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Impact of climate-related factors on strategies of Austrian banks

Master Thesis submitted in fulfillment of the Degree

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AFFIDAVIT

I hereby affirm that this Master's Thesis represents my own written work and that I have used no sources and aids other than those indicated. All passages quoted from publications or paraphrased from these sources are properly cited and attributed.

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ABSTRACT

The present Master Thesis discusses the impact of climate-related factors on strategies of Austrian banks. In the first step, the structure of the Austrian banking landscape is assessed, which shows that not only the strong orientation towards small and medium-sized enterprises, as well as a tourism and agricultural focus, but also sectoral specifics are relevant for the analysis. In that context banks are clustered according to sectors, which in Austria consist of the one-tier sector or stand-alone banks, the two-tier sector banks such as the cooperative banks and the savings banks and Raiffeisen, representing the three-tier sector.

The applied methodology is of qualitative nature following a staggered approach by first theoretically investigating particularly the regulatory framework for the climate-related factors, opportunities, challenges and risks. Findings from the assessment of theoretical sources are subsequently supplemented by an empirical research of publications of banks and interviews with experts from Austrian banks and the supervisory authorities.

Austrian banks are adjusting their business models, adopting exclusion criteria, and offering green products such as green bonds. They have developed comprehensive sustainable product portfolios and established sustainability officers and units to embed sustainability considerations across departments. Risk management practices are evolving to incorporate climate-related risks, but challenges remain due to limited data availability. Banks are actively disclosing climate-related information and aligning their reporting with standards such as the Global Reporting Initiative. Climate-related factors are not only transforming banks' business models but are also integrated into their strategies, with a focus on reducing carbon emissions and becoming leaders in the green transition.

These climate-related developments are also increasingly reflected in the strategies, although the adjustments made so far usually only affect strategic sub-areas. The vast majority of the banks surveyed expect further momentum and expect strategies to be even more closely aligned with climate-related criteria in the future. By doing so, they aim to mitigate risks, unlock growth opportunities, and establish themselves as leaders in green finance, contributing to a more sustainable future.

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List of Abbreviations

AAR14	Austrian Assessment Report on Climate Change 2014
AG	Aktiengesellschaft/Stock Corporation
AIFMD	Alternative Investment Fund Managers Directive
APCC	Austrian Panel on Climate Change
Art	Article
ATX	Austrian Traded Index
BAWAG	Bank für Arbeit und Wirtschaft und Österreichische Postsparkasse Ak tiengesellschaft P.S.K.
Bln	Billion
CDP	Carbon Disclosure Project
CEO	Chief Executive Officer
CEE	Central Eastern Europe
CRD IV, V	Credit Requirements Directive
CRO	Chief Risk Officer
CRR, CRR II	Capital Requirements Regulation
CSRD	Corporate Sustainability Reporting Directive
EBA	European Banking Authority
EC	European Commission
ECB	European Central Bank
EGB	Erste Group Bank AG

E-GeldG	E-Geldgesetz
ESG	Environmental, Social and Governance
ESRS	European Sustainability Reporting Standards
ETF	Exchange Traded Fund
EUR	Euro
EU	European Union
FMA	Financial Market Authority
GBP	Green Bond Principles
GDP	Gross Domestic Product
GHG	Green House Gas
GRI	Global Reporting Initiative
ICMA	International Capital Market Association
IDD	Insurance Distribution Directive
KPI	Key Performance Indicator
KRI	Key Risk Indicator
MIFID	Market in Financial Instruments Directive
MS	Microsoft
NFRD	Non-Financial Reporting Directive
NGO	Non-Governmental Organisation
OENB	Oesterreichische Nationalbank
P&L	Price & Loss
RAF	Risk Appetite Framework

RBI	Raiffeisen Bank International AG
RTS	Regulatory Technical Standards
SBG	Sustainable Bond Guidelines
SDG	Sustainable Development Goal
SME	Small and Medium-Sized Enterprise
SREP	Supervisory Review and Evaluation Process
UCITS	Undertakings for Collective Investment in Transferable Securities
UGB	Unternehmensgesetzbuch
UN	United Nations
UNEP-FI	United Nations Environment Program Finance Initiative
Volksbank	Volksbank Wien AG
WWF	World Wide Fund for Nature
ZaDiG	Zahlungsdienstgesetz

1 INTRODUCTION

1.1 Overview and relevance of the topic

Particularly democratic societies are increasingly focusing on climate change and its consequences on life on our planet, including the impact on economy (Dunlap & Brulle, 2015). Banks as significant elements of economic systems, have to deal with these changes and adapt strategies in order to address associated risks and identify emerging opportunities.

Banks do not only have the responsibility to satisfy their direct stakeholders, but play a key role in positively influencing developments on avoiding or decelerate climate-change by adopting sustainable finance principles. Supporting the transition to sustainable solutions and technologies are becoming increasingly important aspects in the banking sector changing business models and policies.

As supervisory and regulatory authorities for financial institutions, like the ECB or the EBA, have become active by enacting regulations and issuing guidelines to address the risks of environmental changes and the associated shifts of the markets, banks need to consider these changes in their business approach.

The current developments are very dynamic and rapid alignment of strategies is crucial for mid- to long-term success. Austrian banks are facing these general issues, but have to consider several additional specifics, like the partially small-scale business structure, a high share of business with tourism, farming and energy intensive industries (such as paper producing industry or steel industry) as well as financial institutions with unique ownership structure.

The goal of the paper is to examine the effects of climate-related factors on strategies of Austrian banks. The regulatory framework and changes in market conditions are considered to identify strategic areas which are relevant for success of banks in the mid- and long-term.

1.2 Scope and research questions

Addressing the goal of understanding how climate-related factors impact strategies of Austrian banks, this thesis investigates on the environment of banks that stems directly or indirectly from climate change and influences or could influence the business of banks now and in the future.

The identified climate-related factors are assessed with regard to their relevance for and potential impact on corporate bank strategies. The study examines the strategies of banks and their response to climate-related factors. It investigates how banks are adapting their strategies to address the challenges and opportunities posed by climate change.

This work explores how climate-related factors impact the business of banks and how strategies are shaped in response to such factors. A quantitative analysis of the impact is not conducted, nor is the impact on the internal organization and processes, such as governance structure and corporate culture of banks examined.

While climate-related factors are in the focus of the investigation, other environmental, social and governance aspects are not included in the research as long as such aspects do not have a relevant interdependency to climate-related factors.

Considering the scope and assumptions the research questions are as follows:

“How is the business of Austrian banks affected by climate-related change?”.

“How can resulting risks be addressed and resulting opportunities be incorporated into the strategy?”

The paper is intended to contribute to current discussions from the point of view of Austrian banks, and provide insights into how banks can address resulting risks and incorporate opportunities into their strategies. The study is a determination of the current status and, together with other studies on this topic, it builds a basis for further investigations with expected sustained momentum.

1.3 Methodology

The chosen research approach is qualitative combining an initial review of available written material with a subsequent case study of Austrian banks and other relevant stakeholders and regulators. The data will be analyzed using thematic analysis to identify themes and patterns related to the impact of climate-related factors on the strategies of Austrian banks.

Data collection follows a staggered approach by firstly gathering primary data, which is interpreted for the purpose to generate a structure for the following in-depth data collection. Data required is of qualitative nature (Creswell, 2014), in order to be able to identify strategic reactions to climate-related impacts and consequences on business models. The initial primary data collection focuses on relevant legal sources. National legal regulations are used as well as EU law provisions. In addition, there are draft guidelines, explanatory notes and discussion papers issued by international institutions. While existing regulations are essential for the preparation of the status quo, discussion papers and drafts provide information about the further trend of developments in the regulatory environment

The assessment of the existing market and its evolution is based on corresponding literature, mostly articles and market reports. For the research on articles university libraries will be used, while institutions and authorities, like the ECB, the EBA, the OENB and the UN are contacted regarding market reports. In order to ensure completeness and to identify factors that have an economic influence on existing and potential customer groups of banks, selected articles on general economic development are also analysed.

Building on the interpreted primary data secondary sources published by banks are gathered. At this stage the analysis is focusing on identifying the extent of alignment of bank’s strategies with current and upcoming climate-related impacts on economy.

For the purpose of understanding, bank’s actually implemented or initiated strategy adaptions and planned adjustments caused by climate-related factors, interviews with representatives of banks and authorities are conducted. Interviewees are managers with responsibilities for ESG, who are involved or at least aware of strategic endeavors in their organizations. The banks interviewed are to be separated in banks with market significance, which are usually larger banks and banks with non-significant relevance for the market, which are usually small- to mid-sized banks.

The interviews are conducted by video conferencing, using MS Teams. The interviews are semi-structured (Fraenkel et al., 2012), with a focus on opinion (Iro, 2013). Topics and general open questions to be discussed are predetermined, as well as relevant key findings from the previous analysis. During the interviews the latter is presented and the interviewee are asked to confirm or clarify if his/her organization considers an aspect differently.

Open questions on specifics and aspects arising throughout the interviews allow for gathering further qualitative information (Patton, 2002). This addresses the target to be able to draw a complete picture of the mid- to long-term impact of climate-related changes on business and its strategies of Austrian banks.

1.4 Structure of the Thesis

Chapter 1 introduces the topic to be investigated and clarifies its relevance. On this basis the objectives and the scope of the thesis are determined, which leads to the presentation of the research questions. The last part of this chapter is the explanation of the procedure and the methodology applied.

An insight into the Austrian banking system and its specifics is provided in Chapter 2. The initial sub chapter provides a definition of banks and the banking business in scope of the investigation. This is followed by two sub sections explaining the two most relevant categorization approaches, which are categorization by sector and categorization by business model. These include an outline of the historical developments, forming the foundation of the current market structure.

Chapter 3 identifies the environmental factors, which are relevant for banks and the banking business. The chapter consists of two sub chapters, the first of which shows the relevant and significant factors for banks and the second those market developments related to climate aspects.

Based on the first chapters, the first part of Chapter 4 assesses how climate-related factors affect banks' business and business models, both directly and indirectly. The second part of this chapter identifies the impact on business strategies. In both subchapters, a literature review is performed in the first step. Building on this and to complete the study, the results of the empirical survey and finally the result of the overall analysis are discussed.

Chapter 5 summarises the findings of the previous chapters and answers the research questions. This chapter also examines the possible further studies on this topic, especially with regard to the expected further dynamic development.

2 BANKING BUSINESS IN AUSTRIA

2.1 Definitions

Since this work refers to Austrian banks, the term banks is to be defined. In particular, banks are to be distinguished from other financial institutions. For this purpose, the most important legal regulations relevant to the Austrian market are used. On the one hand, this is the Austrian Banking Act and, on the other hand, the Regulation (EU) 575/2013 (the CRR).

In the Austrian Banking Act, the first two paragraphs of Art 1 are related to definitions of credit institutions and financial institutions. It should be noted that the term "bank" is not mentioned literally, but the term “credit institution” corresponds to it according to its meaning. In Art 1 para. 1 the Austrian Banking Act determines the term "credit institution". Accordingly, a credit institution is an institution authorised to carry out banking transactions on the basis of a banking license granted by the Austrian Financial Market Authority. Art 1 para 1 further outlines the term banking transactions (see Appendix 1). These include the following activities, if carried out for commercial purposes: deposit business, current account business, lending business, discounting business, custody business, issuance and administration of payment instruments like credit cards and traveller’s cheques, foreign exchange and foreign currency business, securities business, trading for one's own account or on behalf of others in money-market-instruments, financial futures and derivatives, guarantee business, securities underwriting business, building savings and loan business, investment fund business, real estate investment fund business, capital financing business, factoring business, brokering on the interbank market, severance and retirement fund business and exchange bureau business (see Appendix 2).

Furthermore, Art 1 para 2 of the Austrian Banking Act specifies the term "financial institution". This refers to an institution which is not a credit institution as defined under para. 1 and which is authorised to conduct one or more of the following activities for commercial purposes if they are conducted as the institution's main activities: leasing business; the provision of advice to undertakings on capital structure, industrial strategy and related questions, as well as advice and services related to mergers and the purchase of undertakings; the provision of credit reporting services; the provision of safe deposit services; the provision of payment services pursuant to Art 1 para. 2 of the Payment Services Act 2018 (ZaDiG 2018; Zahlungsdienstegesetz 2018), Federal Law Gazette I No. 17/2018; the issuance of electronic money pursuant to Art 1 para. 1 of the Electronic Money Act 2010 (E-GeldG, E-Geldgesetz), Federal Law Gazette I No. 107/2010 (Finanzmarktaufsicht, 1993).

The second relevant definition related to the term bank is stipulated in Art 4 n. 1 of the CRR. A credit institution according to this Art is an undertaking that a) takes deposits or other repayable funds from the public and grants credits for its own account or that b) is an investment firm with a total balance sheet exceeding EUR 30 bln (big investment firm) (Regulation (EU) 575/2013). The definitions of Art 1 para 1 of the Austrian Banking Act, in particular n. 1 and 3 overlap with the definition stipulated by Art 4 n. 1 a) of the CRR.

The definition in EU law is thus more general and diversifies less between the included banking transactions than is the case under national law. For the purpose of focusing on the core business of banks only credit institutions according to Art 1 para 1 of the Austrian Banking Act are in the scope of the investigation. Financial institutions and big investment firms are explicitly excluded.

Further only banks domiciled in the Republic of Austria are included in the examination. This means that banks must have a banking license issued according to Art 1 para 1 of the Austrian Banking Act or according to Art 4 n. 1 a) CRR which have their legal seat in the Republic of Austria.

According to the defined scope, it is appropriate to categorize the banks for the analysis, as it is possible that the effects of climate-related factors are different in each category. For this purpose and given the composition of the Austrian banking sector as well as the legal prerogatives two ways of categorizing the banks are taken into consideration: the categorization of banks according to sectors and the categorization of banks according to business model.

2.2 Categorization of banks according to sectors

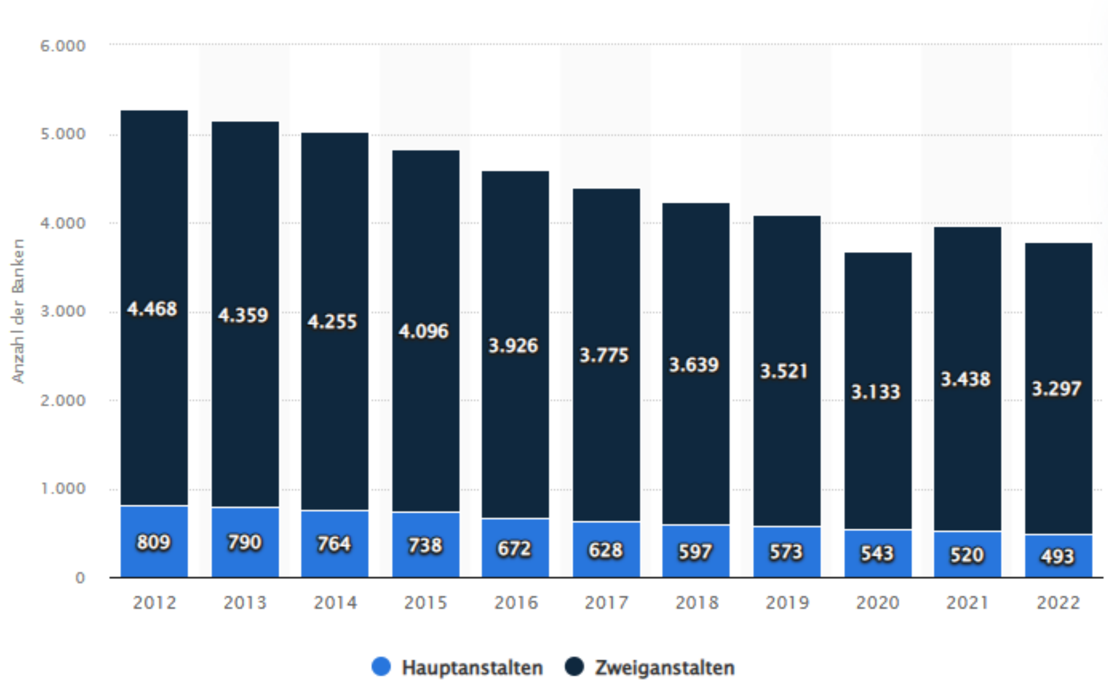
2.2.1 Development of the banking sectors in Austria

Austria´s history with banking dates all the way back to the time of the imperial period. The Jewish bankers, who lent money to the Austrian Emperor and the nobility, set the tone (Butschek, 2019). Banks finally started acting as intermediaries between the public and the private sectors of the economy, as the industrial revolution progressed. The banks started to separate into several sectors in the 19th century, which has come to shape the Austrian banking industry. Around this time, the Creditanstalt and the Länderbank, Austria´s first commercial banks, were established (Wien Geschichte Wiki, 2022).

World Wars I and II changed the banking scene. Following World War II, the biggest Austrian banks were nationalized.

A structural shift occurred in the small-scale Austrian banking sector in the 1990´s. The Zentralsparkasse (central savings bank), acquired the Länderbank, and was renamed "Bank Austria" (Wien Geschichte Wiki, 2022). Girozentrale and Oesterreichisches Creditinstitut were combined and eventually merged together into "GiroCredit". Later, Erste Bank der oesterreichischen Sparkassen (Erste Bank of Austrian Savings Banks) amalgamated with GiroCredit (Erste Group AG, 2019), and Bank Austria acquired the Creditanstalt, changing its name to "Bank Austria Creditanstalt".

Figure 2-1: *Anzahl der Banken in Österreich von 2021 bis 2022*, as cited in Statista Österreich-Banken, 2023



Austria has one of the densest banking networks in Europe, despite the number of banks that have merged in the recent years. However, the number of banks in Austria has been steadily declining in recent years and the trend is expected to continue.

The Austrian banking industry can be split into three different sectors as follows:

- The one-tier sector
- The two-tier sector
- The three-tier sector

Table 2-1: *Drei dezentrale Bankensektoren in Österreich*, as cited in Österreichische Bankenwissenschaftliche Geschäftsmodelle, 2017

Savings banks sector		**Raiffeisen sector**	**Volksbank sector**
Erste Bank Group (central institution)		Raiffeisen Bank International (central institution)	Volksbank Vienna (stock corporation)
Savings banks (municipal or associations)	Savings banks (stock corporations)	Raiffeisen Landesbanks (stock corporations or cooperatives)	Regional Volksbanks (cooperatives)
	Owners of this savings banks (foundations or savings banks‘ holdings)	Regional Raiffeisenbanks (cooperatives)	
Orphan entities		**Members of cooperatives**	**Members of cooperatives**

2.2.2 The one-tier sector

Stock companies, limited liability banks, building societies and special banks make up the majority of the one-tier industry. Its primary characteristic is that they are independent banks, rather than being part of Volksbank, Sparkassen or Raiffeisen (two or three-tier sectors). Nonetheless, they may be part of a banking organization (for instance: Unicredit Bank Austria or Santander) (Blisse, 2017).

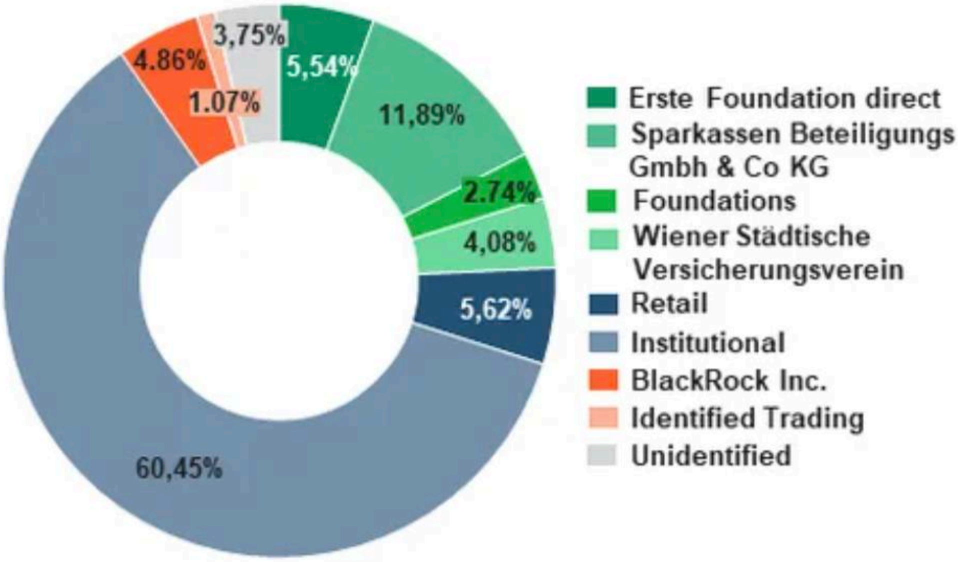
2.2.3 The two-tier sector

The two-tier sector banks include savings banks and cooperative banks such as the savings bank group (Erste Bank Group) and the Volksbank.

Erste Group (savings banks)

The holding company, of the savings bank group is the Erste Group Bank AG and is listed on a stock exchange. As of 31 December 2022 the free float amounts to 75,84%. The main investors are the Erste Foundation, the Sparkassenbeteiligungs GmbH & Co KG, which hold the savings banks´own holdings; the Wiener Städtische Versicherungsverein and Black Rock (two institutional investors – see below Figure 2-2). Erste Group Bank holds the participation in the Central and Eastern European banks such as Slovenska and Ceska Sporitelna and directly and indirectly controls the 48 regional savings banks, which form the first layer. The regional savings banks´ legal frameworks can vary and a few association or community savings banks still exist. Nevertheless, the majority of savings banks these days are structured in the form of stock corporations. The savings banks are a consolidated group with Erste Group Bank being the highest level of consolidation and also the central institution of the savings banks sector. Additionally, the savings bank industry developed a deposit guarantee scheme and an institutional protection scheme in accordance with Art 113.7 CRR (Erste Group Bank AG, n.d.).

Figure 2-2: *Shareholder Structure*, as cited in Erste Group Bank AG, 2023)



History of the savings banks

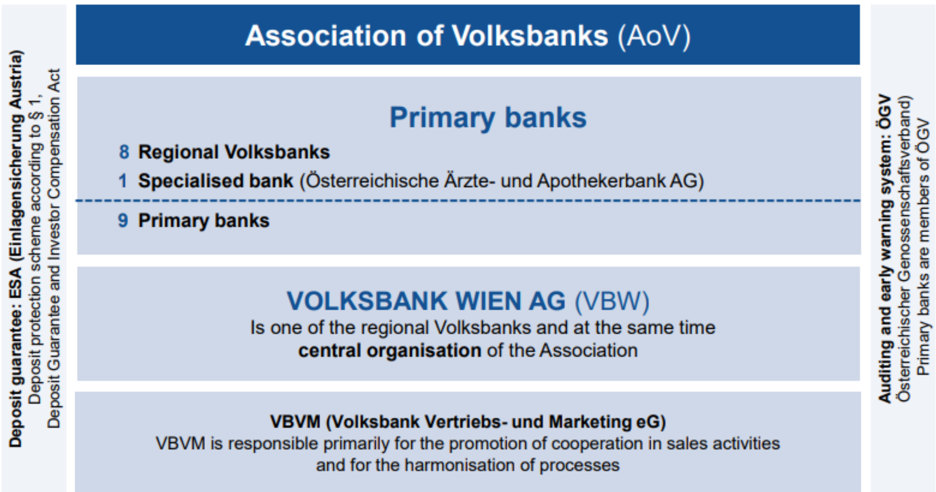
In the early 19th century, the well-established social structures are becoming brittle and in response to the abolishment of the manorial system a significant part of the country´s population migrates from rural areas to cities in search for factory jobs. Although this implies personal freedom and independence for the migrators, it also implies economic uncertainty. Due to the lack of social security, the risk of falling ill might cost them their jobs. The first Austrian savings bank was established on October 4th, 1819 in a parsonage in Leopoldstadt (Erste Group AG, 2019). The care for the poor is in the responsibility of the churches and monasteries. It is therefore no coincidence that a priest, Johann Baptist Weber, is one of the founders of "Erste Oesterreichische Spar-Casse". The initial funding and capital is provided by wealthy citizens and employees that take care of day-to-day operations. A section in the charter that sounds almost revolutionary reads: "No age, no gender, no social standing, no nation shall be excluded from the benefits that the Spar-Casse offers every depositor." Banks, on the other hand, were exclusive to the government, large companies and financially strong citizens. The concept of savings banks spread throughout the monarchy first as branches of "Erste Oesterreichische Spar-Casse", but soon also in the form of independent savings banks, such as in Ljubljana (1822), Innsbruck (1822), Bregenz (1822), Graz (1825) and Klagenfurt (1835), in Prague (1825), Dubrovnik (1835), Brasov (1835), Pest (1839), Bratislava (1842), Lviv (1844) and many other urban centres (Erste Group AG, 2019). The savings bank system was given a strong legal foundation in 1844, which reinforced the opening of more savings institutions. In the 1870´s the peak of this start up surge was reached, where savings banks played a significant role in the growth of the economy and the financing of small and medium-sized businesses (Erste Group AG, 2019).

With the emergence of GiroCredit in March 1997, the second-largest banking group in Austria was established. "Erste Bank der oesterreichischen Sparkassen AG" listed on the stock market in November with a volume of more than 7 bln schillings, making it the largest share offering in Austrian history at the time (508 million euros). On December 4, the firm made its first public offering on the Vienna Stock Exchange, and on December 22, it was added to the ATX, the top share index of the Vienna Stock Exchange. Erste Bank continues to be a significant player in the ATX today (Erste Group AG, 2019).

<u>Volksbank Association</u>

The Volksbank Group is based in Austria and is a cooperative bank organization with affiliated specialist banks and other service companies. It consists of the Volksbank, including Volksbank Wien-Baden, which took over the central institution role from Volksbank AG – after the Volksbank Group was restructured in the wake of the 2008 financial crisis (Austria Forum, n.d.). Following their merger in 2012, to create a credit institution association in accordance with Art 30a of the Austrian Banking Act, the Austrian Volksbank AG and regional primary banks have established a liability and liquidity association. Upon the Volksbank association, the Austrian government´s support for Austrian Volksbank AG restructuring measures were contingent. (Volksbank Wien, n.d.-a). The top layer consists of the eight regional Volksbanken, the specialized bank and the Arzt- und Apothekerbank. The Volksbank Wien-Baden is included in the second layer and belongs to the group of regional banks (Austria Forum, n.d.).

Figure 2-3: *Association of Volksbanks,* as cited in Volksbank Wien and Association: investor presentation, 2023.



<u>History of the Volksbank Association</u>

The Austrian Cooperative Association, which later became the General Association of Self-Help-Based Austrian Commercial and Business Cooperatives, was founded in Vienna on August 4th, 1872. Hermann Schulze-Delitzsch, a cooperative pioneer, stated towards the newly formed association that "the healthy existence of the person and of society is built on freedom, united with the responsibility for its use" (Oesterreische Genossenschaftsverband, n.d.).

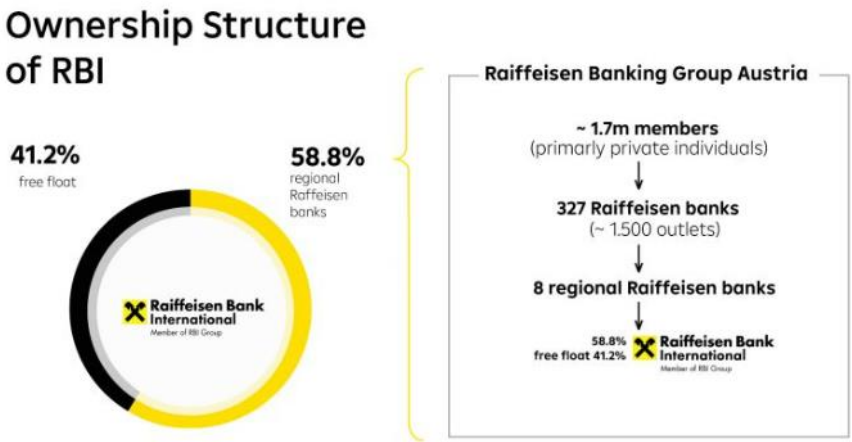
2.2.4 The three-tier sector

<u>Raiffeisen Group</u>

The Raiffeisen banks are part of the three-tier sector. The Raiffeisen sector´s ownership structure differs from other sectors, as the primary banks, which are the regional Raiffeisen banks own the Raiffeisen Landesbanken that form the second layer. The third layer, which is the Raiffeisen Bank International, is partially owned by the Raiffeisen Landesbanken. The corporation is listed on the stock exchange, with a free float of around 40%. Almost 60% of Raiffeisen Bank International is owned by the Raiffeisen

Landesbanken. Additionally, Raiffeisen Bank International serves as the Raiffeisen industry´s focal point. The Raiffeisen banks do not form a consolidated group in contrast to the Erste Bank Group. Nonetheless, the Raiffeisen banks are members of an institutional protection scheme in accordance with Art 113.7. Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 ("CRR"). Moreover, a deposit guarantee scheme was established by the Raiffeisen banks. Eight Raiffeisen Landesbanken and over 327 regional Raiffeisen banks exist today (Raiffeisen Bank International, n.d.-a)

Figure 2-4: *Ownership Structure of RBI*, as cited in Raiffeisen Bank International – Shareholder Structure, n.d.-a.



History of Raiffeisen

A German social reformer, Friedrich Wilhelm Raiffeisen, made it his top priority to address the economic and social issues in his area of influence. As the mayor of a community in a Westerwald region, he was frequently confronted by the predicament of farmers, laborers and craftsmen. He was eventually convinced that providing assistance to people to care for themselves, would be the only way to tackle problems after several unsuccessful endeavors (Raiffeisen Bank International, n.d.-b).

In accordance with the Raiffeisen model, the farmers established initiatives that focused on assisting their members rather than making profit. In so-called loan fund associations, members´ savings were collected and made available to them in the form of low-cost and long-term loans. Many people received their first chance to borrow money for investments or to get by during the seasons of meager harvests (Raiffeisen Bank International, n.d.-b).

The next phase involved the combined purchase of operating resources such as: seeds and other common agricultural products. As a result, producers had the opportunity to prolong the process until prices had increased instead of being compelled to sell at knock-down rates during periods of oversupply (Raiffeisen Bank International, n.d.-b).

In 1886, in Mühldorf, the first Raiffeisen Bank in Austria was founded. Farmers, artisans, laborers and traders were part of the member association. A number of congresses were held before the founding of the bank in order to prepare and look for ways to address the agrarian issue. Soon after the other Raiffeisen banks were founded with the help of regional state parliaments (Raiffeisen Bank International, n.d.-b).

In accordance with the German model, a central cooperative organization that was later known as the "Allgemeiner Verband landwirtschaftlicher Genossenschaften in Austria"(general association of agricultural cooperatives in Austria), was founded in 1898 (Raiffeisen Bank International, n.d.-b).

An estimate of 2,000 cooperatives were operating on the area of what would become the First Republic at the time of the Austro-Hungarian Monarchy's collapse in 1918 and many more that would follow (Raiffeisen Bank International, n.d.-b).

2.3 Categorization of banks according to their business models

2.3.1 General

The business model of banks focusses on the idea of intermediation, where banks collect deposits from savers and lend them to borrowers in exchange for interest. Banks serve as middlemen between savers and borrowers and thereby assist in the economy´s money flow.

The revenue of banks is generated from the interest rates they earn on loans and the interest they pay on deposits. Additionally, they receive payments for a variety of services they provide, such as; account management, foreign exchange transactions and loan processing fees. Activities, like trading securities and investment in stock markets generates additional revenue for banks. Risk management is a crucial component of the banking business model – when banks lend money to borrowers, there is some sort of risk involved and they therefore need to make sure that they have enough capital to cover possible losses. Banks have introduced a number of risk management strategies, to reduce the risk of losses, including setting loan-requirements, conducting credit checks and diversifying their loan portfolios (Roengpitya et al., 2014).

Another key component of the banking business model is regulation. In order to maintain a stable financial system of banks, there are a variety of laws and rules that are intended to safeguard customers. Certain regulations may place restrictions on activities of banks and determine the level of risk they can accept, as well as the kinds of goods and services they provide.

As climate effects will increase in the future, banks will be forced to modify their business strategies in order to stay competitive and address clients changing expectations.

Depending on a bank's business model, different climate-related factors have different effects. The supervisory community and academic literature generally agree that banks follow distinct business models due to the many decisions they make about assets and liabilities, as well as the various techniques used to reach profitability goals (Roengpitya et al., 2014).

There is dispute about how it should be defined and which elements should be used to classify banks according to their business models based on the general understanding of the concept of the business model. These traits could include things like strategy, market niches, balance sheet, and income structure. One of the most popular practices for credit institutions, for instance, is specialization, which establishes a distinction between two types of banks: "specialized banks," which limit their activities to a small number of areas (such as consumer credit, mortgage lending, trade finance, project finance, and lending to public entities), and "universal banks," which combine various banking activities (Roengpitya et al., 2014).

Additionally, it can be distinguished between retail focused banks, wholesale banks and private banks. Retail focused banks primarily serve individuals and small businesses and are either consumer credit banks, or savings banks or cooperative banks. Wholesale banks, are focused on large business entities and receive funding from wholesale clients. Private banks provide wealth management services to affluent clients (Roengpitya et al., 2014).

The development of the standardised list of business model categories, is based on the categories of the EBA (2014, 2015, 2016). The figure 2-5 shows the initial proposed business model categories (Cernov & Urbano, 2018).

Figure 2-5: *Business model categories: initial proposed categories*, as cited in Identification of EU Bank Business Models - A Novel Approach to Classifying Banks in the EU Regulatory Framework, 2018.

Number	Business model	Type of business model
1	Cross-border universal banks	Cross-border universal banks
2	Local universal banks	
3	Consumer credit banks (including automotive banks)	Retail-oriented banks
4	Cooperative banks/ savings and loans associations	
5	Savings banks	
6	Mortgage banks taking retail deposits	
7	Mortgage banks not taking retail deposits – pass-through financing	
8	Private banks	
9	Merchant banks	Corporate-oriented banks
10	Leasing and factoring	
11	Public development banks	Other specialised banks
12	Central counterparties (CCPs)	
13	Custodian institutions, including central securities depositories (CSDs)	
14	Pass-through financing (excluding mortgage banks)	

After a review of the above categorisation of the business models of banks by the supervisors the table below shows the final categorisation of business models.

Figure 2-6: *Business model categories: initial proposed categories and final categories*, as cited in Identification of EU Bank Business Models - A Novel Approach to Classifying Banks in the EU Regulatory Framework, 2018.

Table 3. Business model categories: initial proposed categories and final categories

Broad business model category		Initial proposed categories used for data collection, based on those of the EBA (2013, 2015, 2016)		Final categories (used in the paper)
Cross-border universal banks	1	Cross-border universal banks	BM01	Cross-border universal banks
	2	Local universal banks	BM02	Local universal banks
Retail-oriented banks	3	Consumer credit banks (including automotive banks)	BM03	Consumer credit banks (including automotive banks)
	4	Cooperative banks/savings and loans associations	BM04	Cooperative banks/savings and loans associations
	5	Savings banks	BM05	Savings banks
	6	Mortgage banks taking retail deposits – building societies and other mortgage banks	BM06	Mortgage banks taking retail deposits (including building and loan associations from Germany – Bausparkasse)
	7	Mortgage banks not taking retail deposits – pass-through financing		
	8	Private banks	BM07	Private banks
Corporate-oriented banks	9	Merchant banks	BM08 (including 9 and 10)	Corporate-oriented (including leasing and factoring, merchant banks and Landesbanken from Germany)
	10	Leasing and factoring		
Other specialised banks	11	Public development banks		
	12	CCP		
	13	Custodian institutions (including CSDs that are subject to the CSDR)	BM09	Custodian institutions (including CSDs that are subject to the CSDR)
	14	Pass-through financing (not mortgage banks)	BM10 (including 7 and 14)	Institutions not taking retail deposits (including pass-through financing)
	15	Islamic finance		
	16	Other specialised banks	BM11 (including 11, 12, 15 and 16)	Other specialised banks (including public development banks, Islamic finance, cooperative central banks, CCPs)

2.3.2 Universal banks

Universal banks provide a full range of financial services and products (Kagan, 2023). Accordingly these banks have a comprehensive banking licenses with regard to Art 1 para 1 of the Austrian Banking Act (Market Business News, 2019). In this context they have a distinctive knowledge in most areas of banking such as capital markets, trade finance, foreign currency, etc., which enables them to offer to their clients a one-stopshop for their financial needs (Schildbach, 2012). Universal banks provide financial services to consumers and to business clients.

Universal banks may be active cross-border and conduct business in multiple jurisdictions or locally in one jurisdiction only.

The banks covered in this master thesis all are universal banks.

2.3.3 Specialised banks

As opposed to the universal banks, specialized banks provide only a very limited number of financial services. Specialised banks are for instance custodian institutions, institutions not taking retail deposits or public development banks and central banks. These banks are not within the perimeter of this master thesis (see description Figure 2-6).

2.3.4 Retail-oriented banks

Retail-oriented banks provide their services to individuals and small business enterprises. Cooperative and savings banks are usually retail-oriented banks and provide fully fledged services to their customers (universal banks).

Cooperative banks are a type of financial institution that are owned and controlled by their members, rather than by external investors (Volksbank Wien, n.d.-b) primary goal of cooperative banks is to meet the financial needs of their members and give them access to credit and banking services at reasonable rates. One of their main advantages is that cooperative banks are locally based and strongly focused on meeting the needs of their communities. They often prioritize financial needs of their members and are therefore more likely to give loans to local businesses and individuals that do not have access to credit from more sizable banks. Cooperative banks typically exhibit a higher level of responsibility in comparison to other banks, as they invest in local communities and promote social and environmental causes, due to their strong commitment to ethical and sustainable banking practices. They are subject to the same regulatory rules and standards in comparison to other types of banks. However, what sets them apart from other banks is their distinctive structure and emphasis on providing service to their maximizing, rather than maximizing shareholder profits.

Savings banks normally operate on a non-profit basis and are usually owned by its depositors. They encourage saving and give their members access to affordable credit. One of their key advantages is that they encourage saving and financial literacy. To assist their clients in understanding how to manage their finances and accumulate savings, they frequently provide educational materials and programs. As is the case with cooperative banks, savings banks are subject to the same laws and regulations as other banks. Nevertheless, what sets them apart from other financial organizations is their distinctive structure and the type of services they offer to depositors. Additionally, they play a vital role in promoting financial stability and security for individuals and households.

Some of the retail-oriented banks focus on providing loans to individuals for personal or household use, including personal loans, credit card loans and auto loans (WallStreetMojo Team, n.d.). These loans are frequently used for expenses such as, education, home improvement or debt consolidation and are normally unsecured. Banks that offer consumer credit typically work with a credit scoring system to determine a borrower´s creditworthiness. This method takes into account the borrower´s income, debt-to-debt income ratio and credit history. The interest rate and loan size will be chosen by the bank based on the results of this evaluation (Enright, 2021), EBA GL on loan origination and monitoring (European Banking Authority, 2020). Ultimately, the consumer credit banks play a crucial role in helping clients get access to credit in order to make investments and purchases that they otherwise might not be able to do.

Mortgage banks provide primarily mortgage loans to their customers for the purchase or refinancing of properties. Mortgage loans are collateralized loans, typically secured by property. Some mortgage banks also accept retail deposits (Corporate Finance Institute Team, 2023).

2.3.5 Corporate-oriented banks

These banks ultimately are merchant banks (Peterdy, 2022). They provide a wide range of specialized services such as trade financing, corporate financing, investment banking and foreign exchange services as well as leasing and factoring. Merchant banks do not provide standard retail banking services such as checking and savings accounts. Their proficiency in specific fields of finance is one of their main strengths. They usually have in-depth expertise in particular industries, such as technology, energy, or real estate, and provide guidance for customers seeking to increase capital or make strategic investments. These banks are very specialized and therefore are not in the focus of this master thesis.

3 CLIMATE-RELATED FACTORS AND RELATED MARKET TRENDS

3.1 Climate-related factors

3.1.1 General

For the definition of climate-related factors relevant ESG factors are to be identified. They have social, environmental, social and governance characteristics that can have either positive or negative effects on companies, individuals or states in terms of their financial situation and solvency. These are, in particular, events or conditions which, if they occur, could have a negative impact on a company's assets, earnings and financial position as well as on its reputation (Koumbarakis, 2021).

Climate-related factors relate to natural resources, innovation, waste management and climate stability and can take the form of physical risks, transition risks or litigation risks. They have the potential to impact economic activities of companies and banks, which in turn impact the financial system. This impact may occur in two ways: a) directly, through a decline in profitability or through depreciation of assets, or b) indirectly, through changes in the macro-financial area. It is also possible that climate-related factors have a medium- to long-term impact on the stability and resilience of banks' business models. Banks with highly sectoral business models and banks that operate very strongly in climate-sensitive markets are particularly sensitive to the influence of climate-related factors. (Financial Market Authority, 2020).

Although climate-related factors can have both positive and negative effects on banks, the analysis in literature and practice is usually based on the risk aspects. While risk management is taken into account operationally in the management of banks through appropriate organisational precautions and processes, the corresponding opportunity management is usually only carried out at the strategic level. Based on the available sources of assessment, the considerations carried out in this chapter are therefore initially based on the risk aspects, but can also be applied accordingly to the associated opportunities.

Within the ESG risks, environmental and climate risks are considered to be the most important and are currently included in banks' risk management (Koumbarakis, 2021).

The climate-related and the environmental factors themselves are divided into physical and transition factors. Consequently, climate-related and environmental physical and transition factors can be translated into certain types of risk.

Climate-related physical factors are for instance extreme weather events or chronic weather patterns; whereas environmental physical factors are water stress, resource scarcity, biodiversity loss or pollution. These factors may affect certain types of risk which the banks may then incur.

- Credit risk: the granting of loans may be affected since the borrowers' probability of default may increase. In addition, also the loss in the case of default of the banks' exposures to its borrowers may rise. This means that the credit risk of the banks increase and in turn the banks have to back these loans with more own funds. In certain geographies or regions estates may be endangered by heavy rains and floods and therefore their value as collateral may decline.
- Market risk: the physical risk may lead to shifts in market expectation and as a result in sudden re-pricing of goods or companies. This may lead to a higher market volatility and consequently to losses regarding values of assets.
- Operational risk: operational risk more than all other risk categories directly affects the banking operations. They may be disrupted due to floods and the resulting damage of branches, data centres and other property.
- Other risks: if the clients are withdrawing their money from their accounts to repair damages they have incurred in their property this may lead to a liquidity risk.

Climate-related as well as environmental transition factors include for instance policy and regulation change, technology change or change in market sentiment. These factors may be translated into the same risk categories as the physical factors.

- Credit risk: the energy efficiency standards may have to be adapted, which may trigger substantial costs for private individuals and for companies. This will lower their income or profit and may have an impact on their creditworthiness and on their collateral values.
- Market risk: since some of the products of the banks' customers may become unprofitable these may lead to stranded assets for them and if these companies are stock-exchange listed to sudden re-pricings of their securities or of the derivatives.

- Operational risk: there may occur reputational risks for banks, if they decide to finance or not to end financing environmentally controversial businesses or industries and their activities.
- Other risks: transition risk may affect the viability of certain industries, businesses or business lines. Such enterprises may have to adapt their business model or strategies. This may lead to a re-pricing of assets, as described under market risk, with in turn may lead to a reduction of the high quality liquid assets and as a consequence affect the liquidity buffers of the banks.

As described in detail, climate-related risks can drive a number of risk categories and at the same time sub-categories of existing risk categories. Long-term macroeconomic effects caused by climate change have been estimated. These estimates confirm the potential for significant and lasting losses in wealth. The adverse effects might be provoked by a slowdown of investments and decreasing factor productivity in relevant economic sectors, as well as a reduction in the growth of GDP (European Central Bank, 2020).

Consequences of climate change are not only upcoming issues, but are already recognizable. Austria and its alpine regions both are particularly strongly affected by the climate change. E.g., there has been an increase of the global mean temperature of approx. 1°C since 1880, while there has been an increase of 2°C for the same time period in Austria. According to records of the Central Institute for Meteorology and Geodynamics (GeoSphere Austria, 2019), the 14 warmest years since records began in Austria 252 years ago have all occurred in the most recent past (Finanzmarktaufsicht, 2020).

The changing climate conditions lead to different sources of risk, which in turn differ by region. The different areas of Austria regarding the climate zone, topography and geological zone are the mountainous areas, the continental lowland regions and the cities. They all may be impacted differently by the various climate change effects, for the Austrian strategy for adaption to climate change see (Federal Ministry Republic of Austria, 2017). Regional effects can be found in APCC, AAR14 (Collective Commitment to Climate Action, 2014), as well as in the regional climate scenarios.

A number of effects pertaining to climate change can be observed being relevant for a large number of Austrian regions (Finanzmarktaufsicht, 2020). One of these broadly occurring effects is the increased frequency of extreme heat waves and the related extended dry periods. These affect first and foremost both the agricultural sector and forestry, due to the increased risk of forest fires and the risk of vermin infestation. As a result, this can have an impact on the value of forests. Other affected sectors are the construction industry and the healthcare sector, as the health of the elderly is more often affected. Heat is also taking its toll on transport and general infrastructure. The increasing demand for cooling systems, the resulting increased energy requirements and the low performance of employees are effects that affect almost all industries.

Other major consequences of climate change are floodings, torrential rainfall and hail. While these weather extremes, as well as drought, have a negative impact on agriculture, forestry, infrastructure and transport, there is also damage to and destruction of assets. In addition, disaster relief and civil protection entail considerable costs.

The melting of glaciers, rockfalls and mudslides, as well as the rise in the snow line, have an impact on tourism. On the one hand, this means a decrease in the number of areas that can be used for tourism and, on the other hand, a shortening of the season, especially for winter tourism.

Significant impact is also expected from the interruption of supply and value creation chains caused by climate change. It can potentially impact on all industrial sectors with the consequence of interrupting supply with essential goods and foods. A resulting consequence of this is the increase in diseases due to unbalanced diet and the lack of adequate preventive measures. The associated increasing demands on the health care system and health logistics further increase the costs for the social and health care system.

Apart from the quite broad definition of climate-related factors as described in this chapter there are further descriptions included in the ECB guide on climate-related and envirornmental risks (the ECB Guide) as well as the FMA Guide on sustainability risks (the FMA Guide). This definition lists the climate-related factors that could potentially pose risks for banks.

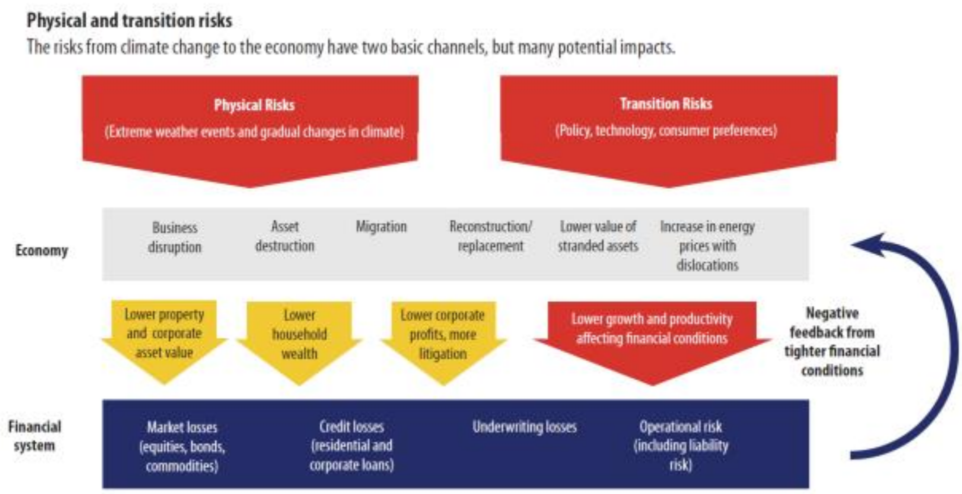
According to the ECB Guide climate-related and environmental risks are commonly understood to comprise two main risk drivers, being the physical risk and the transitional risk.

This is also valid for the FMA Guide. It defines climate risks as follows:
*"Climate risks cover all risks arising due to or which are intensified as a result of climate change. Companies and their value creation chains (especially suppliers) may be directly or indirectly affected, whether through changing climate conditions and potential natural hazards, regulatory standards in climate protection, or by technological developments and societal changes. Climate-based risks can be roughly divided into two risk categories (*Task Force on Climate-Related Financial Disclosures*, 2017), which may have reciprocal effects:*

- *Physical risks as a consequence of changed climate conditions*
- *Transition risks as a consequence of development towards a low-* Co_2 *economy and society"* (Spannlang, 2019)

See also the graphical overview published by staff members of the International Monetary Fund (IMF):

Figure 3-1: *Physical and transition risks*, as cited in Financial Market Authority, Guide for Managing Sustainability, 2020.



The results of the analysis of the climate-related risks have an impact on the strategy of a bank and its corporate governance, as well as on the bank's disclosure guidelines and risk management.

3.1.2 Physical Factors

According to the ECB Guide physical risk includes the following factors that could have a financial impact on the banks:

- A changing climate, including more frequent extreme weather events and gradual changes in climate,
- Environmental degradation, such as air, water and land pollution, water stress, biodiversity loss and deforestation.

According to the ECB Guide, physical risks are to be assessed as "acute" if they are caused by short-term weather events such as storms, floods and extreme droughts. Physical risks are "chronic" when they are based on progressive changes. Such progressive changes are, for example, rising average temperatures, rising sea levels or the reduction of ecological diversity. The expected consequences can be property damage or loss of productivity, which in turn can trigger adverse follow-up events, such as the disruption of supply chains (European Central Bank, 2020).

The definition of physical risks from climate change in the FMA Guide is principally similar to the definition included in the ECB Guide. The FMA Guide provides examples of the sectors primarily affected. These are mainly agriculture, forestry, the food sector, tourism, energy and water management, health care and infrastructure.

However, it is not only banks' customers who can be affected by climate-related factors, but also the banks and other financial market participants themselves. In particular, physical risks related to logistics and facility management can have a direct impact. In general, the risk potential depends on the exposure of the relevant value chains. (Financial Market Authority, 2020).

3.1.3 Transitional factors

As with the physical factors the transitional factors are translated by the ECB Guide into transitional risks. These refer to modifications in the economy supporting the transition to an increased environmentally sustainable economy. Possible drivers for these adjustments can be the accelerated application of environmental policies or changes in preferences of markets (European Central Bank, 2020).

The FMA Guide defines transition risk in more detail and also broader than the ECB Guide does, as transition risk not only affects the economy but also the society. According to the FMA Guide transition risk is the term for a risk arising because of the transition to a climate-neutral and resilient economy and society. The transition risk may lead to a devaluation of assets as well as to technological developments and changes in consumer behaviour (Financial Market Authority, 2020).

According to the FMA Guide energy generation that uses fossil fuels and high emissions sectors may be the primarily affected sectors. They generally have business models that are based on the cheap availability of fossil energy or have high emissions, such as the cement, iron and steel industries. Additionally, there are industries, whose products cause high emissions. They pose also a threat to the environment(e.g. automotive industry producing combustion motors).

Other sectors, primarily affected are: exploration, refining and distribution of mineral oil products, of natural gas, aviation companies, road haulage companies, as well as the transportation business. An additional impact for banks may be caused by regulations regarding energy efficiency for buildings. Therefore, the extent of the risk potential for banks arising from transition risks is the dependent on the level of exposure to energy intense industries, with high emissions or to industries which have high emissions in their value chain. Significant transition risks can arise for banks, for example, if they lend to companies with an environmentally harmful business orientation or buy securities from such companies. (Financial Market Authority, 2020).

3.1.4 Reputational factors

The climate-related risks, may lead to not only to legal but also to reputational risks and opportunities for the companies and for the banks. Globally an increase in judicial proceedings can be observed. Lawsuits are often used to bring about changes in the practices of companies or governments (“strategic litigation”, or in relation to climate risks “climate litigation“) (Hodges et al., 2018). For this purpose, damages claims or strict liability in tort against companies may be attempted to assert from companies whose conduct increases the probability of realisation of physical risks (for instance as a result of high carbon dioxide emissions).

In addition, not only legal risks, but also reputational risks may increase. As an example serves the boycott of consumers of certain products or services, that they consider to be a damage to the environment. Also, consumers may stop purchasing goods they regard to be manufactured by using child labour. Reputational risks may increase the medium- to long-term risk of business models of banks.

With the ever-increasing range of so-called green and environmentally friendly financial products, the risk of "greenwashing" is also increasing. In this context, greenwashing is understood to mean the practice in which financial products that do not meet environmental standards are marketed as green or environmentally friendly in order to gain a competitive advantage. This unfair practice may also be relevant under criminal law (Financial Market Authority, 2020).

3.1.5 Regulative factors

3.1.5.1 General

With the adoption of the Paris Climate Agreement and the EU Action Plan "Financing Sustainable Growth", it became obvious that legislators are giving the financial sector a key role in decarbonizing the economy. Both of these political umbrella agreements call for an active redirection of capital flows in order to enable the transformation into a low-carbon economy and to meet legal climate protection targets. Against the background of these developments, the financial market regulation and thus the banks are facing major challenges. Furthermore, there are more and more voices calling for financial market regulation to have a directing role in diverting capital flows. Currently, the EBA is tasked with advising the EC on green supporting factors which means the easing of equity capital requirements of banks in favour of sustainable investments (all of these developments in the field of sustainability have already been or are now being incorporated into regulations or agreements).

3.1.5.2 International law and agreements

The "2030 Agenda for Sustainable Development" was adopted by all UN members in 2015. For sustainable finance the SDG number 13 is the relevant one as it aims at combating climate change and its impacts.

The UN climate conference in Paris in winter 2015 is of particular importance for the development of sustainable finance. Their goal is to reduce emissions that affect the climate and thus limit global warming to a maximum of 2° C compared to pre-industrial values. Therefore, *“the financial flows must be aligned in such a way that they are consistent with a development path towards lower emissions of climate-impacting gases and climate-resilient development*.” The banking supervisory authorities became concerned that the financial sector itself could be affected by the transition, as risks, such as depreciation and declining values of assets due to the exit from dirty industries and outdated technologies, hitherto not sufficiently considered could materialize. For this reason, the Financial Stability Board founded in December 2015 the “Task force on Climate-Related Financial Disclosures” (Fabian, 2022).

3.1.5.3 Union and national law

3.1.5.3.1 Action plan on financing sustainable growth

The EC published an “Action Plan: Financing Sustainable Growth” in March 2018 to achieve the goals set both in the Paris Agreement as well as the United Nations’ Agenda 2030 (SDGs) (European Central Bank, 2018). This resulted in the European Green Deal in 2019 and the Sustainable Finance Package adopted in April 2021, which essentially consisted of the taxonomy, transparency and disclosure regulation (Financial Market Authority, 2020). The aim of the Green Deal is to develop a modern and resource-efficient but also competitive economy. Economic growth should be decoupled from resource consumption. Its key aims are:

- Transformation of the economy and society
- Sustainable design of transport
- Pioneer of the third industrial revolution

- A clean energy system
- Renovating buildings for a greener lifestyle
- Protecting the planet and health with nature
- Promotion of global climate protection measures

(Fabian, 2022), Regulatory steps in this direction have already been taken or initiated at European level. In this process sustainability risks are integrated into the risk management of banks and other financial market participants, in particular including the following new EU legislation (Financial Market Authority, 2020):

- The amendments of the EC to delegated acts related to the MIFID II, the UCITS Directive, AIFMD (published in June 2020): These amendments contain obligations regarding the internal governance relating to sustainability and requirements for the risk management function of investment fund management companies and alternative investment fund managers (Financial Market Authority, 2020).
- Regulation (EU) 2019/2088 of the European Parliament and of the Council on sustainability-related disclosures in the financial services sector (the Disclosure Regulation): This regulation contains transparency rules for financial market participants and financial advisers. These have to publish Information relating to sustainability on their company websites. The Disclosure Regulation has already been published and is gradually faced in since 29 December 2019 (Financial Market Authority, 2020).
- Furthermore, Regulation (EU) 2020/852 of the European Parliament and of the Council on the establishment of a framework to facilitate sustainable investment (the Taxonomy Regulation) was published in in 22 June 2020 (Financial Market Authority, 2020).

The Taxonomy Regulation defines the following six environmental goals (Fabian, 2022):

- Climate protection: The first and most important goal of the European Green Deal is to achieve a reduction in net greenhouse gas emissions to "zero" by means of a new growth. The economic growth should be decoupled from the use of resources (see Art 10 of the taxonomy regulation).

- Adaption to climate change: The prerequisite here is that a global temperature increase cannot be completely prevented and that adaptation to the temperature increase therefore represents a separate environmental goal (see Art 11 of the taxonomy regulation).
- Sustainable use and protection of water and marine resources: This is a significant contribution to achieving a good status of water bodies or to avoiding their deterioration, for example by improving water management (see Art 12 of the taxonomy regulation).
- Transition to a circular economy, waste prevention and recycling: This is stipulated in Art 13 of the taxonomy regulation and is about economic activities aimed at sustainable and efficient production or the avoidance of waste.
- Prevention and reduction of environmental pollution: According to Art 14 of the taxonomy regulation, this is an economic activity that aims to avoid or reduce emissions in the air, water or soil.
- Protection of healthy ecosystems: This is understood to mean a significant contribution to the protection, maintenance or restoration of achieving the biodiversity of the ecosystem (see Art 15 of the taxonomy regulation) (Klimscha, 2021).

The Taxonomy Regulation extends the scope of the disclosure regulation by requiring specific reporting obligations. In that context information about the sustainability of underlying investments behind a financial product has to be published. Furthermore, banks that are required to disclose non-financial information in accordance with Art 19a or Art 29a of Directive 2013/34/EU, have to include in their non-financial statements information about the ecological sustainability of their activities (Financial Market Authority, 2020).

- Regulation (EU) 2019/876 of the European Parliament and of the Council of 20 May 2019 (the CRR II) stipulates in Art 449a that large institutions (size criterion 30 bln) that have issued securities (stock exchange listing) have to disclose information on ESG risks including physical risks and transition risks. Art 501c instructs the EBA to draw up a report on the supervisory treatment of ESG risks. This report must be prepared by June 28, 2025 and submitted to the EC. On this basis, if necessary, a legislative proposal will be drawn up (Frank et al., 2022).

- Directive (EU) 2019/878 of the European Parliament and of the Council of 20 May 2019 (the CRD V) provides in Art 98 paragraph 8 that EBA is mandated to assess the potential inclusion of ESG risks in the supervisory review and evaluation process (SREP) that has to be performed by supervisory authorities.

3.1.5.3.2 Guide on climate-related and environmental risks

In addition to the above-mentioned union law the ECB has issued in November 2020 a guide on climate-related and environmental risks (the ECB Guide) and the FMA has issued a guide on sustainability risks on 1 July 2020 (the FMA Guide).

The ECB Guide states the supervisory expectations relating to the business models and strategy of banks. The supervisory authorities expect banks to identify and assess the short-term, medium- and long-term impacts of environmental risks on the relevant business environment in order to be able to make adequate decisions on this basis (European Central Bank, 2020).

In order to be able to match this requirement, the banks have to identify, assess and monitor the business related environment in which they operate. The banks must be able to identify the risks on different levels, such as sectors, geography as well as related to the products they sell and the services delivered by the banks. The resilience of the banks' business models will be impacted by the way the banks respond to the climate-related changes and how they implement them into their business strategy (European Central Bank, 2020).

The business strategy of a bank is relevant for positioning itself within the business environment the bank operates in. The goal of the strategy is that the bank shall generate acceptable returns in line with the risk appetite. Climate-related risks may directly impact the banks existing and future strategies. Therefore, the banks have also to factor in the time horizon since some effects such as reputational ones may become relevant in the short or medium term while other effects as extreme weather events may take longer to have an impact on the strategy of a bank. There are two time horizons for the banks to observe when making the assessment of climate-related risks. The first time horizons spans over three to five years. The second one is a longer time horizon, typically more than five years, and goes beyond the typical business planning horizon (European Central Bank, 2020).

The ECB Guide foresees that climate-related risks have to be incorporated in the risk management framework. Climate-related risks are split as risk drivers in different risk categories. The banks have not to qualify and quantify these risks and are expected to ensure the capital adequacy pertaining to these risks. Climate-related risks – physical and transitional risks – are translated into several financial risk categories (European Central Bank, 2020).

Credit risk management

Banks are expected to consider climate-related risk at all stages of the credit-granting process and also when monitoring the credit risks. In particular, climate-related risks may affect the borrowers default risk. Therefore, the banks should consider the borrowers own risk management relating to the climate- related factors. The banks also have to factor in climate-related risks in their collateral valuation and their loan pricing (European Central Bank, 2020).

Operational risk management

Banks are expected to assess whether, respectively how, climate-related events could have an impact on business continuity and on the reputation of a bank (European Central Bank, 2020).

Market risk management

Climate-related risks can also have an impact on the banks' market positions. Climate-related events can potentially lead to shifts in supply and demand in financial instruments, such as derivatives (for instance weather derivates) (European Central Bank, 2020).

Liquidity risk management

Banks are expected to assess whether climate-related risk have an impact on the banks' liquidity reserves. Climate-related events may cause potentially cash outflows (European Central Bank, 2020).

3.1.5.3.3 Disclosure rules

For the transparency vis-á-vis potential investors it is necessary that banks follow certain disclosure rules. These rules also provide a safeguard for functioning capital markets. In that context it is expected that banks publish meaningful information and key metrics on their climate-related risks. Banks should assess the appropriateness of their disclosures on a regular basis. The banks have to disclose material information. The task force on climate-related financial disclosures has issued a recommendation regarding disclosures (European Central Bank, 2020). It is recommended to disclose information on governance, strategy, risk management and metrics and targets.

The Board has an active key role in managing climate-related risks and opportunities. The role of the board and the further organizational measures are to be explained. In particular, it should be stated how the management and evaluation of the climate-related factors takes place and how the board ensures the monitoring of the related opportunities and risks.

In the case of information on strategy, it must be stated which effects on the business arise or are to be expected and how these are taken into account in the strategy. This also includes explanations of how these aspects are reflected in financial planning. Also, the strategic resilience, considering different climate scenarios, has to be explained.

As part of the disclosure on risk management, an explanation must be given of how climate risks are identified, analysed and controlled. The focus is on the corresponding organizational precautions and processes that serve the goal of risk management.

In connection with metrics and targets, it is essential to state which parameters the bank uses to asses climate-related opportunities and risks and to determine the degree of goal achievement. The connections between the risks and opportunities, strategy and risk management process have to be explained. Additionally important is the clarification of the set targets and how the organization is performing against these targets.

For these aspects of disclosure the banks are expected to disclose the following information:

- Climate-related risk that is material. Materiality means information that if it is omitted may lead to a change or influence on the decision-making of potential investors.
- The banks' financed Scope 3 GHG emissions.
- KPIs and KRIs used for the banks' strategy setting and risk management and their current performance in relation to these metrics (European Central Bank, 2018).

According to Art 267a of the Austrian corporate code (Unternehmensgesetzbuch or UGB) companies have to create, in addition to the financial report, on a yearly basis a non-financial report. Currently, the sustainability reporting is often included in this non-financial report.

The content of the sustainability reporting is stipulated in the EU directive on sustainability reporting or the CSRD. It was published in the Official Journal of the European Union in December 2022 and replaces the existing NFRD. The CSRD now defines the framework for the new requirements regarding the sustainability transparency. European companies are confronted with this legal requirement in their reporting as of the 2024 financial year. This directive is designed to hold companies publicly accountable by obliging them to regularly disclose information about the ecological and also social impact of their actions. To this end the CSRD introduces more detailed reporting obligations on the impacts of companies on the environment, human rights and social standards. The information to be disclosed according to the CSRD will be specified by the ESRS that are currently being developed. For this, the CSRD contains clear guidelines for the minimum contents (Baumüller et al., 2022).

In the future, the sustainability reporting must be part of the management report and has to be drawn up in the form of a closed chapter. Therefore, the sustainability reporting can no longer be part of the non-financial reporting (Baumüller et al., 2022).

The reporting obligation includes large corporations or capital market-oriented small and medium sized companies. The reporting obligation also includes cooperatives. For this reason, all large or capital market-oriented banks are included in the sustainability reporting by the CSRD. Companies that are included in another consolidated report are exempt from the obligation to prepare their own sustainability report. However, this is not valid for companies, which are large capital market-oriented subsidiaries (Baumüller et al., 2022).

The first application of the new reporting obligations is planned in three stages:

- Companies that fall, on the relevant date, under the criteria for reporting under the NFRD have already to publish CSRD-compliant sustainability reports for the financial year of 2024.
- For all other companies the financial year 2025 is relevant for the reporting according to the CSRD.
- Capital market-oriented small and medium sized companies and small, non-complex banks are obliged to disclose the sustainability information according to the CSRD for the financial year 2026.

Capital market-oriented small and medium sized companies are allowed to defer the reporting obligations for further two years, until 2028 and all companies have the right to limit the reporting across the entire value chain to certain areas (Baumüller et al., 2022).

The EU taxonomy regulation was passed in June 2020. It will affect all large corporations, that fall under the reporting obligation of the NFRD and by dynamic reference under the CSRD as of the financial year 2021 (Frey et al., 2022).

A first step towards the mandatory harmonization of transparency regimes in the EU was the directive on the disclosure of non-financial information. It obliges companies that exceed certain size criteria to include additional non-financial information in the management report starting with the financial year 2017. In Austria, currently stock-exchange listed corporations and banks are the addressees of these transparency obligations (Klimscha, 2021).

Art 8 of the taxonomy regulation supplements the mandatory content of the non-financial statement since information must be included that describes the extent of the activities of the company that are classified as ecologically sustainable. The focus of the taxonomy regulation is on the ecological sustainability. Guidelines regarding the other goals, such as social and governance, are to be included in a later stage (Klimscha, 2021).

An important driver of the development of the EU classification system of the taxonomy regulation was the fight against the so-called greenwashing, i.e. the practice of gaining an unfair competitive advantage by advertising a financial product as environmentally friendly (Klimscha, 2021).

Conceptually, the taxonomy regulation initially defines six environmental goals (see Chapter 3.1.4.3.1). In order for an economic activity to be able to enjoy the title "ecologically sustainable", it must meet the following four criteria (Klimscha, 2021):

- The economic activity must make a significant contribution to the achievement of at least one environmental objective. The objectives are defined in Art 10 to 15 of the taxonomy regulation. Typically, the essential contribution is that the environment is only slightly polluted and at the same time has the potential to push away an activity that is more polluting. Also, the transition to a carbon neutral economy may be classified as an essential contribution.
- At the same time, however, economic activity must not lead to a significant impairment of one or more other environmental objectives whereas the impact aims at the entire life cycle.
- Certain internationally recognized minimum standards for human and labour rights must be observed (minimum protection).
- The economic activity concerned must comply with the technical assessment criteria to be adopted by the Commission through delegated acts for each of the six environmental objectives (Klimscha, 2021).

3.1.5.3.4 Outlook for upcoming EU regulation

At the end of October 2021, the EC published proposals to amend the CRR and the CRD IV, which are intended to complete the implementation of Basel III at the level of Union law. The aim is to take greater account of ESG risks in the area of banking supervision (Frank et al., 2022).

A definition of ESG risks will be included in the coming amendment of the CRR (EU Commission, 2021). It defines ESG risks in Art 4 n. 52d to 52i (see Appendix 3). The environmental risks are defined per risk category.

Accordingly, the environmental risk is the risk of loss resulting from current or future adverse effects on banks' business partners and assets. This includes the risk of losses arising from the negative financial impact on banks resulting from the present or future impact of environmental factors on business partners or the banks' assets. This also includes factors that serve to meet environmental objectives, such as the transition to a circular economy or measures to reduce pollution.

Physical risk is considered a component of environmental risk and includes the negative financial impact of physical environmental factors affecting business partners and assets.

Transition risk is also part of the environmental risk and results from the negative financial effects of the transition to a sustainable economy.

The consideration of sustainability aspects will also be included in the CRD IV. New provisions will be introduced and adjustments to several provisions of CRD IV will be made to account for the climate-related risks that banks will face due to climate change and the profound economic changes required. For example, climate-related risks must be taken into account by banks when assessing equity, and banks must also have appropriate procedures and systems in place to measure and control these risks (Frank et al., 2022).

3.1.6 Societal factors

Globally, the climate change is deeply intertwined with the patterns of inequality. Although the poorest people, which clearly are the most vulnerable are going to suffer most from climate change impacts they contribute much less to the crisis than the richer people. Millions of vulnerable people will face huge challenges regarding extreme weather events, health effects and limitations of food, water, and security. This will lead to migration and forced displacement and probably the loss of cultural identity.

Climate change is not only an environmental crisis, it may lead to a social crisis. Inequality issues will have to be addressed on many levels. First of all, there are the wealthy and poor countries that are able to cope with climate-related changes differently, then there are the rich and poor people within the countries, who will be affected differently by the changes. Last but not least, men and women, as well as the different generations will have to bear the brunt of climate-related changes in various ways.

As already mentioned above there are certain groups that are particularly vulnerable to climate-related crises, such as female-headed households, migrant workers, or minorities. Also, elderly people may be especially affected by these crises. The main causes lie in a combination of their financial, socio-economic, cultural, and gender status. This restricts their access to resources, decision-making power, health services and justice.

These people are also often most impacted by the measures to address climate change. As measures could have unintended consequences for the livelihoods of these people. For example, may certain measures regarding the carbon pricing lead to higher costs which hit poorer people the most. So, taking measures to reduce climate-related risks has also to address social, cultural and political economy aspects (World Bank Group, n.d.).

3.2 Climate-related market trends

The new sustainability disclosure standards that will come into effect around the globe are very complex and the banks will have to grapple with their potential challenges. There may be increased litigation activity potentially addressing sustainability disclosure issues.

Climate change and topics associated therewith such as water scarcity and biodiversity loss will likely be dominating the discussions and long-term climate goals will potentially be reevaluated in order to address near-term urgencies.

This will test the banks regarding their commitment to sustainability issues and their priorities relating to climate-related risks. Therefore, banks may face more scrutiny on appropriate oversight of the management as well as on the maturity of the banks' sustainability strategies and processes.

Banks will have to consider balancing affordability of loans and the transition in a context of high inflation and rising interest rates. This seems to be specifically complicated in Europe, since the decarbonization plans are endangered by the new investments in liquefied natural gas as well as the slower phaseout of coal. Project costs for banks' clients that are investing in their own energy generation may rise.

Banks will bear the impacts from physical risks related to climate change. Climate-related disasters are now more frequent as in former times. If the current trend continues, by 2030, the number of disasters could rise to 560 per year. This would be 40% compared to the year 2015. There will be the need of $340 bln per year of financing adaptation by 2030.

It has to be noted that the impacts from climate change will not be evenly distributed globally. As already mentioned under chapter 3.1.4 lower-income countries are more at risk than higher-income peers and they are also less ready to cope with climate-related changes. There will be significant attention paid to adaptation and resilience financing. In addition to that there will be growing interest in innovative financing instruments, such as debt-for-climate swaps.

Climate change brings with it two different phenomena, water scarcity on the one hand and more severe and frequent droughts on the other hand, impacting agricultural production and consequently food supply. Droughts will impact major economies globally, including Austria. There exist some sectors, including utilities, oil and gas, and agribusiness, that are particularly exposed to water stress and therefore they will have to deal with harsher operating and financial challenges. Agriculture in turn is particularly sensitive to water scarcity. This may result in the necessity to build more expensive irrigation systems, crop damage and weak harvests (Standard & Poor´s Global, 2023).

4 IMPACT OF CLIMATE-RELATED FACTORS AND MARKET TRENDS

4.1 Impact on business

The impact on of climate-related factors on the business of banks forms the basis of what is considered from a strategic point of view. In order to assess and understand such impact and its consequences publications by supra-regional organizations, such as the EBA or the ECB, are examined in a first step. This draws a general framework, which is supplemented with information from surveys. These surveys include the analysis of publications by banks as well as interviews with representatives of banks and supervisory authorities.

According to the stocktaking that EBA has conducted recently, the majority of banks is aware of the material impact that climate-related risks have on the banks' business models. In consequence the banks will have to adapt their business strategies to the changing environment (European Central Bank, 2020).

The climate-related documents that have been disclosed by the following banks have been analysed:

- RBI, Geschaeftsbericht.pdf (rbinternational.com), (Raiffeisen Bank International, 2023)
- Erste Group Bank AG, GB2022_Nichtfinanzieller_Bericht_de (1).pdf, (Erste Group Bank AG, 2023)
- Volksbank Wien AG, 230323_vbw_cr_report_2022_online_gesperrt.pdf (volksbankwien.at) (Volksbank Wien AG, n.d.)
- Bank für Arbeit und Wirtschaft und Österreichische Postsparkasse Aktiengesellschaft, Consolidated Annual Report 2020 (bawaggroup.com) – Bericht 2021, CSR Bericht – Corporate (Bawag Group, 2022)
- Oberbank AG, OBK_Nachhaltigkeitsbericht 22_215x275_DIG_20230411_final-K4.indd (oberbank.at) (Oberbank, 2023)
- Bank Austria AG, https://www.bankaustria.at/files/Jahresfinanzbericht_2022_DE.pdf (Bank Austria, 2023)

In addition, information was collected in interviews with representatives of Austrian banks and supervisory authorities, such as the FMA and the Austrian National Bank.

4.1.1 Impact on business approach and business models

4.1.1.1 General perspective

To address the changes pertaining to climate-related events the banks have in a first step to formulate sustainability goals in the context of their strategic planning. At the top there is a general vision of the bank of its future role. This is the bank's vision statement, which should point the way for the bank. Following this visions statement, the bank has to develop a corporate philosophy. This includes written leadership principles which serve as a support of orientation for the employees of the bank. The sustainability issues are to be included into these leadership principles. Finally, in order to ensure the implementation of a sustainable corporate vision, agreed strategic corporate goals must be developed. Sustainability goals can be operationalized according to content (e.g., financing of certain energies), extent (e.g., output in megawatts), regional reference (e.g., industrialized countries) and planning period (e.g., 30 years). To be able to steer and control the degree of the achievement of the target the sustainability goals should be quantifiable (Waschbusch et al., 2021).

4.1.1.2 Practical perspective of banks and supervisory authorities

4.1.1.2.1 General

For the impact on business approach and business models the survey of bank publications focuses on three topics:

- the mission statement and derived from it the strategy relating to climate factors.
- the structural measures taken by the banks.
- the products of financing and loans as well as the issuance of bonds.

In the interviews with representatives of banks and authorities the following points are queried:

- climate-related factors
- relevance of the identified factors for banking business
- market and business changes
- opportunities and risks
- impact on strategies

All these topics may undergo changes due to the inclusion of the climate-related and environmental factors.

The banks included in the survey pertain to the one-tier, the two-tier and the tree-tier sector. All banks have a universal banking license in the sense of Art 1 of the Austrian Banking Act. However, the business models of the banks vary as there are included cross border and local universal banks, savings and mortgage banks, cooperative banks as well as corporate-oriented banks.

The supervisory authorities confirm that for assessing risks and opportunities and resulting consequences for business models and strategies, it is important to distinguish between physical and transitory factors and then again between direct and indirect effects. The impact of these factors on the business depends not only on its characteristics, but also on the geographical location and the industrial sector the companies are active. Since banks are differently positioned with their portfolios and products and have different investments in different sectors, there are also different effects for banks.

Physical factors that can be visibly recognized. They occur either as acute physical risks or as chronic physical risks. Acute physical risks occur abruptly, such as heat waves, floods or storms. Chronic physical risks are long-term climatic or ecological changes, such as the melting of glaciers, increased precipitation, increase in average temperatures, etc. Physical risks also include the indirect consequences of acute and chronic physical risks, such as the collapse of supply chains, migration, armed conflicts, etc.

Such factors are already recognizable with consequences for companies and banks. For example, the effects of climate change on winter tourism are already a strongly noticeable fact in Austria. mainly due to the fact, that the snow line is continuously rising due to global warming. This means that the season is significantly shortened for ski resorts at lower altitudes. This also affects banks.

On the other hand, transition risks arise from the fact that the economy is required or forced to switch to a low-carbon mode of production. This causes corresponding investments and costs, as companies are switching to renewable energies and private households are switching to heating and heat.

For banks these factors are mostly operationalized as credit risk. Credit risk is the most obvious and likely risk for banks. This is usually based on the risk of a lack of liquidity from borrowers. For example, if a region is affected by environmental disasters, such as floods, borrowers located in the region may suffer from a lack of liquidity, causing an inability to repay loans. In order to be able to identify and assess these risks, banks must integratively analyse all relevant risk aspects individually and regionally. General, highly standardized risk assessment approaches may not always be appropriate.

The most important target, that is mentioned by the banks, is the reduction of the carbon emissions or GHG emissions. The carbon emissions are split into three scopes, whereas scope one pertains to the carbon emissions that a company issues directly (for instance by the production or through vehicles). The scope two carbon emissions are indirect emissions of companies such as the electricity or energy bought for heating and cooling buildings). The definition of the scope three carbon emissions is complicated. Under this category fall all the emissions for which the company is indirectly responsible across its value chain. Such emissions are coming for instance from the companies' products when the consumers use them. These scope three emissions cover usually the biggest part of the carbon emissions but are the most complicated to identify and quantify (Deloitte UK, n.d.).

With regard to the structural measures, it has to be noted that all banks included in the survey have set up ESG specific committees and/or responsible persons.

Banks are directing the offering towards sustainability and greening. If banks sell offerings as green products, the supervisory authorities emphasize the importance of the fact that banks need to adhere to the specifications, to avoid legal risks.

Most banks strive to offer sustainable products to interested investors. In 2022, for example, a number of banks have issued large green bonds. In addition to specific products labelled as green, sustainability is also taken into account in the pricing policy. In some cases, prices are diversified depending on the sustainability of the products offered; especially in the case of credit products. E.g., depending on the sustainability of a financed object, price premiums or discounts are offered. In the case of mortgage loans, for example, some banks require an energy certificate for the financed property. Price premiums or discounts then result from the energy efficiency certified in the energy certificate.

In practice the banks' portfolios are often analysed to understand how exposed banks are to environmental risks in the medium to long term. Ideally, this is followed by a restructuring of the portfolios with the aim to reduce risk. It needs to be clarified what the share of investments is in non-sustainable industries or in high-risk areas, such as flood regions, is. It is important to perform the analysis at the individual level. For example, there are Austrian banks with mortgage loan portfolios in the Netherlands, with strong flood exposure, for which a specific hedging strategy must be developed.

Supervisory authorities suggest to systematically identify new business opportunities. For this purpose, the P&L of a bank must be analysed with the aim of identifying positions that form a basis for business opportunities from an environmental policy; such as sustainable financing (green loans) or sustainable products.

The transitioning of companies to green technologies offers business opportunities for banks. Large investment volume arises, with which the banks can earn interest. It is expected that EUR 1000 bln will be invested annually in the EU, which means EUR 27 bln in additional earnings potential for banks. Investments can be in ESG projects, bonds from green loans or in advising companies on climate and environmental risks (Redinger, 2023).

4.1.1.2.2 The one-tier sector

Business impact of climate-related factors

Banks belonging to the one-tier sector are confronted with a number of climate-related factors. In addition to the core factors, such as physical and transitional factors, banks also cite reputation, societal and, above all, the regulatory environment as significant. At the moment, the highest focus for banks is on the physical environmental factors and the related transitional factors; mainly caused by the fact that tangible data is available.

For Austrian banks physical risks materialize mainly in the area of carbon emissions and extreme weather conditions. For example, the effects of climate change on winter tourism are already a strongly noticeable fact in Austria. Particularly as the snow line is continuously rising due to global warming. This means that seasons are significantly shortened for ski resorts at lower altitudes. This also has indirect effects, which are currently still not sufficiently quantified. The assessments are usually based on estimates allowing to forecast e.g., the loss of productivity associated with global warming.

Reputational factors are likely to become increasingly important, especially in connection with transition factors. BAWAG believes that the reputation issue will play a big role in how much will be invested in ESG. Separately, there is a trend to implement exclusion criteria with regard to the customers and the supported projects. This is taken into account in the business models. One example is the exclusion of cooperations with producers of controversial weapons; i.e., weapon systems with the potential to cause very large and permanent damage.

Regulatory factors will also have significant impact on banks, as the directly or indirectly related regulations are increasing. Many banks expect the political and legal framework to further change, probably making it impossible to launch new high-carbon emission projects.

<u>Market and product changes</u>

Managers of the interviewed banks, expect universal banks not to change their business models on a large scale, but probably adjustments will be made. Particularly, banks will be stepping up the definition of exclusion criteria. Some banks are already excluding certain businesses. The exclusion criteria will certainly be expanded over time. The risk appetite for certain business activities will be further evaluated on an ongoing basis.

Many of the Austrian banks are already offering green products. E.g., the focus of the financing portfolio at EGB is on real estate financing. EGB prefers financing that fulfills a positive environmental purpose. A relevant part of it is the issuance of green bonds, which is done by a majority of larger banks. Banks that do not issue bonds take green assets as a pool, e.g., for a green account or savings account. While EGB does not offer a green account Bank Austria is doing so.

I.e., the focus of climate-related products is similar among the banks on the Austrian market, with different labeling and characteristics in detail. In terms of financing, Austrian banks are all on the same level in terms of conditions. This can be explained by the market situation and the interest rate situation, as interest rate level has been low for a very long time. As a result, there was little room for manoeuvre, when it came to conditions for banks. The regulatory requirements for capital adequacy in supervisory law are also identical. With the increasing regulatory requirements and the changes in interest rates, changes in the market are to be expected.

BAWAG perceives green finance credit dynamics to be positive. The bank expects green finance to account for at least €1.6 bln of their annual new business by 2025 (compared to €0.8 bln in 2020). On the investment side, BAWAG is trying to provide their customers with financial products that pursue ecologically sustainable goals. It is seen as an effective way of channeling private investment into sustainable activities. As part of the environmental fund of the bank's cooperation partner Amundi Austria, BAWAG offers several investment funds and ETFs that are geared towards environmental aspects.

By 2025, Oberbank will provide sustainable private financing (energy-efficient housing) amounting to at least 1.5 bln EUR. This corresponds to more than 50% of the newly granted residential construction financing. Oberbank identifies and evaluates the ESG risks in its loan portfolio and takes appropriate measures for decarbonization by applying inter alia limits, exclusion and positive criteria. With regard to the sustainable credit policy the bank has ESG soft facts in customer rating and in the credit processes included. By 2025, more than 50% of all new Oberbank issues will meet the ESG criteria. Oberbank is increasing the volume of sustainable retail funds to more than EUR 1 bln by 2025.

Bank Austria can certainly refer to an already comprehensive sustainable product portfolio. This portfolio has been significantly expanded. It ranges from ESG investment products for both private and institutional investors to so-called ESG-linked loans, that are subject to certain international criteria (based on an external ESG rating), and products that are structured alike such as green mortgage and consumer loans. In that case better conditions are linked to the improvement of ESG ratings of the customers. In addition to the financing products for companies with an affinity for capital and credit markets that have already been successfully offered (e.g. green bonds, ESG-linked bonds, ESG-linked promissory note loans, ESG-linked loans, ESG-linked derivatives), Bank Austria now also offers a standardized sustainability loan, which provides for an adjustment of the interest margin based on an external ESG rating.

Organizational considerations

It is to be expected that market requirements and regulatory requirements on banks and their products will continue to increase. In order to ensure that banks prioritize the orientation towards sustainability and support for climate protection as a whole and permanently in their business models, in particular the large Austrian banks have taken appropriate organisational precautions. This includes not only the supply side, but also related aspects, such as legally adequate data collection.

BAWAG has set up a Non-Financial Risk and ESG Committee, which is chaired by the CRO and includes also all other management board members and selected senior employees of BAWAG as well as BAWAG's ESG officers. It monitors the relevant climate-related parameters and initiatives. The Non-Financial Risk & ESG Committee operationalizes the sustainability program as well as the group-wide ESG strategy of BAWAG. It usually meets on a quarterly basis. The Non-Financial Risk & ESG Committee is commissioned to continuously advance the commitment to sustainability of the whole BAWAG group and to this end works with experts from various areas and departments within the bank. Also, additional platforms have been created for ESG officers and dedicated working groups to discuss strategic priorities with representatives from business units who also embed these issues in their teams. Since the importance of the sustainability and climate-related issues is growing, the board of directors of BAWAG has decided to also set up an ESG committee at board level. This committee will collaborate with the board and the ESG Officers of the bank to ensure further sustainable and profitable growth of the bank..

A sustainability organization (with sustainability officers in all head office departments) was established at Oberbank in 2019. The topic of sustainability has thus been anchored in various departments. A partial reorganization of Oberbank's internal sustainability organization became necessary. In order to better bundle and monitor all sustainability management measures, the ESG unit group was established in 2022 in the Organizational Development, Digitization and IT department. The ESG unit is managed by Oberbank's sustainability officer who bears the main responsibility for the sustainability strategy of Oberbank and the implementation activities derived from it. The ESG unit is the central point of contact for all departments on the subject of sustainability and takes on the project management and coordination of the various sustainability projects. It also has central responsibility for the various reports and publications on the subject of sustainability. In addition, the ESG unit or the Oberbank's sustainability officer ensures the implementation and further development of the Oberbank's sustainability strategy through regular meetings with different target groups and is therefore responsible for organizing and conducting the sustainability jour fixes with the sustainability officers of the individual departments, the steering sustainability committee and the Stakeholder Sounding Board. There are also sustainability officers in the individual departments.

The ESG Committee on Unicredit Group level supports the Board of Directors in Bank Austria in fulfilling its responsibilities with regard to the integral ESG components of the banking group’s business strategy and sustainability.

4.1.1.2.3 The two-tier sector

Business impact of climate-related factors

In general, the two-tier sector, which is comprised of the savings banks, represented by EGB and the Volksbank Group, has a perspective on climate-related factors and its consequences on business and business models, similar to the one-tier sector. In detail, there are specifics to be considered for the banks of the two-tier sector, which are mostly related to their business focus.

Transitional risks, such as those arising from Co_2 emissions from the use of coal and other fossil fuels, are essential. Both in the financing process and in the strategy, EGB has implemented KPIs. The intensity of Co_2 emissions is one of the most important climate-related indicators. This implementation was the first big step that EGB has taken in this direction this year. We are currently evaluating other risks, such as biodiversity risks. In doing so, we also examine to what extent and in what form these factors should be included in the strategy. For example, in the case of real estate financing, a bank has to be aware of whether properties with an energy certificate worse than B or C should be financed.

Market and product changes

The Volksbank focusses on the issuance of green bonds and has developed a framework for this. The funds raised are earmarked inter alia for financing the reduction of greenhouse gases. Moreover, The Volksbank states that sustainability criteria should be taken into account when granting loans. The products should have a sustainable background to a large extent.

According to EGB the greatest impact on the sustainable transformation is by supporting the transition of the customers' activities and investments to net-zero emissions. EGB is aiming at expanding its leading position in the area of sustainable financing in the CEE region in order to ensure growth opportunities for the future. The bank defines sustainable financing as making available funds or refinancing to customers, as well as new and/or existing "green projects" with the focus on environmental and in particular climate-related sustainability. Financial institutions and sovereign/supranational/government bond issuance have continued to grow in 2022 the volumes of both green bonds and social bonds increased compared to the previous year. In this regard, there was also significantly increased investor interest in social bonds in the year under review register. In 2022, EGB again acted as bookrunner for a large number of such bonds and arranged issues for companies, states and supranational organizations of green/social/sustainable bonds with a total volume of approx. EUR 8.2 bln. The market for sustainable corporate bonds is growing. In former times it was dominated by utility green bonds, but this is no longer the case. The sustainable corporate bond market is already well diversified, offering a wide variety of issues across issuers and sectors. The offerings have been expanded to green bonds in the real estate segment as well as ESG-rated promissory notes for the packaging industry and in the utilities segment. EGB in 2022 was very active in the sustainable finance market, arranging corporate issues with a total volume of more than EUR 3 bln. EGB has a Sustainable Finance Framework that defines rules for bond issuance in line with the ICMA GBP.

ICMA is a non-profit association with currently more than 600 members from all segments of the international debt capital markets. In addition to banks, members include private and public issuers, fund managers, securities dealers, law firms and central banks. ICMA governs the following principles and guidelines:

- the Green Bond Principles (GBP),
- the Social Bond Principles (SBP),
- the Sustainability Bond Guidelines (SBG) and
- the Sustainability-Linked Bond Principles (SLBP),

These principles are supported by a global market initiative assembling the market participants and stakeholders from both the private and official sectors (International Capital Market Association, n.d.-a).

In the areas of buildings and energy, the criteria EGB uses are based on the technical assessment criteria of the EU taxonomy. In June 2021, EGB became the first financial institution to join the EC´s initiative for green consumption (Green Consumption Pledge) to make an additional contribution to a sustainable economic recovery. This pledge is organised by the EU Commission. It invites companies to take a voluntary pledge to support sustainable consumption, beyond the requirements of the rules and regulations. This initiative is part of the New Consumer Agenda. As part of a pilot project launched in 2021, a number of small and large companies have committed themselves to meeting at least one of the following points:

- *“identify your carbon footprint and reduce it by setting targets that can be measured and checked in the coming years*
- *identify your environmental footprint (which relates to other environmental indicators, such as impacts related to water, air, resources, land use and toxicity) and reduce it (e.g. through awarding your products with the EU Ecolabel, or increasing the visibility of EU Ecolabel products)*
- *increase ‘circularity’ in your activities (e.g. use more recycled or sustainably-sourced material, generate less waste, lower energy consumption in production processes)*
- *respect social sustainability across your company’s supply chain (e.g. describe internal processes that ensure sustainable production, register your products with recognised labels)”* (European Commission, n.d.-b)

EGB commits to ensuring the availability of sustainable investment products and promotes sustainable investments to make it easier for consumers to participate in the green transition. EGB's commitments are implemented through its investment fund and asset management subsidiary, Erste Asset Management. Sustainable ESG products with ecological and/or social characteristics receive an ESG rating. For this, EGB uses a specified methodology and observes ESG exclusion criteria (e.g. weapons, child labor) in order to avoid social, ecological and financial risks. The ESG share of the structured products that EGB issued in Austria in 2022 was already well over 70 percent (2021: 50%), which corresponds to an increase of around 40%.

Organizational considerations

The Volksbank has set up a sustainability committee, directly reporting to the CEO.

In addition it has implemented a Group ESG Office, which also reports to the CEO. It acts as the main advisor to the management board on ESG strategy, goals as well as priorities relating to ESG topics. The ESG Office further develops central ESG guidelines, ensures the in-house expertise in climate, ecological, social and governance goals, and defines the ESG governance and financing rules. In addition, it ensures transparency about the results of EGB's sustainability measures and works together with the stakeholders such as investors, ESG rating agencies, NGOs as well as regulators and governments. It ensures coordination with the local ESG offices. Furthermore, the ESG Office coordinates all ESG related committees and teams such as the cross-divisional and group-wide coordination committees, the Group Sustainable Finance Committee and the ESG Core Team.

4.1.1.2.4 The three-tier sector

Business impact of climate-related factors

For the three-tier sector RBI is the most important bank. The most significant climate-related factors identified by RBI are similar to those that are also considered material by banks in other sectors. For assessing the climate-related drivers with business impact RBI categorizes in environmental, change, social and governance aspects. In order to understand the consequences of these factors' metrics, such as green-asset-ratios, ESG scores and greenhouse gas effects, are applied.

Market and product changes

RBI claims to have a leading position as arranger for sustainable bonds in RBI's home market (No. 1 in number of transactions, No. 2 in proportionate transaction volume). The bank sees an expansion of sustainable financing by 34%.

Organizational considerations

RBI has set up a Sustainability Council. The sustainability council is an organisationally firmly anchored association of sustainability managers. The sustainability council consists of external ESG and sustainability experts. The importance of the Council is manifested by the fact that it is chaired by the CEO of RBI. Also CRO, a member of the Board of Directors of a subsidiary bank from Central and Eastern Europe and managing directors of Austria subsidiaries are among the members. The Sustainability Council has the task of advising on the further development of the sustainability agenda and gives recommendations for developing and establishing the annual sustainability program. Furthermore, a Group ESG & Sustainability Management department has been implemented and sustainability officer has been established in the subsidiaries of RBI. One of the central tasks of Group ESG & Sustainability Management, which reports directly to the CEO is the planning, implementation and continuous development of RBI's approach to environmental, social and governance activities and based on the sustainability strategy, called "We create sustainable value" that was implemented in 2012. An important task is the support of the departments and subsidiaries of the banking group in setting ESG-related environmental and social goals and in deriving measures for improvement in the respective area, taking into account international requirements and standards.

4.1.2 Impact on risk management

4.1.2.1 General perspective

The impact of climate-related risks on the risk management of banks is manifold. Looking a credit risks, natural disasters may reduce the value of the collaterals or a rise in the temperature may reduce the biodiversity or the productivity an in consequence the profit of the borrowers. In terms of transition risks there may be increase depreciation of assets that are CO_2 intensive. Some borrowers may also have to pay an increased amount of Co_2 tax and therefore their profits are reduced substantially. In addition, some borrowers may have to make large investments in new technologies (Financial Market Authority, 2020).

In terms of market risk, it can be stated that natural disasters increase the price volatility of financial instruments and can lead to changes in consumer behaviour (Financial Market Authority, 2020). Also, the consequences of natural disasters may be increasing capital outflows and rising inflation expectations because of the Co_2 taxes. Additionally, natural disasters may increase the country risk, if for instance the sea level rises (Financial Market Authority, 2020).

The cash outflows pose also a liquidity risk for banks in the same way as the sudden demand for emergency liquidity facilities (Financial Market Authority, 2020).

The operational risk materializes, if the infrastructure of the bank is destroyed or the costs for the insurance rise. The costs for the adaption must be taken into consideration, too. Sustainability risks have to be taken into consideration in the banks' business continuity management as for instance there might be a loss of an essential building, servers, or connection to public transportation (Financial Market Authority, 2020).

For the legal and reputational risk the increase in judicial proceedings may be observed. Some clients of the banks may be stigmatized consumers due to their undesirable behaviour. Banks incur a reputational risk if they are selling financial products that only pretend to be sustainable ("greenwashing") (Financial Market Authority, 2020).

In that context it has to be noted that the operational risk materializing from climate-related events mostly affects the banks themselves, while the other risks that have been described are especially related to the banks' customers and falls back to the bank.

4.1.2.2 Practical perspective of banks and supervisory authorities

4.1.2.2.1 General

The climate-related-risks are not a separate risk category but have to be taken into account in different risk categories, such as credit risk, market risk, operational risk and liquidity risk. The banks included in the survey have different approaches to the risk management. Any type of environmental category can result in a risk of loss for the bank.

Credit risk is the most obvious and likely risk for banks. This is usually based on the risk of a lack of liquidity from borrowers. For example, if a region is affected by environmental disasters, such as floods, borrowers located in the region may suffer from a lack of liquidity, causing an inability to repay loans. In order to be able to identify and assess these risks, banks must integratively analyse all relevant risk aspects individually and regionally. General, highly standardized risk assessment approaches may not always be appropriate.

In the management of climate-related risks, it is not only to distinguish between physical and transitory risk aspects, but also between direct and indirect effects. All risk factors can have an impact on business models and business. Depending on the geographical location and the industrial sector the impacts are different. Also, the specific positioning of banks with their portfolios and products and their investments in different sectors, causes various effects.

A major challenge in risk management is the availability of meaningful data to assess environmental risks and their impacts. Since both general and customer-related data are only available to a very limited extent in this regard, banks must generate such data jointly with their customers. The second major challenge is the lack of historical climate and environmental data over a longer horizon. As the risk models used so far are based on a longer series of historical data, they are not suitable for purposes involving climate-related aspects. In addition, due to the existing high volatility of climate-related data, the conclusion from the past to future scenarios is only possible to a limited extent. Therefore banks have to develop a completely new risk management approach that covers forecast periods of up to 30 years. Currently, banks are investing a lot of resources in the development of adequate risk models.

4.1.2.2.2 The one-tier sector

In addition to the other physical risks that have existed for some time by all banks in the sector, environmental risks are now taken into account, jointly with the related transition risks. A relevant requirement is to measure CO_2 emissions, which is a huge challenge for many. It requires the development of appropriate strategies for these new challenges. Since this is a global problem, such strategies must be cross-sectoral. This complicates both the development and the execution of such strategies. Social risks are currently less relevant for the European region. However, social risks have an indirect effect, as a significant part of supply chains are often located in countries with poorly developed social systems.

BAWAG has included the verification of its sustainability goals as an essential part in the internal processes. In that context the product implementation process (PIP) is particularly important for the development of new products and services as well as for the entrance into new markets. Apart from that this process is just as important for relevant changes to existing products, services and markets. When developing a product, it is necessary to consider all risks such as credit risk, market risk and operational risk. Since the beginning of 2020, BAWAG has implemented the mandatory inclusion of ESG criteria in the product development process. In 2021, all newly introduced products were also checked with regard to ESG aspects.

Oberbank mentions the climate stress test of the ECB. It was carried out for the first time in 2022 and 107 major European banks that are classified as significant by the ECB have participated. The climate stress test provides an initial assessment of how affected banks are by climate risks. In order to further increase awareness of such risks, Oberbank, as a less significant institution, carried out the climate stress test on a voluntary basis. Among other things, the viability of the business models and the involvement in emission-intensive companies were examined. 44% of the Oberbank exposure is in greenhouse gas-intensive sectors and more than 52% of the interest income is generated in these sectors. This is below the average of the ECB climate stress test result of 60%. More than 51% of fee and commission revenue comes from greenhouse gas-intensive industries. In terms of industry intensity, the results tend to be comparable to the ECB climate stress test of the major European banks. For Oberbank, the energy supply, mining and transport sectors in particular have high financed greenhouse gas intensities. The financed scope of one to three greenhouse gas intensity of Oberbank is lower than that in the ECB climate stress test. The calculation of the financial ESG effects was carried out using three climate change scenarios (short-term disruptive, heat, flood) that take physical and transitory risks into account. Climate risks lead to relevant losses in both the short and long term. In the flood scenario, the Oberbank stress test shows slight effects on credit losses and, in the short term, a very moderate effect on the credit risk parameters. Oberbank states that climate risks are taken into account in the risk rating of loans.

For the year 2023, Bank Austria has for the first time defined measurable ESG targets in its Risk Appetite Framework (new grants of environmentally friendly loans and restrictions on collateral received that are exposed to physical risks), whereby the increasing importance of ESG targets is also expressed in this instrument. The risk framework aims to ensure that we identify imminent adverse effects of climate change and protect our bank against them in the best possible way. These effects include:

- Possible higher defaults on loans or losses from the revaluation of customer commitments or assets that are affected by climate risks.
- Reputational damage and claims for damages if the bank fails to respond appropriately to climate risks.
- Disruptions to Bank Austria's operations that affect its staff, buildings, and/or processes settled at locations exposed to physical climate risks, such as extreme weather events.

The focus of the UniCredit Group in 2022 was on the further development of the tools, methods and metrics to integrate climate-related risks into the risk appetite and the corresponding processes (loan application, reporting, credit risk strategy, stress tests, operational risk / reputational risks). Climate risks are identified, assessed and monitored in relation to the Group's balance sheet and business processes, and quantitative risk appetite limits are set so that potential risks are adequately addressed. The regulatory requirements ECB, EBA, FMA and the UniCredit Group's commitment to sustainable development require that climate risks be adequately taken into account in the lending process. Associated with this is an analysis of the influence of environmental risks on our borrowers' counterparty risk, the result of which must be taken into account when making the credit decision. The underlying method includes the assessment of the customer's exposure to transition risks such as GHG emissions, water and energy consumption or waste management. In that context the bank is assessing the customer's vulnerability to transition risks as well as the economic impact on the bank's corporate customers , as for instance lost investments, decline in market share, increased investment costs or supply chain impact. To that end the bank has developed a climate and environmental risk questionnaire. From the date when the application is submitted the questionnaire must be under 12 months. In the case of repeated applications during the year, the accuracy of the questionnaire with regard to the information and answers provided by the customer has to be checked again. As part of the physical risks Bank Austria carried out an analysis of the potential damage to the collateral in the mortgage portfolio due to extreme and acute climate-related events. An initial, forward-looking and overview assessment was made of how physical risk may affect the overall fair value and the impact on the market value of the relevant mortgages was estimated. The calculation of physical risks (flood, hail, storm) is based on the method from an external provider and is based on data on the real estate collateral in our loan portfolio. Finally, it should be noted that some of the above measurements have been incorporated into the RAF and loan strategy processes to support the integration of climate and environmental factors into the risk management framework and further strengthen underwriting processes and improve portfolio monitoring. Other focal points in connection with climate risks are:

- the implementation of the taxonomy regulation N. 15 through the integration of customer and product-specific information regarding the support of the change to a CO_2 neutral economy in the bank's processes and IT systems, which will start in the 1st quarter of 2023.
- further developing the portfolio emissions measurements in line with industry standards and covering an additional six industries by October 2024.
- embedding sustainability factors in the 2023 credit risk strategy.

4.1.2.2.3 The two-tier sector

The Volksbank mentions in their sustainability report that climate-related risks are considered in the risk management. In particular consideration of sustainability criteria is taken for lending by the inclusion of ESG criteria in the loan cycle. Furthermore, the bank has taken measures to identify measure, assess, monitor and steer ESG risks and develop ESG scores. Moreover, the Volksbank has been included in the climate stress test.

EGB describes the main task of the Committee for Sustainable Finance (Group Sustainable Finance Committee). It is the coordinated development of basic ESG methodologies for steering tools such as portfolio limits, pricing or the ESG Heat Map which is a graphical representation of ESG risk factors for industry segments. The committee is chaired by EGB’s Sustainability Officer. He is supported by senior executives with voting rights from the risk and business units. The committee is responsible for the content of EGB’s Sustainable Finance Framework, group-wide criteria for the classification of sustainable assets, asset allocation and reporting requirements. The committee's recommendations are submitted to the respective decision-makers for decision within the framework of the usual governance structures. The committee is organized by the Group ESG Office and meets as required. Ten meetings were held in 2022, including on topics related to selection criteria of green assets for financing purposes and changes in the calculation of financed emissions. Task of these bodies is also to monitor and control the risks that arise from EGB’s business activities in particular for the environment. These are essentially the financed emissions. EGB records the climate-related risks as part of its risk management and controls. A comprehensive analysis of the climate-related challenges, legislative and economic implications of the climate change in EGB’s region (Climate Change House View) shows that financing for or investing in companies that are exposed to physical and transitory climate risks represent a significant risk for the bank’s core business in the medium to long term. Especially in customer investment and advice there are also consequences if products are advertised as “sustainable” that cannot withstand close scrutiny by the regulator (“greenwashing”). Penalties and a loss of reputation would be the consequences. At the same time, negative effects on the environment and society are possible, if companies are financed or invested in companies that operate in an environmentally harmful manner and disregard fundamental human rights or the principles of good corporate governance. The establishment of sustainability criteria, on the other hand, means that companies with negative sustainability impacts are avoided and that financial resources flow into companies and activities that make a contribution to transformation.

EGB stresses the fact that, while large companies are already very aware of environmental risks, the awareness of SMEs needs to be improved. This is also due to the fact that SMEs are not included in many regulations. The management of many smaller companies is often convinced that their business is not affected by environmental issues. EGB is doing educational work in this regard and is a member of the Net Zero Banking Alliance, which analyses how many tons of CO_2 is in the bank's financing portfolio and how this can be reduced by 2050. This is a mitigation measure to minimize CO_2 risks in the context of CO_2 pricing. This means that a reduction in CO_2 emissions reduces company's future costs for Co_2 pricing and thus reduces the associated financial risk.

4.1.2.2.4 The three-tier sector

RBI states that the climate risk from financial instruments is the financial risk from banks' exposures with climate-exposed counterparties. Such climate exposed counterparties are engaged with climate change and other forms of environmental degradation (such as air and water pollution, soil contamination, biodiversity loss and deforestation). Climate and environmental risks can affect credit, market, liquidity and operational risk of a financial institution. RBI has therefore expanded the risk framework to include climate and environmental risks as additional risk drivers and also to take into account climate and environmental reputational damage.

4.1.3 Impact on external reporting and disclosure

4.1.3.1 General perspective

The development in disclosure and reporting is very dynamic. The market is showing great interest in environmental information. Since only the information that has actually been implemented or is in the process of being implemented may be disclosed, this also promotes the motivation to actually carry out such initiatives. By not only fulfilling basic reporting and disclosure requirements, but actively using reporting as communication instrument for conveying a banks initiatives and orientation towards sustainability, it can create competitive advantages.

The EU directive on sustainability reporting (CSRD) was adopted by the EU Parliament in November 2022 and published in the Official Journal of the EU in December 2022. It replaces the existing NFRD.

4.1.3.2 Practical perspective of banks and supervisory authorities

All banks included in the survey disclose climate-related information in the non-financial statement according to Art 267a of the corporate code.

As a member of the UniCredit Group, Bank Austria does not prepare its own non-financial statement in accordance with Section 267a of the corporate code, as it is included in the non-financial report of UniCredit S.p.A. in accordance with Art 267a para 7 of the corporate code is included. This now also takes into account the requirements of EU Regulation 2020/852 on EU climate taxonomy, i.e. in particular the information to be disclosed by credit institutions for 2021. The banks also disclosed climate-related information according to the taxonomy regulation.

Some banks state that they report in accordance with GRI standards. The GRI standards are issued by the Global Reporting Initiative. They enable any entity, whether large or small, private or public, to understand and report on their impacts on the economy and environment in a comparable and credible way. Thereby the transparency will be increased. In addition, the GRI standards are not only highly relevant to the companies but also to many stakeholders, such as investors, policymakers, capital markets participants, and the public as a whole. GRI standards are designed as a modular set, that is easy to use. It gives an all-encompassing picture of the substantial topics of an entity as well as their impacts pertaining to these subjects and their management. The GRI Standards represent global best practice for public reporting standards regarding economic, environmental and social impacts. The reporting which is based on these Standards gives relevant information about the positive or negative contributions to the development of an enterprise in terms of sustainability. The GRI standards are a modular system of mutually dependent standards. Three series of standards support the reporting process: the GRI Universal Standards, applying to all organizations; the GRI Sector Standards, applicable to certain sectors; and the GRI Topic Standards, each of them enumerating disclosures relevant to a particular topic (Global Reporting Impacts, 2023).

4.2 Impact on strategies

4.2.1 General

Climate-related influencing factors not only change the business model of banks, but are also taken into account in strategies on which the business models are based. This is reflected inter alia in the strong growth of sustainable debt instruments. According to Bloomberg these instruments surpassed USD 1,6 trillion in 2021. However, there is still potential for further growth. The revenue from sustainable trade finance and cash management, for instance, is estimated to grow by 15% to 20 % each year. Currently, banks' offerings in climate-related products are typically incorporated in traditional lending and growth in these products has been strong (Botta et al., 2022).

Also, a recent survey by McKinsey showed that consumers in the United States of America are increasingly interested in climate-linked financial products. Such developments can also be observed in Austria. There have been five insights McKinsey could gather from this survey:

- There is a strong and wide demand for green financial products. Many consumers are willing to allocate more than 40 percent of their savings to a green retail product. This is not very much correlated with region or income (Edwards et al., 2023).
- Green offerings are a business opportunity for banks, not a concession. Consumers are willing to pay more for climate-related products such as savings accounts or investment products. So have ESG funds charged higher fees for years (Edwards et al., 2023).
- In general, customers are interested in support and advice from banks.. This interest in advice stems from the fact that banks usually have better access to information, both technical and financial, than most customers. (Edwards et al., 2023).

- Consumers need to be educated. The understanding of consumers regarding climate-related products is quite low. They need their banks to advise and educate them (Edwards et al., 2023).
- When selecting banks, climate issues are not yet at the forefront of most customers' minds. This opens up the opportunity for banks to be innovative and topic-leading in the market and thus creating additional business opportunities. (Edwards et al., 2023).

Taking into consideration these insights McKinsey gathered from its survey it can be said that it is imperative for banks to have sustainable products in their global transaction portfolio. Besides the issuance of green bonds and loans basic sustainable products could be:

- Documentary trade finance products: better pricing and improved access to letters of credit or guarantees for sustainable products, such as the delivery of solar panels.
- Credit Cards: favourable terms for purchase of sustainable goods in comparison to travel expenses.
- Account-related liquidity: invest cash received from deposits in sustainable assets.
- Payments and liquidity management: favourable terms for underlying assets that are sustainable, show transactions which are exclusively related to sustainable activities (Botta et al., 2022).

Especially in the area of climate-related factors, the role of banks as consultants is becoming increasingly important. Via advisory services banks support their customers in their efforts to reduce greenhouse gas emissions (Botta et al., 2022), because of their huge data collection banks can be particularly effective in assessing the greenhouse gas emissions which are linked to the companies’ supply chains. These scope three emissions account for most emissions and are difficult to measure (Botta et al., 2022) and the companies will need the support and expertise of the banks to meet these challenges.

It has to be noted, that with regard to climate change banks act on two fronts. Firstly, they need to manage their own financial exposures and secondly, they have to help finance a green agenda. For this they need to have a profound climate-risk management.

The physical risks of climate change are huge. Greenhouse gas emissions cause warming that has the potential to damage the liveability and workability. Global warming will undermine food systems, infrastructure and natural habitats of people and animals. Furthermore, regulation increasingly requires banks to manage climate risk. This is particularly challenging, since many banks still have to formulate their strategies and create a stable climate risk management (Eceiza et al., 2020). Another issue for the climate risk management is the timeline. On the one hand, there are material risks on a ten-year horizon or more and on the other hand transition risks are already becoming real, forcing banks to write-off stranded assets already now. Also, rating agencies are incorporating climate factors into their rating systems and assessments which in turn may affect the banks' assets.

In general, the banks need to quantify climate factors across their business and put in place processes and a governance to manage these factors. For an effective climate risk management banks have to observe five principles: (Eceiza et al., 2020)

- Formulate climate-risk governance: banks should nominate a responsible person for climate risk. In many banks this is the CRO (Chief Risk Officer). The climate-risk management must be cascaded down the whole organization.
- Tailor business and credit strategy: consideration relating to climate have to be included in the risk framework and in the capital allocation.
- Align risk processes. Climate-risk exposure has to be aligned with the risk appetite and the business and credit strategy of a bank.
- Stress testing: banks need to assess their resilience vis-á-vis climate-related risks. They have to quantify their risks on counterparty and portfolio level.
- Focus on enablers. Banks need to hire people who have the expertise in climate-related risks (Eceiza et al., 2020).

To be able to execute these principles the banks have to define and articulate their strategic ambition. As a second step the banks need to build the foundations by identifying the necessary processes and methodologies to manage climate risk effectively. As a last step the banks have to construct a climate-risk management framework. Climate risk factors need to be built into the whole decision-making process and across front- and back office (Eceiza et al., 2020).

The current trend is that Austrian banks are focusing on contributing to the reduction of the Co_2 footprint with their business, especially the bond portfolio. This is reflected in the strategy. To manage and monitor the implementation of the strategy, most banks are now using appropriate KPIs. Examples of adequate KPIs are; Net-Zero portfolios until 2050, no provision of products and services to customers and establishment of guidelines and internal policies for environmentally harmful industries.

There is already a requirement for credit institutions to deal intensively with the different scenarios of climate change and to determine their effects. There is a need to map these to the business strategies and analyze which core business areas can still be successful in the future, which have future potential and which can be expected to be very strongly affected by transitory but also physical changes. At some banks this process is already underway, and some have already made concerning adjustments to their strategy. Banks are considering which so-called brown sectors, i.e. Co_2-intensive sectors, they will continuously withdraw from and shift business to the currently most popular green sectors. At the same time, the product portfolios will be adjusted accordingly.

4.2.2. The one-tier sector

The one-tier sector banks are mainly retail-oriented with a focus on Austria. They describe their business strategy as well as their climate-related targets in their sustainability or corporate responsibility reports.

The climate-related target of BAWAG is a reduction of own scope one and scope two carbon emissions by more than 50% by 2025. The bank comes from a baseline of around 3,200 tons in 2020. To support the achievement of the sustainable development goals the bank increases its funds for environment and climate-related spending. BAWAG issues a clear commitment to the ESG goals and ensures that investments are channeled into economic activities that have the greatest positive impact on these environmental goals. An example of this is the green finance ESG target of the bank. The green finance credit dynamics are positive and it is the expectation that green finance accounts for at least €1.6 bln of BAWAG’s annual new business by 2025, compared to €0.8 bln € in 2020. In order to further advance the ecological change, BAWAG aims to gain an annual new business volume in "green" financing of over €1.6 bln by 2025, which corresponds to a doubling of the volume of 2020. On the investment side the bank plans to provide customers with financial products that pursue ecologically sustainable goals.

These targets are considered in the strategy, in a way that strategy is basically retained, but expanded by climate-related aspects. Austrian banks are generally reluctant to make general changes to their strategies. Moderate adjustments are preferred.

Oberbank will be carbon neutral in scope one and scope two by 2025 and will help limit temperature rise to 1.5 degrees. The bank is committed to the 1.5 degree target of the Paris climate agreement, pursuing a clear sustainability strategy, actively involved in ESG initiatives, establish new partnerships. The carbon footprint per employee will be less than one ton by 2025. Oberbank further explains that it has included sustainability as separate and own field of action in the overall bank strategy. The integration of the sustainability strategy into the Oberbank 2025 corporate strategy makes it clear that sustainability at the Oberbank is also of the utmost importance for future development and thus for the future success of the bank at the strategic level. Accordingly, the sustainability aspects influence the business model and strategy of the bank in numerous areas. The change in the business model and strategy leads to changes in the product range, sustainable credit policy and operational ecology. The anchoring of sustainability in the corporate strategy meant that the target horizon of the sustainability strategy was extended from 2022 to 2025 and Oberbank's sustainability goals have been adjusted accordingly. Moreover, Identifying and assessing ESG risks in the Credit portfolio is an important part of Oberbank's sustainability strategy and management.

Since Bank Austria is a subsidiary of the Unicredit Group which is based in Italy, its strategy is embedded in UniCredit Group's ESG strategy. As climate change is the central ecological challenge of this time, UniCredit has developed a climate strategy that includes both the reduction of its own and the financed emissions. The objective is to be net zero for the bank’s own emissions by 2030 and to be net zero for the bank’s portfolio by 2050 at the latest. This objective is expressed through membership in the Net Zero Banking Alliance. The Net Zero Banking Alliance is a voluntary global coalition of banks under the auspices of the United Nations Environment Program Finance Initiative (UNEP FI). Currently, approximately 40% of the global banking assets are represented in the Net-Zero Banking Alliance (United Nations, n.d.). Its goal is to achieve net-zero emissions on all financing and investment volumes by 2050 or if possible, sooner. The targets are accompanied by an annual target achievement report. To this end UniCredit analyzed its portfolio in detail in 2022 and carried out baseline calculations based on various recognized scenarios. As the next important step, UniCredit will announce the reduction targets for the first three particularly emission-intensive sectors in spring 2023, with targets for other sectors to follow within a further 18 months. Furthermore, Unicredit strengthens the fact that in the medium and long term, the transformation of the economy together with the customers can only succeed if the financing and investment portfolio is aligned with the Paris 1.5 degree goal.

At Bank Austria, too, the topic of sustainability is part of the business strategy and is therefore also anchored in the core business. ESG already has a major impact on Bank Austria's day-to-day business operations through the development of environmentally and/or socially compatible products in the private and corporate customer area or through internal industry and sector-specific products. This is also presented in UniCredit's Integrated Report, in which UniCredit's sustainability goals such as withdrawing from financing environmentally harmful industries such as coal mining and increasing loans that serve energy efficiency are presented. These goals are also relevant for Bank Austria as a key part of the group. Bank Austria in 2022 also reaffirmed its ambitions at national level by joining the Green Finance Alliance, which pursues similar objectives. The Green Finance Alliance is the initiative of the Austrian Ministry of Climate Protection, whose goal is to steer the activities of the core business of the financial sector in a sustainable direction. Moreover, Bank Austria has developed four core principles as basis for its ESG strategy. These core principles generally address the relationship of the bank with its customers as well as the behaviour Bank Austria strives to implement in its strategy with regard to ESG. The four core principles are:

- Principle 1: leading by example and striving for the same high standards that is expected from the business partners. The aim is to remain at the forefront of the ESG landscape, based on the principle that as an organization, the bank should be at the forefront of the sustainable transformation of the economy.
- Principle 2: set ambitious ESG targets for change to meet the customers' needs. The performance is continually reviewed against strong commitments and ambitious goals.

- Principle 3: equip the bank with tools to support customers and communities in tackling the environmental and social change they are exposed to.
- Principle 4: provide and invest the necessary resources to meet medium and long-term commitments such as equal pay for equal tasks, financial health and inclusion to enable a more equal and sustainable society.

4.2.3 The two-tier sector

The two-tier sector banks are like the one-tier sector banks retail oriented universal banks with a prominent focus on Austria for the Volksbank. EGB is not only an Austrian domestic bank but also has subsidiaries in Central Eastern European countries.

The Volksbank include in their mission statement and strategy the commitment to the Paris Climate Protection Agreement. Sustainability as an integral part of their corporate culture and their goal is to appropriately manage the ESG risks. The sustainability goals of Volksbank are formulated in their business strategy and their business model which is based on cooperative principles, considers the need for expansion of the range of products and services.

In EGB’s mission statement the bank commits that it will strive to be a role model and a leader in the green transition by mobilizing funds to fight climate change and invest in maintaining clean water and transitioning to a circular economy. EGB also mentions 0that the green transition brings an opportunity for the people of the CEE region. Hence the strategic priorities in the area of sustainability for EGB are the Green Transition and to expand their leadership position in green finance in CEE and in the Austrian regions to ensure growth opportunities for the future. Also, EGB strive to create a basis to reach the climate neutrality of their portfolio by the year 2050 and by that to contribute to climate protection and simultaneously bring about a precondition as well as a basis for the long-term resilience of and the investments. EGB, sees itself as a role model for effective climate protection measures and in this function commits to reach climate neutrality of its banking operations by 2023. With regard to the green transition the long-term strategic considerations relating to the financial resilience of EGB’s business model, including the risks associated with sustainability issues, are based on an extensive analysis of the climate-related factors and the legal and economic effects of climate change in EGB’s region ("Climate Change House View"). The bank affirms that the European climate laws (see chapter 3.1.5.3), the EU Green Deal and the Fit for 55 package set the framework for future changes in EU strategy and laws.

The EU Green Deal by the EC acknowledged that climate change and environmental degradation are existential threats to Europe and to the world. With the European Green Deal a transition to a modern, resource-efficient and competitive economy should be created. It basically aims at an economy that emits zero net greenhouse gases by 2050 and decouples their growth from resource use (European Commission, n.d-a).

In 2021, the EC presented the "Fit for 55" package. Thereby, it adopted 12 proposals to shape EU policies in the areas of climate, energy, land use, transport and tax. Included therein was that net greenhouse gas emissions are to be reduced by up to at least 55 percent in 2030 compared to the levels of 1990. This plan shall bring the EU Commission closer to its goals, namely to make Europe the first climate-neutral continent in the world by 2050 and thereby, realize the European Green Deal. The "Fit for 55" package includes the necessary legal instruments to achieve these goals (Bundeskanzleramt, 2021).

As with all other banks, EGB, too, commits to the Paris climate agreement and to making a contribution to limiting global warming to 1.5 degrees. As a financial service provider, EGB is not only concerned with the transformation of own operations, but above all with the effects of financing and investments. In order to meet this challenge, EGB pursues the goal of a net-zero portfolio by 2050. To this end, it follows clear sustainability criteria for financing and investments. Particular attention is paid to the emission-intensive sectors. Finally, necessary measures are taken regarding the bank’s operational business to be climate-neutral in banking operations by the end of 2023.

Although EGB has already adapted its business strategy and environmental aspects have been taken into account, the strategy is re-evaluated annually due to the continuing momentum. To measure the level of the achievement of strategic sustainability goals appropriate KPI data is important, which is not yet available in sufficient quality. For this reason, science-based calculation models are used, which arere-evaluated every year.

Forecasts on environmental aspects are a complex topic where data from the past is not a basis for planning for the future. The calculation models for the assessment of environmental factors are all still in their infancy. However, EGB has already developed long-term strategic goals, namely a certain rate of new financing that should be taxonomy-compliant, as well as a decarbonization.

EGB is optimistic for bank's future profitability and think it will have a positive effect for those banks that recognize the business potential. One example is business in Eastern Europe. In Eastern Europe, the share of renewable energy is very low compared to Austria. However, as requirements are also increasing in this region, there is great potential for banks if this business is actively promoted.

4.2.4 The three-tier sector

RBI as part of the three-tier sector of Raiffeisen is basically a corporate-oriented bank with subsidiaries in Central Eastern Europe, South Eastern Europe and in Russia with its biggest and most profitable subsidiary.

RBI describes its targets similar to the other Austrian banks included in the survey. A specific is that the emission reduction targets set by RBI are approved by the Science Based Targets Initiative, which is unique in Austria so far. RBI aims at the reduction of group-wide carbon emissions by eight percent (Scope one to three) compared to 2021. The Science-Based Targets Initiative is a partnership of CDP, UN Global Compact, World Resources Institute and WWF. This initiative has developed tools and methods to support companies in their actions to achieve climate goals. Environmentally relevant goals and measures at bank and company level are incorporated into a science-based target model. This allows climate-related targets to be aligned and aggregated at all levels. The companies participating in this program commit themselves to setting their targets in such a way that the global temperature increase remains below critical levels. The relevant criteria to which the companies commit themselves are the following:

- *"Timeframe: companies have a period of 24 months to set their targets. The commitment period must cover a minimum of 5 years from the date of announcement of the target.*

- *Boundary: target covers company-wide Scope 1 and Scope 2 emissions and all GHGs, as required by the GHG Protocol Corporate Standard.*
- *Level of ambition: target is consistent with the level of decarbonization required to keep global temperature increase below 2°C compared to pre-industrial temperatures.*
- *Scope three: an ambitious scope three target is also required when scope three emissions cover a significant portion of a company's overall emissions.*
- *Reporting: companies will disclose GHG emissions inventory on an annual basis."* (Callahan, 2015).

RBI's mission statement for 2025 is to make their customers' lives easier through constant innovation:

- Customers: improve the customer experience and enable the customers privately and more professionally.
- Employees: expertise is valued and a work environment is created that encourages collaboration, creativity and promotes entrepreneurial thinking.
- Shareholders: generate solid and sustainable corporate value for the shareholders.
- General public: acting in a socially responsible manner and contribute to the long-term well-being of people and companies.

5 CONCLUSION

The urgent need to address climate change has gained significant traction in Western societies, with a growing emphasis on avoiding its adverse impacts. As key players in economic systems, Austrian banks have recognized the relevance of climate-related aspects for their business and strategies, and their significance is expected to further increase in the future. Climate-related factors encompassing natural resources, innovation, waste management, and climate stability pose risks to banks in the form of physical risks, transition risks, and litigation risks, which can directly or indirectly impact their financial activities and the overall financial system.

The identified climate-related factors relevant to banks encompass natural resources, innovation, waste management, climate stability, and their associated risks: physical, transitional, and litigation risks. These factors have the potential to directly or indirectly impact economic activities, corporate profitability, asset valuation, and the overall financial system. Additionally, the environmental factors can be categorized as physical, transitional, reputational, societal, and regulative factors.

Regulatory factors, particularly European regulations based on the action plan for sustainable growth, emerge as the most effective drivers for sustainable business practices among banks. The impact of climate-related factors on banks is generally similar across sectors, with a strong focus on physical and transitional environmental risks due to the availability of tangible data. Austrian banks primarily face physical risks related to carbon emissions and extreme weather conditions, while reputational factors gain importance in relation to transition risks.

<u>Research question: "How is the business of Austrian banks affected by climate-related change?"</u>

Austrian banks are actively adapting their business models to address climate-related factors. Although universal banks are not expected to undergo significant changes in their business models, adjustments and the strengthening of exclusion criteria are anticipated. Many banks have already begun offering green products and services, such as green bonds and green accounts, which support positive environmental purposes. The market for climate-related products in Austria is characterized by similar focuses among banks, although with differing labels and characteristics.

Moreover, Austrian banks have established comprehensive sustainable product portfolios that cater to private and institutional investors, including ESG investment products, ESG-linked loans, and green mortgage and consumer loans. These offerings align with the banks' goal of supporting customers' transition to net-zero emissions. To ensure long-term sustainability integration, large Austrian banks have taken organizational precautions by appointing sustainability officers and units, effectively embedding the topic of sustainability across various departments.

Risk management practices among banks vary, but climate-related risks are recognized as significant and are incorporated into different risk categories, such as credit, market, operational, and liquidity risks. The European Central Bank (ECB) has initiated climate stress tests to assess the resilience of major European banks to climate-related risks, highlighting the growing importance of incorporating environmental considerations into risk management.

However, challenges persist in risk management due to the limited availability of meaningful climate and environmental data, as well as the lack of historical data for future scenario projections. Banks are investing substantial resources in developing adequate risk models that cover longer forecast periods, up to 30 years.

Additionally, there is a significant impact of climate-related factors on external reporting and disclosure practices. Disclosure requirements and reporting standards are evolving rapidly, driven by market demand for environmental information. Banks that actively use reporting as a communication instrument to convey their sustainability initiatives gain a competitive advantage. All banks included in the survey disclosed climate-related information in their non-financial statements, and some banks reported in accordance with the Global Reporting Initiative (GRI) standards, increasing transparency and comparability.

<u>Research question: “How can resulting risks be addressed and resulting opportunities be incorporated into the strategy?”</u>

Climate-related factors are not only transforming banks' business models but are also integrated into their strategies. The strong growth of sustainable debt instruments and revenue from sustainable trade finance and cash management exemplifies this trend. While Austrian banks prefer moderate adjustments to their strategies, large banks have incorporated climate-related targets, including significant reductions in carbon emissions. Mission statements of banks often highlight their commitment to becoming role models and leaders in the green transition, mobilizing funds to combat climate change, and transitioning to a circular economy.

Overall, the findings suggest that Austrian banks are proactively responding to the impact of climate-related factors by embracing sustainability in their strategies. As market and regulatory requirements continue to evolve, banks must remain agile and adaptive, ensuring that sustainability and climate protection remain integral aspects of their long-term business strategies. By doing so, banks are not only mitigating risks but also unlocking growth opportunities to establish themselves as leaders in green finance, contributing to a more sustainable future.

The empirical assessment confirms that leading Austrian banks not only meet the legal requirements, but also consider sustainability aspect in their product portfolios. This can be explained above all by the fact that ignoring environmental protection and sustainability would cause competitive disadvantages. A further intensification of this trend is to be expected, which is why the business models of banks will be geared even more towards sustainability.

While business models and operations of banks take climate-related factors into account already, strategies have yet only been adjusted partially. Due to the continuously increasing market pressure, it can be assumed that banks will go one step further in the medium term and not only adapt parts of the strategy, but will align strategies overall with environmental aspects.

The present thesis focuses the empirical analysis on large Austrian banks. However, the Austrian banking market continues to have a high density of banks, which will continue to decline. On the one hand, it can be concluded that in the next few years a portion of the small and medium-sized banks will withdraw from the market or their business will be taken over by large banks. On the other hand, small and medium-sized banks remaining on the market will only be able to succeed if they adapt their business strategies to the market trend. This means that the knowledge gained for the leading banks can be applied to the entire banking market ion Austria.

6 BIBLIOGRAPHY

Blogs:

Hodges, J., Leatherby, L., & Mehrotra, K. (2018, May 24). *Climate Change Warriors' Latest Weapon of Choice Is Litigation.* Retrieved May 14, 2023, from https://www.bloomberg.com/graphics/2018-climate-change-lawsuits/.

Books:

Blisse, H. (2017). *Drei dezentrale Bankensektoren in Österreich - drei eigenständige Geschäftsmodelle und Eigentümerprofile*. Österreichische Bankwissenschaftliche Gesellschaft.

Creswell, J. W. (2014). *Research Design: Qualitative, Quantitative and Mixed Methods* Approaches (4th ed.). Sage Publications .

Fabian, T. (2022). 5. Sustainable Finance . In *Sustainability Law - Das Recht der Nachhaltigkeit* (1st ed., pp. 93–115). essay, Binder Grösswang .

Fraenkel, J. R., Wallen, N. E., & Hyun, H. H. (2012). *How to Design and Evaluate Research in Education* (8th ed.). Mc Grow Hill .

Frank, S., Heckenthaler, S., & John, G. (2022). 6. Nachhaltigkeitsrisiken in der Finanzbranche. In *Sustainability Law - Das Recht der Nachhaltigkeit* (1st ed., pp. 117–139). essay, Binder Grösswang .

Patton, M. Q. (2002). *Qualitative research and evaluation methods* (2nd ed.). Sage Publications

Waschbusch, G., Kiszka, S., & Strauß, P. (2021). *In Nachhaltigkeit in der Bankenbranche : Ansätze zur Integration des Nachhaltigkeitsgedankens in die bankbetriebliche Praxis* (pp. 96–150). Nomos.

EU Regulations:

REGULATION (EU) No 575/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 26 June 2013 on prudential requirements for credit institutions and amending Regulation (EU) No 648/2012

REGULATION (EU) No 575/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 October 2021 on requirements for credit risk, credit valuation adjustment risk, operational risk, market risk and the output floor (EU) No 575/2013

Journals:

Baumüller, J., Haring, N., & Merl, S. (n.d.). Die Endfassung der Corporate Sustainability Reporting Directive (CSRD): Überblick und Anwendungsbereich. *Verlag Österreich* , 4, 509. https://doi.org/10.33196/nr202204050901

Blisse, H. (2017). Drei Zentrale Bankensektoren in Österreich - drei eigenständige Geschäftsmodelle und Eigentümerprofile. *Österreichische Bankwissenschaftliche Gesellschaft*, 227.

Botta, A., Digiacomo, N., Eceiza, J., Heidegger, H., Jain, R., Mach die Palmstein, F., & Röhrig, M. (2022). Sustainability in global transaction banking: A market imperative. *McKinsey & Company, 2–7*. https://www.mckinsey.com/industries/financial-services/our-insights/sustainability-in-global-transaction-banking-a-market-imperative#/

Butschek, F. (2019). Im Zentrum der Wirtschaftsgeschichte des 19. Jahrhunderts. *Wirtschaft Und Gesellschaft , 1*, 152–156.

Dunlap, R. E., & Brulle, R. J. (2015). Climate Change and Society: Sociological Perspectives. *Fudan Journal of the Humanities and Social Sciences*, 535–538. https://doi.org/https://doi.org/10.1007/s40647-016-0129-8

Eceiza, J., Harreis, H., Härtl, D., & Viscardi, S. (2020). Banking imperatives for managing climate risk. *McKinsey & Company* , 2–8. https://www.mckinsey.com/capabilities/risk-and-resilience/our-insights/banking-imperatives-for-managing-climate-risk

Edwards, W., Jain, R., Nadeau, M.-C., Soehner, C., & Stephens, D. (2023). Green growth: Unlocking sustainability opportunities for retail banks. *McKinsey Sustainability*, 2–6. https://www.mckinsey.com/capabilities/sustainability/our-insights/green-growth-unlocking-sustainability-opportunities-for-retail-banks

Frey, B., Rogl, G., Schönauer, K., Sternisko, A., & Terko, S. (2022). Q&As zur Berichterstattungspflicht gemäß Artikel 8 der EU-Taxonomie-Verordnung . *Zeitschrift Für Recht Und Rechnungswesen*, 1(4).

Iro, S. I. (2013). Data collection techniques a guide for researchers in humanities and education. *International Research Journal of Computer Science and Information Systems (IRJCSIS)* , *2*(3), 40–44.

Klimscha, F. (2021). Nachhaltigkeitsrecht. *eVerlag Österreich*, 1(3), 302–313. https://doi.org/2708-9649

Koumbarakis, A. (2021). Nachhaltiges risikomanagement: Best practices im Umgang MIT Nachhaltigkeitsrisiken. *Nachhaltigkeits Recht,* 1(3), 352. https://doi.org/10.33196/nr202103035201

Roengpitya, R., Tarashev, N., & Tsatsaronis, K. (2014). Bank Business Models . *Bank for International Settlements*, 55. Retrieved April 10, 2023, from https://www.researchgate.net/publication/269401947_Bank_business_models.

Spannlang, R. (2019). Schadholz 2019 auf 10 Mio. fm geschätzt. *Forstzeitung*. https://www.forstzeitung.at/aktuelles/2019/12/oesterreich--schadholz-auf-10-mio--fm-geschaetzt.html

Wallstreetmojo Team. (n.d.). What is Consumer Credit? *WallStreetMojo*. Retrieved April 16, 2023, from https://www.wallstreetmojo.com/consumer-credit/.

Lectures:

Redinger, G. (2023, April). *Risikomanagement Nachhaltigkeitsbezogene Risiko- und Chancenbetrachtung. Nachhaltigkeitsmanagement*. Vienna.

Magazine articles:

Focus Online. (2013, August 30). Övag und regionale Volksbanken werden eine Kreditinstitutsgruppe. *Focus Online* . Retrieved March 19, 2023, from https://www.focus.de/finanzen/news/wirtschaftsticker/oevag-und-regionale-volksbanken-werden-eine-kreditinstitutsgruppe-unternehmen_id_2057695.html.

Press Release:

European Central Bank. (2018, March 8). *COMMUNICATION FROM THE COMMISSION Action Plan: Financing Sustainable Growth*. (2018, March 8). (Press Release) from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52018DC0097.

Reports:

Bank Austria. (2023). (rep.). *Jahresfinanzbericht 2022*. Retrieved May 15, 2023, from https://www.bankaustria.at/files/Jahresfinanzbericht_2022_DE.pdf.

Bawag Group . (2022). (rep.). *Consolidated Annual Report 2021*. Retrieved May 15, 2023, from https://www.bawaggroup.com/resource/blob/42232/0aae20061cc415f59e4e529b08e5f267/consolidated-annual-report-2021-data.pdf.

Collective Commitment to Climate Action. (2014). (rep.). *Austrian Assessment Report Climate Change* . Retrieved May 14, 2023, from https://www.ccca.ac.at/fileadmin/00_DokumenteHauptmenue/03_Aktivitaeten/APCC/summarys/Synopse_englisch_finaleversion_181214.pdf.

Cernov, M., & Urbano, T. (2018). (tech.). *Identification of EU Bank Business Models - A Novel Approach to Classifying Banks in the EU Regulatory Framework* (pp. 9–15). EBA.

European Banking Authority. (2020). (rep.). *Final Report - Guidelines on Loan Origination and Monitoring* . Retrieved April 16, 2023, from https://www.eba.europa.eu/sites/default/documents/files/document_library/Publications/Guidelines/2020/Guidelines%20on%20loan%20origination%20and%20monitoring/884283/EBA%20GL%202020%2006%20Final%20Report%20on%20GL%20on%20loan%20origination%20and%20monitoring.pdf.

European Central Bank. (2020). (rep.). *Guide on Climate-Related and Environmental Risks: Supervisory Expectations Relating to Risk Management and Disclosure.* Retrieved May 14, 2023, from https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.202011finalguideonclimate-relatedandenvironmentalrisks~58213f6564.en.pdf.

Erste Group Bank AG. (2023). (rep.). *(Konsolidierter) nichtfinanzieller Bericht* . Retrieved May 15, 2023, from https://www.erstegroup.com/de/investoren/berichte/nichtfinanzielle_berichte.

Federal Ministry Republic of Austria . (2017). (rep.). *The Austrian strategy for adaptation to climate change.* Council of Ministers. Retrieved May 14, 2023, from https://www.bmk.gv.at/en/topics/climate-environment/climate-protection/austrian-strategy-adaptaion.html.

Financial Market Authority. (1993). (rep.). *Austrian Banking Act (pp. 4–6).* Federal Law Gazette.

Financial Market Authority. (2020). (rep.). *FMA Guide for Managing Sustainability Risks (pp. 5-24).*

Kinsky, K., & Elsensohn-Pauser, M. (2023). (rep.). *Volksbank Wien and Association: investor presentation*. Volksbank Wien AG. Retrieved April 10, 2023, from https://www.volksbankwien.at/m101/volksbank/zib/de/individuelle_seite/regionale_Inhalte/volksbank_gruppe/praesentationen_en.jsp?branch=m044_43000&lang_sel=en.

Oberbank. (2023). (rep.). *Nachhaltigkeitsbericht 2022*. Retrieved May 15, 2023, from https://www.oberbank.at/documents/20195/559187/irglobal_nachhaltigkeit22.pdf.

Raiffeisen Bank International. (2023). (rep.). *Nachhaltigkeitsbericht 2022*. Retrieved May 14, 2023, from https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwiR8Lv8uPX-AhVO6aQKHXexBE8QFnoECAkQAQ&url=https%3A%2F%2Fwww.rbinterna-

tional.com%2Fresources%2FRBI%2Fraiffeisen-bank-international%2Fsustainability%2Fnachhaltigkeitsbericht-2022%2FNachhaltigkeitsbericht%25202022.pdf&usg=AOvVaw13AIuS90gRXkkaLnInm5Gd.

Schildbach, J. (2012). (rep.). *Universal banks: Optimal for clients and financial stability Why it would be wrong to split them up.* Retrieved April 16, 2023, from https://www.dbresearch.com/PROD/RPS_EN-PROD/PROD0000000000455298/Universal_banks%3A_Optimal_for_clients_and_financial.pdf?undefined&realload=fTF1e7HASzpdCwz3tFgctd3RHpjNtkwZRk/C3VGHlY6v1Yg1V6gZUdVrvGn4qrE7.

Task Force on Climate-Related Financial Disclosures. (2017). (rep.). *Recommendations of the Task Force on Climate-related Financial Disclosures - Final Report.* Retrieved May 14, 2023, from https://assets.bbhub.io/company/sites/60/2020/10/FINAL-2017-TCFD-Report-11052018.pdf.

Volksbank Wien AG . (n.d.). (rep.). *Corporate Sustainability Report 2022*. Retrieved May 19, 2023, from https://www.volksbankwien.at/m101/volksbank/zib/downloads/geschaeftsberichte/2022/230411_vbw_cr_report_2022_uk_online_gesperrt.pdf.

Websites:

Austria-Forum. (n.d.). *Austria-Forum*. Startseite Austria-Forums. Retrieved April 7, 2023, from https://austria-forum.org/af/AustriaWiki/Volksbank_Gruppe

Bundeskanzleramt. (2021, July 16). *“Fit for 55”-Paket – EU-Kommission geht Herausforderungen zum Klimaschutz an.* Bundeskanzleramt. https://www.bundeskanzleramt.gv.at/themen/europa-aktuell/fit-for-55-paket-eu-kommission-geht-herausforderungen-zum-klimaschutz-an.html

Callahan, E. (2015, October 21). *Science-Based Targets Initiative - Driving Bold Business Climate Action*. United Nations Climate Change . https://unfccc.int/news/science-based-targets-initiative-driving-bold-business-climate-action?psafe_param=1&gclid=EAIaIQobChMI-om08v30_gIVDuFRCh3rjA0oEAAYAiAAEgLt_PD_BwE

Corporate Finance Institute Team. (2023, March 19). *Mortgage bank - What is a Mortgage Bank?* Corporate Finance Institute. Retrieved April 16, 2023, from https://corporatefinanceinstitute.com/resources/wealth-management/mortgage-bank/

Deloitte UK. (n.d.). *Scope 1, 2 and 3 emissions*. Deloitte. https://www2.deloitte.com/uk/en/focus/climate-change/zero-in-on-scope-1-2-and-3-emissions.html

Enright , M. (2021, January 11). *Understanding the Types and Sources of Consumer Credit*. Wolters Kluwer. Retrieved April 16, 2023, from https://www.wolterskluwer.com/en/expert-insights/understanding-the-types-and-sources-of-consumer-credit

Erste Group AG . (2019). *Our story - from 1819 to today*. Erste Group . Retrieved March 19, 2023, from https://www.erstegroup.com/en/about-us/history

European Commission. (n.d.-a). *Europäischer Grüner Deal Erster klimaneutraler Kontinent werden.* European Commission. https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_de

European Commission. (n.d.-b). *Voluntary cooperation with businesses to increase the sustainability of production and consumption, thereby complementing other regulatory actions.* European Commission - Sustainable Consumption Pledge. https://commission.europa.eu/strategy-and-policy/policies/consumers/consumer-protection-policy/sustainable-consumption-pledge_en

GeoSphere Austria. (2019, December 19). *2019 eines der drei wärmsten Jahre der Messgeschichte*. https://www.zamg.ac.at/cms/de/klima/news/2019-eines-der-drei-waermsten-jahre-der-messgeschichte. https://www.zamg.ac.at/cms/de/klima/news/2019-eines-der-drei-waermsten-jahre-der-messgeschichte

Global Reporting Impacts. (2023). *The global standards for sustainability impacts*. Global Reporting Impacts. https://www.globalreporting.org/standards/

International Capital Market Association. (n.d.-a). *The Principles*. ICMA. https://www.icmagroup.org/sustainable-finance/the-principles/

International Capital Market Association. (n.d.-b). *Welcome to the International Capital Market Association*. ICMA. https://www.icmagroup.org/About-ICMA/

Kagan, J. (2023, March 14). *Universal banking: Definition, functions, regulation.* Investopedia. Retrieved April 16, 2023, from https://www.investopedia.com/terms/u/universalbanking.asp

Market Business News. (2019, September 22). *What is a universal bank? definition and examples*. Market Business News. Retrieved April 16, 2023, from https://marketbusinessnews.com/financial-glossary/universal-bank/

Oesterreische Genossenschaftsverband. (n.d.). *Unsere Geschichte: Von 1872 bis heute*. OEGV - Österreichische Genossenschaftsverband . Retrieved March 19, 2023, from https://www.genossenschaftsverband.at/der-oegv/unsere-geschichte

Peterdy, K. (2022, December 5). *Corporate banking - What is Corporate Banking?* Corporate Finance Institute. Retrieved April 16, 2023, from https://corporatefinanceinstitute.com/resources/commercial-lending/corporate-banking/

Raiffeisen Bank International. (n.d.-a). *Raiffeisen Bank International - Who we are*. Raiffeisen Bank International . Retrieved March 19, 2023, from https://www.rbinternational.com/en/who-we-are.html

Raiffeisen Bank International. (n.d.-b). *Our History: RBI AND THE RAIFFEISEN BRAND*. Raiffeisen Bank International . Retrieved March 19, 2023, from https://www.rbinternational.com/en/who-we-are/facts-figures/history.html

Shareholder structure. Erste Group Bank AG. (n.d.). Retrieved April 7, 2023, from https://www.erstegroup.com/en/investors/share/shareholder-structure

Standard & Poor´s Global. (2023, January 16). *Key Sustainability Trends that will drive decision-making in 2023.* S&P Global. https://www.spglobal.com/esg/insights/featured/special-editorial/key-sustainability-trends-that-will-drive-decision-making-in-2023

United Nations. (n.d.). *Net-Zero Banking Alliance*. UNITED NATIONS ENVIRONMENT PROGRAMME FINANCE INITIATIVE. https://www.unepfi.org/net-zero-banking/

Volksbank Wien. (n.d.-a). *Restrukturierung - Volksbank Wien*. http://www.volksbankwien.at. Retrieved April 7, 2023, from http://web.archive.org/web/20151107062455/http://www.volksbankwien.at/volksbanken-verbund/ueber-den-volksbanken-verbund/restrukturierung

Volksbank Wien. (n.d.-b). *Wir über uns: Volksbank Wien*. http://www.volksbankwien.at. Retrieved April 16, 2023, from https://www.volksbankwien.at/hausbank/das-unternehmen/ueber-uns

Wien Geschichte Wiki. (2022, July 8). *Banken*. – Wien Geschichte Wiki. Retrieved April 10, 2023, from https://www.geschichtewiki.wien.gv.at/Banken

World Bank Group . (n.d.). *Social Dimensions of Climate Change*. World Bank. https://www.worldbank.org/en/topic/social-dimensions-of-climate-change

APPENDICES

Appendix 1: Austrian Banking Act (Bankwesengesetz), Art 1, Para. 1

§ 1. (1) Ein Kreditinstitut ist, wer auf Grund der §§ 4 oder 103 Z 5 dieses Bundesgesetzes oder besonderer bundesgesetzlicher Regelungen berechtigt ist, Bankgeschäfte zu betreiben. Bankgeschäfte sind die folgenden Tätigkeiten, soweit sie gewerblich durchgeführt werden:

1. Die Entgegennahme fremder Gelder zur Verwaltung oder als Einlage (Einlagengeschäft);
2. die Durchführung des bargeldlosen Zahlungsverkehrs und des Abrechnungsverkehrs in laufender Rechnung für andere (Girogeschäft);
3. der Abschluß von Geldkreditverträgen und die Gewährung von Gelddarlehen (Kreditgeschäft);
4. der Kauf von Schecks und Wechseln, insbesondere die Diskontierung von Wechseln (Diskontgeschäft);
5. die Verwahrung und Verwaltung von Wertpapieren für andere (Depotgeschäft);
6. die Ausgabe und Verwaltung von Zahlungsmitteln wie Kreditkarten, Bankschecks und Reiseschecks, wobei die Laufzeit der Kreditierung bei Kreditkarten nicht beschränkt ist;;
7. der Handel auf eigene oder fremde Rechnung mit
   a) ausländischen Zahlungsmitteln (Devisen- und Valutengeschäft);
   b) Geldmarktinstrumenten;
   c) Finanzterminkontrakten (Futures) einschließlich gleichwertigen Instrumenten mit Barzahlung und Kauf- und Verkaufsoptionen auf die in lit. a und d bis f genannten Instrumente einschließlich gleichwertigen Instrumenten mit Barzahlung (Termin- und Optionsgeschäft);
   d) Zinsterminkontrakten, Zinsausgleichsvereinbarungen (Forward Rate Agreements, FRA), Zins- und Devisenswaps sowie Swaps auf Substanzwerte oder auf Aktienindices („equity swaps");
   e) Wertpapieren (Effektengeschäft);
   f) von lit. b bis e abgeleiteten Instrumenten,

   sofern der Handel nicht für das Privatvermögen erfolgt;

7a. der Handel auf eigene oder fremde Rechnung mit Finanzinstrumenten gemäß § 1 Abs. 1 Z 6 lit. e bis g und j Wertpapieraufsichtsgesetz 2007 – WAG 2007, BGBl. I Nr. 60/2007, ausgenommen der Handel durch Personen gemäß § 2 Abs. 1 Z 11 und 13 WAG 2007;

8. die Übernahme von Bürgschaften, Garantien und sonstigen Haftungen für andere, sofern die übernommene Verpflichtung auf Geldleistungen lautet (Garantiegeschäft);

9. die Ausgabe von Pfandbriefen, Kommunalschuldverschreibungen und fundierten Bankschuldverschreibungen und die Veranlagung des Erlöses nach den hiefür geltenden besonderen Rechtsvorschriften (Wertpapieremissionsgeschäft);

10. die Ausgabe anderer festverzinslicher Wertpapiere zur Veranlagung des Erlöses in anderen Bankgeschäften (sonstiges Wertpapieremissionsgeschäft);

11. die Teilnahme an der Emission Dritter eines oder mehrerer der in Z 7 lit. b bis f genannten Instrumente und die diesbezüglichen Dienstleistungen (Loroemissionsgeschäft);

12. die Entgegennahme von Bauspareinlagen und die Vergabe von Bauspardarlehen nach dem Bausparkassengesetz (Bauspargeschäft);

13. die Verwaltung von Kapitalanlagefonds nach dem Investmentfondsgesetz - InvFG 1993, BGBl. Nr. 532/1993 Art II (Investmentgeschäft);

13a. die Verwaltung von Immobilienfonds nach dem Immobilien-Investmentfondsgesetz - ImmoInvFG, BGBl. I Nr. 80/2003 (Immobilienfondsgeschäft);

14. die Errichtung oder Verwaltung von Beteiligungsfonds nach dem Beteiligungsfondsgesetz, BGBl. Nr. 111/1982 (Beteiligungsfondsgeschäft);

15. das Finanzierungsgeschäft durch Erwerb von Anteilsrechten und deren Weiterveräußerung (Kapitalfinanzierungsgeschäft);

16. der Ankauf von Forderungen aus Warenlieferungen oder Dienstleistungen, die Übernahme des Risikos der Einbringlichkeit solcher Forderungen - ausgenommen die Kreditversicherung - und im Zusammenhang damit der Einzug solcher Forderungen (Factoringgeschäft);

17. der Betrieb von Geldmaklergeschäften im Interbankenmarkt;

18. die Vermittlung von Geschäften nach

    a) Z 1, ausgenommen durch Unternehmen der Vertragsversicherung;

    b) Z 3 ausgenommen die im Rahmen der Gewerbe der Immobilienmakler und der Vermittlung von Personalkrediten, Hypothekarkrediten und Vermögensberatung vorgenommene Vermittlung von Hypothekar- und Personalkrediten;

    c) Z 7 lit. a, soweit diese das Devisengeschäft betrifft;

d) Z 8.

19. (Anm.: aufgehoben durch BGBl. I Nr. 60/2007)
20. die Ausgabe von elektronischem Geld (E-Geldgeschäft)
21. die Hereinnahme und Veranlagung von Abfertigungsbeiträgen und Selbständigenvorsorgebeiträgen (Betriebliches Vorsorgekassengeschäft);
22. der schaltermäßige Ankauf von ausländischen Zahlungsmitteln (zB Geldsorten, Schecks, Reisekreditbriefen und Anweisungen) und der schaltermäßige Verkauf von ausländischen Geldsorten sowie von Reiseschecks (Wechselstubengeschäft);
23. (anm.: aufgehoben durch BGBl. I Nr. 66/2009)

Appendix 2: Austrian Banking Act, Art 1, Para. 1 (english)

§ 1. (1) A credit institution is any organization, which on the basis of §§ 4 or 103 Z 5 of this Federal Act or special federal regulations is entitled to conduct banking business. Banking transactions are the following activities, insofar as they are carried out commercially:

1. The acceptance of funds from other parties for the purpose of administration or as deposits (deposit business);
2. The provision of non-cash payment transactions, clearing services and current-account services for other parties (current account business);
3. The conclusion of money-lending agreements and the extension of monetary loans (lending business);
4. The purchase of cheques and bills of exchange, and in particular the discounting of bills of exchange (discounting business);
5. The safekeeping and administration of securities for other parties (custody business);
6. The issuance and administration of payment instruments such as credit cards, bankers' drafts and traveller's cheques, with no limitation applicable to the term of crediting in the case of credit cards;
7. Trading for one's own account or on behalf of others in:

a) Foreign means of payment (foreign exchange and foreign currency business); b) Money-market instruments;

c) Financial futures contracts, including equivalent instruments settled in cash as well as call and put options on the instruments listed in lit. a and d to f, including equivalent instruments settled in cash (futures and options business);

d) Interest-rate futures contracts, forward rate agreements (FRAs), interest-rate and currency swaps as well as equity swaps;

e) Transferable securities (securities business);

f) Derivative instruments based on lit. b to e; unless these instruments are traded for private assets;

7a. trading on one's own account or on behalf of others in financial instruments pursuant to Art 1 no. 7 lits. e to g, j and k Securities Supervision Act 2018 (WAG 2018; Wertpapieraufsichtsgesetz 2018) published in Federal Law Gazette I No. 107/2017, except in the case of trading conducted by persons pursuant to Art 2 para. 1 nos. 6, 12 and 13 WAG 2018 as well as trading provided that it is conducted using private assets;

8. The assumption of suretyships, guarantees and other forms of liability for other parties where the obligation assumed is monetary in nature (guarantee business);
9. The issuance of covered bonds in accordance with the Pfandbrief Act (PfandBG; Pfandbriefgesetz) published in Federal Law Gazette I No. 199/2021 (securities underwriting business);
10. The issuance of other fixed-income securities for the purpose of investing the proceeds in other banking transactions (miscellaneous securities underwriting business);
11. Participation in underwriting third-party issues of one or more of the instruments listed under no. 7 lit. b to f as well as related services (third-party securities underwriting business);
12. The acceptance of building savings deposits and the extension of building loans in accordance with the Building Society Act (BSpG; Bausparkassengesetz) (building savings and loan business);
13. The management of investment funds in accordance with the Investment Fund Act 2011 (InvFG 2011; Investmentfondsgesetz), Federal Law Gazette I No. 77/2011 (investment fund business);

13a The management of real estate investment funds in accordance with the Real Estate Investment Fund Act (ImmoInvFG; Immobilien-Investmentfondsgesetz), Federal Law Gazette I No. 80/2003 (real estate investment fund business);

14. repealed
15. The business of financing through the acquisition and resale of equity shares (capital financing business);
16. The purchase of receivables from the delivery of goods or services, assumption of the risk of non-payment associated with such receivables – with the exception of credit insurance – and the related collection of such receivables (factoring business);
17. The conduct of money brokering transactions on the interbank market;
18. The brokering of transactions as specified in a) No. 1, except for transactions conducted by contract insurance undertakings; b) No. 3, except for the brokering of mortgage loans and personal loans by real estate agents, personal loan and mortgage loan brokers, and investment advisors; c) No. 7 lit. a where this applies to foreign ex-change transactions; d) No. 8.

19. repealed

20. repealed

21. The acceptance and investment of severance payment contributions from salaried employees and self-employed persons (severance and retirement fund business);

22. The purchase of foreign means of payment (e.g. notes and coins, cheques, traveller's letters of credit and payment orders) over the counter and the sale of foreign notes and coins as well as traveller's cheques over the counter (exchange bureau business);

23. repealed.

Appendix 3: Amendment of the Capital Requirements Regulation (EU Commission, 2021), Art 4 n. 52d to 52i

'Environmental risk' means the risk of losses arising from any negative financial impact on the institution stemming from the current or prospective impacts of environmental factors on the institution's counterparties or invested assets, including factors related to the transition towards the following environmental objectives: (a) climate change mitigation ; (b) climate change adaptation; (c) the sustainable use and protection of water and marine resources; (d) the transition to a circular economy; (e) pollution prevention and control; (f) the protection and restoration of biodiversity and ecosystems; Environmental risk includes both physical risk and transition risk.

'Physical risk', as part of the overall environmental risk, means the risk of losses arising from any negative financial impact on the institution stemming from the current or prospective impacts of the physical effects of environmental factors on the institution's counterparties or invested assets;

'Transition risk', as part of the overall environmental risk, means the risk of losses arising from any negative financial impact on the institution stemming from the current or prospective impacts of the transition of business activities and sectors to an environmentally sustainable economy on the institution's counterparties or invested assets;"