

# 2022 IORP STRESS TEST

## Technical Specifications

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# 1. GENERAL INTRODUCTION

## 1.1. Objective

### 1.1.1. Content

This document sets out the technical specifications for the 2022 stress test of Institutions for Occupational Retirement Provision (IORPs). EIOPA developed this document and, as part of the cooperation required by the EIOPA Regulation, the European Systemic Risk Board (ESRB) provided the specifications of the adverse scenario. The stress test exercise is launched on 4<sup>th</sup> April 2022 and the participating IORPs are expected to complete the exercise and submit the results to the relevant national competent authority (NCA) by 13<sup>th</sup> June 2022.

### 1.1.2. EIOPA'S mandate to carry out stress tests

According to Article 32 of Regulation (EU) No 1094/2010<sup>1</sup> (EIOPA Regulation), EIOPA has to initiate and coordinate Union-wide assessments of the resilience of financial institutions to adverse market developments. In such assessments, EIOPA should consider the effects of economic scenarios on the IORP's financial position, taking into account specificities of the scheme types, i.e. defined benefit (DB) and defined contribution (DC), for the effects on the financial position of the IORPs and on the members and beneficiaries of IORPs. Hereby, EIOPA is mandated to assess the potential impact posed by IORPs on the financial stability and the real economy. Further, environmental risks and their effects on the financial stability of the IORP sector should be analysed.

## 1.2. Background and motivation

### 1.2.1. Following-up on the 2019 IORP stress test's results

Given the diversity of the European occupational pension sector - in terms of structures, regulatory frameworks and relative importance for the citizens' future retirement income - monitoring the potential impact of and on the sector on financial stability is a crucial exercise for EIOPA. In 2019, EIOPA carried out a stress test to assess the resilience and potential vulnerabilities of the Defined

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<sup>1</sup> Regulation (EU) No 1094/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority (European Insurance and Occupational Pensions Authority), amending Decision No 716/2009/EC and repealing Commission Decision 2009/79/EC; OJ L 331, 15.12.2010, p. 48–83.

Benefit (DB) and Defined Contribution (DC) Institutions for Occupational Retirement Provision (IORPs). For the first time, this European stress test exercise also covered an analysis of IORPs' integration of Environmental, Social and Governance (ESG) factors to gain insights into current exposures to business sectors prone to greenhouse gas emissions.

EIOPA applied an adverse market scenario, characterised by a sudden reassessment of risk premia and shocks to interest rates on short maturities, resulting in increased yields and widening of credit spreads. The adverse market scenario would have led to substantial aggregate shortfalls of 180bn Euros according to national methodologies and 216bn Euros following the stress test's common methodology. Under the assumptions of the common methodology, the shortfalls in the adverse scenario would have triggered aggregate benefit reductions of 173bn Euros and sponsoring undertakings to provide financial support of 49bn Euros. IORPs' financial situation would be heavily affected in the short term, leading to substantial strains on sponsors within a few years after the shock and resulting in cuts of the retirement income of members and beneficiaries over decades.

These findings provided insights into the vulnerabilities and exposures of the IORP sector in terms of current investments and investment behaviour – as well as into the potential effects on security mechanisms and the potential gravity of cuts to members and beneficiaries' retirement income. Long-term pension obligations provide for IORPs to sustain short-term volatility and market downturns for longer periods than other financial institutions, yet the findings highlight the need for supervisory monitoring and the available supervisory tools to be capable of detecting adverse market trends and market developments that can have long-term negative effects.

Further, IORPs' long-term obligations arguably require taking into consideration whether investments are sustainable. Indeed, the majority of IORPs in the sample indicated to have taken appropriate steps to identify sustainability factors and ESG risks for their investment decisions. Most importantly, the IORPs were able to identify the underlying business sectors, in which they are investing, at the necessary level of granularity to quantify the ESG exposures, for example to assess IORPs' carbon footprints. However, only 30% of them had processes in place to manage ESG risks and only 19% of the IORPs in the sample assessed the impact of ESG factors on investments' risk and returns. IORPs' preparedness to integrate sustainability factors was widely dispersed and seemed correlated to how advanced national frameworks were. Matching the participating IORPs' investment information with Eurostat's greenhouse gas emission statistics by business sectors, indicated a relatively high carbon footprint, compared to the average EU economy, of the equity investments and, concentrated in a few Member States, of the debt investments.

European IORPs are considerate to sustainability aspects of their business model, yet may be vulnerable due to a potential lack of effective risk management of environmental risks in their

investments. Further, providing sustainable pensions to the European citizens means to be capable of maintaining an adequate level of future retirement income and to enable members and beneficiaries to keep their standards of living in retirement.

Changing demographics, the shift from DB to DC, new forms of labours – self-employed, part-time, mobile – and the need to address gender gaps put pension systems under pressure to find appropriate solutions that are future-proof. Corresponding risk-mitigation techniques in the design of pension schemes, for example the building of reserves and buffers, as well as specific investment disinvestment strategies for age groups of members, life-cycling, as well as innovative decumulation options may be challenged for their effectiveness under an adverse market scenario.

### 1.2.2. Assessing the impact of the COVID-19 pandemic on IORPs

The IORP sector has been heavily affected by the market turmoil in the wake of the pandemic, which swept away substantial value gains of IORPs' investments in 2019. Whilst equity markets have fully recovered and the expectations on economic growth are more positive than before the pandemic, concerns on the phasing out of fiscal support measures and consequently, potentially increasing numbers of insolvencies and defaults of corporate bonds as well as negative effects on the labour markets are still looming. Investment allocations and strategies of IORPs in Europe are quite diverse, yet generally IORPs are - due to their long-term obligations - capable of investing for the long-term and usually have some flexibility in the time horizon for re-balancing to their strategic investment allocation after the plunge observed in the first and second quarters of 2020.

Due to the character of the crisis, IORPs endured heightened market volatility and experienced unprecedented levels of uncertainty regarding the development of the global economies being shut down, limitations in spending and consumption as well as risks to global trade, but also are still affected by persistently low interest rates. Further, some IORPs probably have faced temporarily funding and liquidity concerns due to suspended or lowered contributions from sponsors and members due to sponsors' default or members' inability to maintain contributions due to unemployment or temporary furlough measures. Government support measures have helped sponsoring undertakings in heavily affected sectors, but could be result in significant financial difficulties when those measures are phased out. Sponsoring undertakings' financial difficulties to maintain contributions, or in the worst case, sponsoring undertaking' insolvency may test national pension protection schemes. The set-up, structures and design of such pension protection schemes

are heterogeneous amongst Member States, so that it may be interesting to assess how these schemes work and when they may be triggered to secure future retirement income.

A preliminary observation from the effects of the COVID-19 pandemic is the necessity of business continuity, maintaining contribution and benefit payments, paying particular attention to liquidity needs, for example margin requirements of derivatives and members/beneficiaries' (limited) rights to redeem savings, and lastly to set out 'crisis-proof' investment allocation policies, processes and strategies for DB and DC IORPs to mitigate investment risks for the members and beneficiaries and to protect members against significant losses shortly before or at retirement.

The effects of the COVID-19 pandemic to some extent determine the financial situation of IORPs at the end of 2021, so that the analysis of the stress-test results have to take into account the specificities of this baseline situation.

### 1.2.3. The rise of inflation levels

The closure of parts of the Member States' key economic sectors and the necessary support measures required unprecedented fiscal deficits and very high stocks of debt. Supply constraints stemming from limitations in international trade and shortages of key industrial components (microchips, metals and chemicals) as well as pandemic-driven changes in consumption resulted in escalating price growth for commodities, in particular petrol and energy, as well as housing and food.

The levels of price inflation in the EU and the US have increased substantially, however, the increases may only be regarded as transitory and not permanent. Consequently, central banks around the world may consider raising interest rates. Further, the impact on wage inflation is yet unclear – where there are noticeable shortages in personnel in a few sectors, there are still many employees in furlough schemes, currently protected against unemployment. Many households may have saved cash during the pandemic due to the significant changes in consumption patterns, which may lead to a surge in spending that may feed inflation. Although such inflation spikes are so far expected to be short lived, there are concerns that strong GDP growth, spending and consumption may drive higher inflation rates than were observed in the last decade in the EU or the US.

Independent of potential reactions of central banks to address rises in inflation rates, inflation certainly affects the real return of investments and may push up bond yields. Further, higher spreads affect highly indebted sovereigns and corporates and particularly impact the value of long-term investments. In case the financial recovery is uneven in the different Member States and third

countries, a general surge in inflation and yields, will affect national economies in different ways and expose particularly highly indebted economies to even higher inflation.

#### 1.2.4. Risk of a delayed and sudden transition to a sustainable economy

The strong fiscal and monetary stimulus to counter the negative implications of the Covid-19 pandemic is a unique opportunity to boost the financing of Europe's transition to a sustainable economy and to mitigate environmental risks, in particular the effects of climate change. The EU has made significant steps to foster greening the financing and investments with a number of legislative initiatives and regulations. To reach its ambitious goals to reduce emissions and to become the first climate-neutral continent by 2050, the EU requires substantial investments in economic activities and technologies that promote climate change adaptation and mitigation - as well as other environmental objectives (e.g. biodiversity).

Since 2018, the EU has put significant efforts to foster transparency and standards to the identification of economic activities that indeed support the environmental goals of the EU so that private financing and funding can be channelled to such activities. The main objective of the Taxonomy Regulation is to set out relevant criteria for determining whether an economic activity qualifies as environmentally sustainable, in particular, in order to address market failures that hamper the identification of such economic activities and therewith, ultimately to remove barriers to the functioning of the internal market. Further clarity and transparency can help raising funds for sustainability projects and may prevent the future emergence of barriers to such projects. With a clear definition of such economic activities, entities shall find it easier to raise funding across borders for their environmentally sustainable activities, as their economic activities could be compared against uniform criteria in order to be selected as underlying assets for environmentally sustainable investments. The harmonisation of relevant criteria is expected to facilitate cross-border sustainable investment in the European Union.

With the definition of what an environmentally sustainable economic activity is, financial market participants can provide a reasonably founded explanation to investors about how the activities in which they invest contribute to environmental objectives. Equally, investors will find it easier to check and compare different financial products, which may encourage investors to invest in environmentally sustainable financial products. Furthermore, a lack of investor confidence has a major detrimental impact on the market for sustainable investment. If financial market participants use common criteria for disclosures about their taxonomy-aligned economic activities across the European Union, this will help investors compare investment opportunities across borders and can incentivise investee companies to make their business models more environmentally sustainable.

Additionally, investors can invest in environmentally sustainable financial products across the Union with higher confidence, thereby improving the functioning of the internal market.

It is noticeable that investors and investee companies are taking steps to assess their taxonomy aligned activities and to allocate investments in taxonomy-eligible economic activities thereby promoting the financing and funding of sectors, business models and technologies to mitigate environmental risks. However, that also entails the risk of sudden revaluation of corporate bonds of, and equity investments in, investee companies with economic activities that are not taxonomy-eligible or taxonomy-aligned, as well as impairment of sovereign bonds where those countries are highly dependent on economic sectors that are not taxonomy-eligible or taxonomy-aligned. Holding investments in sectors that exhibit non-taxonomy alignment, for example power generation, fossil-fuel dependent sectors, such as transport and manufacturing, as well as property and agriculture may prove to be risky and requires particular attention in the risk management of those investments. Further, IORPs may experience that their members and beneficiaries require an assessment, as well as a potential reallocation, of their investments to be channelled towards more sustainable economic sectors.



## 2. SCOPE AND PROCESS

### 2.1. OBJECTIVES OF THE TYPES OF ANALYSES

In line with the methodological framework for stress-testing IORPs, the choice of analytical approaches and tools follows the narrative and perspective of the stress test exercise. The suggested, specific perspectives of the 2022 IORP stress test, which aim at gaining further insights into IORPs' exposures to climate change – and the potential impact on the IORP's financial situation - as well as the frameworks to potentially mitigate the loss in purchasing powers of retirement income resulting from higher inflation – and the impact on the IORPs' members and beneficiaries – are highly relevant for both DB and DC schemes.

The 2022 IORP stress test has two main objectives:

- (1) Assessing IORPs' exposures to environmental risks, by estimating the impact of an adverse environmental scenario on the value of IORP's investments.
- (2) Assessing the effects of a rise in inflation on retirement income, by carrying out a qualitative analysis to assess the dependencies between inflation, loss of purchasing powers and mandatory or automatic (or discretionary) mitigating adaptation mechanisms.

Regarding the first objective, to understand the effects of an adverse environmental scenario, which is translated into an economic scenario, the methodological framework for stress-testing IORPs suggests to assess the impact on the balance sheet, so that the revaluation of the IORP's assets and liabilities is simulated. Hereby, the focus of the assessment regarding an adverse environmental scenario is on the investments held by the IORP. That means the assessment of the IORP's financial situation requires to consider the assumed market value changes of the IORP's investments, taking into account - at a specified, correspondingly granular, level - the investment-specific exposures to environmental risks. Further, the potential impact on the pension liabilities, which may be affected by the revaluation of the assets as well as due to interest rate movements in the adverse scenario, will be assessed.

For that, and to ensure comparability - between scheme types and countries - of the results, the common methodology<sup>2</sup> for the valuation of the balance sheet shall be applied. Further, to gain an understanding of potential funding needs or prudential consequences from the IORP's impaired

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<sup>2</sup> The specifications for the common methodology remain unchanged from the 2019 IORP stress test, yet were updated for current inputs, and form part of the stress test package.

financial situation, it is worthwhile to further assess the IORP's balance sheet under the national valuation requirements.

The impact on the IORP of the adverse scenario on the assets side depends on the investment-specific exposure to environmental risks, while the effects on the liability side results mainly from the consequential impact of the adverse scenario. In the interpretation of the results of the exercise, specific attention will be paid to these different effects of the adverse environmental scenario. Further, the analysis focusses on assessing the effects on the IORP's financial situation and does not focus on the consequential effects on members and beneficiaries or the timing of the cash flows. Hence, the analysis is limited to a balance sheet approach and does not include a cash flow analysis. To provide insights into the IORP's own climate risk management and climate change stress-testing, additional voluntary information is allowed to present the financial impact of the climate change scenario under the IORP's own models providing a higher granularity of the shocks.

Regarding the second objective, following the ideas developed in the methodological framework for stress-testing IORPs, the basis of such an analysis must be firstly a qualitative analyses regarding the interrelation between inflation, future retirement income and, where relevant, the valuation of technical provisions. This assessment is geared to understand the impact of inflation on retirement income of members and beneficiaries as well as the interlinkages with mitigating mechanisms, for example inflation-indexation of pension obligations. To complement this assessment, quantitative information regarding the variables used for projections, potential thresholds, limits and conditions of potential mitigating mechanisms are required to understand the national or scheme-specific set-up. However, at this stage, an assessment of the IORP's financial situation following a rise in inflation is not possible, as the assessment is limited to the (direct) effects on future retirement income, without taking into account the potential broader economic effects triggered by a rise in inflation. It is worthwhile noting that the 2015 IORP stress test provided insights into the effects on the financial situation of IORPs following two distinct double-hit scenarios: one triggered by a demand shock resulting in lower inflation swap rates and one triggered by a commodity supply shock resulting in higher inflation swap rates.

The analyses are complemented by two dedicated questionnaires, one for the environmental aspects following up on the 2019 analyses on ESG factors as well as for providing information on the climate stress test, and one on inflation-related matters.

## 2.2. SCOPE OF THE EXERCISE

Sustainable investments and the management of environmental risks are relevant for all IORPs and all types of pension obligations. On the other hand, the impact of rising inflation may negatively affect the (expected) financial position of the members and beneficiaries via erosion of the

purchasing power of (expected) benefit payments, which potentially is mirrored in higher liabilities (depending on the obligation of IORPs to adjust benefits to inflation) and it probably leads to higher operational expenses of IORPs. IORPs' choice of long-term investments, which is driven by the objective of providing for adequate future retirement income, is to a large extent determined by how well sustainability and inflation risks are managed. Therefore, all types of IORPs and schemes (simplified to DB and DC schemes) are within the scope of this exercise.

In order to ensure meaningful results of the exercise as well as to ensure that individual results remain unidentifiable, prior exercises showed that the coverage of the exercise should be as high as reasonably possible. As applied in the 2019 IORP stress test, the required coverage is set at 60% of DB schemes' assets in the sector and at least 50% of assets of the DC schemes' assets per country in the EEA to ensure a proportionate approach. A lower coverage than 60%, yet not lower than 50%, is acceptable if, after including the largest IORPs, IORPs with less than 25 million € balance sheet total or less than 100 members and beneficiaries would need to be included in the exercise. The required coverage of the DC sector has to be considered in light of extreme national specificities, for example the very high number of very small DC IORPs in Ireland, which is addressed in a proportionate manner by the competent authorities and EIOPA.

Consistently with previous IORP stress tests, only EEA countries with material IORP sectors, exceeding EUR 500m in assets at year-end 2020<sup>3</sup>, are required to participate. Therefore, the following countries are within the scope of this exercise: Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Ireland, Italy, Liechtenstein, Luxembourg, Netherlands, Norway, Portugal, Slovakia, Slovenia, Spain and Sweden. The corresponding competent authorities choose the sample of IORPs participating in this exercise.

## 2.3. PROCESSES

### 2.3.1. Questions and Answers

The NCAs coordinate the stress test exercise in their respective Member State. Participating IORPs have to direct questions on the technical specifications and the accompanying templates to the NCAs. The NCAs will forward questions of general relevance on the stress test specifications and

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<sup>3</sup> EIOPA's IORP statistics were used to determine the aggregate size of the corresponding IORP sectors at 31<sup>st</sup> December 2020: [Occupational pensions statistics | Eiopa \(europa.eu\)](https://www.eiopa.europa.eu/occupational-pensions-statistics); in cases where current information of 2020 was not available, the values of 31<sup>st</sup> December 2019 were used.

technical specifications to EIOPA as well as any errors in spreadsheets. Questions with regard to the use of the spreadsheets may be answered by the NCAs themselves, if possible.

EIOPA will put in place a questions-and-answer procedure (Q&A) for the stress test specifications, including the technical specifications for the valuation of the common balance sheet. The aim of the Q&A procedure is to ensure consistency in the interpretation of the technical specifications and templates by providing common answers to questions raised by the participants during the exercise. Q&A documents will be published on EIOPA's website, which will be updated once every week.

### 2.3.2. Validations

Participating IORPs have to submit the reporting spreadsheets to their NCA after completing the exercise, no later than 13 June 2022. The NCAs will validate the data submissions at the national level and will follow up with IORPs if inconsistencies are discovered. The national validations are expected to be carried out over around one month and may require interactions with the participating IORPs.

The NCAs will submit the reporting spreadsheets and accompanying documents in a non-anonymised way to EIOPA by 18 August 2022. The planning considers that the national validations are carried out over the summer holiday period, so that the deadline of 18 August 2022 allows for some flexibility for the planning of the national validations.

The data provided by individual IORPs will be validated at EIOPA to ensure consistency of outcomes between and within countries. Moreover, the central validation team will analyse the data and prepare figures and tables for the stress test report. The central validation is expected to be carried out in August and September. The validation team will refer any issues or questions with regard to the data to the relevant NCAs which may request re-submissions from the participating IORPs during that period. The validation team will not directly contact the participating IORPs.

EIOPA has a process in place for ensuring confidentiality of all data<sup>4</sup> collected and stored by EIOPA. A limited number of experts will participate in the central validation meetings and be granted access to the database, subject to strict confidentiality and security protocols.

### 2.3.3. Report

EIOPA expects to publish a report on the stress test as well as its key findings by mid-December 2022. The report will be accompanied by a list of the IORPs participating in the stress test exercise. The report will not contain any data that may be linked to an individual IORP. Consequently, information aggregated at country level may neither be disclosed, if such data reveals information

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<sup>4</sup> That may include data referring to the IORP's sponsor(s).

about individual IORPs. This may, for example, be the case when only a few IORPs of a Member State participate in the stress test exercise.

Notwithstanding the disclosure of information in the EIOPA report, IORPs may choose to publish their individual results on a voluntary basis.

## 3. ENVIRONMENTAL RISKS: CLIMATE CHANGE SCENARIO

### 3.1. SUDDEN AND DISORDERLY TRANSITION

The scenario used in this exercise assesses IORPs' potential financial losses and short-term vulnerabilities in an assumed instantaneous shock triggered by a disorderly transition due to a sharp increase in the price of carbon emissions. The scenario should be considered as severe but plausible in order to detect tail risks.

It is acknowledged that the transition towards a more carbon-neutral economy can take different paths. Yet, the analysis at hand is aimed to provide insights into the effects of an assumed instantaneous shock on the IORP's current exposures and investments, which may detect vulnerabilities to the long-term investment portfolio. The stress test considers the impact of transition risk based on credit risk and market risk on a static balance sheet.

Transition risk is expected to impact carbon-intensive exposure instantaneously. The assumed, sharp and unexpected increase in the price of carbon emissions as well as other non-price measures to curb emissions would affect carbon-intensive sectors directly and other parts of the economy indirectly through production chains and second-round effects. Such a shock impacts both credit and market risks.

This scenario is based on the disorderly transition scenario developed by the Network for Greening the Financial System (NGFS).<sup>5</sup> Under this scenario, policy measures to reduce carbon emissions are delayed. For governments to still achieve the Paris Agreement targets, a sharp and unexpected increase in the price of carbon is needed. In the NGFS's disorderly scenario, this sharp increase takes place around 2030. However, this exercise assumes that the increase in the carbon price occurs in 2022, along with the associated effects on the economy. Importantly, this event needs to be considered as a tail risk analysis rather than a benchmark scenario. The aim of the hypothetical tail risk event is to assess the sensitivity of IORPs' current balance sheets to unexpected sharp measures to curb carbon emissions in the near term.

The applied scenario takes the NGFS disorderly transition scenario as a starting point, assuming the disorderly transition to take place as a one-time shock. The NGFS framework provides for various

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<sup>5</sup> See a description here: NGFS (2021): NGFS Climate Scenarios for central banks and supervisors, [ngfs\\_climate\\_scenarios\\_phase2\\_june2021.pdf](https://www.ngfs.net/en/press-releases/2021/06/ngfs-climate-scenarios-phase2-june2021.pdf).

plausible scenarios, following different pathways along the narratives of an orderly transition, disorderly transition, hot house world and too late transition. The disorderly transition scenario of the NGFS explores higher transition risk due to policies being delayed or divergent across countries and sectors. Hereby, carbon prices are typically higher for a given temperature outcome.

A disorderly transition and starkly increasing carbon prices are generally expected to take place over more than one period. While carbon prices increase by about USD 100 over a three-year period during 2030-32 in the NGFS disorderly transition scenario, the stress test scenario assumes that this increase takes place instantaneously on 31 December 2021. A disorderly transition taking place instantaneously is considered a tail risk, but has the advantage of testing the current vulnerability of IORPs, based on their current exposures to such a disorderly transition, which is a severe, but plausible scenario.

The carbon price is applicable for all greenhouse gas emissions and scaled by the relevant CO<sub>2</sub>-equivalence factors. While carbon prices increase by about USD 100 over a three-year period in the NGFS disorderly scenario, the stress test scenario assumes that the carbon price shock is frontloaded to simplify the calculations.

## 3.2. IMPACT ON IORPS' FINANCIAL SITUATION

The resilience and vulnerabilities of IORPs are assessed using one adverse environmental scenario provided by the ESRB. The ECB, in cooperation with the ESRB has developed the narrative, the methodology and calibrated the adverse scenario for this stress test. The scenario provides for individual risk factors that cover the investment exposures of IORPs' assets and short- and long-term interest rates as a measure of risk-free interest rates to be employed in the common methodology developed by EIOPA to re-value IORPs' liabilities. The variables and shocks included in the stress scenario are provided in the annex<sup>6</sup>.

IORPs have to assess the impact of the scenario on their financial situation by applying the scenario to the national balance sheet and the common, market-consistent balance sheet including all security and benefit adjustment mechanisms. It is acknowledged that for DC IORPs the impact of the scenario on the market value of assets may be mirrored by the value of their liabilities.

Therefore, IORPs have to establish two balance sheets, one following the national valuation and funding requirements as well as a balance sheet following the common methodology, which form the baseline of the stress test. On both balance sheets, the climate scenario's shocks are applied.

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<sup>6</sup> Further, EIOPA provides for an inputs helper tool, which brings together all variables and shocks in one excel tool, and which forms part of the stress test package.

For the national balance sheet, IORPs should report their balance sheet at the reference date using national valuation standards. IORPs should also report the funding requirement (liabilities plus possible buffer requirements) and the surplus/deficit relative to the funding requirement at the reference date. If more than one funding requirement exists, IORPs should provide both the highest funding requirement and minimum funding requirement and the accompanying surpluses (or deficits) at the reference date. The stress scenario portrays an instantaneous shock in one period and does not provide shocks for future periods on the development of (unobserved) risk premiums. In some countries, the discount rate for the valuation of the technical provisions in the national balance sheet will be based on expected returns on assets or risk premia. If relevant, IORPs should assume for the valuation of technical provisions that future risk premiums do not change in the stress scenario as compared to the baseline.

Also, IORPs have to value the common balance sheet at the reference date including all available security and benefit adjustment mechanisms. The items on the common balance sheet should be valued on a market-consistent basis, i.e. using the basic risk-free interest rate curve and including a risk margin for the technical provisions.<sup>7</sup> Participating IORPs with DC schemes are expected to apply the market-consistent valuation to their investments and, where relevant, calculate the additional<sup>8</sup> items of the common balance sheet.

Since the stress scenario is to be considered instantaneous, no management actions may be assumed before or at the time of the stress in the valuation of the stressed balance sheet in addition to those management actions already assumed in the baseline common balance sheet. However, in assessing the impact of the loss-absorbing capacity of the best estimate technical provisions and security mechanisms on the value of those items on the common balance sheet, IORPs should take into account possible future management actions of the IORP.

The reference date for the valuation of the balance sheets is 31 December 2021. IORPs that do not dispose of (audited) data for the reference date should use a best estimate approach to valuation at that date.

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<sup>7</sup> IORPs may use the helper tool developed for the 2019 IORP stress test for the establishment of sponsor support and pension protection schemes:  
[https://www.eiopa.europa.eu/sites/default/files/financial\\_stability/occupational\\_pensions\\_stress\\_test/2019/sponsor\\_support\\_helper\\_tool.xlsx](https://www.eiopa.europa.eu/sites/default/files/financial_stability/occupational_pensions_stress_test/2019/sponsor_support_helper_tool.xlsx)

<sup>8</sup> Additional to the items presented in the national balance sheet.



The structure and description of the balance sheet items follow EIOPA's occupational pension statistics<sup>9</sup> as well as the common balance sheet specifications<sup>10</sup>. Additional items, for example 'property for own use' have been added for further clarity. The value of subordinated loans should not be included on the balance sheets, but reported separately.

IORPs should apply a look-through approach to investments in investment funds and other indirect exposures in assessing the impact of the shocks contained in the stress scenario on the value of investments. In case it is impossible to look through an investment in investment funds, the highest shock should be applied to that investment, as follows:

- if an investment fund or part of the investment fund cannot be allocated to a specific asset class, then IORPs should apply the highest shock for equities (i.e. -37.8%) to that exposure;
- if an investment fund or part of the investment fund can be allocated to a specific asset class but information about the geographical or NACE breakdown is not available then IORPs should apply the highest shock for the respective asset class.

IORPs should fill-in the sheets '0.NBS', '1.NBS', '0.CBS' and '1.CBS' without applying the look-through approach. Whereas in the sheets regarding the 'Geographical Breakdown' and 'Breakdown by NACE' sheets, IORPs should report (baseline and stressed) market values for both direct and indirect exposures, following the application of the look-through approach. This means, for instance, that the value of an investment fund or part of an investment fund that was not subject to the look-through should be reported in the sheet 'Breakdown by NACE' as 'Equity', in line 'Not possible to apply look-through'.

The stressed basic risk-free interest rate curves should in principle be applied to both the asset side and the liability side of the balance sheets. The effects on the national balance sheet will depend on national valuation rules. There will be a direct effect on the common balance sheet since it is valued on a market-consistent basis.

When valuing derivatives, IORPs need to take into account the nature of the derivative (option, forward, future, swap, etc.) and the way its value would change following the stresses applied to the underlying assets and risk-free interest rates.

Furthermore, IORPs should assume that exchange rates remain fixed at their 31 December 2021 values.

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<sup>9</sup> Please see Decision on EIOPA's regular information requests towards NCAs regarding the provision of occupational pensions information: [https://www.eiopa.europa.eu/sites/default/files/publications/protocols\\_decisions\\_memoranda/annex\\_eiopa-bos-20-362-initiative-on-pensions-data-bos-decision.pdf](https://www.eiopa.europa.eu/sites/default/files/publications/protocols_decisions_memoranda/annex_eiopa-bos-20-362-initiative-on-pensions-data-bos-decision.pdf)

<sup>10</sup> See Footnote 5.

When calculating the stressed balance sheets, IORPs should take into account the risk-mitigating effects of financial and insurance risk mitigation techniques on the value of these financial instruments and the amounts recoverable from (re-)insurance contracts.

IORPs should take into account the direct as well as indirect effects of the stress scenario on technical provisions and the value of security mechanisms. This includes a possible increase in technical provisions as a consequence of any relevant adverse changes in behaviour of members and beneficiaries or sponsors in reaction to the stress scenario. The approach taken to value the stressed balance sheets, including assumptions regarding behaviour of members and beneficiaries and sponsors as well as future management actions of the IORP, should be consistent with the valuation of the unstressed balance sheet. IORPs should leave market volatilities unchanged in the stress scenario.

IORPs have to classify their credit and equity investments by 22 NACE<sup>11</sup> industries<sup>12</sup> as provided below. The industrial sector of the bond or stock should be determined by the ultimate parent company. For example, a bond issued by a captive finance subsidiary of a car manufacturer should not be classified as a bond issued by a financial institution but as an exposure to a manufacturer of motor vehicles. IORPs should map the exposures to the corporate counterparties to one single sector based on its principle activity, i.e. the activity that generates the highest share of the counterparty's revenue.

<b>NACE industrial sectors</b>	<b>NACE industrial sector description</b>
<b>A01</b>	Crop and animal production, hunting and related service activities
<b>A02-A03</b>	Forestry and logging; Fishing and aquaculture
<b>B</b>	Mining and quarrying
<b>C10-C12</b>	Manufacture of food products, beverages and tobacco products
<b>C13-C18</b>	Manufacture of textiles; Manufacture of wearing apparel; Manufacture of leather and related products; Manufacture of wood

<sup>11</sup> See Eurostat (2008): Statistical Classification of Economic Activities in the European Community, [Europa - RAMON - Classification Detail List](#).

<sup>12</sup> See for a mapping of NACE to other codes: Platform on Sustainable Finance (2021): EU taxonomy NACE alternate classification mapping, [Platform on Sustainable Finance: EU taxonomy NACE alternate classification mapping | European Commission \(europa.eu\)](#).

	and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials; Manufacture of paper and paper products; Printing and reproduction of recorded media
<b>C19</b>	Manufacture of coke and refined petroleum products
<b>C20</b>	Manufacture of chemicals and chemical products
<b>C21-C22</b>	Manufacture of basic pharmaceutical products and pharmaceutical preparations; Manufacture of rubber and plastic products
<b>C23</b>	Manufacture of other non-metallic mineral products
<b>C24-C25</b>	Manufacture of basic metals; Manufacture of fabricated metal products, except machinery and equipment
<b>C26-C28</b>	Manufacture of computer, electronic and optical products; Manufacture of electrical equipment; Manufacture of machinery and equipment not elsewhere classified
<b>C29-C30</b>	Manufacture of motor vehicles, trailers and semi-trailers; Manufacture of other transport equipment
<b>C31-C33</b>	Manufacture of furniture; Other manufacturing; Repair and installation of machinery and equipment
<b>D</b>	Electricity, gas, steam and air conditioning supply
<b>E36-E39</b>	Water collection, treatment and supply; Sewerage; Waste collection, treatment and disposal activities; Materials recovery; Remediation activities and other waste management services
<b>F</b>	Construction
<b>G45-47</b>	Wholesale and retail trade and repair of motor vehicles and motorcycles; Wholesale trade, except of motor vehicles and motorcycles; Retail trade, except of motor vehicles and motorcycles

<b>H49</b>	Land transport and transport via pipelines
<b>H50</b>	Water transport
<b>H51</b>	Air transport
<b>H52-H53</b>	Warehousing and support activities for transportation; Postal and courier activities
<b>L</b>	Real estate activities
<b>Other</b>	Other activities

### 3.3. VARIABLES AND SHOCKS

An environmental stress scenario, which is based on a disorderly transition considering the intensity of greenhouse gas emissions by economic activities, require a high granularity of shocks to understand the potential market value changes of the corresponding investments. However, the granularity of the assessment and the shocks also has to consider limitations in terms of data availability and quality as well as that IORPs are in a position to appropriately apply the shocks to their investments.

The shocks<sup>13</sup> to the different variables have been provided by the ESRB and are the result of applying a climate change scenario featuring a disorderly transition. The variables refer, where appropriate, to the carbon intensity of the sectors financed by the IORP or to the sectoral exposures of the IORP.

<b><i>Variable</i></b>	<b><i>Country disaggregation</i></b>	<b><i>Sector disaggregation</i></b>
Interest rates	EEA countries, Switzerland, UK, US, China, Japan, Rest of the world	aggregate

<sup>13</sup> Please see also the inputs helper tool, which, amongst others, provides for the applicable shocked risk-free interest rate curve and the applicable shocks to the sovereign bond credit spreads/ shocked yield levels.

Sovereign bond stresses	EEA countries, Switzerland, UK, US, China, Japan, Rest of the world	aggregate
Corporate bond stresses	global	by sector
Property/real estate stresses (commercial)	EEA countries, Switzerland, UK, US, China, Japan, Rest of the world	aggregate
Property/real estate stresses (residential)	EEA countries, Switzerland, UK, US, China, Japan, Rest of the world	aggregate
Equity stresses	global	by sector
Commodities: energy price changes (e.g. gas or oil)	global	aggregate

EIOPA aimed to design a proportionate stress test exercise which is practical and contains appropriate simplifications to minimise the burden on IORPs, but which gathers sufficient data for meeting the objectives of the stress test and drawing informed conclusions. IORPs are requested to complete the stress test exercise on a best effort basis. IORPs may use their own simplifications as long as they are proportionate to the nature, scale and complexity of the underlying risks - and provides for a fair approximation to the exact results. The effects of using simplifications need to be explained and quantified, where possible.

In addition, IORPs can provide additional, voluntary information<sup>14</sup> to show quantitatively the financial effects of the scenario, using IORPs' own models and applying a higher granularity of the shocks. In particular, this could be relevant when an IORP has an explicit ESG-investment policy in place that is linked to a different climate risk-classification than the scenario's variables provide for. The additional, voluntary (qualitative and quantitative) information will help EIOPA assessing the possible limitations of the stress test's scenario, resulting from the chosen level of granularity of the uniform exercise, and will be duly considered in that regard. In order to understand such voluntary,

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<sup>14</sup> A separate reporting template is provided to facilitate the additional, voluntary submission of information.

additional submissions, IORPs have to provide detailed information on the approaches taken, specifying the applied granularity of each shock as well as the applied risk-classification, and in particular how the consistency with the scenario was ensured. It cannot be expected that competent authorities or EIOPA can validate those results, but EIOPA will use this input – to the extent possible – to supplement its analyses of the climate stress test’s results, without commitment to publishing the results of the additional, voluntary reporting.

## 4. ASSESSING THE EFFECTS OF A RISE IN INFLATION – UNDERSTANDING THE POTENTIAL LINKAGES

Rising inflation levels affect the purchasing power of future retirement income, which may or may not be compensated by inflation-indexed pensions or – through salary increases and corresponding higher contributions or higher investment returns. Further, higher inflation levels are expected to raise operational expenses by IORPs.

The objective of this part of the exercises is to understand how – and to which extent - IORPs' schemes or pension plans work to protect members from the purchasing-power effects of higher inflation or to which extent the schemes or pension plans are designed - or which measures are available - to mitigate such effects.

To understand the potential effects of rising inflation levels, EIOPA developed a qualitative questionnaire<sup>15</sup> to see in which ways the retirement income of members and beneficiaries and, where relevant, potentially the technical provisions of IORPs are affected. Here, it is important to distinguish between price inflation and salary increases as a reaction to higher inflation as well as to distinguish between automatic or mandatory adaptations or discretionary ones.

Further, some quantitative information is requested to supplement the understanding of the implementation of the potential inflation protection in line with the national or scheme-specific framework and for a high-level assessment as to how sensitive future retirement income (and technical provisions) react to higher levels of inflation.

Real future retirement income is affected by the loss in purchasing powers. Without remedial measures (inflation indexation, higher salaries and higher contributions), the loss in purchasing powers directly affects the members and beneficiaries. Further, specific investment strategies or financial instruments may be geared towards inflation protection.

Some national frameworks require or permit the indexation of future retirement income to inflation and so to ensure that members and beneficiaries receive the same level of real (inflation-adjusted) retirement income, leading to correspondingly increasing technical provisions of the IORP.

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<sup>15</sup> If the framework is regulated at national level without discretion by the individual IORPs, the qualitative questionnaire can be filled in by the national competent authority.

The analysis should establish, using a survey, whether such provisions are in place, whether they lead to mandatory/automatic or discretionary adaptations – as well as the conditions of those -, or which other actions or measures are available to the IORP.



## ANNEX: VARIABLES AND SHOCKS

Short-term interest rates percentage per annum			Long-term interest rates basis points per annum		
Geographic area	Country	3M	Geographic area	Country	10Y
EU	Austria	0.06	EU	Austria	132
EU	Belgium	0.06	EU	Belgium	138
EU	Cyprus	0.06	EU	Cyprus	170
EU	Germany	0.06	EU	Germany	98
EU	Estonia	0.06	EU	Estonia	147
EU	Spain	0.06	EU	Spain	177
EU	Finland	0.06	EU	Finland	129
EU	France	0.06	EU	France	140
EU	Greece	0.06	EU	Greece	214
EU	Ireland	0.06	EU	Ireland	116
EU	Italy	0.06	EU	Italy	214
EU	Lithuania	0.06	EU	Lithuania	158
EU	Luxembourg	0.06	EU	Luxembourg	100
EU	Latvia	0.06	EU	Latvia	139
EU	Malta	0.06	EU	Malta	187
EU	Netherlands	0.06	EU	Netherlands	119
EU	Portugal	0.06	EU	Portugal	169
EU	Slovenia	0.06	EU	Slovenia	149
EU	Slovakia	0.06	EU	Slovakia	132
EU	Euro area	0.06	EU	Euro area	143
EU	Czech Republic	4.31	EU	Czech Republic	230
EU	Denmark	0.19	EU	Denmark	117
EU	Croatia	3.11	EU	Croatia	172
EU	Poland	1.48	EU	Poland	267
EU	Sweden	0.56	EU	Sweden	110
EU	Hungary	2.78	EU	Hungary	347
EU	Romania	1.49	EU	Romania	397
EU	Bulgaria	0.77	EU	Bulgaria	170
Advanced economies	Norway	1.34	Advanced economies	Norway	284
Advanced economies	Iceland	2.90	Advanced economies	Iceland	451
Advanced economies	Switzerland	-0.14	Advanced economies	Switzerland	96
Advanced economies	Liechtenstein	-0.14	Advanced economies	Liechtenstein	96
Advanced economies	United Kingdom	1.44	Advanced economies	United Kingdom	154
Advanced economies	United States	1.68	Advanced economies	United States	168
Advanced economies	China	1.28	Advanced economies	China	383
Advanced economies	Japan	0.48	Advanced economies	Japan	105
World	Rest of the World	4.64	World	Rest of the World	395

Sovereign yields basis points per annum		
Geographic area	Country	10Y
EU	Austria	132
EU	Belgium	138
EU	Cyprus	170
EU	Germany	98
EU	Estonia	147
EU	Spain	177
EU	Finland	129
EU	France	140
EU	Greece	214
EU	Ireland	116
EU	Italy	214
EU	Lithuania	158
EU	Luxembourg	100
EU	Latvia	139
EU	Malta	187
EU	Netherlands	119
EU	Portugal	169
EU	Slovenia	149
EU	Slovakia	132
EU	Euro area	143
EU	Czech Republic	230
EU	Denmark	117
EU	Croatia	172
EU	Poland	267
EU	Sweden	110
EU	Hungary	347
EU	Romania	397
EU	Bulgaria	170
Advanced economies	Norway	284
Advanced economies	Iceland	451
Advanced economies	Switzerland	96
Advanced economies	Liechtenstein	96
Advanced economies	United Kingdom	154
Advanced economies	United States	168
Advanced economies	China	383
Advanced economies	Japan	105
World	Rest of the World	395

Carbon prices in EUR, USD*		
Geographic area	Country	
EU	Austria	321
EU	Belgium	321
EU	Cyprus	321
EU	Germany	321
EU	Estonia	321
EU	Spain	321
EU	Finland	321
EU	France	321
EU	Greece	321
EU	Ireland	321
EU	Italy	321
EU	Lithuania	321
EU	Luxembourg	321
EU	Latvia	321
EU	Malta	321
EU	Netherlands	321
EU	Portugal	321
EU	Slovenia	321
EU	Slovakia	321
EU	Euro area	321
EU	Czech Republic	321
EU	Denmark	321
EU	Croatia	321
EU	Poland	321
EU	Sweden	321
EU	Hungary	321
EU	Romania	321
EU	Bulgaria	321
Advanced economies	Norway	321
Advanced economies	Iceland	321
Advanced economies	Switzerland	321
Advanced economies	Liechtenstein	321
Advanced economies	United Kingdom	321
Advanced economies	United States	439
Advanced economies	China	201
Advanced economies	Japan	473
World	Rest of the World	192

\* Carbon prices are reported in EUR for the 27 Member States, European Free Trade Association countries and the United Kingdom and in USD for other geographic areas.

Residential real estate prices y-o-y percentage change		
Geographic area	Country	
EU	Austria	-0.6
EU	Belgium	-0.6
EU	Cyprus	0.8
EU	Germany	1.5
EU	Estonia	0.8
EU	Spain	-2.0
EU	Finland	-1.1
EU	France	-0.5
EU	Greece	3.7
EU	Ireland	-0.5
EU	Italy	0.7
EU	Lithuania	0.8
EU	Luxembourg	0.8
EU	Latvia	0.8
EU	Malta	0.8
EU	Netherlands	0.1
EU	Portugal	-1.4
EU	Slovenia	0.8
EU	Slovakia	0.8
EU	Euro area	0.8
EU	Czech Republic	0.8
EU	Denmark	-1.3
EU	Croatia	0.8
EU	Poland	0.8
EU	Sweden	0.8
EU	Hungary	0.8
EU	Romania	0.8
EU	Bulgaria	0.8
Advanced economies	Norway	0.3
Advanced economies	Iceland	0.3
Advanced economies	Switzerland	2.9
Advanced economies	Liechtenstein	2.9
Advanced economies	United Kingdom	0.5
Advanced economies	United States	2.8
Advanced economies	China	7.0
Advanced economies	Japan	1.1
World	Rest of the World	1.0

Commercial real estate prices y-o-y percentage change		
Geographic area	Country	
EU	Austria	-0.3
EU	Belgium	-0.3
EU	Cyprus	0.8
EU	Germany	0.7
EU	Estonia	0.4
EU	Spain	-0.7
EU	Finland	-0.6
EU	France	-0.3
EU	Greece	3.1
EU	Ireland	-0.6
EU	Italy	0.4
EU	Lithuania	0.4
EU	Luxembourg	0.4
EU	Latvia	0.4
EU	Malta	0.4
EU	Netherlands	0.1
EU	Portugal	-0.8
EU	Slovenia	0.4
EU	Slovakia	0.4
EU	Euro area	0.4
EU	Czech Republic	0.3
EU	Denmark	-1.4
EU	Croatia	0.4
EU	Poland	0.4
EU	Sweden	0.4
EU	Hungary	0.5
EU	Romania	0.4
EU	Bulgaria	0.4
Advanced economies	Norway	0.2
Advanced economies	Iceland	0.2
Advanced economies	Switzerland	1.6
Advanced economies	Liechtenstein	1.6
Advanced economies	United Kingdom	0.4
Advanced economies	United States	1.5
Advanced economies	China	3.8
Advanced economies	Japan	0.6
World	Rest of the World	0.5

Commodities y-o-y percentage change				
Geographic area	Country	Oil	Gas	Coal
EU	Austria	275	239	1294
EU	Belgium	275	239	1294
EU	Cyprus	275	239	1294
EU	Germany	275	239	1294
EU	Estonia	275	239	1294
EU	Spain	275	239	1294
EU	Finland	275	239	1294
EU	France	275	239	1294
EU	Greece	275	239	1294
EU	Ireland	275	239	1294
EU	Italy	275	239	1294
EU	Lithuania	275	239	1294
EU	Luxembourg	275	239	1294
EU	Latvia	275	239	1294
EU	Malta	275	239	1294
EU	Netherlands	275	239	1294
EU	Portugal	275	239	1294
EU	Slovenia	275	239	1294
EU	Slovakia	275	239	1294
EU	Euro area	275	239	1294
EU	Czech Republic	275	239	1294
EU	Denmark	275	239	1294
EU	Croatia	275	239	1294
EU	Poland	275	239	1294
EU	Sweden	275	239	1294
EU	Hungary	275	239	1294
EU	Romania	275	239	1294
EU	Bulgaria	275	239	1294
Advanced economies	Norway	275	239	1294
Advanced economies	Iceland	275	239	1294
Advanced economies	Switzerland	275	239	1294
Advanced economies	Liechtenstein	275	239	1294
Advanced economies	United Kingdom	275	239	1294
Advanced economies	United States	271	235	1271
Advanced economies	China	128	107	580
Advanced economies	Japan	291	253	1368
World	Rest of the World	120	100	542

Equity prices y-o-y percentage change	
NACE Sector code	
A01	-11.5
A02-A03	-11.8
B05-B09	-37.8
C10-C12	-12.3
C13-C18	-10.9
C19	-32.2
C20	-12.7
C21-C22	-11.1
C23	-20.4
C24-C25	-15.3
C26-C28	-11.1
C29-C30	-11.2
C31-C33	-9.8
D35	-23.0
E36-E39	-13.1
F41-F43	-11.5
G45-G47	-13.4
H49	-22.6
H50	-12.7
H51	-14.2
H52-H53	-10.8
L68	-12.0
Other	-14.3

Corporate credit spreads basis points change	
NACE Sector code	
A01	143
A02-A03	146
B05-B09	467
C10-C12	152
C13-C18	134
C19	397
C20	157
C21-C22	137
C23	252
C24-C25	189
C26-C28	138
C29-C30	139
C31-C33	121
D35	284
E36-E39	162
F41-F43	143
G45-G47	165
H49	279
H50	157
H51	176
H52-H53	133
L68	148
Other	177

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