: the climate zone and for Hotels in particular the season duration, year of construction, type of energy utilized
3. For **Manufacturing**: the type of manufacturing is involved in (steel industry, oil refinery, aluminum production etc.)
4. For **Electricity Production**: the fuel and the technology utilized as well as the installed capacity and annual electricity production.

Additionally, the business borrowers are categorized according to whether they participate in the EU Emissions Trading System (EU – ETS), a factor, which is taken into account due to transition risk.

### Upgrading the Climate Risk Management Model

In 2018, a group of UNEP FI banking members proposed a scenario approach based on the TCFD's recommendations, for the management of climate risk by financial institutions. This was published in the following reports:

- "Extending our Horizons: Assessing Credit Risk and Opportunity in a Changing Climate"
- "Navigating a New Climate: Assessing Credit Risk and Opportunity in a Changing Climate"

Piraeus Bank conducted a gap analysis between the UNEP FI scenario approach and the Climate Risk Management Model, in order to identify discrepancies and convergences. The main discrepancies between the two methodological approaches were captured and actions were taken to align the Climate Risk Management Model with the UNEP FI scenario approach, which is structured in two stages.

### Stage 1:

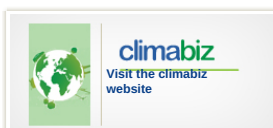
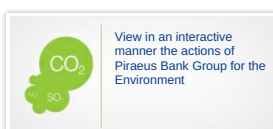
- Update based on the new generation of IPCC climate scenarios
- Integration of the effects of extreme weather events
- Calculation of the cost of indirect emissions

### Stage 2:

- Estimation of the cost of direct and indirect emissions of the examined companies as well as the investments required in order for these companies to significantly reduce their emissions.
- Evaluation of the effects that the increase of the compliance cost may have on the examined companies (on product prices and demand level).
- Pilot use of the Climate Risk Management Model to assess the climate risk of selected companies.

### Climate Risk Calculation of the Bank's business Loan Portfolio

For 2019, through the Climate Risk Management Model the calculated climate risk of the Bank's business borrowers amounted to € 1.05 billion- compared to €



926.22 million in 2018 and € 541.5 million in 2017- corresponding to 1.8% of the total turnover of the specific creditors.

The Physical Risk constitutes 32.7% (2018: 39.3%) and the Transition Risk 67.3% (2018: 60.7%) of the overall climate risk.

The increase in the climate risk of Bank's business borrowers in 2019 compared to previous years is mainly due to the significant increase in the EUA's price, which has resulted in a substantial increase of the transition risk. The climate risk was calculated based on an average annual greenhouse emission allowance price of € 24.90 / tCO<sub>2</sub>.