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FMA GUIDE

FOR MANAGING SUSTAINABILITY RISKS

TABLE OF CONTENTS

Objectives and notes	3
Prevailing circumstances	3
Developments under Union law	7
Target Audience	9
I. Terms and Legal Bases	10
Sustainability	10
Sustainability factors	10
Sustainability risks	11
Climate Risks	12
Physical Risks	12
Transition Risks	13
Reciprocal effects between physical and transition risks	15
Indirect climate risks	16
Legal and Reputational Risks in relation to Sustainability	16
Material Legal Bases in Risk Management	17
II. Managing Sustainability Risks in Risk Management	21
General risk management requirements	21
Sustainability related data and ratings	22
Transmission paths of climate risks into existing risk categories	22
III. Managing Sustainability Risks in Strategy and Governance	26
The Relevance of Sustainability Risks in Strategy and Governance	26
Creation of an adequate data base	27
Implementation of Strategies by the Management Body	28
Role of the Supervisory Board	29
Role of the Risk Management Function	29
Role of Compliance	30
Role of the Internal Audit Function	30
Knowledge and human resources Management	30
Remuneration policies	31
Business Continuity Management (BCM)	31
IV. Managing sustainability risks in the case of transparency obligations at company level	32
Disclosures in accordance with the Disclosure Regulation and Non-financial Reporting	32
Company Reporting and Reflection of External Effects in the Balance Sheet	33
ANNEX A: Good Practices for Treating Sustainability Risks using Tools and Methodologies.	35
Identification and Measurement of Sustainability Risks	35
Climate Risk Heat Maps	35
Proportion of Companies in the portfolio, which disclose their CO ₂ emissions	35
Total or Proportion of Assets with CO ₂ exposure	36
Carbon Footprint	36
Sensitivity analyses	38
Scenario analyses and stress tests	39
(Climate) Value-at-Risk	39
Risk Monitoring & Early Warning Indicators	40
Controlling and Limiting Sustainability Risks	40
Criteria/Limits for Exclusion	41
Divestment	41
Best-in-Class Approach	41
Norms-based Screening	41
Positive Lists	42
Engagement and Exercising of Voting Rights	42
ANNEX B: Sources of information	43
Sources of information about initiatives, tools and methodologies	43
Information Sources for climate-relevant data and facts	51
Austria	51
Europe and International	52

OBJECTIVES AND NOTES

PREVAILING CIRCUMSTANCES

Increasing climate change harbours increased risks for the economy and society, to which entities supervised by the FMA are also exposed. Risks emanating from the social and governance fields may also negatively impact companies. Sustainability risks therefore cover risks in relation to environmental, social and governance factors (“ESG”) – see point I. Terms and Legal Bases.

Sustainability risks (and in particular climate risks) may not only influence the performance of individual assets and financial market participants, but may also potentially negatively influence financial stability.¹ Such risks may affect different industries and sectors at various stages of the value creation chains, and may even also negatively influence economic growth. The World Economic Forum’s Global Risks Landscape 2020² classifies climate change or climate action failure as the greatest risk. A number of other environmental risks are listed in the Top 10 risks.

As a consequence of the upcoming disclosure obligations, which cover the impact of one’s own economic activity on sustainability factors, greater significance is afforded to the indirect impacts of sustainability risks for the environment and society. Customers, investors and employees in particular increasingly consider which companies are making beneficial or less beneficial contributions towards achieving climate goals.

In addition to limiting global temperature increase to well below 2°C or if at all possible to 1.5°C above pre-industrial levels, the Paris Agreement, which was ratified by Austria³, states in Article 2 para. 1 lit. c that financial flows should be made consistent with low-CO₂ development⁴ and climate-resilient development. Since restricting the global temperature rise to 1.5°C⁵ is considered necessary for averting severe economic, social and ecological effects, the decision was passed by the European Council in December 2019 to achieve climate-

Unless stated otherwise all online sources were accessed on 13.01.2020.

¹ Cf. *Lamperti et al.*, The public costs of climate-induced financial instability, nature climate change 09/2019 as well as *Pointner/Ritzberger-Grünwald*, Climate change risk as a risk to financial stability, Financial Stability Report, 38, 2019.

² *World Economic Forum*, The Global Risks Report 2020, <https://www.weforum.org/reports/the-global-risks-report-2020/>.

³ as published in Federal Law Gazette III No. 197/2016 as amended.

⁴ The term CO₂ is used in this Guide to include CO₂ equivalents. All greenhouse gases covered in the Kyoto Protocol are therefore covered: carbon dioxide (CO₂, which serves as a benchmark), methane (CH₄), nitrous oxide (laughing gas, N₂O) and the group of fluorinated gases. The emission of greenhouse gases is weighted on the basis of their greenhouse gas potential and is expressed as a CO₂ equivalent. A full list of all gases, including all fluorinated gases (F-gases) may be found in Annex III in *United Nations, Framework Convention on Climate Change FCCC/CP/2011/9/Add.2*, <http://unfccc.int/resource/docs/2011/cop17/eng/09a02.pdf>. Further background information and sector-specific figures from the Austrian Greenhouse Gas Inventory can be found in *Environment Agency Austria (Umweltbundesamt)*, Austrian Climate Protection Report 2019 (Klimaschutzbericht 2019), <https://www.umweltbundesamt.at/fileadmin/site/publikationen/REP0702.pdf>.

⁵ Cf. *Intergovernmental Panel on Climate Change (IPCC)*, Special Report - Global Warming of 1.5 °C (2018), <https://www.ipcc.ch/sr15>.

neutrality by 2050.⁶ This will require a 50-55 % CO₂ reduction by 2030. The European Commission (EC) estimates that an additional annual investment of around € 260 billion/year throughout the EU will be required to achieve the targets.⁷ Under Regulation (EU) 2018/1999 of the European Parliament and of the Council on the Governance of the Energy Union and Climate Action, national energy and climate plans⁸ should ensure that climate and energy targets are achieved by 2030, and that Member States draw up long-term strategies lasting until 2050⁹. The Austrian Federal Government furthermore decided in its outline of its programme from 2020-2024 (*Regierungsprogramm 2020-2024*) to aim at already achieving a climate-neutral status by 2040.¹⁰ Further political and regulatory measures are therefore to be expected as well as the acceleration of climate protection measures.

The impacts of climate change are already clearly apparent, and Austria is particularly strongly affected. While the global mean temperature increase has been approx. 1°C since 1880, a 2°C increase has been observed for the same time period in Austria.¹¹ According to records of the Central Institute for Meteorology and Geodynamics (ZAMG; Zentralanstalt für Meteorologie und Geodynamik), the 14 warmest years since records began in Austria 252 years ago have all occurred in the most recent past.¹²

⁶ Cf. *European Council*, Conclusions from European Council meeting of 12.12.2019, EUCO 29/19, <https://data.consilium.europa.eu/doc/document/ST-29-2019-INIT/en/pdf>.

⁷ Cf. *European Commission*, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: United in delivering the Energy Union and Climate Action - Setting the foundations for a successful clean energy transition, COM(2019) 285 final, <https://ec.europa.eu/transparency/regdoc/rep/1/2019/EN/COM-2019-285-F1-EN-MAIN-PART-1.PDF>.

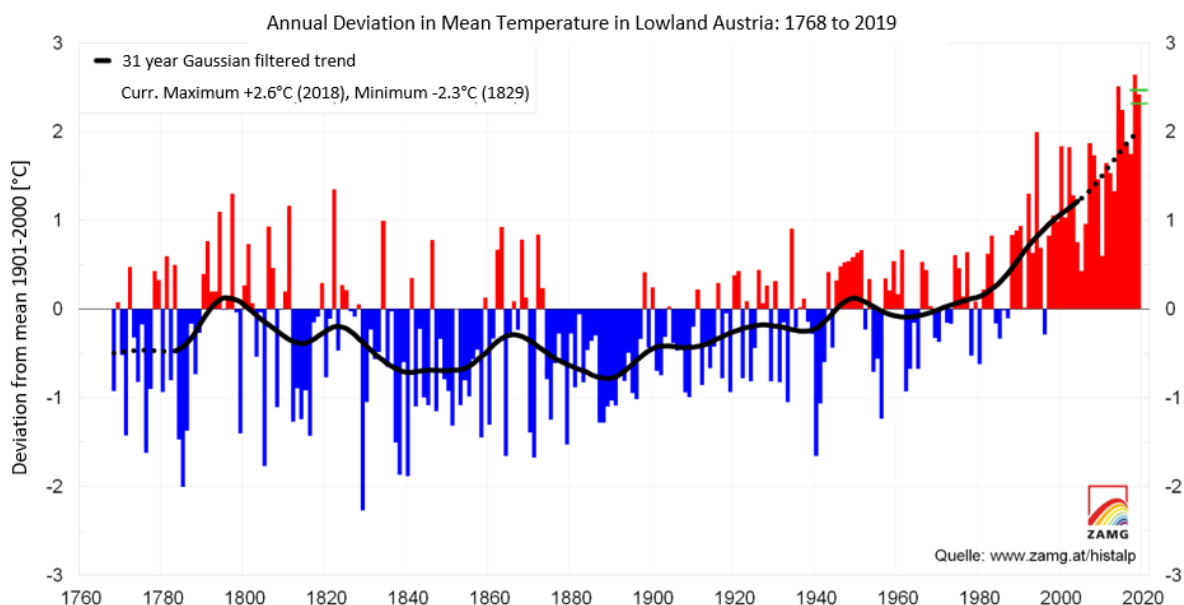
⁸ Cf. *Federal Ministry for Sustainability and Tourism (BMNT)*, Austrian National Energy and Climate Plan (in German only), https://www.bmnt.gv.at/umwelt/klimaschutz/klimapolitik_national/nationaler-energie-und-klimaplan.html.

⁹ Cf. *Federal Ministry for Sustainability and Tourism (BMNT)*, Austria's long-term strategy 2050 (in German only), <https://www.bmnt.gv.at/umwelt/klimaschutz/langfriststrategie-2050.html>.

¹⁰ Downloadable in German only at https://www.dieneuevolkspartei.at/Download/Regierungsprogramm_2020.pdf as well as <https://gruene.at/themen/demokratie-verfassung/regierungsbereinkommen-tuerkis-gruen>.

¹¹ Cf. *Austrian Panel on Climate Change (APCC)*, Austrian Assessment Report on Climate Change 2014 (AAR14) (in German only), <https://ccca.ac.at/wissenstransfer/apcc/apcc-aar14/austrian-assessment-report-2014-aar14> as well as *Environment Agency Austria (Umweltbundesamt)*, 12th State of the Environment Report: the Environmental Situation in Austria (2019) (Zwölfter Umweltkontrollbericht: Umweltsituation in Österreich (2019)) (in German only), <https://www.umweltbundesamt.at/fileadmin/site/publikationen/REP0684.pdf>.

¹² Cf. *Zentralanstalt für Meteorologie und Geodynamik (ZAMG)*, Klima / News / 2019 eines der drei wärmsten Jahre der Messgeschichte (EN: 2019 one of the three warmest years since records began), <https://www.zamg.ac.at/cms/de/klima/news/2019-eines-der-drei-waermsten-jahre-der-messgeschichte>.



Different sources of risk arise from the changing climate conditions, which in turn may differ by sector and region. Depending on climate zone, topography and geological zone, Austria’s mountainous areas, continental lowland regions and cities may be impacted differently by different climate change effects. Austria’s strategy for adapting to the consequences of climate change¹³ contains detailed information about sector-specific effects. The following climate change effects are particularly relevant for a large number of Austrian regions and sectors:

Consequences of Climate Change in Austria	Examples of Affected Sectors
Increased frequency of extremes in heat	<ul style="list-style-type: none"> - Agriculture - Forestry/timber industry (increased risk of forest fires, spread of pests [bark beetles], lower economic value of woods) - Construction industry - Transport and cabling infrastructures - All economic sectors (increased energy consumption for cooling purposes, greater heat stress for employees) - Healthcare sector (greater danger especially for the elderly as a result of heatwaves)
Lower amount of precipitation in summer and more frequent drought periods	<ul style="list-style-type: none"> - Agriculture (lower harvest yields) - Food industry - Forestry and timber industry - Water industry - Energy industry (reduced potential for hydroelectric power)

¹³ Cf. *Kronberger-Kießwetter/Balas/Prutsch*, Austrian Strategy for Adaptation to Climate Change (2017), <https://www.bmlrt.gv.at/english/environment/Climateprotect/Austrian-Strategy-for-Adaptation-to-Climate-Change.html>. Regional effects can be found in *Austrian Panel on Climate Change (APCC)*, Austrian Assessment Report on Climate Change 2014 (AAR14), <https://cca.ac.at/wissenstransfer/apcc/apcc-aar14/austrian-assessment-report-2014-aar14>, as well as in the regional climate scenarios for the respective provinces.

Consequences of Climate Change in Austria	Examples of Affected Sectors
	<ul style="list-style-type: none"> - Shipping (lower water levels) - Industry (lack of water for cooling)
Increased risk of flooding (of rivers), torrential rainfall (flooding), wet snow, thunder storms and hail	<ul style="list-style-type: none"> - Regionally concentrated endangering of assets - Agriculture - Forestry and timber industry - Transport, energy and business infrastructures - Residential areas (public facilities and residential buildings, commercial real estate, utility and waste disposal services) - Catastrophe protection
Reduction of the extent and volume of glaciers ¹⁴	<ul style="list-style-type: none"> - Winter tourism - Water industry
Increased risk of rockfalls, rockslides and landslides	<ul style="list-style-type: none"> - Residential areas and infrastructures in the Alpine region and the pre-Alpine lowland - Summer tourism in Alpine regions
Rising snowline and shortened duration of closed snow coverage	<ul style="list-style-type: none"> - Winter tourism - Water industry
Increased risk of extinction of species	<ul style="list-style-type: none"> - Agriculture and forestry - Biodiversity and stability of ecosystems
Greater risks of interruption of supply and value creation chains	<ul style="list-style-type: none"> - All industrial sectors - Agriculture and forestry - Transport - Trade (availability of goods) - Guaranteeing the food supply to the population - Social and healthcare sector (increased costs for balance nutrition and associated healthcare risks)

The consequences of climate change already cause considerable ecological, societal and economic damage due to more frequent and stronger extreme events, in addition to rising temperatures, and changed patterns and impacts of precipitation. The irregular occurrence of climate change-related damage complicates risk management.¹⁵

Practical example: Sustainability risks arising from flood events

Flood events primarily cause considerable damage to buildings and infrastructures. The costs of the 2002 floods in Austria were € 3 billion, while flooding in 2013 cost € 0.9 billion.¹⁶ A “century” flood occurring in the first half of this century could result in damages to buildings alone of up to € 4 billion.¹⁷ Currently around 400,000 buildings and various infrastructures in Austria are located in zones at risk of flooding. Buildings in exposed locations are however frequently

¹⁴ In addition, the reduction of the extent of glaciers also contributes towards warming as a result of the reduction in size of the reflection surface.

¹⁵ Cf. the presentation contained in *FMA, Bericht über die Lage der österreichischen Versicherungswirtschaft 2019* (Report on the State of the Austrian Insurance Industry 2019), 19, <https://www.fma.gv.at/versicherungen/offenlegung/lage-der-oesterr-versicherungswirtschaft/>; *FMA, Facts & Figures, Trends and Strategies 2020*, 84, <https://www.fma.gv.at/en/publications/facts-and-figures-trends-and-strategies/>.

¹⁶ Cf. *Kronberger-Kießwetter/Balas/Prutsch, Austrian Strategy for Adaptation to Climate Change* (2017), <https://www.bmlrt.gv.at/english/environment/Climateprotect/Austrian-Strategy-for-Adaptation-to-Climate-Change.html>.

¹⁷ Cf. *Steininger/König/Bednar-Friedl/Kranzl/Loibl/Prettenthaler, Economic Evaluation of Climate Change Impacts: Development of a Cross-Sectoral Framework and Results for Austria* (2015).

no longer insurable, or in the case of insured buildings, with insurance often only covering a fraction of the actual flood damage. Mudslides, landslides, rockslides, avalanches and forest fires also have high potential to cause damage.

The Guide now especially focuses on climate risks to be methodically addressed as part of risk management, which is currently also a top priority at both international and European level. The FMA nevertheless expects the appropriate consideration of all environment, social and governance-related sustainability risks (see Point I. Terms and Legal Bases about sustainability factors and risks).

DEVELOPMENTS UNDER UNION LAW

To achieve the goals set both in the Paris Agreement as well as the United Nations' Agenda 2030 (SDGs), the European Commission (EC) published an "Action Plan: Financing Sustainable Growth" in March 2018.¹⁸ Moreover, in December 2019 the Commission published its communication on "The European Green Deal"¹⁹ and announced a strategy for a sustainable financial industry.

Regulatory steps have already been initiated at European level for integrating sustainability risks into the risk management of financial market participants, in particular including the following new EU legislation, some of which has already been published in the EU's Official Journal:

- The European Commission's draft amendments to delegated acts in related to MIFID II, the UCITS Directive, AIFMD, IDD and Solvency II published on 8 June 2020 contain obligations regarding the integration of sustainability risks (general organisational requirements as well as the requirements for the risk management function of investment firms, investment fund management companies, alternative investment fund managers as well as insurance and reinsurance undertakings).²⁰
- Regulation (EU) 2019/2088 of the European Parliament and of the Council on sustainability-related disclosures in the financial services sector (the "Disclosure Regulation") contains cross-sector transparency obligations for financial market participants and financial advisers: In the future, information will be required to be

¹⁸ Cf. *European Commission*, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Action Plan: Financing Sustainable Growth, COM(2018) 97 final, <https://ec.europa.eu/transparency/regdoc/rep/1/2018/EN/COM-2018-97-F1-EN-MAIN-PART-1.PDF>.

¹⁹ *European Commission*, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: The European Green Deal, COM(2019) 640 final, https://eur-lex.europa.eu/resource.html?uri=cellar:b828d165-1c22-11ea-8c1f-01aa75ed71a1.0002.02/DOC_1&format=PDF

²⁰ The drafts were preceded by technical advice from ESMA (<https://www.esma.europa.eu/press-news/esma-news/esma-submits-technical-advice-sustainable-finance-european-commission>) and EIOPA (https://www.eiopa.europa.eu/content/eiopa-submits-advice-sustainable-finance-european-commission_en) on 30 April 2019 to the European Commission. At the time of this Guide being published, the European Commission's drafts had been published for public consultation running from 8 June 2020 until 6 July 2020, <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives?page=1&topic=FINANCE>.

published on company websites about the integration of sustainability risks at company level, as well as a description of the integration of sustainability risks and their potential impacts to be included in pre-contractual information for financial products. The Disclosure Regulation has already been published in the Official Journal of the EU and began its gradual phasing-in on 29 December 2019. The transparency rules contained in the Regulation will be specified further by means of Regulatory Technical Standards (RTS, delegated EU regulations).²¹

- Along with the Disclosure Regulation, Regulation (EU) 2019/2089 of the European Parliament and of the Council amending Regulation (EU) 2016/1011 as regards EU Climate Transition Benchmarks, EU Paris-aligned Benchmarks and sustainability-related disclosures for benchmarks has already been published in the Official Journal and is being phased in gradually since 30 April 2020. The provisions contained therein are being specified further by means of delegated acts.²²
- 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 the Official Journal on 22 June 2020, and in terms of disclosure obligations extends the scope of the Disclosure Regulation by some specific reporting obligations. Information is required to be published about how and to what extent the underlying investments behind a financial product are invested in ecologically sustainable economic activities in accordance with the Taxonomy Regulation. Furthermore for companies that are required to disclose non-financial information in accordance with Article 19a or Article 29a of Directive 2013/34/EU, they have to include information in their non-financial statement or consolidated non-financial statement about whether/how and to what extent the company’s activities are associated with ecologically sustainable economic activities in accordance with the Taxonomy Regulation.

This Guide should generally serve as guidance for entities supervised by the FMA in considering sustainability risks within the scope of their business activities, and is intended in particular to also prepare them for the application of the Disclosure Regulation and the Taxonomy Regulation.²³

Information about the relevant national legal bases can be found under Material Legal Bases in risk management in point I. Terms and Legal Bases.

²¹ At the time of publication, the RTS were still being drafted and therefore have not yet been published in the Official Journal.

²² At the time of this Guide being published, the delegated acts were still being drawn up by the European Commission and therefore have not yet been published in the Official Journal. See <https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12020-Minimum-standards-for-benchmarks-labelled-as-EU-Climate-Transition-and-EU-Paris-aligned-Benchmarks>

²³ Recital no. 12 of the Disclosure Regulation states: “In order to comply with their duties under this [Regulation], financial market participants and financial advisers should integrate in their processes, including in their due diligence processes, and should assess on a continuous basis not only all relevant financial risks but also including all relevant sustainability risks that might have a relevant material negative impact on the financial return of an investment or advice. Therefore, financial market participants and financial advisers should specify in their policies how they integrate those risks and publish those policies.”

TARGET AUDIENCE

The FMA is aware of the increasing sustainability risks and in particular climate-related risks, and believes in light of the increased risk situation that correspondingly robust precautions are necessary in risk management and should be appropriately included in the supervised entities' regular risk management processes. The FMA has been asked frequently by a wide range of financial market participants, especially supervised entities, for guidance about how to deal with sustainability risks. This FMA Guide therefore strives to provide an overview of definitions, requirements and safeguards regarding the handling of sustainability risks.

This Guide is addressed to all entities supervised by the FMA²⁴ on a cross-sector basis, especially credit institutions²⁵, insurance undertakings, investment fund management companies, alternative investment fund managers, investment firms as well as *Pensionskassen* (pension companies) and occupational severance and retirement funds. Examples will then address the existing factual and legal idiosyncracies of the respective sectors.²⁶

The Guide does not constitute a legal regulation. It is intended to provide supervised entities with know-how, while also promoting the development of a common understanding. No rights and obligations extending over and above the provisions of the law can be derived from this Guide. Due to the significance and the current dynamic attached to this issue, in particular at European level, it may be necessary to update the Guide once necessitated by important new developments. However, we also recommend supervised entities to independently observe relevant developments and react appropriately.

The explanations contained in this Guide are to be considered in accordance with the principle of proportionality, so that the size and internal organisation, and the nature, scope and complexity of the activities or transactions, as well as the risk structure of the respective supervised entity is taken into account in determining appropriate measures, systems and processes in relation to the treatment of sustainability risks. However, a supervised entity with a small amount of total assets might nevertheless still be exposed to strong sustainability risks and consequently would have to adhere to increased risk management requirements.

²⁴ cf. Article 2 of the Financial Market Authority Act (FMABG; Finanzmarktaufsichtsbehördengesetz), which states which material legal acts have been assigned to the FMA to enforce.

²⁵ On the basis of Regulation (EU) No. 1024/2013 (SSM-R), on 4 November 2014 the European Central Bank (ECB) took over supervision of all banks in the Euro area. Significant credit institutions as defined in Article 6(4) SSM-R are therefore subject to direct supervision by the ECB in relation to the areas of responsibility listed in Article 4 (1) SSM-R within the scope of the Single Supervisory Mechanism (SSM). This provision in particular cites ensuring compliance with the requirements on credit institutions to have in place robust governance arrangements, including the fit and proper requirements for the persons responsible for the management of credit institutions, risk management processes, internal control mechanisms, remuneration policies and practices and effective internal capital adequacy assessment processes. In summary, this Guide is therefore addressed to supervised credit institutions, provided they are subject to direct supervision by the FMA.

²⁶ The rules relating to the non-financial declaration are addressed to the circle of entities that are of public interest pursuant to Articles 243b and 267a UGB in conjunction with Article 19a or Article 29a of Directive 2013/34/EU which fulfil the criteria on the reporting dates for the financial statement, of employing more than 500 employees as an annual average (Article 221 para. 6 UGB). Entities that are supervised by the FMA are the principle addressees of this FMA Guide, although it may also be applied by other entities.

This Guide does not prevent addressed supervised entities from determining higher standards and better methodologies for treating sustainability risks!

I. TERMS AND LEGAL BASES

SUSTAINABILITY

The United Nations has defined 17 sustainable development goals (SDGs) within its Resolution on “Transforming our world: the 2030 Agenda for Sustainable Development”.²⁷ The Republic of Austria as a Member State of the United Nations is obliged to implement these sustainable development goals.²⁸ Ultimately, under international law, sustainability can be seen as fulfilment of the 17 SDGs.

SUSTAINABILITY FACTORS

According to Article 2 (24) of the Disclosure Regulation, ‘sustainability factors’ mean environmental, social and employee matters, respect for human rights, anti-corruption and anti-bribery matters. The following table shows a (merely demonstrative) presentation of sustainability factors for better comprehensibility.²⁹

Environment	Social and Employee Issues	Governance
<ul style="list-style-type: none"> - Climate protection - Adjustment to climate change - Protection of biodiversity - Sustainable use and protection of water and maritime resources - Transition to a circular economy, the avoidance of waste, thermal waste treatment and recycling 	<ul style="list-style-type: none"> - Observance of recognised labour law standards (e.g. no child labour, no forced labour, no discrimination)³⁰ - Observance of Employee Health and Safety - Appropriate remuneration, fair working conditions, diversity, and training and development opportunities 	<ul style="list-style-type: none"> - Tax honesty - Measures for prevention of corruption - Sustainability management by the management board - Remuneration dependent on sustainable business activities - Facilitation of whistle blowing

²⁷ Cf. *United Nations*, Sustainable Development Goals, <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>

²⁸ Cf. *Federal Chancellery*, Sustainable Development – 2030 Agenda for Sustainable Development, <https://www.bundeskanzleramt.gv.at/en/topics/sustainable-development-2030-agenda-sdgs.html>.

²⁹ Cf. *Bundesanstalt für Finanzdienstleistungen*, Guidance Notice on Dealing with Sustainability Risks, 13, https://www.bafin.de/SharedDocs/Downloads/EN/Merkblatt/dl_mb_Nachhaltigkeitsrisiken_en.pdf. The factors listed in BaFin’s Guidance Note on Dealing with Sustainability Risks in relation to Environmental, Social and Governance (ESG) risks were adapted and enlarged for this table.

³⁰ Cf. e.g. *International Labour Organization (ILO)*, ILO Core Labor Standards, <https://www.ilo.org/global/standards/lang-en/index.htm>. In Austria this means observance of the Employee Health and Safety Act (ASchG; ArbeitnehmerInnenschutzgesetz) originally published in Federal Law Gazette no. 450/1994 as amended and regulations issued on the basis of that act.

<ul style="list-style-type: none"> - Avoidance of hazardous (incl. radioactive) waste - Avoidance and reduction of pollution (incl. air pollution) or destruction of the environment - Protection of healthy ecosystems - Sustainable land use - Plant-based nutrition and sustainable livestock farming 	<ul style="list-style-type: none"> - Trade union rights and freedom of assembly (freedom of association) - Guaranteeing adequate product safety, including health protection - Projections for combating inequality or for social coherence / social integration of for the benefit of financially or socially disadvantaged groups of the population 	<ul style="list-style-type: none"> - Safeguarding of employee rights³¹ - Data protection guarantees - Disclosure of information - Transparency of information towards consumers - Installation of proprietary quality management systems and mediation bodies for customer complaints
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SUSTAINABILITY RISKS

Sustainability risks in this Guide are defined as events or conditions in relation to sustainability factors that, if they occur, could cause an actual or a potential material negative impact on the value of the investment or the assets, financial and earnings situation as well as a company's reputation.³²

It should be noted that a general differentiation is made between two different types of sustainability risks (double materiality / significance). Firstly, risks from sustainability factors that may have negative impacts on assets or companies (financial materiality, "outside-in"). Secondly, other risks that are caused by companies and may negatively influence sustainability factors (societal or ecological materiality, "inside-out"). This FMA Guide primarily relates to the handling of sustainability risks that may have a negative effect on assets and companies. Financial market participants that appropriately integrate such sustainability risks into their processes are not necessarily "sustainable" or do not necessarily have a "sustainable" business model. On the other hand, "sustainable" investments are not necessarily exposed to lower sustainability risks. It is also necessary to state that performing well in relation to some sustainability factors does not mean that a company's overall business conduct is "sustainable". A company's social governance (e.g. its positive consideration of employee rights, professional development, employment contracts, handling of trade union representation) may even in some cases be at odds with ecological principles (e.g. ecological manufacturing processes, sparing use of materials). Such reciprocal effects between sustainability factors are to be considered in the risk assessment.

³¹ See also the category "Social and Employee Issues".

³² Cf. also Article 2 (22) Disclosure Regulation. This definition of sustainability risks is based on the definition of "sustainability risks" in the Disclosure Regulation as deviates from the definition pursuant to Articles 243b and 267a UGB in conjunction with Article 19a or Article 29a of Directive 2013/34/EU.

CLIMATE RISKS

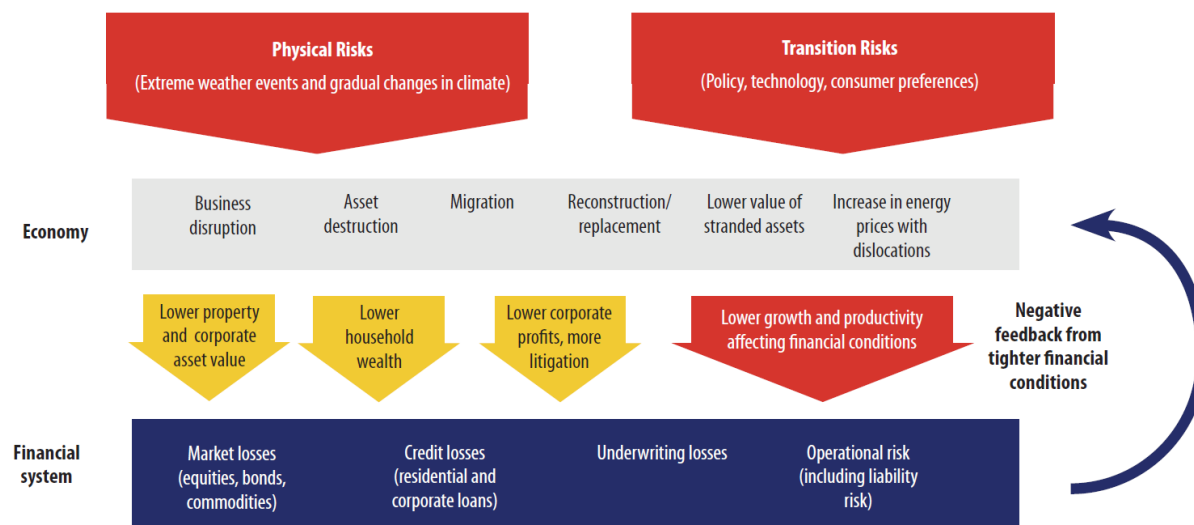
Climate risks cover all risks arising due to or which are intensified as a result of climate change. Companies and their value creation chains (especially suppliers) may be directly or indirectly affected, whether through changing climate conditions and potential natural hazards, regulatory standards in climate protection, or by technological developments and societal changes. Climate-based risks can be roughly divided into two risk categories³³, which may have reciprocal effects:

- Physical risks as a consequence of changed climate conditions
- Transition risks as a consequence of development towards a low-CO₂ economy and society

See also the graphical overview published by staff members of the International Monetary Fund (IMF):³⁴

Physical and transition risks

The risks from climate change to the economy have two basic channels, but many potential impacts.



PHYSICAL RISKS

Physical risks from climate change result directly from the consequences of climate change e.g. an increase in average global temperature, or natural catastrophes and extreme weather events such as flooding, periods of extreme heat/drought, storms and hail occurring more frequently. The primarily affected sectors in particular include agriculture and forestry,

³³ Cf. *Task Force on climate-related Financial Disclosures (TCFD)*, Recommendations of the Task Force on Climate-related Financial Disclosures – Final Report (2017), <https://www.fsb-tcfd.org/wp-content/uploads/2017/06/FINAL-TCFD-Report-062817.pdf>.

³⁴ *Grippa/Schmittmann/Suntheim*, Climate Change and Financial Risk, IMF Finance & Development (2019), 27, <https://www.imf.org/external/pubs/ft/fandd/2019/12/pdf/climate-change-central-banks-and-financial-risk-grippa.pdf>.

foodstuffs production, the (foodstuffs) transport sector, the food trade, the real estate sector, the healthcare sector, tourism, the energy sector, the water sector as well as infrastructure. However, financial market participants may also be directly affected, e.g. their office buildings, server premises, or as a result of write-downs of participations in affected companies in the real economy.

The risk potential arising from physical risks for financial market participants depends on the exposure to the assets and value creation chains affected by physical risks. Physical risks are considered in the short- to medium-term as a reduced risk for the financial market, but may already bear significant risks for individual supervised entities. Furthermore, in the medium- to long-term an increase in physical risks is to be expected, unless effective climate protection measures are taken promptly. Furthermore, measures must to be taken to adapt to rapidly changing climate conditions. Even if temperature increase is successfully limited to well below 2°C, certain consequences of climate change will nevertheless not be preventable.³⁵ The earlier suitable climate protection measures are taken by companies, the public sector and private households, the lower the probability of realisation and extent of damage of physical risks, and the lower the costs of damages and the costs for adaptive measures will be.

Practical example: sustainability risks in the forestry industry

The amount of damaged timber in the forestry industry increased by 75 % in 2018: 9.9 million cubic metres or more than half of the timber felled was damaged timber, an amount again exceeded in 2019, with 10 million cubic metres of damaged timber.³⁶ Storms, wet snow, extreme drought and the rapid spread of bark beetles are responsible for this. This development constitutes an existential threat for many owners of woods, as well as a high risk for downstream industries, whose value creation chain depends on the adequate availability of high quality timber.

From the outset, managing physical risks has been an essential part of the typical business activity of (re)insurance undertakings. Due to climate change, however, the probability of realisation and the effects of such events change, and therefore historical data on the frequency and the amount of damage (in previous years) alone no longer provides reliable indicators on the prospective risks for specific regions and industries. The more frequently such risks are correctly measured and evaluated, the greater the probability that risk premiums adapt for certain forms of investments. Since physical risks often occur in spatial correlation, from a physical source of risk, a concentration risk may arise for supervised entities active in a regionally concentrated manner, which must be taken into consideration.

TRANSITION RISKS

Transition risk is the term for a risk arising through the transition to a climate-neutral and resilient economy and society and which therefore may lead to a devaluation of assets, such

³⁵ Cf. Intergovernmental Panel on Climate Change (IPCC), Special Report - Global Warming of 1.5 °C (2018), <https://www.ipcc.ch/sr15/>.

³⁶ Cf. the evaluation of data supplied by the Austrian Regional Chambers of Agriculture (LKÖ; Landwirtschaftskammer Österreich) of 06 December 2019 cited in *Forstzeitung*, Schadholz 2019 auf 10 Mio. fm geschätzt ("Damaged timber estimated at 10 million cubic metres in 2019"), <https://www.forstzeitung.at/aktuelles/2019/12/oesterreich--schadholz-auf-10-mio-fm-geschaetzt.html>.

as changes in political and legal conditions in the real economy (introduction of a CO₂ tax, changes in construction codes and zoning, rules regarding reliability of supply, different treatment of exposures with higher sustainability risks, etc.), technological developments (e.g. renewable energies) and changes in consumer behaviour. Energy generation using fossil fuels and high emissions sectors may be considered as the primarily affected sectors, with business models based on the cheap availability of fossil energy or with high process emissions (e.g. the cement, iron and steel industries). However industries, whose products cause high emissions are also at threat (e.g. automotive manufacturing using combustion motors). Other primarily affected sectors are: exploration for, and production, refining, and distribution of mineral oil products, the exploration for, production and distribution of natural gas, operating of aviation companies, operating of road haulage companies, as well as the operating haulage companies that are heavily dependent on transportation. In this regard, the risk of “stranded assets” must also be highlighted.³⁷ Furthermore, supervised entities may also be directly affected, e.g. due to changes in regulations about the energy efficiency for office buildings.

Practical example: changes in behaviour in consumption of foodstuffs

Transition risks may arise as a result of changes in the purchasing or dietary behaviour of consumers. In particular business models that are based on the low-cost production and marketing of foodstuffs that are high in sugar, salt, fat and/or energy, or foodstuff value creation chains that are connected to the deforestation of rainforests and long transportation routes (CO₂ footprint), are to be considered as harmful to health and climate. Such business models are increasingly exposed to an operational risk – in addition to price increases due to levying of CO₂ taxes an increased taxation on ingredients in foodstuffs (e.g. taxes on foodstuffs with a high sugar content) is also possible. In addition to the operational risk, increased public awareness regarding sustainable nutrition also increases such companies’ reputational risk.

The risk potential arising from transition risks for financial market participants therefore depends on their exposure to high-emission and energy-intensive industries as well as industries with high emissions in the value creation chain.³⁸ Value creation in the financial sector itself is usually not particularly CO₂ intensive, however, for example, the granting of loans to, the buying of securities in, or the insurance for companies with environmentally damaging business models may cause significant transition risks for supervised entities. To enable such risks to be correctly mapped, it is necessary for the real economy to state CO₂ emissions and for suitable metrics to be disclosed. In such cases, both the total amount of annual CO₂ emissions as well as the CO₂ intensity form important metrics, to be able to conduct an appropriate risk assessment.³⁹

³⁷ In this case assets are concerned, the earning capacity or market value of which falls in an unexpectedly drastic way, in extreme cases until worthless. Examples include power stations, that may no longer be operated due to changes in regulatory conditions e.g. energy efficiency criteria, or oil or gas fields, that are no longer profitable or permissible to open up or operate.

³⁸ It should be noted that in the transition period towards sustainable business that “reverse” transitions risks might also occur, e.g. short-term (competitive) disadvantages for the pioneers (e.g. reduced performance, investment in advance, being excluded from certain business relationships), which will be overcome in the medium-to-long-term by improved predisposition to risk.

³⁹ It is significant that companies not only state the emissions caused in their own operations (Scope 1), but also the indirect emissions from buying in of electricity, heat and cooling (Scope 2) as well as the emissions in the value creation chain (Scope 3).

Practical example: Categories (Scopes) of greenhouse gas emissions in accordance with the Greenhouse Gas Protocol⁴⁰

Scope 1 covers all direct GHG emissions, which are caused by a company itself. The main causes include the deployment of fossil fuels for the primary production of energy (electricity, warmth and cooling). In addition to direct emissions from combustion processes of fixed (e.g. boilers) and mobile plants (e.g. vehicle fleets), Scope 1 also covers direct emissions of exhaust gases (e.g. coolants from air conditioning and refrigeration systems) as well as direct emissions from (industrial) processes.

Scope 2 covers those GHG emissions that are directly caused by the energy suppliers of an entity, e.g. from combustion processes for the generation of electricity, district heating, district cooling and steam purchased by the company. Emissions from the supplying of energy carriers that are to be burnt belong to Scope 3.

Scope 3 covers all GHG emissions arising from the upstream and downstream value creation chain of the undertaking under observation, provided that they are not already taken into consideration in Scope 1 and Scope 2. They therefore contain all indirect GHG emissions that are caused by third parties in relation to the activities of an undertaking. Examples include those emissions that occur during the supply chain (e.g. purchased operating equipment, commodities, semi-finished goods), as well as those emissions that are caused during the usage phase of products or by services (e.g. leasing, financial services, cars with combustion engines).

While physical risks relating to the entire financial market in the short- to medium-term are considered to be lower risk, transition risks may have earlier effects. In such a case, an orderly transition towards climate-friendly investments as opposed to an abrupt exit from emissions- and energy-intensive assets should be strived for as mitigation for transitions risks and is associated with lower economic costs in comparison to an abrupt exit.⁴¹ An orderly transition assumes that the climate-friendly orientation of the business model is strategically planned, is quickly initiated and purposefully implemented.

RECIPROCAL EFFECTS BETWEEN PHYSICAL AND TRANSITION RISKS

Physical risks and transition risks are subject to strong reciprocal effects. An increase in physical risks is therefore to be expected, as long as a transition towards a climate-neutral and resilient economy is not initiated. On the other hand, physical risk may be reduced where effective climate protection measures are taken in a timely manner, which however lead to transition risks. An unexpectedly rapid increase in physical risk – in particular by not taking climate protection measures in a timely manner – might necessitate a rapid changeover towards a climate-neutral and resilient economy, which in turn leads to high transition risks.

⁴⁰ For further information about the Greenhouse Gas Protocol (GHG Protocol) see: <https://ghgprotocol.org/>. See also footnote 4 about the terminology used in this document (“greenhouse gases”, “CO₂” etc.).

⁴¹ In contrast to “divestment”, an “engagement” approach (dialogue with undertakings or their management, so that they initiate a climate-friendly orientation of their business model) is to be adopted as a strategy for an orderly transition.

INDIRECT CLIMATE RISKS

As well as the direct impact of physical risks and transition risks, climate risks can also indirectly affect financial market participants. In the context of climate change, the following examples can be given:

- Increased risks of productivity losses due to the burden of disease (e.g. greater risk of vector-based illnesses such as borreliosis (Lyme disease) that may lead to total incapacity for work; increased risk of health problems due to heat);
- Increased risk of productivity losses due to pandemics;
- Increased risk of staffing shortages in specific sectors due to the increased competition for staff, that arises due to the climate-induced increased requirement for medical and care staff and which is exacerbated further by demographic change;
- Increased risk of interruptions or overloads across different sectors with corresponding knock-on consequences for other sectors (e.g. failure of harvests leading to reduced levels of available produce, resulting in lower processing and sales).

LEGAL AND REPUTATIONAL RISKS IN RELATION TO SUSTAINABILITY

As a result of increasing sustainability risks, legal and reputational risks for companies also rise. A global increase in judicial proceedings is being observed, in which aggrieved parties or activists are using lawsuits to affect a change in the behaviour of individual companies or authorities or governments (in a broader sense “strategic litigation”, or in relation to climate risks in a narrower sense “climate litigation”).⁴² For this purpose, aggrieved parties or activists attempt inter alia to assert damages claims or strict liability in tort against business operators, whose conduct increases the probability of physical risks being realised (e.g. as a result of high carbon dioxide emissions).

In addition to legal risks, reputational risks also increase, such as calls for consumers to boycott certain products or services considered to be damaging to the environment, or to stop purchasing goods manufactured using child labour or forced labour. In extreme cases, reputational risks may place the medium- to long-term viability of business models in question.

Furthermore, with the increasingly frequent offering of “green” or “environmentally friendly” investments and financial products, there is also an increased risk of “greenwashing”. Greenwashing is understood as the practice of marketing financial products as being “green” or “environmentally friendly”, despite their not conforming to underlying environmental standards. “Greenwashing” is focused on obtaining an unfair market advantage against competitors, and may arise from unfair advertising, and in some cases may even constitute activities punishable under penal law. Adequate risk management limits legal and reputational

⁴² Cf. *Bloomberg*, Climate Change Warriors’ Latest Weapon of Choice Is Litigation, 24 May 2018, <https://www.bloomberg.com/graphics/2018-climate-change-lawsuits/>.

risks that may arise from “greenwashing” – both in the form of active “greenwashing” by supervised entities, as well as greenwashing in their portfolios and investments.

Practical example: voluntary sustainability standards

Where the obligation of supervised entities to observe sustainability standards is voluntary⁴³, processes are necessary that allow the effective checking of compliance with such standards. Voluntary standards for sustainable investments often stipulate the use of funds must be checked by an external expert⁴⁴. Cooperation with external certification bodies and experts, where sustainability audits of voluntary standards are conducted, must be adequately designed.

MATERIAL LEGAL BASES IN RISK MANAGEMENT

Sectoral regulations apply for all supervised entities addressed by this Guide, obliging them to identify, measure, assess, control, monitor and limit risks. In so doing, the responsibility lies with the respective supervised entity to have internal methods or their own risk indicators in place. In assessing the risks, supervised entities are required to take into consideration, in accordance with the prevailing legal situation, all factors of influence for the assessment of risks, including any risk factors in relation to the environment, society and governance (ESG).

For **credit institutions**, Article 39 of the Austrian Banking Act (BWG; Bankwesengesetz) stipulates the general due diligence regulations to be observed by directors. They are required, inter alia, to obtain information on and to control, monitor and limit the risks of banking transactions and banking operations using appropriate strategies and mechanisms, and have in place plans and procedures pursuant to Article 39a BWG. For this purpose, administrative, accounting and controlling procedures must be implemented commensurate to the nature, scope and complexity of the banking transactions conducted. Article 39 para. 2b BWG lists the respective types of risk to be taken into account: e.g. credit risk, market risk, operational risk etc. Sustainability risks⁴⁵ are subsumed within the respective applicable risk categories and ultimately taken into consideration accordingly. Furthermore, the FMA’s Regulation on Credit Institution Risk Management (KI-RMV; Kreditinstitute-Risikomanagementverordnung) defines the minimum requirements for the orderly identifying, assessing, controlling and limitation of types of risk pursuant to Article 39 para. 2b BWG.⁴⁶

⁴³ e.g. UN Principles for Responsible Investment, Montreal Carbon Pledge or Austrian Ecolabel for Sustainable Investment Products.

⁴⁴ Cf. the (voluntary) EU Green Bond Standard, proposing the inclusion of external experts in supervision – *EU Technical Expert Group on Sustainable Finance*, Report on EU Green Bond Standard – Overview, https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/190618-sustainable-finance-teg-report-overview-green-bond-standard_en.pdf as well as https://ec.europa.eu/info/publications/sustainable-finance-teg-green-bond-standard_en.

⁴⁵ It should be noted that sustainability risks, as already defined in this Guide, should not be confused with risks arising from “non-sustainable lending”. In contrast to sustainability risks, which take into consideration ESG factors (this term is used frequently in this Guide), the term “sustainable lending” relates according to the definition of the Financial Market Stability Board (FMSG) to the aspects of requiring borrowers to have an adequate down-payment, ensuring that the term of the loan is not disproportionately long, and taking into consideration the development of the borrower’s income situation across their lifetime (cf. *Finanzmarktstabilitätsgremium (FMSG)*, Press Release relating to the 17th Meeting of the Financial Market Stability Board, <https://www.fmsg.at/en/publications/press-releases/2018/17th-meeting.html>).

⁴⁶ In the interests of completeness, please also consult *European Banking Authority (EBA)*, Final Report on the EBA Guidelines on loan origination and monitoring, EBA/GL/2020/06, https://eba.europa.eu/sites/default/documents/files/document_library/

In the case of **payment institutions**, the directors of the payment institution in their management of the payment institution pursuant to Article 20 para. 2 of the Payment Services Act 2018 (ZaDiG 2018; Zahlungsdienstegesetz 2018) shall apply the due diligence and care of a prudent and conscientious director as defined in Article 84 para. 1 of the Stock Corporation Act 1965 (AktG 1965; Aktiengesetz 1965), as published in Federal Law Gazette No. 98/1965. In so doing, they shall in particular inform themselves of the risks associated to payment services business and payment services operations and manage, monitor and limit this risk through adequate strategies and procedures while also ensuring the solid and prudent management of the payment institution. For this purpose, appropriate measures are to be implemented for governance arrangements, accounting and controlling procedures to ensure that the payment institution is able to fulfil its obligations. For **electronic money institutions**, pursuant to Article 13 of the Electronic Money Act 2010 (E-Geldgesetz 2010), the due diligence requirements defined in ZaDiG 2018 shall generally be applied.

Insurance and reinsurance undertakings are required to establish an effective risk management system covering all necessary strategies, processes and reporting procedures to be able to detect, measure, monitor, manage and report about all actual and potential risks, both on an individual and aggregated basis as well as the mutual interdependencies between these risks (Article 110 Insurance Supervision Act 2016 (VAG 2016; Versicherungsaufsichtsgesetz 2016)). In order to ensure that insurance and reinsurance undertakings only invest in assets where this is guaranteed, they must develop their own risk indicators to be deployed during the investment stage and which cover all material risk indicators (Article 124 para. 1 no. 1 VAG 2016 in conjunction with Article 7 of the Insurance Undertakings Investment Regulation (VU-KAV; Versicherungsunternehmen Kapitalanlageverordnung)).

Pensionskassen (pension companies) where ecological, social and governance-related factors are taken into account in investment decisions, must assess risks that have recently arisen or that are to be expected, inter alia risks in relation to climate change, the use of natural resources and the environment as well as social risks and risks in conjunction with a reduction of the value of assets as a result of regulation being amended. *Pensionskassen* must use methods that are appropriate in relation to the magnitude, nature, scope and complexity of the *Pensionskasse's* activities and to describe them in its Own Risk Assessment (ORA) (Article 22a para. 3 no. 8 of the *Pensionskassen* Act (PKG; Pensionskassengesetz) in conjunction with Article 21a para. 3 no. 9 PKG in conjunction with Article 4 para. 3 no. 7 of the Risk Management Regulation for Pensionskassen 2019 (PK-RiMaV 2019; Pensionskassen-Risikomanagementverordnung 2019) as well as Article 25 para. 1 no. 9 PKG, where, under the prudent person rule, the potential long-term effects of the investment of an asset allocated to an investment and risk-sharing group may be taken into account with regard to the relevant environmental, social and governance factors). The written declaration on the investment

[Publications/Guidelines/2020/Guidelines on loan origination and monitoring/884283/EBA GL 2020.06 Final Report on GL on loan origination and monitoring.pdf](#). The report contains provisions regarding ESG risks in point 4.3.5 "Environmental, social and governance factors" as well as in point 4.3.6 on "Environmentally sustainable lending".

policy principles for every investment and risk-sharing group shall cover the selection of assets in accordance with ethical, ecological and/or social criteria (Article 25a para. 1 no. 6 PKG).

With regard to risk management, **corporate provision funds** – in addition to the general due diligence obligations pursuant to Article 39 BWG as special credit institutions – are required pursuant to Article 30 of the Company Employee and Self-Employment Provisions Act (BMSVG; Betriebliches Mitarbeiter- und Selbständigenvorsorgegesetz) to conduct their corporate provision fund transactions in the interest of the entitled beneficiaries. In so doing particular consideration must be taken in relation to security, profitability as well as the need for liquid funds as well as an appropriate mix and diversification of assets.

Investment fund management companies (KAGs – German: Kapitalanlagegesellschaften) are required under Article 85 of the Investment Funds Act 2011 (InvFG 2011; Investmentfondsgesetz 2011) to implement risk management procedures that allow them to monitor and measure the risk associated with the investment position at all times. To achieve this, documented risk management principles are to be defined and implemented pursuant to Article 86 InvFG 2011 and safeguards, processes and procedures initiated pursuant to Article 87 InvFG 2011, in order to be able to measure and manage the risks to which the UCITS managed by the KAG is exposed. KAGs are required in this context, for every UCITS managed, inter alia to conduct periodical stress tests and scenario analyses for capturing risks arising from potential changes in market conditions, which might have negative effects on the UCITS.

Alternative Investment Fund Managers (AIFMs) are required, pursuant to Article 13 of the Alternative Investment Fund Managers Act (AIFMG; Alternatives Investmentfonds Manager-Gesetz), to implement appropriate risk management systems, so that all risks that are material for individual AIF investment strategies and those which every AIF is or may be subject to, are adequately identified, assessed, controlled and managed. To do so, pursuant to Article 44 of Delegated Regulation (EU) 231/2013, AIFMs are required to establish and implement quantitative or qualitative risk limits or both taking into consideration all relevant risks with regard to exceptions, the conditions for performing the activity as an AIFM, depositories, leveraged financing, transparency and oversight for every AIF managed. Within the scope of risk measurement and risk management pursuant to Article 45 of Delegated Regulation (EU) 231/2013, inter alia, regular stress tests and scenario analyses are to be conducted to address risks arising from potentially detrimental changes in market conditions.

Investment firms or credit institutions that provide investment services are required to have efficient risk assessment processes in place pursuant to Article 32 of the Securities Supervision Act 2018 (WAG 2018; Wertpapieraufsichtsgesetz 2018). Pursuant to Article 23 of Delegated Regulation (EU) 2017/565 supplementing Directive 2014/65/EU of the European Parliament and of the Council as regards organisational requirements and operating conditions for investment firms and defined terms for the purposes of that Directive, they are required inter alia to establish, implement and maintain adequate risk management policies and procedures which identify the risks relating to the firm's activities, processes and systems, and

where appropriate, set the level of risk tolerated by the firm. Effective arrangements, processes and mechanisms are to be adopted to manage the risks relating to the firm's activities, processes and systems, in light of that level of risk tolerance.

Practical example: sustainability risks in alpine winter tourism and in agriculture

As a consequence of global warming, decreasing snow cover and depth is to be expected in low-lying and mid-level areas in Austria; and alpine glaciers will also shrink. The reduction of glacier size will in turn also influence the flow of water in rivers that are supplied from glaciers. Economic consequences will inter alia affect winter tourism, since the use of artificial snow is only possible to a limited extent in skiing areas. Tourism operations are frequently, and sometimes to a significant extent, financed using debt by means of bank loans. Where tourism operations are unable to offset decreases in winter tourism, then there is a threat of default. It is therefore important for credit institutions, both prior to granting a loan and having granted one, to identify and manage such sustainability risks accordingly. The same applies for lending to the agricultural industry, which is increasingly affected by increasing levels of very hot days, the drying out and erosion of the ground and consequently humus depletion, increasingly frequent strong rain events and pests that thrive in warm conditions.⁴⁷

⁴⁷ Cf. *Environment Agency Austria (Umweltbundesamt)*, Austrian Climate Protection Report 2019 (Klimaschutzbericht 2019, in German only) <https://www.umweltbundesamt.at/fileadmin/site/publikationen/REP0702.pdf> and *Grippa/Schmittmann/Suntheim*, Climate Change and Financial Risk, IMF Finance & Development (2019), 26, <https://www.imf.org/external/pubs/ft/fandd/2019/12/pdf/climate-change-central-banks-and-financial-risk-grippa.pdf> as well as *Baumgartner/Stomper*, Climate-related insolvency risks - Case Study for Ski Tourism (2020), <https://www.wiwi.hu-berlin.de/en/Professorships/bwl/finance/research/riski>.

II. MANAGING SUSTAINABILITY RISKS IN RISK MANAGEMENT

GENERAL RISK MANAGEMENT REQUIREMENTS

Sustainability risks should not be considered as a separate type of risk, but should be integrated in the existing risk classification and into the existing risk management, since they also affect existing types of risk, to which supervised entities are exposed in their business activities. A thorough understanding of company-specific sustainability risks and risk management processes as well as anchoring sustainability risks in the risk culture is a prerequisite for being able to consider them adequately within the existing risk classification. In this context particular attention must be paid in the supervised entity to the qualitative and quantitative data situation.

The first step is for supervised entities to identify the sustainability risks that are relevant for them, by checking their complete business activities. In a second step, the identified risks must be “transposed” into the existing risk categories, and at the same time also measured and evaluated. The FMA assumes that all of the sustainability risks that are identified, measured and evaluated are adequately managed, monitored and limited, and that the necessary provisions are made in the balance sheet. For this purpose, business and risk strategies should be reviewed regularly, and where necessary adapted pro-actively to the objective of a business activity that is sustainable in the long-term.⁴⁸ Appropriate methodologies should be defined for the identification, measurement, evaluation and management of risks that are in line with the business and risk strategy, and integrated into existing methodologies and processes, or new methodologies and processes established - see ANNEX A: Good Practices for Treating Sustainability Risks using Tools and Methodologies.

The FMA acknowledges that uncertainty prevails regarding the time horizon (especially across longer time horizons in the case of physical risks) and the extent of sustainability risks. In addition the measurement and evaluation of sustainability risks on the basis of frequently inadequate historical data as well as uncertainties about the factors to be included also represent particular challenges for supervised entities, meaning that they need to be adequately addressed. The FMA expects that the data situation of supervised entities will also improve as the quality of sustainability and climate-related data increasingly improves.

⁴⁸ In relation to credit institutions, please also refer to EBA's expectation published on 6.12.2019 as part of the “Action plan on sustainable finance” at: <https://eba.europa.eu/eba-pushes-early-action-sustainable-finance>.

SUSTAINABILITY RELATED DATA AND RATINGS

Sustainability risks must be appropriately incorporated when defining suitable general risk indicators or ratings.⁴⁹ When using external sustainability ratings or sustainability-related or climate-related data from external providers, it is necessary to ensure that such data is subjected to a plausibility check that is appropriate for its risk situation, and that the risks arising from business activities with third parties are also adequately managed.⁵⁰ The plausibility check is used to check the suitability of individual factors that feed into the sustainability rating for assessing the individual risk situation. Sustainability ratings providers currently use different influence factors and different weightings. Therefore a single company will have different sustainability scores from one rating provider to the next.⁵¹ An appropriate plausibility check therefore also applies disaggregated assessments at the level of the individual factors.

TRANSMISSION PATHS OF CLIMATE RISKS INTO EXISTING RISK CATEGORIES

The transmission paths of climate risks into existing risk categories will be focussed on below, since their being considered methodically in risk management is currently also a priority at both international and European level.

The FMA still expects other environmental risks to also be mapped in risk management. Environmental risks arise as a result of damage and destruction of the natural environment. They may lead to risks for investors and supervised entities, who may be exposed to environmental risks both as the affected party and as a cause thereof: in the latter case, by financing activities that are damaging to the environment, and in the former case by being adversely affected by environmental damage. Environmental risks may for example be caused by emissions containing atmospheric pollutants, contamination of ground and surface water, scarcity of water, soil contamination, soil compaction, desertification, generation of hazardous (incl. radioactive) waste, loss of biological diversity (biodiversity of animals, plants and ecosystems), deforestation, the loss of ecosystem services.

Practical example: Sustainability risks arising from reduced biodiversity

Reduced biodiversity may also constitute financial risks for supervised entities. For example, one million animal and plant species are threatened with extinction, with the extinction of many species expected in the next few decades. Such biodiversity loss might have similarly severe financial effects as climate change. For example, according to scientific estimates, the risk to agriculture caused by the loss of pollinators may lead to damage of up to USD 577 bn per annum.⁵² This may, for example, lead to increased levels of credit default or total insured losses.

⁴⁹ Internal rating systems are ideally set up in the form of integrated financial and sustainability ratings. Where the ratings of credit rating agencies do not adequately consider sustainability risks, then additional sustainability ratings are applied.

⁵⁰ Cf. in this case e.g. The FMA Minimum Standards for Special Credit Institutions and AIFMs for undertaking Due Diligence of 01.02.2016 (available in German only), <https://www.fma.gv.at/fma/fma-mindeststandards>.

⁵¹ Cf. Kim/Yoon, Assessing Active Managers' Commitment to ESG: Evidence from United Nations Principles for Responsible Investment (2020), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3555984

⁵² Cf. Bundesanstalt für Finanzdienstleistungen, Guidance Notice on Dealing with Sustainability Risks, 13, https://www.bafin.de/SharedDocs/Downloads/EN/Merkblatt/dl_mb_Nachhaltigkeitsrisiken_en.pdf (2019), with reference to

Social and governance risks, such as e.g. human rights breaches, breaching of Core Labour Standards of the International Labour Organization (“ILO”; esp. child labour or forced labour) and corruption including bribery are also covered by risk management. Increased precaution is advised in the case of existing business relationships or activities with or in countries that in practice have neither ratified, nor implemented, relevant human rights conventions.⁵³ Especially in such cases, compliance with standards such as the OECD Guidelines for Multinational Enterprises and OECD Due Diligence Guidance is necessary.⁵⁴

The following table shows a (purely demonstratively) depiction including examples for better comprehensibility of the how climate risks “translate” into existing risk categories.⁵⁵

Financial Risks	Physical Risks	Transition Risks
Credit / Counterparty risk	<ul style="list-style-type: none"> - Natural catastrophes reduce the value of collaterals - Natural catastrophes reduce sustainability of debt - Increase in temperature / loss of biodiversity reduces productivity / income 	<ul style="list-style-type: none"> - High write-offs on CO₂-intensive facilities - Low revenues from creditors/investments due to CO₂ tax - More investments in new higher risk technologies
Market risk	<ul style="list-style-type: none"> - Natural catastrophes increase price volatility - Natural catastrophes ravage entire regions - Increasing uncertainty about catastrophes - Natural catastrophes lead to rapid outflow of capital - Rising sea level increases country risks 	<ul style="list-style-type: none"> - Changes in consumer behaviour as well as technologies - Missing the turnaround towards climate-neutral facilities - Increasing inflation expectations due to CO₂ taxes - Downgrading of country ratings for country causing a lot of CO₂ - Increased uncertainty about future technologies/laws
Liquidity risk	<ul style="list-style-type: none"> - Sudden outflows due to catastrophes - Sudden demand for emergency loans 	<ul style="list-style-type: none"> - Stranded assets are no longer able to be traded

Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), Global Assessment on Biodiversity and Ecosystem Services (2019), <https://ipbes.net/global-assessment-report-biodiversity-ecosystem-services>.

⁵³ Universal Declaration of Human Rights of the United Nations, A/RES/217 A (III); European Convention on Human Rights, original version Federal Law Gazette No. 210/1958 as amended; Freedom of Association and Protection of the Right to Organise Convention (No. 87), original version Federal Law Gazette No. 228/1950 as amended; Right to Organise and Collective Bargaining Convention (No. 98), original version Federal Law Gazette No. 20/1952 as amended; Abolition of Forced Labor Convention (No. 105), original version Federal Law Gazette No. 81/1958 as amended, Equal Remuneration Convention (No. 100), original version Federal Law Gazette No. 39/1954 as amended; Discrimination (Employment and Occupation) Convention (No. 111), original version Federal Law Gazette No. 111/1973 as amended; Minimum Age Convention (No. 138), original version Federal Law Gazette III No. 200/2001 as amended; Worst Forms of Child Labour Convention (No. 182), original version Federal Law Gazette III No. 41/2002 as amended; United Nations Convention against Corruption original version Federal Law Gazette III No. 47/2006 as amended.

⁵⁴ Cf. *OECD*, OECD Guidelines for Multinational Enterprises, <http://mneguidelines.oecd.org/>.

⁵⁵ Cf. *Pointner/Ritzberger-Grünwald*, Climate change risk as a risk to financial stability, Financial Stability Report, 38, 2019.

Operational risk	<ul style="list-style-type: none"> - Destruction of infrastructure required for the business activity - Increased insurance costs - Increased costs for adapting to climate change - Lack of available data and costs (esp. also for outsourcing) 	<ul style="list-style-type: none"> - Price increases due to levying of CO₂ taxes - Increased reporting obligations about emissions
Legal and Reputational Risk	<ul style="list-style-type: none"> - “Contagion” due to proximity to affected regions - Increase in judicial proceedings (“strategic/climate litigation”) 	<ul style="list-style-type: none"> - Lack of attention to sustainability risks - Consumer stigmatisation of companies - Selling of financial products that only pretend to be sustainable (“greenwashing”)
Underwriting risk	<ul style="list-style-type: none"> - Increased damage costs from storms, flooding, frost or hail - Risk that increased damages are not adequately taken into consideration in the technical provisions of premium-based risks. 	<ul style="list-style-type: none"> - Changes to the underwriting risk esp. as a consequence of selection effects
Strategic and Governance Risk	<ul style="list-style-type: none"> - Sustainability risks are either not taken into consideration or are only afforded insufficient consideration in the company’s business continuity management (loss of an essential building, servers, access roads, connection to public transportation) - Absence of ESG strategy, or a strategy that is not far-reaching enough - Absence or lack of implementation of group-wide minimum standards - Absence or lack of monitoring of the ESG strategy by the compliance and internal audit functions. 	<ul style="list-style-type: none"> - Lack of addressing of or incorrect pricing of sustainability risks - A company specialising in the financing of CO₂-intensive economic activities losing its business base as a result of CO₂ taxes
Systemic risk	<ul style="list-style-type: none"> - Abrupt climate change - Underestimation of effects in risk models 	<ul style="list-style-type: none"> - Carbon bubble⁵⁶ - Simultaneous selling of affected asset titles

⁵⁶ “Carbon bubble” is used to describe a structural long-running valuation of companies that were not able to (adequately) absorb the negative externalities of fossil fuels to date. Were the framework conditions to change (e.g. Due to higher CO₂ prices being introduced) current valuations would become an “overvaluation” and the corresponding correction would be expected to be made.

The risk categories listed in the table may reach potentially systemic levels. For example, this would be the case were the losses due to the realisation of physical risks or transition risks of systemically relevant financial market participants (or otherwise where a significantly large number of participants are affected) is so high, that financial market stability is threatened (e.g. due to an increase in the number of non-performing loans of borrowers with CO₂-intensive business models). Systemically relevant (e.g. regional/sectoral) concentration risks arising due to sustainability risks or contagion risks between sectors of the real economy and between financial market participants (so-called knock-on effects) must also be considered.

III. MANAGING SUSTAINABILITY RISKS IN STRATEGY AND GOVERNANCE

The management body is responsible for taking into account sustainability risks. Adequate resources and expertise are required to address sustainability risks in business and risk strategy effectively as well as in operative risk management. In outsourcing it is important to also consider how sustainability risks are managed. The internal oversight bodies of the supervised entities (e.g. the supervisory board and the risk committee) play a central role in ensuring the adequate addressing of sustainability risks in corporate strategy and governance.⁵⁷

Practical example: Establishing a “Sustainability Management Function” or a “Sustainability Organisational Unit”

A few supervised entities have established their own “sustainability management function” or a “sustainability organisational unit” with overall responsibility towards the ultimately responsible management body. In such cases, their integration in processes and interfaces to other functions and organisational units should be clearly defined.

THE RELEVANCE OF SUSTAINABILITY RISKS IN STRATEGY AND GOVERNANCE

Supervised entities are confronted with sustainability risks from various different perspectives in their activity. In such contexts, sustainability risks arise in particular from investment, customer relationships or the distributed financial products. Furthermore, increasingly within the scope of pre-contractual information for customers (collective consumer protection) and ongoing reporting, information on sustainability and about the supervised entity is required to be disclosed.⁵⁸ Disclosure requirements are intensified, when financial products are marketed as being sustainable.

Furthermore, a comprehensive evaluation of sustainability risk management also requires a critical assessment of existing business models with regard to their resilience in relation to sustainability risks. Attention is to be paid in ensuring clear responsibilities in handling sustainability risks within the area of governance. Ultimate responsibility lies with the management body for considering sustainability risks.

⁵⁷ Cf. *European Central Bank (EZB)*, ECB Draft Guide on climate-related and environmental risks Supervisory expectations relating to risk management and disclosure, https://www.bankingsupervision.europa.eu/legalframework/publiccons/pdf/climate-related_risks/ssm.202005_draft_guide_on_climate-related_and_environmental_risks.en.pdf.

⁵⁸ See in particular the Disclosure Regulation and the Taxonomy Regulation.

Practical example: Group activities

In the case of a group of entities the consideration of sustainability risks in the business and risk strategy should be undertaken consistently throughout the group. Where there is a “sustainability management function” or an “organisational unit for sustainability” in the parent undertaking then it may support the entities belonging to the group in this regard.

CREATION OF AN ADEQUATE DATA BASE

Creating a sound data base is a key requirement to apply methodologies to effectively control and limit of sustainability risks and to be able to comply with transparency obligations. Due to the legal requirement to adequately consider sustainability risks within the scope of existing risk categories, it is necessary to ensure the collection of sustainability-related information, especially with regard to climate risks by supervised entities.

Strategies for the systematic identification and collection of information about sustainability risk factors are required to create an adequate data base within the scope of operational activity (e.g. within the scope of lending processes or when subscribing to insurance contracts) as well as by including relevant external sources. An assessment of the suitable quantity, quality and granularity of the data base must also be conducted. It is advisable to take into account that especially in the case of longer-term contractual relationships or longer-term investments that a danger of physical risks or transition risks exists, as well as legal risks and reputational risks increasing or materialising. Such risks may manifest themselves in a deterioration of credit quality as a result of changed economic/legal environment, and ultimately as a result of “stranded assets”. Conversely, when financing sustainable projects (e.g. green bonds, sustainable loans) internal processes are necessary to check that funds have been used sustainably. A mapping of such information flows necessitates an adaptation of the operative business processes - from the data collection about business partners to the back office monitoring of sustainability risks.

To collect and process the data required for sustainability risk management, it is generally necessary for supervised entities as part of “best efforts” to engage more intensively with their contacts in the real economy in order to improve the data base.

Practical example: Checking the Data Base

The checking of the qualitative and quantitative data base as well as the incorporation of external sustainability ratings or climate- or sustainability-related data providers occurs on a regular basis in order to ensure a robust data base to consider sustainability risks on a company-specific basis. Any data gaps are disclosed and efforts taken to close such gaps. Where relevant information is not available at short notice, the necessary (missing) data are identified for internal reporting and risk quantification purposes, and a plan developed about how this deficiency can be addressed.

Sustainability risks are increasingly taken into account in pre-contractual customer information, for example the expected effects of sustainability risks on the returns of financial products.⁵⁹ In particular when advising the client about sustainable financial products, internal guidance taking into consideration relevant sectoral regulations must stipulate that the client is to be provided with comprehensive information, in order to observe specific information requirements and disclosure obligations accordingly.

IMPLEMENTATION OF STRATEGIES BY THE MANAGEMENT BODY

The legal obligation for supervised entities to take sustainability risks into account as part of their existing risk management also requires them to substantively address sustainability risks within the scope of their business strategy. On the one hand, this may occur by complementing existing strategies, or by implementing a separate sustainability strategy. On the other hand, a separate sustainability strategy should be coordinated with the general business strategy and should be subjected to the same governance mechanisms.

Practical example: Integrating sustainability risks into the business strategy

The integration of sustainability into risk management requires understanding by the senior management regarding the sustainability risks that have an effect on the company. The corresponding internal procedures and support instruments may facilitate the integration of a strategic sustainability perspective into the risk management. For example, the following observations could be made:

- *Identification of the impact of sustainability issues on internal and external stakeholder value;*
- *Active incorporation of sustainability factors in goal setting and cascading of goals across all levels of the organisational hierarchy; and*
- *Development of specific assistance for the identification, assessment and management of economic sustainability risks.*

Supervised entities may be able to improve their competitiveness through such considerations, and to facilitate the integration of the strategic sustainability perspectives into risk management.⁶⁰

Regardless of how they are considered, internal responsibilities within the company (whether by persons or units) are defined in writing and therefore traceable with regard to sustainability risks, with ultimate responsibility always lying with the management body from ultimate responsibility. The risk management function informs the management body both within the scope of regular reporting as well as on an ad hoc basis about company-specific sustainability risks, covering both short- and long-term business perspectives, so that the management body

⁵⁹ Cf. Article 6 Disclosure Regulation.

⁶⁰ Cf. *Schulte/Hallstedt*, Company Risk Management in Light of the Sustainability Transition, *Sustainability*, 10, 4137, <https://www.mdpi.com/2071-1050/10/11/4137>.

is able to make informed decisions. The adapting of the business strategy to adequately address sustainability risks consequently leads to the necessary supervisory functions in the company being affected.

Practical example: Sustainability Key Performance Indicators (KPIs) in the credit decision process

The credit decision process is based inter alia on sustainability key performance indicators (KPIs), such as energy labels for mortgage portfolios.

ROLE OF THE SUPERVISORY BOARD

The supervisory board of the supervised entity assumes a central role in overseeing the management body and determining the strategy and governance. Within the scope of the control, monitoring and oversight over the management body, it should be noted that the supervisory board's monitoring duty relates to the management function itself and therefore covers all management function-relevant conduct. This does not just extend to the conduct of the management body itself, but also the monitoring of the assigned key functions. The discretionary business decisions taken by the management body are measured in terms of the risks manifesting for the supervised entity. Within the context of sustainability risks, it is therefore sensible in the performance of the supervisory board's statutory duties that this body proactively deals with company-specific sustainability risks. From the management body's perspective it is advisable to comprehensively and regularly inform the supervisory board about company-specific sustainability risks as well as the measures taken by the risk management function. Sustainability risks are also appropriately considered in Fit & Proper trainings for members of the supervisory board.

Practical example: Sustainability risks and Internal Capital Adequacy Assessment Process (ICAAP)

Supervised entities, for whom an Internal Capital Adequacy Assessment Process (ICAAP) applies, are obliged to identify material sustainability risks, which could cause economic losses and a reduction of the entity's capital base. Where there is no assumption of materiality, the classification of materiality is to be justified and documented in a transparent manner.

ROLE OF THE RISK MANAGEMENT FUNCTION

The management body assumes ultimate responsibility for ensuring that sustainability risks are adequately considered for the respective risk categories. In addition, the risk management function also assumes a central role, since it also has a complete overview about the manifestation of all types of risk and the company's risk situation. The risk management function is involved in drawing up the risk strategy as well as all material risk management-related decisions. It supports the management body by providing analyses regarding the existing sustainability risks, in order to enable a well-founded decision-making process as well

as acting in a risk-aware manner. It also contributes towards establishing the corresponding risk culture. A strong operational data base, upon which management decisions may be taken, covers the evaluation of the business model, the capital base and liquidity by means of various strategies. Adequate staffing provisions for the risk management function must also be considered. A company's risk appetite must also be taken into account when assessing sustainability risks.

Practical example: Sustainability risks and processes relating to the granting of credit

In supervised entities, where lending business processes forms part of their business model, sustainability risks are taken into account as part of the management of credit risk on both an ex ante and an ex post basis. This includes inter alia the setting and ongoing monitoring of limits, the mitigation of concentration risks, the application of scenario-based analyses and stress tests.

ROLE OF COMPLIANCE

The compliance function, which is required to be established under the applicable material law must establish processes to ensure the effective reviewing of compliance with legal and regulatory rules, to cover and limit risks that arise from non-compliance. The Disclosure Regulation in particular creates transparency requirements in relation to sustainability risks for financial market participants and financial advisers (see Chapter

IV. Managing sustainability risks in the case of transparency obligations at company level).

ROLE OF THE INTERNAL AUDIT FUNCTION

The internal audit function reviews the specific implementation of the risk strategy and the risk appetite in relation to sustainability risks in terms of their ability to achieve their objectives and their handling of disclosure and customer information requirements.

KNOWLEDGE AND HUMAN RESOURCES MANAGEMENT

Adaptations shall be made to the company's internal knowledge and human resources management as necessary, when considering sustainability risks within the business and risk strategy. Employees conducting activities that are affected by sustainability risks require knowledge about the relevant sustainability risks that correspond to their job profile. On the one hand this relates to the employees of supervised entities, who are responsible in relation to customer communication for the data collection about sustainability risks and customer advice (pre-contractual disclosure obligations). On the other hand, the creation of know-how and having adequate staffing resources especially with regard to managerial functions and in risk management also forms an integral component for implementing the entity's internal sustainability strategies.

REMUNERATION POLICIES

Sustainability risks should also be integrated within remuneration policies. In the future, financial market participants and financial advisers will be required to disclose⁶¹ to what extent their remuneration policies are in line with the integration of sustainability risks. This disclosure requirement is to be observed within the remuneration policies defined for the sector, including inter alia the relevant applicable proportionality criteria such as the size, internal organisation and the nature, scope and complexity of the relevant activities. Creating greater transparency is expedient, from qualitative or quantitative perspectives, about remuneration policies that promote sound and effective risk management with respect to sustainability risks. Remuneration structures should not encourage excessive risk-taking in relation to sustainability risks and should be linked to risk-adjusted performance.⁶²

⁶¹ Cf. Article 5 of the Disclosure Regulation.

⁶² Cf. Recital no. 22 of the Disclosure Regulation.

BUSINESS CONTINUITY MANAGEMENT (BCM)

Where sustainability risks are realised, they are likely to be affected by business interruptions (e.g. as a result of extreme weather events). It is therefore also sensible within BCM to evaluate the existing operational sustainability risks, and to develop mitigation strategies. Strengthening the resilience of critical buildings, infrastructure and business processes may prove to be a decisive factor in overcoming major disruptions, which otherwise would have the potential to threaten the company's business operations. This must also be taken into account when making use of third parties, especially in the case of outsourcing.

IV. MANAGING SUSTAINABILITY RISKS IN THE CASE OF TRANSPARENCY OBLIGATIONS AT COMPANY LEVEL

DISCLOSURES IN ACCORDANCE WITH THE DISCLOSURE REGULATION AND NON-FINANCIAL REPORTING

The Disclosure Regulation creates new transparency obligations for supervised entities⁶³, for disclosing their approaches towards the integration of sustainability risks and the consideration of adverse sustainability impacts.⁶⁴ In the future, directly applicable harmonised legal transparency regulations will apply in the case of

- strategies for managing and considering sustainability risks,
- adverse sustainability impacts at entity level as well as on individual financial product level,
- remuneration policies in conjunction with the consideration of sustainability risks, and
- ecological or social characteristics of financial products or sustainable investment financial products (both on a pre-contractual basis as well as on websites and in periodic reports).

Furthermore the disclosure obligations set forth in the Disclosure Regulation are extended in the Taxonomy Regulation to include information about whether or how and to what extent the financial product's underlying investments have been invested in ecologically sustainable economic activities in accordance with the Taxonomy Regulation.

Disclosures in accordance with the Disclosure Regulation are cited alongside the existing disclosures in the management report (Articles 243 and 267 of the Corporate Code (UGB; Unternehmensgesetzbuch) and the non-financial report (Articles 243b and 267a UGB) and should be consistent with the information in these reporting forms. Where the information requirements stipulated by the Disclosure Regulation are also the subject of the disclosure in the management report or the non-financial reporting, then the information contained in these reports may also be used for the purposes of fulfilling the requirements of the Disclosure Regulation (cf. also Article 11 (3) Disclosure Regulation). This is for example conceivable in non-financial reporting with regard to non-financial performance indicators about the indirect impacts on sustainability of financial instruments held (such as the average CO₂ intensity of a portfolio of financial instruments). Under the Taxonomy Regulation, companies, for which an obligation applies to disclose non-financial information in accordance with Article 19a or Article 29a of Directive 2013/34/EU, should include information in their non-financial statement

⁶³ Cf. Article 2 (1) and (11) of the Disclosure Regulation for the legal definition of the terms "financial market participant" and "financial adviser", to which the transparency obligations relate.

⁶⁴ Cf. Recital no. 8 of the Disclosure Regulation.

or consolidated non-financial statement about whether/how and to what extent the company's activities are associated with ecologically sustainable economic activities in accordance with the Taxonomy Regulation.

Conversely, the disclosures in accordance with the Disclosure Regulation do not constitute a substitute for reporting in the management report or the non-financial report. Where linkages exist in terms of the information that is contained in the respective other reporting instruments that are available publicly and free of charge, it is recommendable in the interests of the coherence of disclosures to refer to these linkages using direct and precise references. The information to which the reference relates is not required to be disclosed again.

Disclosure requirements about the (financial) impacts of sustainability risks on the supervised entity arise based on the Austrian Commercial Code (UGB; Unternehmensgesetzbuch) in relation to the management report or the non-financial report for both credit institutions and insurance undertakings in relation to disclosure under the respective CRR and Solvency II regimes. The FMA expects supervised entities to develop an approach for reporting sustainability risks that is appropriate and consistent for the nature and scope of business activities, and to consistently apply and regularly update it. The risk management approach for handling sustainability risks should be described in the disclosure; it should also mention the process for assessing the materiality of sustainability risks for the entity.

Credit institutions and insurance and reinsurance undertakings that are subject to the requirements pursuant to Article 243b or Article 267a UGB are recommended to refer to the European Commission's Guidelines on non-financial reporting: Supplement on reporting climate-related information (Communication 2019/C 209/01) in relation to reporting about climate-related aspects, especially the remarks contained therein in Annex I for credit institutions and insurance companies.

Supervised entities should assess on an ongoing basis, whether additional information is necessary or expedient for a better undertaking the impacts of sustainability risks on the entity in order to observe the legally prescribed reporting and disclosure requirements. The FMA expects that with the consistent further development of scientific findings and the understanding of supervised entities about the impacts of sustainability risks on their own financial situation that there will also be a consistent further development of reporting and disclosure in relation to sustainability risks.

COMPANY REPORTING AND REFLECTION OF EXTERNAL EFFECTS IN THE BALANCE SHEET

External effects or externalities arising from risks caused by the company that may negatively influence sustainability factors (cf. "double materiality" of sustainability risks in Point I. Terms and Legal Bases) are not as a rule captured in financial reporting due to a lack of direct financial

consequences for companies. They are to be understood as financial, social and/or ecological impacts arising from the activities of a supervised entity, which are borne by others at least in the short-term. They are examples for effects arising from market failures, in which the production and consumption of specific goods by a market participant either create benefits for others or incur costs that are not reflected in market prices. External effects not being taken into account in relation to longer-term business decisions correspondingly also means that longer-term financial risks and costs are also unaccounted for, both in terms of the parties to the transaction that are involved, as well as with regard to the third party external effects.⁶⁵

In recent decades an increasing number of external social and environment-related effects have been identified that arise from organisational decisions based on short-term economic factors.⁶⁶ In 2018, the United Nations Sustainable Development Goals created a framework for increasing awareness about these external effects.⁶⁷ Against this background, “externalities” are also an increasingly popular topic in the discussion about the nature of societal responsibility of businesses and the associated accounting obligations. The rapidly growing relevance of external effects for business strategy should therefore ideally be reflected in a corresponding reporting of external effects in financial reporting.

⁶⁵ Hopwood/Unerman/Fries, *Accounting for Sustainability: Practical Insights*. London: Earthscan; Unerman/Bebbington/O'Dwyer, *Corporate reporting and accounting for externalities*, *Accounting and Business Research*, Vol. 48, No. 5 497-522, <https://www.tandfonline.com/doi/pdf/10.1080/00014788.2018.1470155?needAccess=true%20>; *Task Force on climate-related Financial Disclosures (TCFD)*, *Recommendations of the Task Force on Climate-related Financial Disclosures*. Task Force on Climate-Related Financial Disclosures.

⁶⁶ Bebbington/Larrinaga, *Accounting and sustainable development: an exploration*, *Accounting, Organizations and Society*, 39 (6), 395-413.

⁶⁷ Bebbington/Unerman, *Achieving the United Nations Sustainable Development Goals: an enabling role for accounting research*, *Accounting, Auditing & Accountability Journal*, 31 (1), 2-24.

ANNEX A: GOOD PRACTICES FOR TREATING SUSTAINABILITY RISKS USING TOOLS AND METHODOLOGIES.

Good practices for tools, methodologies and indicators for identifying, measuring, evaluating and controlling of sustainability risks, serve merely as a demonstrative list for information purposes for supervised entities. The evaluation whether one or several specific tools or methodologies are suitable for the risk management of a specific company is to be conducted by the company itself, and in the interests of proportionality is based on the size, internal organisational structure and the nature, scale and complexity of the activities or transactions, as well as the risk structure of the respective supervised entity. Moreover, the good practices listed should not prevent supervised entities from observing stricter standards and better techniques or relevant methodological developments in relation to the handling and appropriate integration of sustainability risks.

IDENTIFICATION AND MEASUREMENT OF SUSTAINABILITY RISKS

CLIMATE RISK HEAT MAPS

Potential usage: Initial assessment of physical risks and transition risks

A climate risk heat map is suitable for an initial risk screening. Based on quantitative and qualitative information the sectoral and regional risk exposure towards physical and transition risks is identified⁶⁸. This initial estimation serves as a starting point for prioritisation for a detailed climate risk analysis. The more assets are located in sectors or regions that are exposed to risks, the more important it becomes to subject them in an additional step to a more detailed risk assessment and to set appropriate risk controlling measures. A climate risk heat map may also provide indications for criteria for exclusion or sectoral limits.

PROPORTION OF COMPANIES IN THE PORTFOLIO, WHICH DISCLOSE THEIR CO₂ EMISSIONS

Potential usage: indication about exposure towards transition risks

⁶⁸ As an example of a climate risk heat map that is relevant for Austria, see *Baumgartner/Stomper*, Climate-related insolvency risks - Case Study for Ski Tourism (2020), <https://www.wiwi.hu-berlin.de/en/Professorships/bwl/finance/research/riski>. This case study uses heat maps that measure the risk exposure in Austrian ski tourism and is also able to show how flexibly companies are able to react to changes in weather risk. Heat maps may be used in this way to predict insolvency risks. Furthermore, a schematic example can be found in *De Nederlandsche Bank*, Good Practice - Integration of climate-related risk considerations into banks' risk management (2019), <https://www.toezicht.dnb.nl/binaries/50-238048.pdf>.

This indicator presents the weighted proportion of all the companies in a portfolio that disclose their CO₂ emissions. This is the simplest of all indicators. It provides hints about whether companies are fully aware about their own CO₂ risks and whether they actively manage them. Where companies do not disclose their emissions, principally this is for one of two reasons: either they don't acknowledge their CO₂ emissions and consequently are also unable to control the associated risks, or they do know about their CO₂ emissions, but wish to hide them.

TOTAL OR PROPORTION OF ASSETS WITH CO₂ EXPOSURE

Potential usage: Initial estimation of level of exposure to transition risks

This indicator describes the total or proportion of assets with a CO₂ exposure in a portfolio either in millions of Euro or as a percentage of the value of the portfolio. The total or the proportion of CO₂-exposed assets is an indicator that is comparatively easy to identify, in order to obtain an initial estimation of level of exposure to transition risks. In so doing assets are allocated to economic (sub) sectors^{69,70}. Assets in (sub) sectors with high CO₂ emissions may provide indications about the degree of exposure towards transition risks, since significant CO₂ reductions are necessary in these (sub) sectors.⁷¹

CARBON FOOTPRINT

Potential usage: Calculation of exposure to transition risks

The carbon footprint (also known as the CO₂ footprint or climate footprint) of portfolios is a metric for measuring the level of exposure towards CO₂-exposed assets. Since technological changes and changes to business models in the real economy as well as increasing CO₂ prices are expected due to legal obligations and political developments, the carbon footprint is an important indicator on the exposure towards transition risks.

Generally, several methodologies exist for identifying the carbon footprint. Irrespective of the methodology used, the quality of emission data is of central significance. The European Commission's Guideline of reporting climate-related information⁷² as well as the recommendations of the Task Force on Climate-related Financial Disclosures – TCFD⁷³ the following indicators are among those recommended:

⁶⁹ The term "sector" may be interpreted in different manners, e.g. the relevant NACE classifications in the Taxonomy Regulation, https://www.statistik.at/web_en/classifications/classification_database/integrated_system_of_international_classifications/index.html.

⁷⁰ Sector-specific emissions and targets for reducing CO₂ can for example be found in the *Environment Agency Austria (Umweltbundesamt)* Austrian Climate Protection Report 2019 (Klimaschutzbericht 2019) in German only, <https://www.umweltbundesamt.at/fileadmin/site/publikationen/REP0702.pdf>.

⁷¹ Cf. for example, *Battiston et al.*, A Climate Stress-test of the financial system (2017), <https://www.nature.com/articles/nclimate3255>, as well as *Wyman*, Climate Change – Managing a new financial risk (2019).

⁷² Cf. *European Commission*, Guidelines on reporting climate-related information (2019), C(2019) 4490 final; https://ec.europa.eu/finance/docs/policy/190618-climate-related-information-reporting-guidelines_en.pdf.

⁷³ Cf. *Task Force on climate-related Financial Disclosures (TCFD)*, Recommendations of the Task Force on Climate-related Financial Disclosures – Final Report (2017), <https://www.fsb-tcfd.org/wp-content/uploads/2017/06/FINAL-TCFD-Report-062817.pdf> and *Task Force on climate-related Financial Disclosures (TCFD)*, Implementing the Recommendations of the Task

Investment CO₂ footprint (t CO₂)

This metric returns the total of all CO₂ emissions financed through a portfolio (in tonnes of CO₂). This is an absolute metric also known as “Total Carbon Emissions”. The calculation of the investment CO₂ footprint is an initial step towards measuring transition risks. The CO₂ emissions of companies are calculated proportionally and aggregated, based on the financed assets. The CO₂ footprint covers both the direct and indirect CO₂ emissions (i.e. Scope 1, 2 and 3 emissions under the GHG protocol)⁷⁴ of the financed assets.

$$\sum_n^i \left(\frac{\text{Investment in enterprise } i}{\text{Corporate value of enterprise } i} \right) \times \text{Scope 1, 2 \& 3 GHG emissions of enterprise } i$$

In order to make the investment CO₂ footprint comparable across portfolios, relative metrics are applied. Every metric has difference possibilities and limits for its application. Different global reporting standards require different metrics, with the most widely known ones being described below.

Weighted average CO₂ intensity in relation to the corporate value of companies (t CO₂ / EUR mn enterprise value)

The weighted average CO₂ emissions intensity in relation to the corporate value of the company is a relative carbon footprint metric. CO₂ emissions are allocated based on the corporate value, and in turn compared against the portfolio value. Normalisation using the portfolio value guarantees the comparability of the result against the result of other portfolios or benchmarks. It shows how many tonnes of CO₂ are financed per million Euro invested.

$$\sum_n^i \frac{\text{Investment in enterprise } i}{\text{Total portfolio value}} \times \frac{\text{Scope 1, 2 \& 3 GHG emissions of enterprise } i}{\text{Corporate value of enterprise } i}$$

Weighted average CO₂ intensity in relation to total revenue of enterprise (t CO₂ / mn EUR revenue)

This indicator also allows portfolios to be compared with one another or against benchmarks. In contrast to the indicator above, this indicator compares CO₂ emissions against a company’s revenues.

$$\sum_n^i \frac{\text{Investment in enterprise } i}{\text{Total portfolio value}} \times \frac{\text{Scope 1, 2 \& 3 GHG emissions of enterprise } i}{\text{Total revenue of enterprise } i}$$

Force on Climate-related Financial Disclosures (2017), <https://www.fsb-tcf.org/wp-content/uploads/2017/12/FINAL-TCFD-Annex-Amended-121517.pdf>.

⁷⁴ For calculating direct and indirect CO₂ emissions cf. Greenhouse Gas Protocol (GHG Protocol), <https://ghgprotocol.org/>.

The investment CO₂ footprint, the CO₂ emission intensity, as well as the weighted average CO₂ intensity have the advantage that their calculation is both simple and standardised, the data base is noticeably better and it is possible to compare portfolios as well as make comparisons across the course of time. It should be noted that all carbon footprint calculations only reflect past exposures of portfolios or underlying assets. However, they cannot be used to evaluate entities' future-oriented climate strategies.

SENSITIVITY ANALYSES

Potential usage: for assessing the impact of specific influence factors on the exposure of portfolios towards sustainability risks and especially climate risks

Sensitivity analyses permit a better understanding of the impact of individual influence factors on a company's own business model or on product, investment and credit portfolios. In contrast to the scenario analysis, the sensitivity analysis isolates individual input parameters and quantifies the relationship to a specific output parameter (e.g. non-performing loans, loss given default, net asset value, or return on equity). The spectrum of potential input parameters is diverse, and the following influence factors, among others, may be relevant for identifying them:

- political and regulatory changes (increasing CO₂ prices, bans on oil-based heating or the registration of new vehicles with combustion engines etc.);
- market-related changes (falling costs of renewable energies and energy storage, increasing costs for products that are harmful to the environment, establishing of new or environmentally-friendly services, changes to the value creation chain etc.);
- technological innovations (energy-efficient industrial processes, drive technologies, storage technologies etc.);
- changes in physical environmental and climate-related risk drivers (loss of biodiversity, extreme weather events, temperature increases, water shortages etc.) – potential input parameters include the number of days with a natural snow covering, the number of heat days (> 30°C), the number of days with interruption to production due to the supply change being interrupted etc.;
- new scientific findings about the physical and economic effects of the destruction of the environment and climate change; as well as
- social influence factors (increasing risk of pandemic as a result of destruction of the environment, conflicts due to poor harvests or water shortages, changes in behaviour in the areas of mobility, nutrition, consumption etc.).

Furthermore, by using sensitivity analyses it is also possible to compare how specific influence factors impact different (sub)sectors or regions. For example, it is possible to analyse how the risk exposure of “green” sectors changes compared to “brown” sectors due to increasing CO₂ prices. Portfolios with different regional focuses can also be analysed in comparative terms (with regard to the impact of physical climate changes, political and regulatory risks etc.)

SCENARIO ANALYSES AND STRESS TESTS

Potential usage: Estimation of the risks, impacts or the resilience towards future sustainability-related developments and shocks

Scenario analyses and stress tests permit a well-founded company-specific analysis with sustainability risks in relation to the impacts of different scenarios. Especially in relation to climate risks, they may also provide valuable indications about when and to what extent a deviation from a target path occurs (e.g. $<2^{\circ}\text{C}$ or 1.5°C as climate scenarios) under certain conditions. The important condition is to design scenario analyses (especially in case of physical climate risks) across a long-term time horizon, since climate change cannot be adequately depicted as a risk in short-term scenarios. Strong deviations from the target path imply a disproportionately greater need to act. Due to the high explanatory power of this method, its application is also suggested in the TCFD's recommendations.⁷⁵ For example, the PACTA tool⁷⁶, which was developed as part of a scientific project, provides both a possibility for a climate scenario analysis as well as for a climate stress test. Scenario analyses and stress tests are also suitable for the estimation of risks in relation to other sustainability factors (environmental, social and good governance), with additional short- and medium-term time horizons also being applied.

(CLIMATE) VALUE-AT-RISK

Potential usage: Estimation of loss potential through climate-based and sustainability risks

The (Climate) Value at Risk is used to estimate the maximum loss of value of a portfolio (of assets) due to climate-based and sustainability risks across a certain time interval with a defined probability (confidence interval).⁷⁷ It is advisable, in relation to different risks, to quantify several potential scenarios; neither the future climate conditions, nor the political and regulatory and technological developments can be predicted exactly. The scientific publication "Climate value at risk of global financial assets"⁷⁸ and the UNEP-FI report "Changing Course – Building Blocks of the Investor Pilot methodology"⁷⁹ contain more detailed information about suitable scenarios and calculation options in relation to climate risks.

⁷⁵ Cf. *Task Force on climate-related Financial Disclosures (TCFD)*, Recommendations of the Task Force on Climate-related Financial Disclosures – Final Report (2017), <https://www.fsb-tcfd.org/wp-content/uploads/2017/06/FINAL-TCFD-Report-062817.pdf>.

⁷⁶ PACTA – Paris Agreement Capital Transition Assessment: <https://www.transitionmonitor.com/pacta-2020/>.

⁷⁷ Definitions of the Climate Value at Risk in relation to transition risks can inter alia be found in *Battiston et al.*, A Climate Stress-test of the financial system (2017), <https://www.nature.com/articles/nclimate3255> as well as *Monasterolo*, Climate Change and the Financial System. Annual Review of Environment and Resources (2019), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3479380.

⁷⁸ *Dietz/Bowen/Dixon/et al.*, Climate value at risk' of global financial assets (2016), <https://www.nature.com/articles/nclimate2972>.

⁷⁹ Cf. *UN Environment – Finance Initiative*, Changing Course: A comprehensive investor guide to scenario-based methods for climate risk assessment, in response to the TCFD, <https://www.unepfi.org/publications/investment-publications/changing-course-a-comprehensive-investor-guide-to-scenario-based-methods-for-climate-risk-assessment-in-response-to-the-tcfd/>.

RISK MONITORING & EARLY WARNING INDICATORS

The probability of realisation, impacts and maturity of sustainability risks and especially climate risk may change rapidly. Disruptive climatic, political and regulatory and technological developments become more probable as climate change increases. This requires a consistent monitoring as well as the establishment of early warning indicators in order to detect changes in risk potentials in a systematic and early manner.

The aforementioned metrics (especially the CO₂ footprint, and CO₂ exposed assets) can be applied as indicators for monitoring of transition risks. It should be noted that metrics about CO₂ emissions relate to the status quo of an entity. It is therefore also advisable to include metrics about the planned future alignment of a company towards global and national climate targets in the risk assessment. Information about the climate strategy of a company, investments that have already been made and those planned for climate protection measures or the development of climate-friendly business models are suitable for this purpose.

Trends in the development of prices for CO₂, renewable energies or energy storage, as well as the proportion of assets exposed to CO₂ may serve as early warning indicators for transition risks. Indications of physical risks may be gained from the proportion of assets in flooding risk zones, the development of damage sums from natural catastrophes or the development of temperature and precipitation. It is important to identify the relevant metrics and early warning indicators for the individual risk profile. These should also be oriented towards the sectoral and regional focuses of the company's business model taking into consideration the entire value creation chain.

CONTROLLING AND LIMITING SUSTAINABILITY RISKS⁸⁰

The points listed below contain a selection of the established tools and methods for managing and limiting sustainability risks. It should be noted that a combination of several instruments may be necessary to control risks adequately.

⁸⁰ In addition to the listed strategies further approaches are also applied in the financial economy for designing investments in a more sustainable way, such as impact investing or sustainable thematic funds (investment focus on i.a. energy efficiency, renewable energies, sustainable mobility, the circular economy, social or development projects), although such approaches only appear somewhat suitable for managing and limiting sustainability and climate risks or in combination with further reaching strategies.

CRITERIA/LIMITS FOR EXCLUSION

The exclusion or limiting of risky assets in/from the portfolio is an effective strategy to control sustainability risks. By doing so, transition risks can above all be absorbed, since economic sectors with business models that are significantly dependent on fossil fuels are exposed to an impairment risk due to “stranded assets” and/or the bursting of the “carbon bubble”. Ideally the criteria for exclusion will be very narrowly defined, in order to not be diluted, with value creation chains being incorporated.

DIVESTMENT

Divestment is the strategically planned exit from investments that are harmful to the environment and climate. The difference between divestment and the application of exclusion criteria is that in the case of divestment, investments are already held in risky assets and an orderly exit must be planned, whereas in the application of exclusion criteria there is no investment in defined risky assets from the outset. Divestment is associated with transparent timelines; non-binding memoranda of understanding (MoUs) for undefined future points in time are not considered to be suitable.

BEST-IN-CLASS APPROACH

In this approach the pioneers within an economic sector are identified on the basis of ESG criteria. This approach allows a sector-neutral investment strategy while partially reducing sustainability risks. While the Best-in-Class approach is widespread, it is important that the weighting in (sustainability) rating agencies’ ESG scores also correspond to the actual risk potential. A risk may arise from lock-in effects that should particularly be taken into account. Such lock-in effects may lead to institutions staying invested for too long in certain areas that are ultimately not sustainable, with the outcome being “stranded assets”. There are also sectors that display high overall transition risks. It is therefore recommendable to question whether companies classified as “Best in Class” have actually implemented scientifically-based sustainability or climate strategies, and whether the CO₂ reduction targets are compatible with national, European and international climate objectives in accordance with the Paris Agreement.

NORMS-BASED SCREENING

In the case of norms-based screening, investments are reviewed in terms of their conformity with certain international standards and norms (e.g. the UN Global Compact, OECD Guidelines for Multinational Enterprises, ILO Core Labour Standards), in order to manage and limit sustainability risks. This screening may follow either negative (criteria for exclusion) or positive (best-in-class) approaches. Standards-based screening may be suitable as an initial risk screening approach for identifying major outliers (e.g. companies that systematically breach human rights), however such an approach might prove insufficient if used as the only instrument for managing sustainability risks.

ESG INTEGRATION

In the application of ESG integration ESG criteria are explicitly integrated in the traditional financial/risk assessment process. That is, sustainability risks are incorporated in the assessment of assets. It is material that the ESG integration is systematically anchored in the investment/lending process for the entire portfolio. In order to be able to assess risks appropriately, the respective relevant regional, sectoral and company-specific ESG factors must be identified and compared against the company's strategy and sustainability performance. It is relevant that primarily forward-looking information is included in the ESG risk assessment. Externally purchased ESG scores may be helpful as an initial indicator, but do not however replace the individual analysis. Since the scores of individual ESG rating agencies deviate in some cases significantly from one another, it is necessary to handle such information in a reflected manner. The significant aspect is to identify the detailed ESG factors and their weighting.

POSITIVE LISTS

In contrast to the identification of criteria for exclusion, when drawing up positive lists the conscious decision is to invest exclusively in assets that (e.g. based on a "best-in-class" approach) demonstrate positive performance in relation to ESG criteria and reduced sustainability risks. Thresholds for ESG evaluations or the implementation of specific sustainability standards may for example be defined as positive criteria.

ENGAGEMENT AND EXERCISING OF VOTING RIGHTS

Engagement means that institutional investors and financial institutions engage in a constructive and purposeful dialogue with the companies they invest in. This dialogue offers the opportunity to encourage companies with a currently non-sustainable business model, and which are affected by sustainability to adapt their business strategy. The exercising of shareholder rights at general meetings should be focused on positively influencing the corporate policy with regard to sustainability.

Shareholder engagement as well as exercising shareholder rights are instruments that can force a company that is currently still acting in a harmful manner to reorientate itself towards being a sustainable company. In addition to investments in companies, sustainability risks can also be addressed for (direct) investments in real estate by actively converting/improving existing real estate (building improvements). Consequently, for example, CO₂ emissions may fall and therefore also the CO₂ intensity in the portfolio (positive effect on the environment).

ANNEX B: SOURCES OF INFORMATION

The sources of information listed are merely to be considered a demonstrative list of sources that are publicly accessible and available free of charge or open source tools for information purposes of supervised entities. The FMA does not take any responsibility towards third parties for the content of the quoted sources.

SOURCES OF INFORMATION ABOUT INITIATIVES, TOOLS AND METHODOLOGIES

- **PACTA – Paris Agreement Capital Transition Assessment⁸¹**

PACTA was developed by the 2° Investing Initiative⁸² as part of an EU-backed research and is a simple-to-use open source tool for institutional investors (like insurance undertakings, pensions and severance funds) as well as for analysing investment portfolios of banks and similar entities. The PACTA tool consists of three components: (1) Climate scenario analysis, (2) Climate stress tests and (3) the analysis of qualitative measures. The climate scenario analysis measures the alignment of invested assets against the Paris Agreement and provides options for the alignment of financial flows against the “<2°C or 1.5°C climate target”. In addition, potential transition risks in relation to decarbonisation are also shown. From Q2/2020 onwards, PACTA is also applicable for the lending portfolios of large, internationally active banks.

- **Climate Tech Compass⁸³**

The beta version of the Climate Tech Compass was presented at the UN Climate Change Conference (COP25) in December 2019 in Madrid. This online platform supports investors, governments companies and financial institutions, in aligning their invested assets to the targets of the Paris Agreement. This methodology considers that every sector has a specific transition path or a technology roadmap. The Climate Tech Compass covers those sectors that display particularly high levels of CO₂ emission (automobile industry, aviation, shipping, energy generation, cement, iron and steel, agriculture and real estate).

- **TCFD – Technical Supplement on scenario analysis⁸⁴**

The Task Force on Climate-related Financial Disclosure was founded in 2015 and has published a series of practical recommendations about which metrics should be applied

⁸¹ For more detailed information about the Paris Agreement Capital Transition Assessment (PACTA) see: <https://www.transitionmonitor.com/pacta-2020/>.

⁸² The 2° Investing Initiative is a think tank for the development of climate and long-term risk metrics. For more detailed information please see <https://2degrees-investing.org/>.

⁸³ For more detailed information about the Climate Tech Compass, please see: <https://compass.transitionmonitor.org/>.

⁸⁴ Cf. *Task Force on climate-related Financial Disclosures (TCFD)*, Technical Supplement - The Use of Scenario Analysis in Disclosure of Climate-Related Risks and Opportunities (2017), <https://www.fsb-tcf.org/wp-content/uploads/2017/06/FINAL-TCFD-Technical-Supplement-062917.pdf>.

in the disclosure of climate-related information. In an Annex for implementing these recommendations⁸⁵ specific indicators and stress test frameworks are described and compared, which can be used to measure climate risks.

- **UNEP FI (2020): Corporate Impact Analysis Tool⁸⁶**

The Corporate Impact Analysis Tool supports banks and investors in obtaining a cross-cutting view about the impact status and possibilities available to their customers and investee companies. Based on the Positive Impact Initiative approach, it provides a holistic analysis of companies' impacts in different sectors and countries. The findings of the Tool are intended to help users manage their portfolios, to determine and meet impact targets, and ultimately become more effective at managing impact-related risks and opportunities in close collaboration with their customers and investee companies. The tool may also be used by companies as a contribution to strategic planning and business development. The tool is open source.

- **UNEP FI (2020): Portfolio Impact Analysis Tool for Banks⁸⁷**

The Portfolio Impact Analysis Tool for banks is designed for conducting a holistic impact analysis in the banking system. The tool was jointly developed by the Positive Impact Initiative with the signatories of the Principles for Responsible Banking and the member banks of UNEP FI. The tool supports banks in analysing the impact of their portfolios. The tool is open source.

- **UNEP FI (2019): Climate risk assessment - UNEP FI guide for Investors⁸⁸**

Changing Course. A comprehensive investor guide to scenario based methods for climate risk assessment, in response to the TCFD.

The pilot project focuses on analysing shares, corporate bonds and real estate portfolios. 20 large investors have worked together with the UNEP FI to develop best methods, allowing portfolios to be analysed in accordance with the recommendations of the FSB's Task Force on Climate-related Financial Disclosures (TCFD).

⁸⁵ Cf. *Task Force on climate-related Financial Disclosures (TCFD)*, Implementing the Recommendations of the Task Force on Climate-related Financial Disclosures (2017), <https://www.fsb-tcfd.org/wp-content/uploads/2017/06/FINAL-TCFD-Annex-062817.pdf>.

⁸⁶ Cf. *United Nations Environment Programme Finance Initiative (UNEP FI)*, Corporate Impact Analysis Tool, <https://www.unepfi.org/publications/positive-impact-publications/corporate-impact-tool/>.

⁸⁷ Cf. *United Nations Environment Programme Finance Initiative (UNEP FI)*, Corporate Impact Analysis Tool for Banks, <https://www.unepfi.org/publications/positive-impact-publications/portfolio-impact-tool-for-banks/>

⁸⁸ cf. *United Nations Environment Programme Finance Initiative (UNEP FI)*, Changing Course: A comprehensive investor guide to scenario-based methods for climate risk assessment, in response to the TCFD, <https://www.unepfi.org/publications/investment-publications/changing-course-a-comprehensive-investor-guide-to-scenario-based-methods-for-climate-risk-assessment-in-response-to-the-tcfd/>.

- **UNEP FI (2018): Assessing credit risks and opportunities in a changing climate – Transition related risks & opportunities⁸⁹**

Extending our horizons: Assessing credit risk and opportunity in a changing climate: Outputs of a working group of 16 banks piloting the TCFD Recommendations

PART 1: Transition-related risks & opportunities

This report is the result of cooperation between sixteen of the world's leading banks and the UN Environment Finance Initiative (UNEP FI) as well as the consultancy companies Oliver Wyman and Mercer. The aim was to conduct scenario-based assessments of climate risks and opportunities based on the TCFD recommendations. The outcome of this process should form an initial yet critical step in relation to the implementation of the TCFD recommendations.

- **UNEP FI (2018): Assessing credit risks and opportunities in a changing climate – Physical risks and opportunities⁹⁰**

Navigating a new climate: Assessing credit risk and opportunity in a changing climate: Outputs of a working group of 16 banks piloting the TCFD Recommendations

PART 2: Physical risks and opportunities

This report is the result of cooperation between sixteen of the world's leading banks and the UN Environment Finance Initiative (UNEP FI) as well as the consultancy company Acclimatise, which specialises in climate change and adaptation to climate change. In order to gauge the consequences of climate change on corporate loan portfolios, banks developed and tested a comprehensively applicable scenario-based access pursuant to the TCFD's Recommendations.

- **CISL (2019): Transition risk framework⁹¹**

Cambridge Institute for Sustainability Leadership (CISL) (2019, February). Transition risk framework: Managing the impacts of the low carbon transition on infrastructure investments. Cambridge, UK.

The ClimateWise Insurance Advisory Council has developed the ClimateWise Transition Risk Framework – an open source model, which can be used to quantify climate risks and opportunities in infrastructure investment portfolios.

⁸⁹ Cf. *United Nations Environment Programme Finance Initiative (UNEP FI)*, *Extending our Horizons - Assessing credit risk and opportunity in a changing climate: Outputs of a working group of 16 banks piloting the TCFD Recommendations*, PART 1: Transition-related risks & opportunities, <https://www.unepfi.org/wordpress/wp-content/uploads/2018/04/EXTENDING-OUR-HORIZONS.pdf>.

⁹⁰ Cf. *United Nations Environment Programme Finance Initiative (UNEP FI)*, *Navigating a new Climate - Assessing credit risk and opportunity in a changing climate: Outputs of a working group of 16 banks piloting the TCFD Recommendations*, PART 2: Physical risks and opportunities, <https://www.unepfi.org/wordpress/wp-content/uploads/2018/07/NAVIGATING-A-NEW-CLIMATE.pdf>.

⁹¹ Cf. *Cambridge Institute for Sustainability Leadership (CISL)*, *Transition risk framework: Managing the impacts of the low carbon transition on infrastructure investments*, <https://www.cisl.cam.ac.uk/resources/sustainable-finance-publications/transition-risk-framework-managing-the-impacts-of-the-low-carbon-transition-on-infrastructure-investments>.

The framework consists of three components that can either be used independently of, or in combination with, one another, to investigate threats and opportunities of transition:

1. assessing the breadth of asset types exposed to transition risk at portfolio level (across different subsectors, regions and timeframes)
 2. defining the potential financial impact of the low carbon transition down to asset level
 3. incorporating transition impacts into asset financial models
- **CISL (2019): Physical Risk Framework⁹²**
Cambridge Institute for Sustainability Leadership (CISL) (2019, February). Physical risk framework: Understanding the impacts of climate change on real estate lending and investment portfolios. Cambridge, UK.
 Based on the risk assessment instruments in the insurance sector, the ClimateWise Physical Risk Framework shows to what extent they may also be relevant for other financial market participants, supplemented by risk exposure mitigation strategies. This framework contains instruments specifically focused on investments and financing in the real estate sector for evaluating potential physical risks.
 - **Drought Risks: UNEP FI Drought Stress Testing Tool⁹³**
 The Drought Stress Testing Tool on the one hand permits the evaluation of the extent of associated exposure to drought risks, and on the other hand to what extent drought may affect a sector or a region.
 - **Water risks: WWF Water Risk Filter⁹⁴**
 The Water Risk Filter is an online tool that was developed by the WWF and the Deutsche Investitions- und Entwicklungsgesellschaft (DEG). It allows water risks to be able to be investigated, analysed, and evaluated, and to react accordingly.
 - **Water risks: WBCSD – Global Water Tool⁹⁵**
 The Global Water Tool (GWT) is a free and publicly available instrument for identifying corporate risks and opportunities in relation to water as a resource by access to and the evaluation of relevant data. The tool consists of a workspace (for data entry, a

⁹² Cf. *Cambridge Institute for Sustainability Leadership (CISL)*, Physical risk framework: Understanding the impact of climate change on real estate lending and investment portfolios, <https://www.cisl.cam.ac.uk/resources/sustainable-finance-publications/physical-risk-framework-understanding-the-impact-of-climate-change-on-real-estate-lending-and-investment-portfolios>.

⁹³ Cf. *UN Environment – Finance Initiative (UNEP-FI) / Natural Capital Financial Alliance (NCFA) / Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) / Risk Management Solutions (RMS)*, Drought Stress Testing: Making Financial Institutions More Resilient to Environmental Risks, <http://www.unepfi.org/publications/ecosystems-publications/ncfa-publications/drought-stress-testing-tool/>.

⁹⁴ For more detailed information about the WWF Water Risk Filter see: <https://waterriskfilter.panda.org/>.

⁹⁵ For more detailed information about the Global Water Tool see: <https://www.wbcsd.org/Programs/Food-and-Nature/Water/Resources/Global-Water-Tool-old>.

stock-take by location, significant disclosure indicators, calculation of metrics), mapping functions for graphical depictions, as well as a Google Earth Interface for a spatial view.

- **Water risks: World Resources Institute (WRI), Aqueduct water risk atlas⁹⁶**

The Aqueduct Water Risk Atlas supports the development of an understanding where and how risks and opportunities associated with water resources are developing worldwide. The atlas uses methodologies and data to draw up high-resolution individually adjustable global water risk maps.

- **Natural Capital-related Risks – ENCORE Tool⁹⁷**

ENCORE (Exploring Natural Capital Opportunities, Risks and Exposure) allows users to visualise the interdependencies between the economy and nature and to see to what extent environmental changes pose risks for companies. Emanating from a single corporate sector, a single ecosystem or a single form of nature capital, ENCORE can be applied to investigate nature capital risks.

- **Science Based Targets initiative SBTi – Science-based targets for financial institutions⁹⁸**

The SBTi supports companies or financial institutions, to bring their loan and investment portfolios into line with the objectives set out in the Paris Agreement. The results of the road test conducted in 2019 for 29 financial institutions are being evaluated and fed into the guidance document. The publication of the final guide including methodologies and criteria is announced for summer 2020.

- **European Commission C(2017) 4234 final: Guidelines on non-financial reporting⁹⁹**

These Guidelines aim to support entities in disclosing high quality, relevant, useful consistent and comparable non-financial (sustainability-related) information that promotes resilience and sustainable growth and employment, and ensuring transparency for stakeholders. These non-binding Guidelines were developed in relation to the reporting requirements set forth in Directive 2014/95/EU regarding the disclosure of non-financial and diversity information by certain large undertakings and groups.

⁹⁶ For more detailed information about the Aqueduct water risk atlas see: <https://www.wri.org/resources/maps/aqueduct-water-risk-atlas>.

⁹⁷ For more detailed information about the ENCORE Tool see: <https://encore.naturalcapital.finance/en> (Tool), <https://www.unepfi.org/news/themes/ecosystems/groundbreaking-new-tool-enables-financial-institutions-to-see-their-exposure-to-natural-capital-risk/> (UNEP-FI News) as well as *Natural Capital Finance Alliance (NCFA) / UN Environment World Conservation Monitoring Centre (UNEP-WCMC)*, Exploring Natural Capital Opportunities, Risks and Exposure: A practical guide for financial institutions (2018), https://www.unepfi.org/wordpress/wp-content/uploads/2018/11/NCFA_Exploring-Natural-Capital-Opportunities-Risks-and-Exposure_Nov-2018.pdf (Guidance).

⁹⁸ For more detailed information about the Science Based Targets initiative (SBTi) see: <https://sciencebasedtargets.org/financial-institutions/>.

⁹⁹ Cf. *European Commission*, Communication from the Commission — Guidelines on non-financial reporting (methodology for reporting non-financial information), 2017/C 215/01, [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52017XC0705\(01\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52017XC0705(01)).

- **European Commission Communication C(2019) 209/01: European Commission Guidelines on non-financial reporting: Supplement on reporting climate-related information**¹⁰⁰

Prepared in accordance with Article 2 of Directive 2014/95/EU to assist concerned companies to disclose non-financial information and diversity-related information as a supplement to the Guidelines on Non-Financial Reporting (C (2017) 4234 final). These Guidelines are non-binding and also integrate the recommendations of the TCFD.

- **Taxonomy: Final report of the Technical Expert Group on Sustainable Finance**¹⁰¹
- **TCFD (2017): Recommendations of the Task Force on Climate-related Financial Disclosures**¹⁰²

The Task Force developed Recommendation for publishing climate-related information, with the aim of contributing towards the better understanding of material climate risks. The Task Force developed four generally implementable recommendations for climate-related financial disclosure (Governance, Strategy, Risk Management, Metrics and Targets).

- **De Nederlandsche Bank (2019): Good Practice - Integration of climate-related risk considerations into banks' risk management**¹⁰³

This DNB Guide sets out and describes the individual steps in the risk management cycle using simple explanations, graphics and practical examples.

- **GSFC Germany e.V & TCFD Think Tank (2019): User Guidance in relation to the TCFD Recommendations**¹⁰⁴

The Green and Sustainable Finance Cluster Germany has established a think tank in cooperation with financial market practitioners to discuss practical issues in the implementation of the TCFD Recommendations. The outcomes are made available to the interested public, especially financial institutions, now in the form of handouts. They are tailored to practical requirements, in order to promote the autonomous implementation of the TCFD Recommendations.

¹⁰⁰ Cf. *European Commission*, Communication from the Commission — Guidelines on non-financial reporting: Supplement on reporting climate-related information, 2019/C 209/01, [https://eur-lex.europa.eu/legal-content/en/TXT/PDF/?uri=CELEX:52019XC0620\(01\)](https://eur-lex.europa.eu/legal-content/en/TXT/PDF/?uri=CELEX:52019XC0620(01)).

¹⁰¹ Cf. *EU Technical Expert Group on Sustainable Finance*, Taxonomy: Final report (2020), https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/200309-sustainable-finance-teg-final-report-taxonomy_en.pdf.

¹⁰² Cf. *Task Force on Climate-related Financial Disclosures*, Final Report: Recommendations of the Task Force on Climate-related Financial Disclosures (2017), <https://www.fsb-tcf.org/publications/final-recommendations-report/>.

¹⁰³ Cf. *De Nederlandsche Bank*, Good Practice - Integration of climate-related risk considerations into banks' risk management (2019), <https://www.toezicht.dnb.nl/binaries/50-238048.pdf>.

¹⁰⁴ Cf. *Green and Sustainable Finance Cluster Germany*, User Guidance on TCFD Recommendations, https://gsfc-germany.com/wp-content/uploads/2019/08/190820_TCFD_Handreichungen_EN-1.pdf.

- **ISO 14097 – Framework and principles for assessing and reporting investments and financing activities related to climate change¹⁰⁵**

This international standard that is currently under development contains principles, requirements and guidelines for defining, monitoring, evaluating and reporting the measures of financial institutions in relation to climate change referring to the TCFD Recommendations. The framework may be applied both by financial market participants that conduct focused climate protection measures, as well as those with specific climate targets or strategies.

- **Greenhouse Gas Protocol (GHG Protocol)¹⁰⁶**

The GHG Protocol Corporate Accounting and Reporting Standard contains requirements and guidelines for entities and other organisations that draw up a greenhouse gas inventory at entity level (Scopes 1 and 2).

- **Corporate Value Chain (Scope 3) Accounting and Reporting Standard¹⁰⁷**

The Corporate Value Chain (Scope 3) Accounting and Reporting Standard allows companies to assess their entire value chain emissions impact and identify where to specifically focus emission-reduction activities.

- **GRI Standards and GRI Financial Sector Guidance¹⁰⁸**

GRI Standards represent the global best practice for public reporting of various economic, ecological and social impacts. Sustainability reporting that is based on the standards informs about the positive or negative contributions of organisations towards sustainable development.

- **Sustainability Accounting Standards Board (SASB)¹⁰⁹**

The Standards have been jointly drawn up by financial players to support companies around the world in identifying, managing and communicating about sustainability issues that are relevant for their investors.

- **Carbon Disclosure Project (CDP)¹¹⁰**

CDP operates a global environmental disclosure system. Every year, CDP supports companies, cities, states and regions in measuring and controlling their threats and opportunities in relation to climate change, water security and deforestation.

¹⁰⁵ For more detailed information about ISO 14097 - Framework and principles for assessing and reporting investments and financing activities related to climate change see: <https://www.iso.org/standard/72433.html>.

¹⁰⁶ Cf. *GHG Protocol*, A Corporate Accounting and Reporting Standard, <https://ghgprotocol.org/corporate-standard>.

¹⁰⁷ Cf. *GHG Protocol*, Corporate Value Chain (Scope 3) Accounting and Reporting Standard, <https://ghgprotocol.org/standards/scope-3-standard>.

¹⁰⁸ For more detailed information about GRI Standards and GRI Financial Sector Guidance see: <https://www.globalreporting.org/standards/resource-download-center/>.

¹⁰⁹ For more detailed information about on SASB Standards see: <https://www.sasb.org/>.

¹¹⁰ For more detailed information about CDP surveys see: <https://www.cdp.net/en>.

- **Climate Disclosure Standards Board (CDSB)¹¹¹**

CDSB is an international consortium of businesses and environmental NGOs. The consortium's goal is to align the global mainstream corporate reporting model in such a way that natural capital is equated with financial capital.

- **The Bank of England's Insurance Stress Test and the 2° Investing Initiative using the PACTA Tool¹¹²**

In July-September 2019, the UK's Prudential Regulation Authority (PRA) conducted an insurance stress test for the largest regulated life and general insurers. The PRA plans to publish a summary of the results.

- **The 2021 biennial exploratory scenario on the financial risks from climate change – Bank of England (2019)¹¹³**

The Bank of England has published a discussion paper, presenting the proposed framework conditions for the 2021 BES Scenario (Biennial Exploratory Scenario). The BES's objective is to test the resilience of the largest banks and insurers against physical risks and transition risks based on various potential climate scenarios.

- **ISIMIP – Inter-Sectoral Impact Model Intercomparison Project¹¹⁴**

ISIMIP harmonises the modelling of a number of international research groups using uniform scenarios, output data and formats. It covers various sectors of climate-impact research, from agriculture and energy through to health.

- **OeNB/WKO Conference on “Climate Risk Management for Financial Intermediaries”¹¹⁵**

Presentations addressed the following issues: How does climate change affect the financial sector? What challenges do financial intermediaries face? In addition, good and best practices were also presented.

¹¹¹ For more detailed information about CDSB standards see: <https://www.cdsb.net/>.

¹¹² For more detailed information about the Insurance Stress Test using the PACTA Tool see: <https://www.transitionmonitor.com/stress-testing/> (2° Investing Initiative) as well as <https://www.bankofengland.co.uk/prudential-regulation/letter/2019/insurance-stress-test-2019> (Bank of England).

¹¹³ cf. *Bank of England*, Discussion Paper - The 2021 biennial exploratory scenario on the financial risks from climate change (2019), <https://www.bankofengland.co.uk/-/media/boe/files/paper/2019/the-2021-biennial-exploratory-scenario-on-the-financial-risks-from-climate-change.pdf?la=en&hash=73D06B913C73472D0DF21F18DB71C2F454148C80>.

¹¹⁴ For further information about the Inter-Sectoral Impact Model Intercomparison Project see: <https://www.isimip.org/>.

¹¹⁵ The Oesterreichische Nationalbank/Austrian Economic Chambers held a conference on Climate Risk Management for Financial Intermediaries on 11.12.2019, the presentations (in German) of which can be accessed at: <https://www.oenb.at/Termine/2019/2019-12-11-klimariskomanagement.html>.

INFORMATION SOURCES FOR CLIMATE-RELEVANT DATA AND FACTS

AUSTRIA

- Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology (BMK): <https://www.bmk.gv.at/en.html>
- Environment Agency Austria (Umweltbundesamt) - Facts and Figures about Climate Change, Mitigation and Adaptation: (*Zahlen, Daten, Fakten zu Klimaschutz & Klimawandelanpassung*) (in German only) <https://www.umweltbundesamt.at/klima>
- Climate and Energy Funds: Fact Check about Green Finance: <https://faktencheck-energiewende.at/en/faktencheck/green-finance/>
- Austrian Climate Protection Report 2019 (Klimaschutzbericht 2019): <https://www.umweltbundesamt.at/fileadmin/site/publikationen/REP0702.pdf>
- Central Institution for Meteorology and Geodynamics (Zentralanstalt für Meteorologie und Geodynamik, ZAMG): The ZAMG's climate portal provides an overview about current findings from climate research. <https://www.zamg.ac.at/cms/de/klima/informationsportal-klimawandel>
- The Austrian Assessment Report on Climate Change (AAR14 – Austrian Assessment Report) contains comprehensive analysis about the effects of climate change: <https://ccca.ac.at/wissenstransfer/apcc/apcc-aar14/austrian-assessment-report-2014-aar14>
- Climate Status Report - Austria and Vienna 2018: <https://ccca.ac.at/wissenstransfer/klimastatusbericht>
- Klimawandelanpassung.at: Joint BMK, Climate Fund and Environment Agency Austria (Umweltbundesamt) information portal about the consequences of climate change and adaptation: https://klimawandelanpassung.at/ms/klimawandelanpassung/de/kwa_oesterreich/
- Austria's integrated national energy and climate plan: https://www.bmnt.gv.at/umwelt/klimaschutz/klimapolitik_national/nationaler-energie-und-klimaplan.html
- COIN – Cost of Inaction – monetary assessment of the effects of climate change for Austria including sector-specific analyses: <https://coin.ccca.ac.at/>
- CCCA Climate Service Center Austria <https://ccca.ac.at/en/homepage>
- How municipalities are affected by climate change: <http://www.ccact.anpassung.at/>
- ÖKS 15 – Regional Climate Scenarios for Austria: The Climate Factsheets for every Province and selected municipalities provide an overview about future development trends about temperature, precipitation, heat days, frost days, dry periods etc. until the end of the 21st century. The spatial resolution of the calculation models is 1 x 1 km.
To download maps: <https://data.ccca.ac.at/dataset?organization=uni-salzburg>

[Brief description](https://www.bmnt.gv.at/umwelt/klimaschutz/klimapolitik_national/anpassungsstrategie/klimaszenarien.html) (in German only): https://www.bmnt.gv.at/umwelt/klimaschutz/klimapolitik_national/anpassungsstrategie/klimaszenarien.html

- CLIMA-MAP maps to present the effects of climate change for municipalities and regions in Austria: The following climate change consequence maps are available for every province: Heat days, wet days, total precipitation, tropical nights, 3 day precipitation intensities, days with strong precipitation, heating degree days, vegetation period, cooling degree days, freeze-thaw days of change, incl. a manual about using the material contained on the maps.

To download maps: <https://data.ccca.ac.at/en/dataset?q=clima+map>

Brief overview: <https://www.klimawandelanpassung.at/index.php?id=31111>

- Scientists 4 Future: <https://www.scientists4future.org> (in German only)
- HORA 2.0 – Risk of Flooding and Natural Hazards for Austria: The HORA 2.0 digital map of hazards allows an initial estimation to be made about the threat-based situation of a property or a plot of land. HORA shows the potential threat of flooding, earthquakes, storms, hail and snow. www.hora.gv.at

EUROPE AND INTERNATIONAL

- European Commission: https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance_en (see also the Commission’s Action Plan at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52018DC0097> and the European Green Deal https://eur-lex.europa.eu/resource.html?uri=cellar:b828d165-1c22-11ea-8c1f-01aa75ed71a1_0021.02/DOC_1&format=PDF)

- EEA – European Environment Agency

The EEA provides robust independent information about environmental issues. In close cooperation with the European Environmental Information and Observation Network (Eionet) and its 33 member nations, the EEA collects data and conducts analyses on a broad range of environmental issues.

The EEA regularly publishes reports on “climate change, impacts and vulnerability”, which may be used as a basis for further-reaching analyses.¹¹⁶

<https://www.eea.europa.eu/>

- Climate-ADAPT

Climate-ADAPT, the European platform for adapting to the consequences of climate change, is a partnership between the European Commission and the EEA. Climate-ADAPT is intended to support Europe in adapting to the consequences of climate change, and provides access to data and information about expected climate change in European as well as the vulnerability of regions and sectors. <https://climate-adapt.eea.europa.eu/>

¹¹⁶ Cf. e.g. *European Environment Agency (EEA)*, EEA Report No 1/2018 - National climate change vulnerability and risk assessments in Europe, <https://www.eea.europa.eu/publications/national-climate-change-vulnerability-2018>.

- **meteoalarm**
EU-wide early warning system, which makes the most important information available in order for Europe to prepare for extreme weather situations. The system warns about extreme weather events, such as strong rain with a threat of flooding, severe storms, storm force winds, heatwaves, forest fires, fog, snow or extreme cold with snowstorms, avalanches etc. <http://www.meteoalarm.eu/>
- **COPERNICUS**
The Copernicus Climate Change Service (C3S) provides historical, present day and future climate information in both in Europe and globally. <https://climate.copernicus.eu/>
- **European Flood Awareness System:** <https://www.efas.eu/>
- **EC Knowledge Hub on Water and Agriculture:** <https://water.jrc.ec.europa.eu/>
- **European Drought Observatory:**
<https://edo.jrc.ec.europa.eu/edov2/php/index.php?id=1000>
- **IPCC – Intergovernmental Panel on Climate Change**
The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body for assessing scientific studies related to climate change. It prepares comprehensive assessment reports on the current state of scientific, technical and socio-economic knowledge about climate change (impacts, future risks and mitigation options etc.) <https://www.ipcc.ch/>
- **Network for Greening the Financial System (NGFS)**
The NGFS is an affiliation of supervisory authorities and central banks, sharing best practices and contributing to the development of environmental and climate risk management in the financial sector. In this way, the transition to sustainable economies is intended to be supported by the financial sector. <https://www.ngfs.net/en>
- **WMO – World Meteorological Organisation:** <https://public.wmo.int/en>
- **Potsdam Institute for Climate Impact Research (PIK)**
The Potsdam Institute for Climate Impact Research (PIK) is one of the world's leading institute's in research on global change, climate impact and sustainable development. <https://www.pik-potsdam.de/research/publications>
- **SENSES Toolkit - interactive online platform with climate scenarios**
<https://climatescenarios.org/>
- **IRENA – International Renewable Energy Agency:** www.irena.org
- **IEA – International Energy Agency:** <https://www.iea.org/reports/world-energy-outlook-2019/>
- **World Bank – ESG Data Portal:** <http://datatopics.worldbank.org/esg/>