

Opportunities and risk report

The management of opportunities and risks is integrated into all business processes. | Opportunities and risks are identified early and are managed and monitored proactively. | Group risk management was expanded to include CSR-relevant issues and their risks for external stakeholders.

As an international aviation company, the Lufthansa Group is exposed to a number of macroeconomic, sector-specific, financial and Company-specific opportunities and risks. The Lufthansa Group defines opportunities and risks as the possible positive or negative deviations from a forecast figure or a defined objective for possible future developments or events. Opportunities and risks are an ever present part of doing business; their active management is deliberately integrated into business processes.

OPPORTUNITY AND RISK MANAGEMENT

Opportunity management process

For the highly dynamic global airline industry, opportunities can arise both externally – from new customer wishes, market structures, ongoing consolidation or the regulatory environment, for instance – and internally – from new products, innovations, quality improvements and competitive differentiation.

Employees and managers in the Lufthansa Group identify opportunities in the course of day-to-day processes and market observation. They are supported by a regular strategy and planning process, which is managed by the strategy and controlling departments. Scenario analyses and accurate return calculations are used to precisely examine opportunities and the associated risks. Opportunities that, in an overall assessment, are considered advantageous for the development of the Lufthansa Group, and so for the interests of shareholders, are pursued and implemented by means of defined steps. They are managed by the established planning and forecasting processes as well as by projects.

Objectives and strategy of the risk management system

Risk management at the Lufthansa Group aims to fully identify risks, to present and compare them transparently and to assess and manage them. Risk owners are obliged to monitor and manage risks proactively and to include relevant information in the planning, steering and control processes. The Group guidelines on risk management adopted by the Executive Board define all the binding methodological and organisational standards for dealing with opportunities and risks.

Structure of the risk management system

The scope of consideration covered by the Lufthansa Group's risk management system comprises all of the airlines in the Lufthansa Group, the MRO, Logistics and Catering segments, as well as Lufthansa Aviation Training GmbH, Lufthansa AirPlus, Miles & More, Lufthansa Global Business Services, the IT companies and the Delvag group.

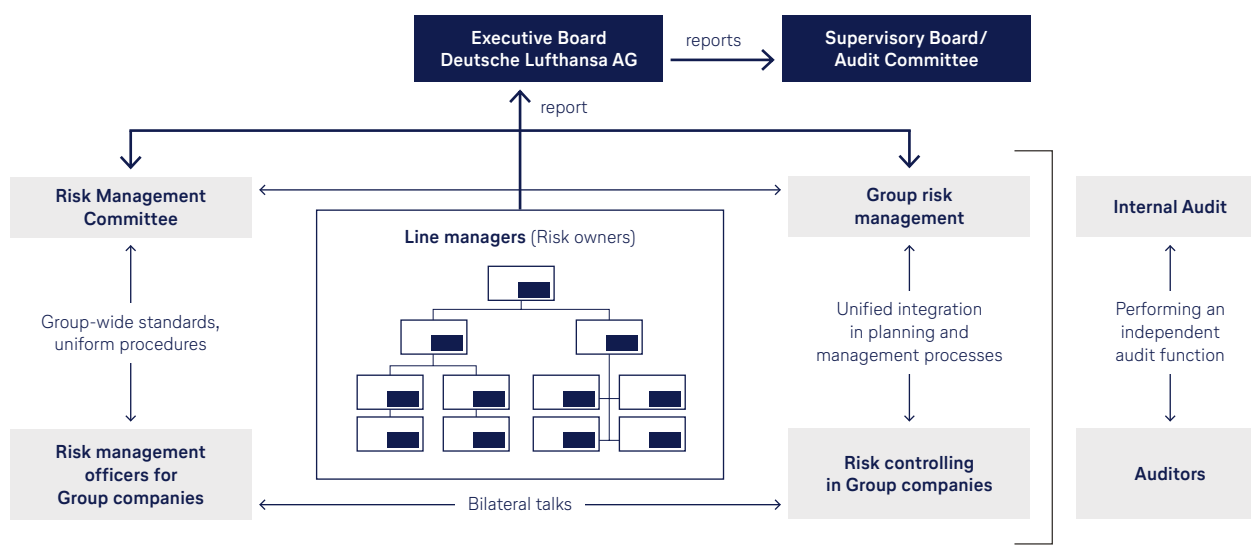
➤ **C24 Risk management in the Lufthansa Group on p. 65** shows the different functions involved.

The Supervisory Board's Audit Committee monitors the existence and the effectiveness of the Lufthansa Group's risk management.

The Risk Management Committee ensures, on behalf of the Executive Board, that business risks are always identified at an early stage, evaluated and managed across all functions and processes. It is also responsible for ensuring that the risk management system is always up to date and for making improvements to its effectiveness and efficiency. Appointments to and the responsibilities of the committee are defined in internal regulations.

The "Risk Management, Internal Control System and Data Protection" staff unit has functional responsibility for ensuring that the risk management system is standardised across the Group. It reports directly to the Chief Financial Officer and is responsible for implementing Group-wide standards and methods for the coordination and ongoing development of the risk management process.

The managing directors or management boards of all the companies covered by the risk management system also appoint risk managers. They are responsible for implementing the Group guidelines within their own companies and are in close, regular contact with the Lufthansa Group's risk management function. In addition, they ensure that risk-relevant information is agreed with the planning and forecasting processes in their company (risk controlling).

C24 RISK MANAGEMENT IN THE LUFTHANSA GROUP

As risk owners, managers with budgetary and/or disciplinary responsibility are obliged to implement risk management at a segment level. The identification, evaluation, monitoring and management of risks are therefore fundamental aspects of every management role.

The Internal Audit department carries out internal, independent system audits focusing on the effectiveness, appropriateness and cost-effectiveness of the risk management system practised in the Lufthansa Group.

During its annual audit of the financial statements, the auditor examines the system for the early identification of risks in place at Deutsche Lufthansa AG with regard to statutory requirements. In 2017, the review came to the conclusion that all statutory requirements were met in full.

Stages of the risk management process

The closed and continuous risk management process, which is supported by IT, begins with the identification of current and future, existing and potential risks from all material internal and external areas. The risks identified are checked for plausibility by the companies' risk coordinators and gathered together in the Group's risk portfolio. The risk portfolio documents the systematic entirety of all individual risks and constitutes the quality-assured result of the identification phase. As the risk landscape is dynamic and subject to change, the identification of risks is a continuous task for the risk owners.

Risk owners are obliged at least once a quarter to verify that the risks for which they are responsible are complete and up to date. They also evaluate the extent to which circumstances involving risk have already been included in the forecast results and to what extent there are additional opportunities or risks of achieving a better or worse result than the one forecast. On this basis, the Executive Board is informed about the current risk situation of the Lufthansa Group and of the operating segments every quarter. The Executive Board reports annually to the Audit Committee on the performance of the risk management system, the current risk situation of the Lufthansa Group and on significant individual risks and their management. In the event of significant changes to previously or recently identified top risks, mandatory ad hoc reporting processes have been defined in addition to these standard reports.

Evaluation methodology in the risk management process

Once the risks have been identified, they are evaluated. Evaluation principles are applied uniformly across the Lufthansa Group. Wherever possible, objective criteria or figures derived from past experience are used. Risk measurement forms the basis for consolidating similar individual risks into an aggregate risk. Suitable instruments for risk management are defined with the aim of proactively limiting the risk position. Continuous risk monitoring identifies changes in individual risks and any required adjustments to risk management at an early stage. Steps necessary to manage and monitor risks are initiated as required. Steps, in this sense, mean clearly defined activities with a fixed duration, responsibility and time frame, which serve to develop control instruments. The progress made is also monitored continuously.

The methodological evaluation of risks at the Lufthansa Group distinguishes between qualitative and quantitative risks. Risks are evaluated on a net basis, i.e. taking implemented and effective management and monitoring instruments into account.

Qualitative risks are mostly long-term developments with potentially adverse consequences for the Lufthansa Group. As concrete information is often not available, these risks cannot or cannot yet be quantified. In the context of qualitative risks, risk management amounts to a strategic approach to uncertainty. Qualitative risks are often identified in the form of “weak signals”. In order to evaluate such risks as systematically as possible in spite of this, estimates are made about their significance and their magnitude. Significance describes the potential impact of the individual risk – for example, on the Group’s reputation, business model or earnings. The estimate of magnitude assesses how pronounced or intense the (weak) signals are that indicate a potential risk to the Lufthansa Group or a specific company. ➤ **C25 Lufthansa risk evaluation for qualitative and quantitative risks** shows the different categories used.

Quantitative risks are those whose potential effect on earnings can be estimated. A distinction is made between different probabilities of occurrence. The extent of loss is given as the potential monetary impact on the planned Adjusted EBIT. Depending on the type of risk, this may relate either to relatively infrequent event risks, such as an airspace closure, or to risks from deviations from planned business developments, such as fuel price volatility. Quantitative risks therefore form the basis for the overarching verification of potential deviations from plans and forecasts. The thresholds for classifying the monetary Adjusted EBIT effect are defined centrally for the Lufthansa Group and the Group companies according to standardised criteria.

The individual qualitative and quantitative risks are divided into classes A, B, C, D and other risks to assess their materiality. In accordance with DRS 20, all quantitative A and B risks as well as all qualitative A and B risks that are at least of a “substantial” significance and a “high” magnitude count as material risks for the Lufthansa Group. ➤ **C25 Lufthansa risk evaluation for qualitative and quantitative risks.**

Risks for the Lufthansa Group that meet this materiality criterion are presented in a table in the order of their significance for the Lufthansa Group in the section ➤ **Opportunities and risks at an individual level, p. 67ff.**, and are described in detail below. In some cases, equivalent risks are shown here in a more aggregated form than that used for internal

management purposes. Unless stated otherwise, all the operating segments in the Lufthansa Group are exposed to a greater or lesser degree to the risks described.

Inclusion of CSR Directive Implementation Act in risk management

When the CSR Directive Implementation Act (CSR-RUG) came into effect in April 2017, the Lufthansa Group’s risk management was expanded to cover aspects relevant to CSR (environmental, employee and social concerns, as well as human rights, anti-corruption measures and bribery) and their risks for external stakeholders. The risk management methodology remains unchanged, however. Risks are reported in the non-financial report in line with CSR-RUG if they would have a severely adverse impact on the Company and their occurrence is highly likely.

Internal Control System for monitoring the risk management process

The risk management process in the Lufthansa Group is monitored by an internal control system (ICS). This entails systematically reviewing the effectiveness of control measures for substantial risks as part of the Lufthansa Group’s ICS. The relevant risks are selected annually. The review includes an assessment of the structure and its functionality. Reporting on the results of the review forms part of the report to the supervisory boards of the individual companies on the effectiveness of the ICS, and to the Audit Committee of the Deutsche Lufthansa AG Supervisory Board on an overall basis.

C25 LUFTHANSA RISK EVALUATION FOR QUALITATIVE AND QUANTITATIVE RISKS

■ A risks ■ B risks ■ C risks ■ D risks

Magnitude/ Probability of occurrence

extreme/ ≥ 50%					
high/ 30 – 50%					
medium/ 20 – 30%					
low/ 10 – 20%					
negligible/ 2 – 10%					
	immaterial/ 19 – 38	low/ 38 – 95	moderate/ 95 – 190	substantial/ 190 – 380	critical/ ≥ 380

Significance/
Extent of damage in €m

OPPORTUNITIES AND RISKS AT AN INDIVIDUAL LEVEL

The table, below, shows the top risks for the Lufthansa Group. They comprise all quantitative A and B risks, as well as qualitative risks with a rating of at least “substantial and high” in the order of their significance. Detailed explanations can be found in the following sections.

Macroeconomic opportunities and risks

Uncertain economic environment

The Lufthansa Group's forecast for 2018 is based on the expectation that future macroeconomic conditions and sector developments will correspond to the description given in the [Forecast, p. 78ff.](#) If the global economy performs better than forecast, this is expected to have a positive effect on the Lufthansa Group's business. Future revenue and earnings for the Lufthansa Group may, in this case, exceed the current forecast. As a global company, the Lufthansa Group can also benefit from positive developments outside its own core market. The same applies if the performance of the global economy and of individual markets that are relevant for the Lufthansa Group is worse than forecast.

Risks with potential effects on global economic growth, and thereby for the Lufthansa Group's sales, primarily arise from increasing uncertainty about political developments, such as the ongoing protectionist economic policy of the USA. There is still great uncertainty concerning the effects of Brexit. The currently resurgent economy in Europe offers the Lufthansa Group opportunities to participate in this development.

Crises, wars, political unrest or natural disasters

The current deterioration in the security situation, particularly in the Middle East and North Africa but also in Europe and Germany, as well as the latent risk of terrorist attacks on air traffic and aviation infrastructure could have concrete effects on business operations and on the safety of the Lufthansa Group's flight operations, customers and employees. Potential losses could result from primary effects, such as not being able to fly to individual destinations, but also from significant secondary effects, including a fall in passenger numbers, higher insurance premiums, higher fuel costs due to airspace closures or more stringent statutory security requirements.

Because of its strong symbolic effect, civil aviation is still a potential target of terrorist attacks, which have to be evaluated in the context of the wider regional environment.

T048 TOP RISKS LUFTHANSA GROUP

	Magnitude	Significance	Trend	Description
Quantitative risks				
Fuel price movements	critical	extreme	→	p. 70f.
Exchange rate movements	critical	extreme	↑	p. 71f.
Earnings risks	moderate	extreme	→	p. 69
Breaches of compliance requirements	critical	medium	→	p. 75
Loss of the investment grade rating	critical	negligible	↓	p. 72
Exchange rate losses on pension fund investments	critical	negligible	→	p. 72
Credit risks	substantial	low	→	p. 72
Qualitative risks				
Cyber and IT risks	critical	extreme	→	p. 74f.
Pandemic diseases	substantial	high	↓	p. 68
Flight operations risks	critical	negligible	→	p. 73f.
Human resources	substantial	high	→	p. 73
Crises, wars, political unrest or natural disasters	substantial	high	→	p. 67f.
Increased noise legislation	substantial	high	→	p. 70
Market entry Original Equipment Manufacturer ¹⁾	critical	high	→	p. 69
Contaminated foods ¹⁾	critical	low	→	p. 74

¹⁾ Risk evaluation on segment level.

Threats to civil aviation from complex anti-aircraft systems, especially in the hands of non-state forces, and greater challenges in the use and coordination of airspace as a result of increasing military activity still require comprehensive measures to assess and manage the risks to flights over areas of conflict. Overall, the demands made of the security functions of international companies have risen significantly in view of the political environment and the continuous development of new technology. Increasing security regulations due to the greater threat potential, as well as a tightening of entry requirements for air passengers around the world, could lead to further restrictions in international air traffic and thereby to adverse effects for the air transport industry.

In order to analyse, track and manage these risks, the Lufthansa Group carries out comprehensive monitoring of the global security situation and current events that may affect the Lufthansa Group. This relates both to immediate action and to the anticipation of possible dangers and the implementation of effective protective measures in advance. The Lufthansa Group prepares comprehensive security analyses on an ongoing basis in order to assess developments in advance and so to draw up preventive scenarios in the event of any disruptions. It can draw on an extensive network of national and international security services and specialised security advisers to do so. The necessary security measures depend on the probability and consequences of the event.

To evaluate security-relevant events in the context of the regional environment, the Lufthansa Group uses a quality management system, which helps with the continuous evaluation of local security procedures, both in existing operations and with new destinations. In order to ensure compliance with national, European and international aviation security legislation and the Lufthansa Group's own security standards, these sites are inspected regularly in the course of risk audits for aviation security and country risks. If necessary, deficits are compensated for by additional measures that may affect all relevant functional areas. In addition, perceptions of Germany in certain regions of the world and the profile of the Lufthansa Group compared with other, particularly exposed Western airlines are taken into account when choosing infrastructure and processes abroad.

Pandemic diseases

Risks exist around the world from the transmission of pathogens from animals to humans, from humans to humans and by other means. Epidemics, pandemics or other causes such as bioterrorism could cause high rates of disease in various countries, regions or continents, which could lead to drastic falls in passenger numbers in the short, medium or long term due to a fear of contagion. Furthermore, it is possible that staff are not willing to fly to the countries concerned for fear of infection and that local employees want to leave these countries. A high prevalence of sickness among employees may endanger operations.

The risk has not changed compared with the previous year.

The Lufthansa Group permanently reviews information from the World Health Organisation (WHO), the Robert Koch Institute in Germany and other institutions in order to identify risks of an epidemic or pandemic as early as possible. Employees receive detailed information, risk groups are given personal protective equipment and preventive vaccination campaigns against influenza are offered throughout the Lufthansa Group every year.

Sector-specific opportunities and risks

Market growth and competition

The airline industry remains on a long-term growth path, with above-average growth rates at low-cost carriers in particular and in specific growth regions such as Asia/Pacific. Strong capacity growth at the low-cost carriers and competitors on North Atlantic routes is increasingly affecting demand and price trends in Europe.

The Lufthansa Group is broadly positioned, which enables it to benefit from global growth across all of its business segments. At the same time, the ongoing consolidation of the industry plays an important role. The Lufthansa Group can strengthen its competitive position in a fragmented market environment, stabilise pricing and seize growth opportunities by means of strategic acquisitions and partnerships. The current fleet orders and delivery slots for aircraft with new technology allow the airlines in the Lufthansa Group to participate actively in this global growth and respond flexibly to changes in the market and in competition by adjusting capacity.

Market consolidation

For some years, an increased trend towards consolidation in the highly fragmented European airline sector has been apparent. Examples include the insolvencies of Air Berlin, Monarch and Alitalia. In this environment, the Lufthansa Group positions itself as an active consolidator, by means of M&A transactions, for instance. It aims to exploit opportunities from the ongoing market consolidation, such as economies of scale or efficiency gains. At the same time, the Lufthansa Group emphasises a careful analysis and assessment of the risks of such transactions, including complexity and integration risks.

Converging business models and new customer requirements

In the European market, the business models of low-cost carriers and full-service airlines are increasingly converging. This is resulting in increasing cost pressure in the full-service airline segment, which is being addressed by the use of new technologies and efficient resources. In a price-sensitive, growth-oriented market, the Lufthansa Group is also concentrating on high-quality products and discerning customers in its strong home markets as well as on expanding Eurowings.

Customers are increasingly seeking a personalised travel experience. Here, the Lufthansa Group invests continuously in employees and systems in order to offer every customer the right product at the right time. The Company's clear aim remains to fulfil this premium product promise.

Service companies

With its service companies in the Logistics, MRO and Catering segments, the Lufthansa Group has a broad base from which it can participate in the global growth of the airline industry. Lufthansa Cargo is pursuing growth opportunities through innovative products, digitalisation and further airfreight joint ventures. Lufthansa Technik is concentrating on extending its service and customer portfolio, seizing development opportunities in the growth markets of Asia and America and expanding partnerships with OEMs (Original Equipment Manufacturers). The catering specialist LSG group is developing new business models in established and existing markets; its regional challenges range from comprehensive restructuring in Europe to rapid growth in Asia and North America.

Earnings risks

Changes in available capacity have a decisive influence on the risk-return profile of the airline industry. Given the many orders for new aircraft within the industry and the forecast growth, the risk of sustained overcapacities has also increased. Pressure on yields therefore remains high and offsets the generally positive developments in demand and load factors. Complex forecasting methods to estimate unpredictable changes in demand, sales management techniques and active capacity management are used to counter this. In view of structural shifts in demand, there is the possibility in the short and medium term of responding by deploying aircraft with different configurations of travel class and flexible compartment sizes in Business and Economy Class.

Price erosion, overcapacities, cyclical fluctuations, current developments in the markets and competition, geopolitical changes and unpredictable events with a global impact all create earnings risks for the entire Lufthansa Group. Earnings risks still remain, particularly at the service companies. Earnings performance is monitored continuously. Sales, product, capacity and cost-cutting measures are taken as needed. Unit costs and efficiency are improved systematically and sustainably by continuous efficiency gains and as the result of segment-specific restructuring projects.

Developments and competition in the supply market

Aircraft manufacturers now only want to work with a limited number of systems integrators (known as "risk-sharing partners") on their new aircraft models, which has led to a significant concentration on the supply market. This concentration gives rise to monopoly situations for Lufthansa Technik and new dependencies, with corresponding effects in terms of material supplies and access to information.

There is a persistent trend towards an ever smaller number of manufacturers for each aircraft and engine type. This stronger market position for OEMs results in barriers to entry for independent providers of aircraft-related maintenance, repair and overhaul (MRO) services, especially for new aircraft models, and makes it more difficult to gain access to licences and intellectual property. Maintaining their market position in this environment is a key challenge for MRO providers.

Lufthansa Technik works to address these risks by means of strategic partnerships and joint ventures.

Opportunities and risks from the regulatory environment

Political decisions at national and European level continue to have a strong influence on the international aviation sector. This is particularly the case when countries or supranational organisations unilaterally intervene in the competition within a submarket, for example, by way of regional or national taxes, emissions trading, fees and charges, restrictions or subsidies. The Lufthansa Group campaigns actively to influence these developments in the appropriate boards and forums and in cooperation with other companies and industry associations.

Increased noise legislation

Stricter noise standards may apply to airlines or airports. They may cause, for example, higher costs for retrofitting aircraft, bans on specific aircraft models, higher fees and/or charges or higher monitoring expenses. The still outstanding revision of the directive on environmental noise at European level is relevant here. In the short term, legislation is not expected to be tightened at the federal level in Germany. In November 2017, the Lufthansa Group, Fraport, Condor, the Board of Airline Representatives in Germany (BARIG) and the government of Hesse came to a voluntary agreement on noise limits at Frankfurt Airport. This framework still allows for growth and does not provide for any interference with operating licences as long as the limits are respected. Introducing a voluntary noise limit in Frankfurt could have an effect on other sites in Germany.

The limits set in the Aircraft Noise Abatement Act were reviewed as scheduled in 2017. Any changes to the Act are expected to be made in the coming legislative period. Although the latest results of noise research do not show any significant changes in health risks, the way in which noise is perceived as a nuisance by those affected has changed radically, even when noise levels at airports are stable. New legislative initiatives are therefore to be expected.

The Lufthansa Group develops coordinated strategies by means of targeted communications in collaboration with trade associations and other industry stakeholders. In the course of research projects, the Lufthansa Group is involved in active noise abatement measures and closely monitors research into the effects of noise.

Financial opportunities and risks

System of financial risk management for fuel prices, exchange rates and interest rates

Financial and commodity risks are managed systematically. Derivative financial instruments are used exclusively for hedging underlying transactions. Prices are averaged by means of layered hedging. Financial liabilities are either at floating rates from the outset or are swapped into floating rates using derivatives. This enables the Lufthansa Group to minimise average long-term interest expense. Foreign currency risks from financing are always hedged to 100 per cent.

Here, the Lufthansa Group works with partners that have at least an investment grade rating equal to Standard & Poor's BBB rating or a similar long-term rating. All hedged items and hedging transactions are tracked in treasury systems so that they can be valued at any time.

Appropriate management and control systems are used to manage financial and commodity risks, which measure, manage and monitor risks. They cannot be eliminated altogether, however. The functions of trading, settlement and controlling of financial risk are strictly separated at an organisational level, which the Lufthansa Group achieves through the use of internal guidelines that are continuously developed. The executive departments, Group Financial Risk Controlling and Corporate Audit departments ensure compliance with these guidelines. Furthermore, the current hedging policies are also discussed regularly in management board meetings across the business areas. The Supervisory Board is regularly informed of the amounts of risk. ➤ **Note 41, p. 161ff.**

Fuel price movements

Oil prices were higher in 2017 than in 2016 altogether. There has been no material, year-on-year change in the risk of price fluctuations.

In the reporting year, the Lufthansa Group consumed around 10.2 million tonnes of kerosene. At around EUR 5.2bn, fuel expenses constituted a major item of expense for the Lufthansa Group in 2017. Severe fluctuations in fuel prices can have a significant effect on the operating result. A change in the fuel price of +10 per cent (–10 per cent) at year-end 2018 would increase (reduce) fuel costs for the Lufthansa Group by EUR 265.1m (EUR –284.6m) after hedging.

The Lufthansa Group therefore hedges fuel prices with a time horizon of up to 24 months. This is aimed at reducing fluctuations in fuel prices. Limited protection against higher prices is accepted in exchange for maximising the benefits derived from any fall in prices.

The hedging level and hedging horizon depend on the risk profile, which is derived from the business model of the Group company concerned. The hedging policy and structure shown in chart **C27, p. 71**, are applied to Lufthansa German Airlines, SWISS and the scheduled operations of Austrian Airlines. Transactions for some other Group companies are hedged to a lesser extent, and are therefore more exposed to the risk of a price increase. Conversely, they also profit more if prices go down. Charter business is hedged in full using forward transactions as soon as the contract has been signed. This largely eliminates the risk of fuel price increases. On the other hand, this also eliminates the chance of benefiting from a fall in prices.

The Lufthansa Group uses standard market instruments in the form of option combinations for its fuel hedging. Hedges are mainly in crude oil for reasons of market liquidity. The hedging transactions are based on fixed rules and map the average of crude oil prices over time. Depending on the company in the Group, the amounts hedged each month result in a hedging level of up to 85 per cent.

As of 23 February 2018, there were crude oil and kerosene hedges for around 74 per cent of the forecast fuel requirement for 2018, in the form of futures and options. For 2019, around 27 per cent of the forecast fuel requirement was hedged at that time. The fuel required in the event that the takeover of parts of Air Berlin is successful had not been hedged at the time of the acquisition. It will be hedged gradually over the coming months.

In the context of fuel supplies, there are opportunities in the development of new production techniques, both for crude oil and for other energy sources. This could have a direct or indirect effect on the Lufthansa Group's kerosene expenses, by reducing both prices and volatility.

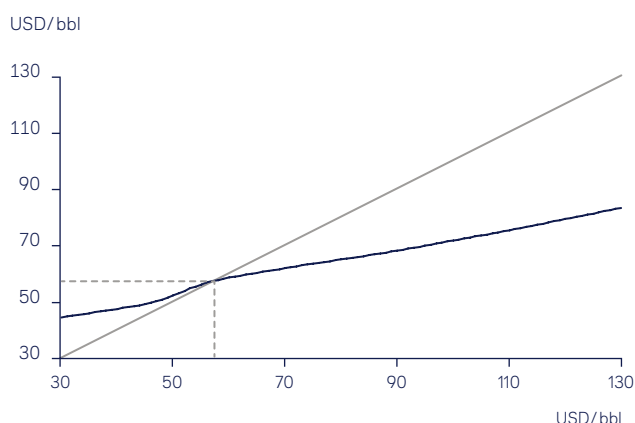
As fuel is priced in US dollars, fluctuations in the euro/US dollar exchange rate can have a positive or a negative effect on reported fuel prices. US dollar exposure from planned fuel requirements is included in currency hedging.

Exchange rate movements

Foreign exchange risks for the Lufthansa Group arise in particular from international ticket sales and the purchasing of fuel, aircraft and spare parts. All subsidiaries report their planned currency exposure over a timeframe of at least 24 months. At Group level, a net position is aggregated for each currency in order that "natural hedging" can be taken advantage of. 23 of the 62 currencies in total are hedged because their exposure is particularly relevant to the Lufthansa Group. **Note 41, p. 161ff.**

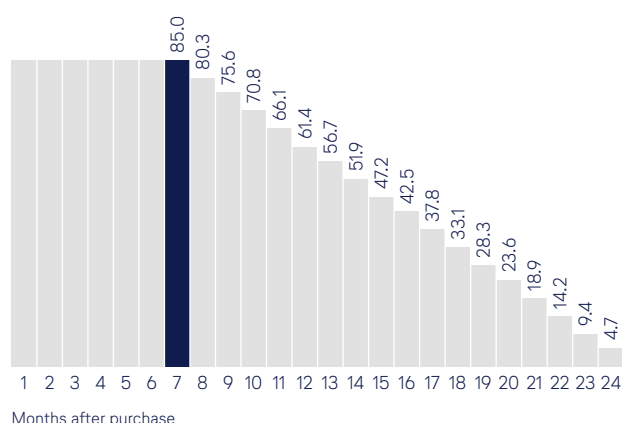
C26 OIL PRICE SCENARIO FOR THE LUFTHANSA GROUP 2018

in USD/bbl (As of 23.2.2018)
■ Market price ■ Lufthansa price



C27 LUFTHANSA'S HEDGING POLICY

Medium-term crude oil hedging in %
■ Hedging exposure ■ Hedge (average Brent price)



Financial developments also represent opportunities for the Lufthansa Group. Volatility in fuel prices, exchange rates and interest rates can result in lower costs and/or higher income if the direction taken is better than the assumptions used for planning and forecasting. There were no significant changes to this estimate compared with the previous year.

Loss of the investment grade rating

Deutsche Lufthansa AG has an investment grade rating from Standard & Poor's (BBB-) and Moody's (Baa3), both with a stable outlook. Since November 2016, Deutsche Lufthansa AG has also had a third investment grade rating of BBB- with a positive outlook from the agency Scope Ratings. A downgrade in the credit rating to non-investment grade could lead to a significant deterioration in funding terms and financial risk management and restrict access to new funding and hedging instruments.

The financial indicators relevant to the rating have stabilised in the investment grade range for all three rating agencies. The measures included in the planning are all aimed at strengthening the financial profile by means of investment discipline and earnings improvement, and provide the opportunity to further reduce the Group's debt. Accounting standard IFRS 16, which is applicable from 2019 onwards, means that lease liabilities must be recognised in the statement of financial positions. If the figures calculated on the basis of the standard differ from the rating agencies' estimates, this could have a positive or negative impact on their ratings.

Capital investments and liquidity risks

Capital investments at the Lufthansa Group are managed from the point of view of operating and strategic liquidity. Investments are also made by the Lufthansa Pension Trust and other pension funds in the Lufthansa Group. The risks mainly consist of potential price changes for shares, fixed-income securities and interest rates, as well as credit risks.

Capital investments to ensure the Lufthansa Group's operating liquidity are generally made in accordance with the Group's financial guidelines. The investment period is limited to a maximum of 24 months, whereby at least EUR 300m

should be in investments that can be liquidated on a daily basis. For its operating liquidity, the Lufthansa Group mainly uses money market funds that can be liquidated daily, overnight deposits, fixed-term deposits and short-term securities, especially commercial papers, from creditworthy issuers.

The investment structure of the strategic minimum liquidity for the Lufthansa Group has been determined using a stochastic allocation study. During its development, the Lufthansa Group's high liquidity requirements and conservative investment principles were taken into account. These investments are largely made in money markets and fixed-income securities. A mixture of European shares is also included. Active risk management restricts the absolute share price risk to 2 per cent per annum. Asset management and management of hedges is undertaken by external service providers, taking into consideration the need for instant liquidability, i.e. within a maximum of four weeks.

Exchange rate losses on pension fund investments

Pension fund investments are subject to price fluctuations on international capital markets. However, the broad diversification across many asset classes (including global equities and fixed-income securities) does reduce the overall investment risk to capital investments. An investment manager also monitors and manages risk using a stop-loss system. Due to the decreasing correlation between asset classes, high share prices and especially low interest rates, market risk and the risk of market fluctuations are generally higher than last year. ➤ **Financial strategy and value-based management, p. 16ff.** Further information on opportunities from changes to retirement benefits ➤ **Human resources, p. 73.**

Credit risks

The transactions completed in the course of financial management give rise to default risks. The counterparty default risk is continuously assessed using a system of counterparty limits.

In times of broad economic swings, the default risk for trade receivables also increases. Here, too, their performance is tracked constantly at the level of the Group and the individual business segments. Preventive measures are also taken.

➤ **Note 36, p. 151ff.**

Company-specific opportunities and risks

Broader process-based organisation creates potential

Expanding the process-oriented matrix organisational structure is a key element of the Group's continuous improvement initiatives. This step has already been taken at the network airlines and will be implemented in administrative areas and in other operating segments from 2018 onwards, which will create additional potential for efficiency gains and cost reductions.

Potential opportunities and risks to forecast economic developments, in the form of unforeseen internal and external factors, both positive and negative, must be identified and managed during the course of the year.

Human resources

INTERNAL AND EXTERNAL LABOUR DISPUTES

Deutsche Lufthansa AG, Lufthansa Cargo, Germanwings and the Vereinigung Cockpit pilots' union signed agreements on all outstanding collective bargaining topics in December 2017. They remain in effect until mid 2022 and so represent a sustainable and long-term solution to the risk of strikes. The risk of strikes by the cockpit crew at the companies mentioned is therefore considered to be low. Eurowings, Germanwings and the trade union UFO signed wage agreements for the German cabin crew at the two airlines in September 2017. This reduces the risk of strikes at these companies. Through talks, collective bargaining and arbitration, the Lufthansa Group attempts to achieve its policy objectives through agreements with the trade unions and to ensure a working relationship in the spirit of trust. External strikes are also a risk, since the Lufthansa Group depends on a large number of companies and public-sector entities, such as the security staff at airports, which all negotiate with their own collective bargaining partners. Here, the Lufthansa Group is working to ensure that its voice is heard in the legislative process.

REDUCED EMPLOYEE COMMITMENT

Implementing structural changes may reduce the commitment of employees and their loyalty to the Lufthansa Group. Change management initiatives are therefore increasingly being implemented and communications activities initiated to improve employees' commitment. The Lufthansa Group also continues to strive to offer attractive employment terms. This includes continuing to develop the pay structure, fringe benefits and non-monetary remuneration components, including flights at reduced prices, in different ways depending on the employee group.

STAFF STRUCTURE

Differences between strategic HR requirements and the existing competences of employees and how they are distributed across the companies in the Lufthansa Group constitute a structural HR risk. The Lufthansa Group addresses this risk by means of strategic human resources planning, drawing up a skills model and offering training courses for all the employees in the Group.

NEW LABOUR LEGISLATION

Depending on the way it is drafted and structured, new labour legislation may affect operating workflows and entrepreneurial freedom of action. This will depend on the specific composition of a new government coalition and their key objectives (e.g. the right to switch back from part-time to full-time employment). Here, too, the Lufthansa Group works to ensure that its interests are taken into account by policymakers.

Overall, human resources risks are largely unchanged compared with last year. The strike risk is significantly lower, however.

Flight operations risks

The airlines in the Lufthansa Group are exposed to potential flight and technical operating risks. One of these is the risk of not being able to carry out regular flight operations for technical or external reasons. If flights do not take off or land on time, due to weather conditions, for instance, this may have a negative effect on customer satisfaction and future purchase decisions. Airlines' liability for delays has also been broadened significantly.

Another flight and technical risk is the risk of an accident, with the possibility of damage to people and property; it is divided into environmental factors (for example, weather or bird strike), technical factors (for example, engine failure), organisational factors (such as contradictory instructions) and the human factor.

The companies in the Lufthansa Group search for these dangers systematically and in a forward-looking manner in order to manage the resulting risk by means of suitable countermeasures and to increase the level of flight safety further. This takes place in the course of the safety management system, which is focused on proactively addressing any threats to the organisation, identifying risks, defining mitigation measures and thus minimising risks. For example, every single flight made by an airline in the Lufthansa Group is routinely analysed using the parameters recorded in the flight recorder (black box) in order to identify any peculiarities at an early stage and to act on them, such as in the context of

training courses, for example. Other sources of information, e.g. accidents and hazardous situations around the world that come to light, are also analysed and the results are integrated into prevention measures, such as training courses, where relevant. The safety management systems are continuously improved and refined.

Networking between the airlines in the Lufthansa Group in terms of flight safety was advanced, resulting in the drafting of Group-wide process standards and a coordinated Group Safety Policy as the basis for sustainably implementing uniform flight safety standards across the Lufthansa Group, supported by the implementation of a process-oriented organisational structure from early 2018. Ongoing dialogue between the airlines in the Lufthansa Group provides an opportunity to consolidate information gained in an operational setting and factor it into the development of the corresponding standards. This kind of higher-level analysis requires standardised measurement parameters, which is why the first step was to agree on a uniform, standardised risk classification matrix for the entire Group. This “Event Severity Classification” has since been adopted and is applied at all flight operations in the Lufthansa Group.

The organisational structure continues to evolve, since the demands made with regard to risk identification have increased and there is much greater public awareness of topics relating to safety. Reorganising the “Corporate Safety & Security” process underlines this importance and raises its visibility inside and outside of the Lufthansa Group.

Other operating risks

In the Catering segment, it is vital that food is produced to the highest quality and in accordance with all hygiene and food safety standards. Standardised quality management systems are used to identify potential quality defects at an early stage. Furthermore, the LSG group invests continuously in its production facilities and equipment as well as in modern technology. The modernisation process is supported by intensive training courses as well as learning and problem-solving workshops in the individual companies.

Cyber and IT risks

Cyber-risks are all risks to which computer and information networks, ground and flight infrastructure as well as all IT-enabled commercial and production processes are exposed from sabotage, espionage or other criminal acts. If established security measures fail, the Lufthansa Group may suffer reputational damage and be obliged to make payment on the basis of contractual and statutory claims by customers, contract partners and public authorities. A loss of income is also conceivable if operating systems should fail.

The business processes in the Lufthansa Group are supported by IT components in virtually all areas. The use of IT inevitably entails risks for the stability of business processes and for the availability, confidentiality and integrity of information and data, and such risks ultimately cannot be fully eliminated.

The dimension of cyber-attacks is increasing drastically world-wide in terms of their quantity and professionalism. This is borne out by the Group’s own experience of security incidents and by information from other companies and public agencies. At the same time, the digitalisation of business processes in the Lufthansa Group is increasing, meaning that the potential effects of cyber-attacks may continue to escalate. As a result, cyber-risks will become an ever greater potential risk for the Lufthansa Group in the foreseeable future.

In 2017, the Lufthansa Group implemented numerous projects to address this growing IT risk adequately. In the previous year, the Executive Board adopted a programme to strengthen the Lufthansa Group’s resilience in the face of cyber-attacks. Technological instruments were introduced to identify cyber-attacks at an early stage and prevent them, processes were adapted to evolving threats and a campaign was carried out to raise awareness among employees. An extensive cyber-crisis exercise was also conducted in order to implement improvements in a focused and realistic way.

The area that prepares the airlines in the Lufthansa Group for the next generation of avionic IT was further strengthened. Potential cyber-risks that may arise from connecting aircraft to the internet were also analysed as a preventative measure. Corporate security also worked closely with information management to develop a function that systematically investigates cyber-risks to the business areas of the Lufthansa Group, regardless of the technology involved.

IT risk and IT security processes are organised across operating segments. The status of IT risks and IT security is compiled annually, consolidated at Group level and discussed by the Risk Management Committee for the Lufthansa Group. The risk and security management systems and selected other measures are also reviewed regularly by the Internal Audit department.

The Lufthansa Group sources most of its IT infrastructure from external service providers. The operational and commercial risks that by nature accompany this kind of outsourcing are assessed and managed on a continuous basis. The transition to the new provider is taking place within an independent, wide-ranging programme.

Data protection became even more important and extensive documentation obligations were introduced when the General Data Protection Regulation (GDPR) took effect in 2016, with an obligation for companies based in the EU and public authorities to implement its provisions by May 2018. Protecting the privacy of its customers, employees, shareholders and suppliers has always been an important and self-evident concern for the Lufthansa Group. To meet the higher requirements of the GDPR in an era of increasing digitalisation, the Lufthansa Group has launched a project and strengthened the data protection function in order to identify and manage potential risks from these more stringent demands.

Breaches of compliance requirements

Compliance refers to the observance of legally binding requirements, and is intended to ensure that the Company, its executive bodies and its employees act in accordance with the law. The effectiveness of its compliance programme is therefore vital to the Lufthansa Group. ➤ **Corporate Governance, p. 83ff.**

The Lufthansa Group is active in many countries and is therefore subject to various legal norms and jurisdictions with different, and sometimes hard to interpret, legal frameworks, including for criminal law on corruption. In addition, all activities not only have to be judged against local criminal law, the laws applicable in the sales area and the local cultural customs and social conventions, but also need to take into consideration extraterritorial regulations, such as the US Foreign Corrupt Practices Act (FCPA) or the UK Bribery Act. Any infringements are investigated rigorously; they may result in criminal prosecution for the individuals involved and could expose the Company to hefty fines. There would also be reputational damage that is difficult to measure and the Company would be put at a distinct disadvantage when competing for public tenders. The Lufthansa Group has put processes in place that are intended to identify specific compliance risks and, in particular, to prevent corruption.

The Lufthansa Group is also exposed to risks arising from competition and antitrust law. They stem, in particular, from the fact that the Lufthansa Group operates in highly oligopolistic markets, cooperates with competitors in alliances, may have to deal with changes in the legal parameters for certain flight routes and that in some of its segments the suppliers, competitors and clients are the same legal person. The Lufthansa Group's Competition Compliance function addresses the risks of collusive behaviour and provides employees with extensive training.

The Lufthansa Group, in particular Deutsche Lufthansa AG as a publicly listed company, is also exposed to risks from capital market compliance. Since July 2016, the EU Market Abuse Regulation (MAR) and many other national and European regulations have codified bans on insider trading and market manipulation, the obligation to make ad hoc announcements as well as other obligations relating to capital markets. These regulations are directly applicable in Germany. At times, it can be difficult to predict how these new European regulations will be interpreted and administered by the public authorities. The Lufthansa Group takes many organisational precautions to comply with the provisions of the MAR. It uses a specific software solution, for example, and has corresponding guidelines, information circulars and process descriptions. In addition, the Group Compliance Office conducts training courses for individuals specifically affected by the laws applicable to insider trading and market abuse.

Despite the existence of a compliance management system and its risk-mitigating activities, individual breaches, the related investigations by public authorities and penalties cannot be ruled out completely, particularly in the fields of integrity, competition and capital market compliance.

Heavy penalties are also possible if emissions reporting is even slightly inaccurate or not submitted exactly on time. Under some circumstances, the airlines in the Lufthansa Group may not be able to rule out these risks altogether, even when the reporting is compiled with the utmost care.

Litigation, administrative proceedings and arbitration

The Lufthansa Group is exposed to risks from legal, administrative and arbitration proceedings in which it is currently involved or which may take place in the future. It cannot be ruled out that the outcome of these proceedings may cause significant damage to the business of the Lufthansa Group or to its net assets, financial and earnings position. Appropriate provisions have been made for any financial losses that may be incurred as a result of legal disputes. More information on provisions for litigation risks and contingent liabilities can be found in the Notes to the consolidated financial statements

➤ **Note 33, p. 143ff., and Note 40, p. 159f.**

Furthermore, the Lufthansa Group has taken out liability insurance for an amount that the management considers appropriate and reasonable for the industry in order to defend itself against unjustified private third-party claims and to settle such claims it considers justified. Even in such cases, however, this insurance cover does not protect the Lufthansa Group against possible damage to its reputation.

Such legal disputes and proceedings may also give rise to expenses in excess of the insured amount, expenses not covered by the insurance, or those which exceed any provisions previously recognised. Finally – and depending on the type and extent of future losses – it cannot be guaranteed that the Lufthansa Group will continue to obtain adequate insurance cover on commercially acceptable terms in future.

There are insurance contracts in place for Germanwings and Deutsche Lufthansa AG as well as for other Lufthansa Group companies, covering various liability claims in connection with the Germanwings accident on 24 March 2015. This also applies to lawsuits filed in the USA against Germanwings, Lufthansa German Airlines and other Group companies. The Lufthansa flying school in Arizona (formerly Airline Training Center Arizona, Inc. (ATCA), now Lufthansa Aviation Training USA, Inc. (LAT US)), has also been sued for material and non-material damages. In the lawsuit, the claimants are arguing, among other things, that the flying school doubted the co-pilot's mental stability but still trained him nonetheless. Overall, the US lawsuits are estimated as having little chance of success, if indeed they do result in a court ruling in the US. Companies in the Lufthansa Group may still be faced with costs, however, since in France at least, public prosecution and judicial investigations into the case are still underway.

➤ **Earnings, assets and financial position, p. 32ff.** Costs for legal defence cannot be ruled out. Costs for investigations and voluntary payments to the victims' dependants have already been incurred and there is a risk that there are more to come.

The Lufthansa Group is subject to tax legislation in many countries. Changes in tax laws and case law, as well as different interpretations as part of tax audits, can result in risks and opportunities affecting tax expenses, income, claims and liabilities. The Corporate Taxation department identifies, evaluates and monitors tax risks and opportunities systematically and at the earliest possible stage and initiates steps to mitigate the risks as necessary.

OVERALL STATEMENT ON OPPORTUNITIES AND RISKS

In a volatile environment, the Lufthansa Group relies on adjusting its capacities and resources flexibly to changing market conditions. To compete successfully over the long term, the Lufthansa Group focuses on promising product strategies, a solid financial position, a competitive cost structure and participates in the consolidation of the industry.

Continuous efficiency improvements are established as a permanent task in the Company. In order to seize opportunities for making lasting, structural improvements to efficiency, productivity and competitiveness, a process-oriented organisation has been implemented for the network airlines. It is also being implemented in the administrative areas and other operating segments. The Company is also working in other key strategic areas to drive its development by means of consolidation, flexibility and digitalisation.

The implementation risks for projects aimed at increasing efficiency and factors countervailing this, among them rising costs for fuel or fees and charges and declining yields particularly at the airlines, are mitigated by means of systematic risk management.

Although individual risks have been assessed differently in 2017, there has been no general material change to the internal risk landscape for the Lufthansa Group compared with the previous year. The airline industry is under pressure to change and is subject to competitive pressure, even though the economic environment continues to be good.

The Executive Board of the Lufthansa Group does not currently consider that the continued existence of the Company is at risk. It assumes that the Company will still be able to exploit opportunities as they arise in the future without having to incur unreasonably high risks. The Executive Board of the Lufthansa Group aims to achieve a balance between opportunities and risks, and is convinced that the opportunities and risk management system is effective.

DESCRIPTION OF THE ACCOUNTING-RELATED INTERNAL CONTROL SYSTEM AND RISK MANAGEMENT SYSTEM IN ACCORDANCE WITH SECTION 289 PARAGRAPH 4 AND SECTION 315 PARAGRAPH 4 HGB

The Lufthansa Group's Internal Control System (ICS) covers all the principles, procedures and steps intended to ensure effective, economical and accurate accounting and compliance with the relevant legal regulations. It is based on the COSO framework (Committee of the Sponsoring Organizations of the Treadway Commission).

Overall responsibility for the Internal Control System required to manage risk lies with the Executive Board of Deutsche Lufthansa AG, which defines the scope and the format of the systems in place based on the specific requirements of the Lufthansa Group.

The Corporate Audit department of Deutsche Lufthansa AG as well as the decentralised internal audit departments at Group companies are embedded in the internal monitoring system for the Lufthansa Group and act independently of business processes. In addition, the effectiveness of those areas of the Internal Control System relevant to financial reporting are reviewed by the auditors as part of a risk-oriented approach to their audit.

The Audit Committee of the Deutsche Lufthansa AG Supervisory Board monitors the effectiveness of the Internal Control System and risk management system on the basis of Section 107 Paragraph 3 German Stock Corporation Act (AktG).

The objective of the Internal Control System for accounting processes is, by making checks, to provide a reasonable degree of certainty that the financial statements and the consolidated financial statements of Deutsche Lufthansa AG comply with the rules, despite the risks identified.

The following preventative and investigative checks are embedded in the accounting process:

- IT-supported and manual cross-checks,
- functional separation,
- dual signatures and
- monitoring checks.

Operational accounting processes are carried out locally at the Group companies and increasingly also using the Group's own and external Shared Service centres. Expert opinions for determining the amount of pension provisions are prepared by external consultants.

Corporate Accounting is functionally responsible for preparing the consolidated financial statements and draws up binding regulations for the Group companies that pertain to form, content and deadlines. The Lufthansa Group's accounting guidelines are updated regularly and define uniform accounting standards for the domestic and foreign companies included in the Lufthansa consolidated financial statements in accordance with International Financial Reporting Standards (IFRS). For Deutsche Lufthansa AG and other German companies in the Group, a guideline defines rules for drawing up individual financial statements in line with the German Commercial Code (HGB). This ensures that standardised Group accounting practices are applied to the recognition, measurement and presentation of balance sheet items, with as little room for discretion as possible. The formal requirements relate to the mandatory use of a standardised and complete set of reporting forms and a uniform account framework for the Group. Individual financial statements that contain errors are selected and restated as necessary at company or Group level on the basis of control mechanisms already defined in the SAP SEM-BCS consolidation software and/or by systematic plausibility checks. The consolidation system dictates the different deadlines for various elements of the reporting packages and verifies centrally that they are adhered to during the preparation process.

The IT systems used for accounting are protected against unauthorised access by special security precautions.

By means of the organisational, control and monitoring structures defined for the Lufthansa Group, the Internal Control System and risk management system as it relates to accounting ensures that all matters affecting the Company are captured, processed and evaluated, and are presented adequately in the Group's financial reporting. In particular, the use of individual discretion, faulty checks, criminal acts by those involved and other circumstances may compromise the effectiveness and reliability of the Internal Control System and risk management system in place. This means that even the Group-wide application of these systems cannot guarantee with complete certainty that facts are presented correctly, fully and promptly in the consolidated financial statements. These statements only relate to Deutsche Lufthansa AG and the major subsidiaries included in the consolidated financial statements of Deutsche Lufthansa AG.