



# ANNUAL REPORT 2016



**cargolux**  
*you name it, we fly it!*





**cargo**





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AT A GLANCE











# VISION, MISSION AND VALUES

## OUR VISION

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To be 'The Global Cargo Carrier of Choice'

## OUR MISSION

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We deliver consistent flexibility and reliability through our valued and dedicated employees creating sustainable benefits for all stakeholders in a safe environment.

## THE CARGOLUX SPIRIT

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- > Leading by example
- > Respecting each other
- > Working as a team
- > Being dedicated and passionate
- > Going the extra mile
- > Being cost efficient
- > Being flexible
- > Delivering service excellence





# CHAIRMAN'S LETTER



We will remember 2016 as a year that not only held its own set of economic and operational challenges but also brought the departure of Dirk Reich from Cargolux. In the time he led our company, Dirk Reich initiated many changes and pushed for an ambitious and successful expansion in China. The Board of Directors accepted his decision to leave Cargolux for personal reasons. This could have presented a potential hurdle for the company but, thankfully, we have a more than suitable successor in Richard Forson, who accepted the challenge. I want to take this opportunity to thank Dirk Reich for his contribution to the airline during his tenure and also once more warmly welcome Richard Forson as our company's President and CEO.

The early part of 2017 also saw a change on our Board of Directors. Etienne Reuter, who represents the Luxembourg State at Cargolux retired from this position and was succeeded by Isabelle Goubin, who now represents the Luxembourg Ministry of Finance. My deep thanks go to Etienne Reuter for his valuable work on behalf of our company and, again, I extend my welcome to Isabelle Goubin who, I believe, will be an important asset for our board.

On the business side, China remained a focus for Cargolux throughout 2016; we consolidated and expanded our operations at Zhengzhou, which is now our largest hub in Mainland China. Last year, we flew in excess of 100,000 actual tons of freight into and out of Zhengzhou. All this was possible through the excellent cooperation with our partners in Henan, especially HNCA, who stood by our decisions and strategy every step of the way. Once again, I can say that the alliance with HNCA has produced positive results for both sides and has forged many new friendships.

The airport of Zhengzhou has also helped us with a rapid development of its infrastructure and, in 2016, opened a second runway and a new passenger terminal capable of handling 20 million passengers. In addition, construction of new cargo handling facilities is planned to commence shortly and a third runway is expected to become operational in 2019.

Closer to home, Cargolux is preparing for the planned runway resurfacing work at Luxembourg airport that is scheduled for 2018 and 2019. Throughout 2016, we were in discussions with the authorities and concerned parties, in order to minimize the potential disruption of our services and flight schedule during the works. The airport will begin its own preparation for the works during 2017. This may lead to closures of the runway from 12.00 pm to 6.00 am on some days of the week. During 2018, when the works commence in full, the runway will be closed from 11.00 pm to 6.00 am on weekdays. It is planned that the runway will be fully available over weekends and also during the winter period which fortunately coincides with the busiest period of our weekly operations and peak season respectively. As stated, we are already in the process of preparing plans to minimize disruptions to our activities for the period of resurfacing of the runway and upgrade of existing facilities.

As a good neighbor, Cargolux has long ago accepted its responsibility to limit the impact of its operations on the environment and the surrounding communities at Luxembourg airport as much as possible. We recognize that the noise generated by our

activities represents a disturbance to the people living close to our home base. For many years already, we have put our efforts into finding an acceptable balance for all interests; efforts that have continued in 2016 and to date through intensive dialogues with authorities, the airport operator and the inhabitants of the surrounding communities. Especially in regards to the noise issue, but also in regards to emissions, I believe that we have demonstrated that Cargolux has actively and continuously worked to mitigate the impact of its operations on the environment and surrounding communities.

To this end, we have, during 2016, concluded our fleet roll-over program with the delivery of our final new 747-8 freighter on order. This aircraft type not only offers lower fuel consumption, engine emissions and noise than older aircraft, it also represents a significant investment in the quietest freighter aircraft in its class that significantly helps to enhance the quality of life around Luxembourg airport. We have also demonstrated that we are willing to discuss and find solutions with the authorities in order to limit our night activities in Luxembourg as much as we can without disrupting our worldwide operation and network. It is a balancing act, but I am confident that there is a common ground that respects the needs and requirements of all concerned.

Our continued environmental efforts were also recognized, as Cargolux became the first airline worldwide to be honored with the Lean & Green award in 2016. Environmental concerns are of growing importance to many customers and the forwarding industry is putting more and more emphasis on working with carriers that understand their responsibility in regards to environmental awareness. With a Lean & Green seal of approval, we are very proud to lead the field once more and hope we can encourage others in our industry to follow.

Let me finish by thanking my fellow colleagues on the Cargolux Board of Directors and the Cargolux management and staff, as well as our partners across the globe for their dedicated efforts in keeping this proud company at the forefront of the industry. In yet another difficult year, we have come out with a profit, small as it may be, but a positive result nevertheless, that is due to the hard work, the strong will and the family spirit that the people of Cargolux once again have shown.



Paul Helminger



# CEO'S LETTER

It seems that turbulence is the new norm for the air cargo industry and 2016 has once again proven the point. But, despite the difficult business environment that prevailed during the first nine months, Cargolux was able to end the year on a positive note with a net profit of US\$ 5.5 million.

Thankfully, we experienced a very strong fourth quarter of which we were able to take full advantage; the best peak season in many years that resulted in a significantly positive close to the year for the industry.

In November, Cargolux achieved all-time records in block hours flown, with over 12,000 hours for the month, and in tonnage, in excess of 96,000 tons. During the month, the airline also registered a near record-high daily aircraft utilization of its fleet. With 16:74 block hours per day, it was second only to November 2013, when Cargolux freighters flew an average of 16:85 hours per day.

During the year, Cargolux moved up to the number six position in IATA's Top 25 cargo carriers' ranking for international scheduled FTKs. It is the highest position that we have reached in our history and it puts us well on the way to being 'The Global Cargo Carrier of Choice' with a truly global operation with multiple hubs.

These excellent achievements are testament to the strength of Cargolux and the dedicated passion of our employees who deserve special recognition for their effort and hard work, especially during the last quarter. They have enabled the airline to perform all flights as planned and deliver on our service quality promise towards our customers.

We have expanded our product portfolio with CV Select and CV Select+ and we have grown our network with new services to Aguadilla in Puerto Rico, Ashgabat, Rio de Janeiro and Oslo, amongst others. We have also increased direct services to other destinations and now fly flower shipments from South America directly to Amsterdam. All these network changes follow our principle to always go where our customers want us to go.

We have continued to consolidate our business in China and to establish Cargolux as a significant global brand in that country. Zhengzhou is now solidly on its way to becoming a major air cargo hub, not least due to our focus and development of services to that city. In 2016, we carried over 100,000 actual tons of freight to and from Zhengzhou, a remarkable achievement that was also made possible by the strong support of our Chinese partners.

In order to continue to remain a relevant and competitive player in the industry, we initiated a strategic review of

our business at the end of 2016. We need to become lean and agile and more resilient in an increasingly volatile industry. In addition, we are also focusing on the customer experience of Cargolux.

We have commenced an in-depth business process review to implement best practice and lean processes whilst making full use of currently available technologies. We have also set up a dedicated innovation laboratory to monitor and identify changes in technologies, or the way we use technology, that will add value to our business, especially for our customers. Digitalization of data is also being reviewed to enable a much higher level of analysis of information at hand and to produce reports with improved accuracy and relevancy to the day-to-day and strategic decisions we take.

Cost optimization remains a key focus of the organization including introducing a greater degree of flexibility into our cost structure to be better able to respond to changes in developments in global markets.

Investments into our charter business are delivering results, with a record number of flights in 2016 and we also intend to introduce ACMI offerings to the market that are more adaptable to potential client needs.

Although yields continue to remain under pressure we have also introduced measures to address this.

Through our 'Connecting Flights' program we have created platforms whereby employees can engage with others, including management at the highest level, on a variety of issues in order to further improve the family spirit in the organization and to ensure that the voices of all employees are heard and initiatives taken to address issues identified. This will further enhance the performance of the business.

In September 2016, we received our 14<sup>th</sup> new 747-8 freighter. With this delivery, we concluded our fleet renewal that began in 2005 when we became Boeing's launch customer for the 747-8 program. With 26 aircraft, we now operate the largest fleet in our history, a fleet that is more efficient, flexible and environmentally-friendly than ever before.

We continue to cope with the overcapacity situation in the market, driven principally by the introduction of available belly space for cargo. Analysts' reviews indicate that the amount of belly capacity will grow by around 4% to 6% per year, while the expected cargo volume growth is around 3%.

But, while IATA forecasts a growth of the passenger market of between 4% and 6% per annum, the question remains how much capacity can be added before the passenger market itself becomes saturated.

*That being said, belly capacity itself may not always be in the right position at the right time to satisfy the needs of the cargo industry.*

*However, there is clearly a current oversupply of capacity in the markets, which makes for a more challenging environment for cargo operators that have to achieve a healthy level of sustainable profitability. On the other hand, I also do not believe that it will be beneficial for shippers and forwarders if dedicated air freight operators were to disappear from the market.*

*Coming from an extremely busy peak season in 2016, it is difficult to predict how the markets will develop in 2017. While many players seem bullish for the year, I believe that their optimism might be driven by the excellent final quarter of 2016 that, admittedly, carried some momentum into the New Year.*

*There has been a modal shift from air freight to sea freight over the years whilst rail freight between Asia and Europe is an additional competitive challenge.*

*And, while we welcome transparency in the markets, we also see other potential disruptive forces that will come to bear on the industry driven principally by the rapid pace of developments in technology and artificial intelligence. I believe that the future competitive impact for Cargolux will not only be from other airlines and the above mentioned factors, but also from a completely different set of industries, e.g. 3D printing and, as a cargo airline, we have to be agile enough to adapt to change and to be courageous to take those decisions that ensure we do not get left behind in the way the industry has to develop in the future to remain relevant and competitive.*

*Once more I want to thank the worldwide Cargolux family for their unyielding hard work and support that keeps the airline flying high. I also want to give thanks to our shareholders and partners, our Board of Directors and our customers who continue to support us with their loyalty and trust. The success of Cargolux is truly a team effort and that is exactly the way it should be.*

Richard Forson



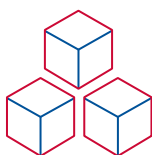
# HIGHLIGHTS – CONSOLIDATED FIGURES

## AS AT DECEMBER 31



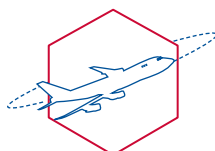
Total income in US\$ '000  
Profit for the year in US\$ '000  
Shareholders' equity in US\$ '000

2016	2015	2014	2013
1,754,495	1,861,126	2,154,880	1,988,508
5,533	49,479	2,854	7,636
838,001	822,996	664,128	482,630



Tonnes sold

964,131	889,652	828,658	753,848
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Tonne-kilometers flown (millions)  
Available tonne-kilometers (millions)

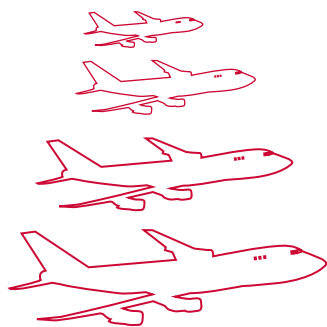
7,550	6,919	6,364	5,723
11,310	10,499	9,514	8,452



Number of employees worldwide  
Headquarters

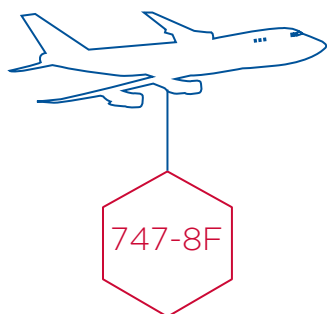
1,856	1,779	1,710	1,606
1,389	1,335	1,305	1,224





## FLEET

	2016	2015	2014	2013
Boeing 747- 8 Freighter	14	13	11	9
Boeing 747- 400 Freighter	10	9	8	8
Boeing 747- 400 BCF	0	2	2	2
Boeing 747- 400 ERF	2	2	1	1



## AIRCRAFT ON ORDER

	2016	2015	2014	2013
Boeing 747- 8 Freighter	0	1	3	4



# CORPORATE GOVERNANCE

As at April 26, 2017

## BOARD OF DIRECTORS

### Luxair representatives

**Paul Helminger**  
Chairman of the Board of Cargolux  
Chairman of the Board, Luxair Group  
Director

**Adrien Ney**  
President and Chief Executive Officer, Luxair Group  
Director

**Françoise Thoma**  
Executive Vice President,  
Banque et Caisse d'Épargne de l'État  
Director

**Tom Weisgerber**  
Premier Conseiller de Gouvernement,  
Ministère du Développement durable  
et des Infrastructures  
Director

### Luxembourg State representative

**Etienne Reuter** (until 27/01/2017)  
Premier Conseiller de Gouvernement

### BCEE representative

**Guy Rosseljong**  
Executive Vice President  
Member of the Executive Committee,  
Banque et Caisse d'Épargne de l'Etat  
Director

Société Nationale de Crédit et d'Investissement (SNCI)  
Director (corporate mandate) represented by  
**Patrick Nickels**  
Conseiller de Gouvernement 1<sup>ère</sup> classe

### Cargolux staff representatives

**Bettina Faulhaber**  
Manager Sales & Marketing, Crew Training  
Director

**George Karambilas**  
Captain  
Director

**Einar Kristjansson**  
Captain  
Director

**David Massaro**  
Permanent Delegate, Staff Delegation  
Director

**Armand Seil**  
Permanent Delegate, Staff Delegation  
Director

### HNCA representatives

**Huiyuan An** (until 09/10/2016)  
Chairman of Henan Province Airport Group Co., Ltd

**Mingchao Zhang**  
Chairman of Henan Civil Aviation Development  
and Investment Co., Ltd

**Shengbo Yuan**  
Project Manager of Henan Civil Aviation Development  
and Investment Co., Ltd

## COMMITTEES OF THE BOARD OF DIRECTORS

### Compensation Committee

**Paul Helminger**  
**Etienne Reuter** (until 27/01/2017)  
**Françoise Thoma** (as of 27/04/2016)

### Audit Committee

**Françoise Thoma**  
SNCI, represented by **Patrick Nickels**  
**Tom Weisgerber**  
**Mingchao Zhang**

## EXECUTIVE COMMITTEE



**Richard Forson**  
President  
and Chief Executive Officer



**Maxim Straus**  
Executive Vice President  
and Chief Financial Officer



**Emese Bekessy**  
Executive Vice President  
HR, Legal Affairs & Compliance



**Onno Pietersma**  
Executive Vice President  
Maintenance & Engineering



**Lars Syberg**  
Executive Vice President  
Vice President Global Logistics



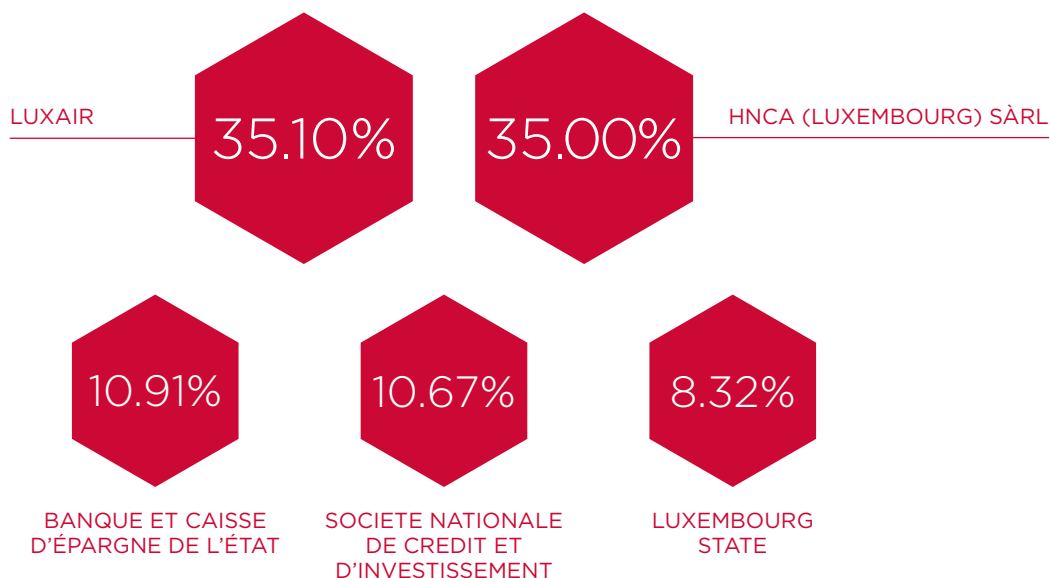
**Nicolaas van der Weide**  
Executive Vice President  
Sales & Marketing



**Claude Zehren**  
Executive Vice President  
Flight Operations

## SHAREHOLDERS

as at December 31, 2016







# 2

## MANAGEMENT'S REPORT OF ACTIVITIES







# FINANCIAL REVIEW AND ANALYSIS

AS AT DECEMBER 31, 2016

## GENERAL

The Cargolux Group achieved a profit in 2016 despite market conditions that remained overall difficult. After an impairment of US\$ 39.7 million on its fleet, the Group recorded a net profit after tax of US\$ 5.5 million which is a major achievement, given the very depressed market conditions during the first nine months of the year. The Group was able to realize this turnaround due to an exceptionally strong peak season in Q4.

Despite the prevailing overcapacity in the market, especially from the continuing growth in belly space, the Group grew its tonnage flown and moved up to the sixth place in IATA's top 20 scheduled cargo carrier ranking. Cargolux is the largest all-cargo airline in Europe.

According to IATA's statistics measured by international scheduled FTKs, Cargolux' global market share grew to 3.9% in 2016.

Compared to 2015, average total network commercial net yield (US\$/kg) decreased by 27 US cents (-13.5%). The drop is explained by lower fuel surcharge revenues (-17 US cents) due to lower fuel prices and the lower underlying prices achieved (-10 US cents).

Over the same period, tonnage sold increased to 964,131 (+8.4%) across the Cargolux network.

## MARKETS AND NETWORK

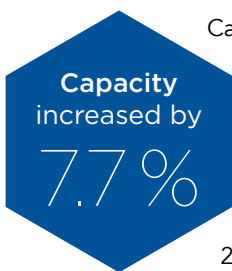
Worldwide markets experienced a steep decline after the Chinese New Year and picked up during the last quarter for an unprecedented peak season, the strongest in many years. However, overcapacity and depressed yields remained a constant source of concern for the industry. Nonetheless, the Group managed to grow its tonnage by 8.4% and end the year with a net profit of US\$ 5.5 million, after impairing its fleet by US\$ 39.7 million.

In November, the Group achieved all-time records with over 12,000 block hours flown and in excess of 96,000 tonnes sold. During the month, the airline also registered a near record-high daily aircraft utilization with 16:74 block hours per aircraft per day.

The fleet-rollover to the Boeing 747-8 freighter was concluded with the delivery of the 14<sup>th</sup> and last unit on order, LX-VCN, in September 2016. The airline now operates a fleet of 26 Boeing 747 freighters. The network of the Group was expanded further with new destinations Mumbai, Ashgabat, Rio de Janeiro, Oslo and Toulouse.

During the year, Cargolux consolidated its presence in Zhengzhou with the help of its Chinese partners and now operates 16 weekly services between its Henan hub and its home base in Luxembourg. Four weekly transpacific services to and from the United States supplement the airline's Zhengzhou operation. In total, the Group carried in excess of 100,000 tonnes of freight to and from Zhengzhou throughout the year.

## KEY PERFORMANCE INDICATORS



Capacity  
increased by  
7.7%

Capacity, measured in ATKs, increased by 7.7% versus 2015, driven by higher block hours (+6.8%) following the delivery of one new Boeing 747-8 freighter in September 2016 and the full-year impact of the 2015 deliveries. Fleet wide utilization reached a daily average of 13:27 hours. In addition to the added Boeing 747-8 freighter in 2016, the Group also leased one further Boeing 747-400 freighter on a power-by-the-hour basis ("PBH"), replacing together the two BCFs which left the fleet in January and April 2016 respectively. This brought the total flexible capacity fleet to five Boeing 747-400 freighter aircraft. At the end of December, the total fleet consisted of seven Boeing 747-400 freighters, fourteen Boeing 747-8 freighters (together our 'core fleet') and five PBH aircraft (three Boeing 747-400 freighters and two Boeing 747-400 extended range freighters).

The Group's production, measured in FTKs, increased by 9.1% versus 2015, resulting in a higher load factor compared to the previous year. This increase results mainly from a strong peak season.





## CONSOLIDATION

The Group's Consolidated accounts comprise, in addition to Parent Company accounts, Cargolux RE S.A., a captive reinsurance company, Luxfresh S.A., a Luxembourg based import-export company, Cargolux Italia S.p.A., an Italian all-cargo airline, and an Italian investment company, Italia Aerologicistica S.R.L.. The Company equity accounts its participations in Champ Cargosystems S.A. (49%), 8F Leasing S.A. (33.3%) and a joint venture, Global Aviation Technical Solutions GB (BVI) Ltd (50%).

## INCOME STATEMENT

**Revenues** decreased by 5.8% from US\$ 1,856.3 million to US\$ 1,749.0 million, mainly as a result of the lower level of fuel surcharge revenue received which represented 21.4% of revenues, or US\$ 374.8 million, down by 24.9% compared to 2015. The Euro weakened versus the US dollar by 3.5% during 2016 which also had a negative impact on our Euro denominated revenues.

**Other operating income**, comprising mainly credits from third parties, increased by 14.1% to US\$ 5.5 million from US\$ 4.8 million in 2015.

**Aircraft lease expenses** increased by US\$ 2.2 million (or 5.6%) to US\$ 41.4 million.

**Aircraft maintenance expenses** decreased by 3.4% to US\$ 82.5 million from US\$ 85.4 million due mainly to lower engine overhaul costs on our Boeing 747-400 fleet and lower utilization of our flexible fleet, partly offset by a higher utilization of our Boeing 747-8F fleet.

**Depreciation and impairment** increased by 3.6% to US\$ 210.0 million, due mainly to the full-year impact of two Boeing 747-8 freighters delivered during the course of 2015 (LX-VCL, LX-VCM) and one Boeing 747-8F delivered in 2016 (LX-VCN), compounded by the higher utilization of our own fleet. As already mentioned, the figure also includes US\$ 39.7 million as an impairment charge.

**Fuel cost** decreased by 13.7% to US\$ 551.5 million and represented 32.3% of operating costs. The Group has taken the decision to stop hedging fuel due to the significant decline of fuel prices, the extreme volatility in the market and the overall efficiency of its own fuel surcharge mechanism. Once this level of efficiency reaches an established trigger level, hedging activities will be reconsidered.

**Personnel costs and benefits** increased by 5.7% to US\$ 250.3 million from US\$ 236.9 million. In Euro terms, the salary of Luxembourg-based staff went up by 3.8% reflecting a headcount increase, promotions and time unit increases under its Collective Work Agreement.

**Handling, landing and overflying costs** increased by 5.4% to US\$ 327.9 million in 2016. Handling charges went up by 4.3% due mainly to an increase in cycles flown (+5.3%) as well as additional tonnage sold (+8.4%) offset by a slightly weaker Euro. Landing

charges increased by 6.2% due mainly to increased cycles (+5.3%) and a unit rate increase of 1.9%. Overflying cost increased by 6.8% up to 101.2 million in 2016 driven mainly by an increase in cycles flown of +5.3% vs 2015 and a unit rate increase of 1.3%.

**Trucking, truck handling and interlining costs** increased by 5.6% to US\$ 125.7 million in 2016. Trucking and truck handling costs increased by 7.3% compared to 2015 due to higher tonnage sold (+8.4%), offset by a slightly weaker Euro. Interlining costs decreased by 32.9%, originating from lower interline production.

**Other operating expenses**, including inter alia GSA commissions, IT services, travel & entertainment, office rental and equipment, legal, audit and consulting fees, other aircraft expenses, telecommunication expenses and net worth tax, decreased by 12.6% to US\$ 117.9 million due mainly to lower foreign exchange losses, lower anti-trust related expenses and lower consulting expenses.

**Financial income** increased by 116.5% from US\$ 7.1 million to US\$ 15.3 million due mainly to the fair value gain of the interest rate derivative portfolio.

**Financial expenses** decreased by 0.9% to US\$ 73.0 million due to the reduction of the overall debt level in 2016 compared to 2015.

**Net finance costs** were US\$ 57.7 million (2015: US\$ 66.6 million).

**Current tax** for the year amounted to a credit of US\$ 14.0 million (2015: US\$ 23.5 million), which includes a positive tax value of ITC benefits as a result of a financial transaction involving the Group's Boeing 747-8 freighter fleet.

Taking all of the preceding into account, the net profit after tax was US\$ 5.5 million for 2016 (2015: US\$ 49.5 million).

## BALANCE SHEET

**Total assets** decreased by 1.0% to US\$ 3,167.8 million from US\$ 3,201.1 million.

**Shareholders' equity** increased by 1.8% to US\$ 838.0 million from US\$ 823.0 million following the financial result of 2016 and the change in fair value recognized in equity.

**Interest bearing liabilities** (including finance leases) decreased by 2.6% to US\$ 1,886.3 million from US\$ 1,936.4 million.

**Cash and cash equivalents** and **Other investments** decreased by 9.0% from US\$ 528.8 million to US\$ 481.0 million.

Net financial gearing amounted to 167.7% (2015: 171.0%) and net adjusted gearing (taking into account the present value of future operating lease payments) was 185.4% (2015: 193.5%).

## BRANCH NETWORK



The Group operates worldwide through a network of branches and representative offices in 34 countries.

## OUTLOOK AND RECENT DEVELOPMENTS

To counter downward pressure on yields, the Group has initiated company-wide measures to improve bottom line profitability. This includes a complete Business Process Re-engineering, enhancing automation, improved customer and yield management, income diversification and a continuing review of cost levels.

In early 2017, the Group further refined its 5 year business plan reflecting the Group's strategy for the period 2017-2021. This includes an investment in 'Cargolux China', Cargolux' investment in a new Chinese cargo airline to be based in Zhengzhou.

In 2016, all committed credit facilities available to Cargolux remained unused. Such committed credit lines amounted in the aggregate to US\$ 63.3 million at year-end 2016. The 2017 budget foresees no breach in the financial covenants ratios.

The Group continuously monitors the environment for such risks and in respect of those under our control, has in place existing safeguards, including legal and operational compliance reviews, regular corporate security risk assessments, aircraft maintenance quality programs and IT security measures to protect against unauthorised entry into our systems. The Group's Aircraft and Third Party Liability insurance coverage is also in line with industry best practice and satisfies specific financing contractual obligations.

As regards instances of events out of our control, such as occurred when volcanic ash clouds disrupted flight operations, these tend to affect the industry as a whole and Cargolux would work together with the relevant authorities, including other airlines, to ensure the minimum disruption to normal operations.







# OVERALL BUSINESS REVIEW

## 2016 BUSINESS REVIEW

The international air cargo industry remains an extremely volatile environment as 2016 once more proved. The year can be categorized in three phases. After a good start, the markets, especially from Asia, went into a steep decline after the Chinese New Year, with rates dropping to extremely low levels.

They only picked up during the last quarter for an unprecedented peak season, the strongest in many years. However, fierce competition resulting in massive overcapacity and depressed yields remained a constant source of worry for the industry.

6.7%  
Growth rate

Given this scenario, Cargolux managed to perform very well and ended the year with a profit of US\$ 5.5 million while its freight tonne kilometers grew by 8.4%.

The airline showed a growth rate of 6.7% and again outperformed its competitors and the market. Its worldwide market share reached 3.9%. With this achievements, Cargolux moved up two places to the number six position in IATA's Top 25 cargo carriers ranking for international scheduled FTKs; the highest position that the airline has held during its history.

The extremely good peak season produced all-time record results for Cargolux. In November 2016, the airline registered over 12,000 block hours flown and in excess of 96,000 ton carried. During that month, the airline also achieved a near record-high daily aircraft utilization with 16:74 block hours per day. Throughout the last quarter, Cargolux registered very strong demand, especially out of China and Hong Kong as well as on transpacific routes. The airline operated an additional 81 Hong Kong flights during the period.

The Cargolux Group, in 2016, carried 964,131 tonnes of freight on its global network. The available tonne kilometers increased to 11.310 million. The overall load factor stood at 66.76%.

With a stable fleet of 26 747 freighters, a mix of 747-400Fs, 747-400BCFs, 747-400ERFs and 747-8Fs, the Group flew 122,575 block hours, a substantial increase over the 114,792 block hours in 2015. The average daily aircraft utilization of the combined 747-400F and 747-8F fleet for the year stood at 13:27 hours.

122,575  
block hours  
flown

## THE ECONOMIC ENVIRONMENT

The continuously low level of yields throughout the year presented a major challenge. It made for an increasingly difficult environment for all air cargo operators to reach and maintain a sustainable, financially viable level of operation. And, while the last quarter was widely hailed as the strongest season in years, it could not gloss over the fact that overcapacity, mainly from Gulf airlines who hold massive orders of passenger aircraft with increased belly load capability, had a negative impact on pure freighter operators.

That said, Cargolux can be reasonably satisfied with the year, especially given the results of the peak season. The Hanjin bankruptcy had some effect on air cargo, but the fourth quarter turn-around mainly resulted from a number of factors; consumer spending in Europe and the United States was high in the run-up to the holiday season and demand even continued into 2017.

Traffic from Europe to Asia and the United States was strong with good load factors throughout the year. The Olympic Games in Brazil helped the South American markets with continued demand after the events.

Africa suffered from a decline of the oil and gas sector while the Middle East performed well. Luxury goods were in high demand; Cargolux moved over 1,000 high-value cars mainly to the Middle East and Asia.

In contrast, the prevailing economic crisis had an impact on airfreight once more, as imports were affected by the slow traffic during the first nine months of the year. In order to mitigate the effect, Cargolux constantly adjusted its schedule and capacity, relying on its ability to react flexibly and fast to changing requirements. With the operating costs of



a European-based airline, Cargolux found it difficult to compete with combination and belly carriers on price, rather, the company concentrated on its charter ability and flexible routings, on flight optimization and its close attention to customers with personalized contact, detailed attention and innovative solutions. This, and to some extent a flexible pricing policy, helped to lessen the negative impact of the economic slowdown somewhat.

A bright spot was Cargolux's investment in China. The operation in Zhengzhou was consolidated and the destination is now the Group's largest hub in Mainland China, surpassing Shanghai. Flights between Luxembourg and Zhengzhou are complemented by four weekly services across the Pacific to Chicago and back. Supported by its partners at HNCA, the airline carried over 100,000 tonnes of freight to and from Zhengzhou during 2016, a significant achievement that underlines the success of its China business. In total, the Cargolux Group operates 24 weekly flights from Europe to Mainland China.

## SUCCESSFUL PRODUCTS

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With the introduction of its extensive product portfolio in 2015, Cargolux laid the foundation for enhanced customer service that builds on the personal attention, experience and dedication of the Cargolux team. The Global Product Management was introduced as a centralized unit within Cargolux Sales & Marketing to connect between commercial expectations and operational capabilities.

In 2016, the product portfolio was expanded with the introduction CV Select and CV Select+, two features that act as an additional layer in combination with any of the eight existing products and can be added with the 'product speed' feature while booking.

The two additions present customers with a number of unique advantages. CV Select features preferred access to premium capacity and booking commitment, while CV Select+ adds to that vastly reduced cut off times of only 30 minutes before departure that customers' shipments can arrive at the airport.

The CV Select duo became an instant hit with Cargolux's customers and generated in excess of 2,300 tonnes in 2016. It was especially popular during the last quarter when a significant number of peak season flights carried full loads of CV Select cargo. In addition, the airline has realized special growth for its CV Alive, CV Pharma, CV Jumbo and CV Power products.

## POWERED BY

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In a gesture of gratitude for continued support and a trustful cooperation, Cargolux has begun to honor its top customers during 2016 by adding their name and logos to the livery of its aircraft with a 'Powered By' slogan. Several Cargolux 747 freighters sport the added branding of a major customer along with the familiar, distinctive Cargolux colors. Cargolux underlines the importance of its successful long-term relationships with the world's freight forwarders who play an important role in the global supply chains and who continue to power Cargolux's success.

More company names will appear on additional members of the fleet in the future. Cargolux had named 2016 the 'Year of the Customer' and focused its efforts and energy on what its partners in the industry require as well as offering perfect solutions for their needs.

## NETWORK



Given the difficult economic climate across the globe, Cargolux consolidated its freighter network with focus on demand and profitability. After more than 45 years in existence, the airline operates an extensive worldwide network that connects with every important industrial and trade center worldwide. Still, Cargolux keeps looking for additional opportunities and will react to any viable customer request for services.

While some existing destinations saw increased services, a number of new scheduled and charter destinations were opened during 2016; these include Tokyo, Ashgabat, Rio de Janeiro, Toulouse, Montevideo and Salalah in Oman. Aguadilla, Puerto Rico, was also added, driven by demand for pharma shipments.

Traffic from Hong Kong to the United States increased while the company registered more requests to Zhengzhou. Some African destinations were important as a source of high quality revenues. In addition, Cargolux saw an increase in requests for block space agreements, especially out of Hong Kong.

The airline's decision to operate flexible aircraft capacity as a service to the customer was widely appreciated and accepted by the market; it enabled the efficient running of the network throughout 2016. The airline underlines that its network policy builds on the commitment to always go where the customer needs it to go which, in turn, remains a major factor in the network development and expansion planning.

## FROM THE AREAS

### Area 1 - The Americas

The combined impact of the adverse dynamics that plagued the air cargo industry for years continued to dampen expansion potential in 2016. As in other parts of the world, overcapacity put pressure on rates as passenger carriers operate bigger aircraft in the 777/A330/A350 category with more cargo payload. Additionally, a strengthened US dollar, which, in turn, diminished American export potential and an oil industry that, in early 2016, finally bottomed out, had a negative impact. As mentioned, supply versus demand continued its unfavorable trend where capacity growth, at 5.3%, outpaced growth in demand in 2016 against 2015. Together, these were among the contributing factors that negatively influenced air cargo at many key export markets.

Against this backdrop, Cargolux in the Americas achieved significant accomplishments. The airline not only successfully protected its market share in several key Americas markets, but it was the number one cargo carrier in the U.S. during December 2016 and placed third in 2016 overall. This translated to a market share improvement to 5.1% from the United States to all worldwide destinations. In essence, Cargolux outperformed its competitors and was one of only a few top carriers to avoid a reduction in tonnage. Furthermore, while pressure on yields intensified, Cargolux was able to maintain positive yield differentials. Particularly strong performances in Chicago, Los Angeles, Columbus, Puerto Rico and Guadalajara helped to mitigate a year of disappointing demand and excess capacity.

Due to limited opportunities to expand its footprint in the Americas, Cargolux focused on the improvement of commercial and operational efficiencies in markets with an established presence. With an emphasis on providing value-added solutions, Cargolux launched a direct, once-weekly service from New York to Oslo in November. This service provides additional capacity for the Scandinavian market with onward trucking services offered from Oslo. In addition, Cargolux expanded its extensive product portfolio with the introduction of its new, capacity-guaranteed services, CV Select and CV Select+.

Cargolux managed a capacity increase of nearly 8% from the Americas by year-end. Its flight schedule consists of 40 weekly flights, 35 in North America and 5 in Latin America. As a major supplier of capacity from the North American market, Cargolux offers service from 14 origins: Atlanta, Calgary, Chicago, Columbus (Rickenbacker), Dallas, Guadalajara, Houston, Huntsville, Indianapolis, Los Angeles, Mexico City, Miami, New York and Seattle. Cargolux is currently providing scheduled service from seven origins in Latin America: Aguadilla, Bogota, Curitiba, Latacunga, Manaus, Petrolina, and São Paulo.

The importance of the Latin American market remained undiminished in 2016, even as demand contracted in several key markets. Similar to the North American performance, Cargolux was able to improve its market share despite the slowdown in demand. Efficiencies in commercial efforts and route management lessened the impact of these challenges.

The Latin American region continued to be tested economically as well as geopolitically on several fronts, however, Cargolux again was able to maintain its market share. In Puerto Rico, pharmaceuticals illustrated healthy growth with an increase of 8%.



The Andean region had its own set of challenges, led by continuously suppressed demand for its flowers by local markets in Russia. No country demonstrated this more than Ecuador, which experienced a 7% decline in demand, though Cargolux, in contrast, again managed to improve its market share there. Demand in Colombia remained consistent, as the drop was less sharp. Collectively, the Americas produced 174,469 tonnes, an increase of 6.9% over 2015.

#### Area 2 – Europe, Middle East, Central Asia and Africa

Europe, once again, proved to be the backbone of Cargolux's operation. For the seventh consecutive year, the area, excluding Africa, recorded growth and achieved an increase in tonnage of 7.5%. With 437,020 tonnes carried, the airline could significantly expand its business in key European markets and ranks as the second largest cargo carrier in Germany, France and Austria, outperforming the national carriers of these countries in growth. The Cargolux Group remains the largest cargo carrier in Italy. At home in Luxembourg, Cargolux continues its reign as the number one carrier with a market share in excess of 80%. However, despite the growth in tonnage and the introduction of premium products, such as CV Select, the pressure on yields resulted in a slight overall decline in Area 2 revenues of 1.5%.

In the United Kingdom, Cargolux grew its tonnage by 6.3%, despite the uncertainty over the Brexit proceedings. The airline moved more than 1,000 cars during 2016, as well as a large number of aircraft engines. Despite increased competition from passenger carriers, especially in London, the airline was able to exceed its 2015 numbers. In Ireland, Cargolux grew by 23.2%.

During 2016, volumes from Europe to Asia were especially strong with high export traffic to destinations such as Taipei, Singapore or Bangkok. The airline also registered an increase in demand to the United States.



Developments in Zhengzhou remained a focus during the year. Business in Zhengzhou also benefitted from additional charters as Hong Kong implemented a new air traffic control system that, for a time, restricted access to additional slots during the peak season.

The Group introduced its first commercial stop in Russia with Cargolux Italia's service to Novosibirsk and launched flights to Oslo from New York and on to Luxembourg. On the Oslo - Luxembourg sector, Cargolux offers Norwegian salmon shippers direct connections to its vast network, giving them the opportunity to benefit from the airline's long-standing expertise in cool chain transports and its dedicated CV Fresh product offering.

Pharma traffic registered continued growth, even as more competitors entered the market. Cargolux operates from an excellent, dedicated healthcare facility in Luxembourg that enables the company to offer a superior product with CV Pharma and holds the potential to further grow this segment in 2017. On the downside, the airline notes that more shippers shift some pharma traffic to sea freight or fly them as general cargo instead of benefitting from the expertise and handling that a dedicated product offers.

Despite fierce competition in the Middle East, Cargolux was able to increase its flight frequencies and maintained a good market share. Perishable traffic was in high demand and markets such as Kuwait developed rapidly. Services to India suffered from very low rates; even though the Cargolux flights carried full loads, it became difficult to operate turn-around freighter services on a financially viable or sustainable basis. Cargolux now serves India as part of its Far East network.

While Africa continued to suffer from a decline in oil and gas traffic that also affected Cargolux's services to and from Houston and Dallas, the continent produced good results and is expected to remain stable in the first half of 2017. Overall, Cargolux saw healthy growth in African markets of 8% in tonnage and 3.1% in revenues during 2016, but imports into Africa continue to outgrow exports which could pose a problem in the future.

As in other markets, Africa suffered from significant pressure on yields due to overcapacity. Nevertheless, the airline registered exceptional export growth in Lagos and Bamako. Other growth markets included Ouagadougou, Cairo and Nairobi.

The lack of modern infrastructures keeps challenging manufacturing and, while the automotive industry in South Africa is relatively stable, the company sees suppliers increasingly moving to Asia or Eastern Europe, where a better infrastructure and lower costs present more attractive options. However, Cargolux still sees opportunities and growth potential, especially in East and West Africa.

### Area 3 – Asia Pacific

2016 was a special year for both, Cargolux Asia Pacific and the general airfreight environment in the region. As in other parts of the world, market demand was quite gloomy and overcapacity, as well as stiff competition, continued to challenge Cargolux in Asia. While Mainland China and Hong Kong were very strong, South East Asia gave cause for worries as markets there remained flat. Asia, in general, is an area dictated by demand with lots of fluctuations that clearly shows how vulnerable these markets can be. Especially in South East Asia, the airline registers stronger import than export demand.

Nevertheless, Cargolux expanded its network and services, adding a service to Ho Chi Minh City in Vietnam in April 2016, thus increasing its weekly frequencies from two to three.

Cargolux Italia added a third service between Zhengzhou and Milan Malpensa, while Cargolux Airlines added another Zhengzhou-Luxembourg flight in September 2016. The airline also introduced a fourth flight from Taipei to Luxembourg via Mumbai, India, in October 2016. This service can also carry fifth freedom traffic between Taipei and Mumbai.

At present, the Cargolux Group operates 52 scheduled weekly flights out of the Asia Pacific region.

The last quarter represents the peak season for the air cargo industry and Cargolux Asia Pacific saw an unprecedented surge in demand. While the airline had to cope with a number of hurdles, including slot restrictions in Hong Kong and Shanghai, the company operated close to 90 additional frequencies from Asia to both Europe and the United States; these mainly originated in Hong Kong and Zhengzhou. This compares with 63 additional flights operated during the 2015 peak season.

In 2016, Cargolux Area 3 produced a total of 295,031 tonnes of cargo, an almost 13% increase over 2015.





## CARGOLUX ITALIA

Cargolux Italia had a successful year that saw the Italian part of the Cargolux Group consolidate its position as the number one cargo carrier in Italy, with a market share of 14.5%, and as the largest cargo operator at Milan airport.

After having doubled its aircraft fleet in 2015, Cargolux Italia, in 2016, focused on stabilizing its performance from an operational and management perspective, strengthening the company's standing as the first choice in air cargo for Italian forwarders.

The fleet of four 747-400 freighters saw intensive employment but also went through a heavy maintenance schedule with three D-Checks - LX-RCV between January and February, LX-YCV between June and July and LX-TCV between July and August - and one C-Check on LX-OCV between May and June.

Nevertheless, the airline flew a total of 19,224 block hours, an increase of 17.34% compared to the previous year, and grew its load factor by 1.2 percentage points. Block hours include flights that Cargolux Italy performed for Cargolux Airlines as well as flights across its own network.

In March, Cargolux Italia obtained its dangerous goods air transport permit from the Chinese authorities at CAAC, which significantly enhanced the company's commercial flexibility. The airline expanded its schedule to China with the introduction of a third weekly flight to Zhengzhou in September, thus increasing capacity and offering expanded services for its customers from its Chinese hub. This now also includes the possibility to access other interior destinations such as Shanghai, Dalian, Ningbo and Chin Tao.

Elsewhere in Asia, Cargolux Italia operated four weekly frequencies to Hong Kong, three via Japan and one via Dubai. The operation to Japan consolidated the successful development of the commercial agreement with Nippon Cargo Airlines from 2015 that allows Cargolux Italia's flights to Tokyo Narita.

On routes to the United States, the airline served New York JFK with two weekly flights. Throughout the year, Cargolux Italia continued its operation for Cargolux Airlines to all African destinations while also providing capacity to other points.

The airline registered the strongest growth in markets such as New York, with 55%; Tokyo, with 37% and Dubai, with 82%.

In total, Cargolux Italia carried 78,000 tonnes of freight, 10% more than in 2015, and produced 574,947 freight tonne kilometers, an increase of 25.63% over the previous year.

## STRONG CHARTER OPPORTUNITIES

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Coming from a record year in charter demand that was boosted by exceptional circumstances, such as the extended US West Coast port strikes in early 2015, Cargolux anticipated a slowdown in activities for 2016. And while demand, as expected, declined to a certain extent over 2015, charter activities in 2016 still comfortably exceeded those of earlier years. The airline operated over 160 charter flights, added more charter sectors and ended the year with a good profit from its charter activities.

Just like the rest of the industry, charter demand went through three phases in 2016. After a reasonably good start to the year, the business recorded mixed results after the Chinese New Year and went into overdrive in October. November 2016 brought unprecedented record performances for Cargolux, aided significantly by charter traffic as the airline operated 43 additional flights during that month alone. Equaling 1.5 charter flights per day, it represents a remarkable achievement for Cargolux's charter team.

Healthy demand in December rounded up a successful fourth quarter that continued into early 2017.

2016 was a year of transition and expansion for the Charter Department. The team was reinforced with additional specialists and grew from three to eight persons, including one in Houston and one in Hong Kong, thus taking the coverage to a global level. It enables the team to offer an enhanced customer service, shorter response times and round-the-clock availability during weekdays with a standby desk on weekends. The expanded team also enables the introduction of Cargolux's ACMI service in the coming years and an expansion of the charter product portfolio.

Customers have repeatedly shown their appreciation for the fact that Cargolux has the ability to reliably serve their short-term charter requirements whenever necessary.

To that end, Cargolux operates a number of aircraft on a power-by-the-hour basis that offer flexible capacity dedicated to charter demand, maintenance coverage and high season traffic, as well as a foundation for the build-up of ACMI services. Throughout the year, the airline has strongly benefitted from this flexible capacity that enabled it to perform the high number of extra flights as a positive contribution to its business.

Building up on these assets, Cargolux believes that its charter business in 2017 has the potential to perform even better than in the record year of 2015.

## 2017 OUTLOOK

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Going back to September 2016, customers had a gloomier outlook on business in 2017. That changed after the unexpectedly strong peak season and, without saying that suddenly everything is overly positive, there is more optimism in the markets in early 2017, with growth anticipated to reach 2.5% to 3%.

At the same time, it is noteworthy, that the industry is working in an increasingly shorter time frame. Given the unpredictability and volatility of the markets, as well as shaky economic developments, long term views are no longer possible. In addition, political developments in several key world markets and its uncertain effects on trade give cause for caution.

One area that shows promise is consumer electronics where Cargolux sees potential, albeit only temporary, as companies such as Apple are introducing new products.

Question marks linger on the overcapacity situation and the yield development. The outlook in early 2017 is cautiously positive, though; for Cargolux, the glass remains half full.







# MAINTENANCE & ENGINEERING

## HI-TECH SUPPORT FOR A SOPHISTICATED FLEET

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The Maintenance & Engineering Division (M&E) of Cargolux continues to enjoy an excellent reputation as a provider of high quality maintenance services for the Cargolux Group as well as third party customers. The division guarantees the technical reliability and safe operation of the advanced 747 freighter fleet for both, Cargolux Airlines and Cargolux Italia.

In 2016, Cargolux Airlines concluded its fleet rollover program with the delivery of one more 747-8F, taking the total to 14 units of Boeing's next-generation freighter. Cargolux and Cargolux Italia operated a mixed fleet of 747-8F, 747-400F, 747-400ERF and 747-400BCF. Two 747-400BCFs left the fleet while another 747-400F was leased-in. This kept the combined fleet at 26 aircraft.

## RECORD UTILIZATION

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Cargolux is a leading operator of Boeing's 747-8 freighter and routinely achieves a record-high utilization of its fleet. The airline's M&E division has gained a deep knowledge and extensive experience in all maintenance processes of the 747-8 freighter, giving the company a distinct competitive advantage that also benefits a range of 747 operators that rely on Cargolux's innovative technical solutions and broad range of sophisticated technical services.

The operational activity of the M&E division grew in line with a 6.6% increase in flight hours compared to 2015. In view of this challenge, M&E was able to keep the schedule reliability on a high level, similar to 2015, with an average dispatch rate of 97.7% for the 747-8F and 97.5% for the 747-400F.

## INNOVATION

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Supported by the division's project management structure, Cargolux M&E continues to develop its capabilities and implements innovative tools in areas such as airplane health management, digital aircraft records, environmentally-friendly aircraft cleaning and design solutions.

Cargolux M&E has also partnered with local research institutions on a project for aircraft inspections with drones as well as data analytics, with the objective to make maximum use of data generated by the aircraft and its engines to facilitate optimized maintenance processes and to perform predictive maintenance.

## HANGAR MAINTENANCE

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During 2016, the maintenance team performed 98 A-Checks against 109 in 2015, as well as 8 C-Checks. The lower number of A-Checks is the result of increased A-Check intervals that were achieved through detailed analysis of maintenance and reliability data. On the 747-400F, the reduction of A-checks is the combination of a slightly lower utilization of the aircraft type, a better utilization of the A-check intervals and one additional D-check. Three D-Checks on 747-400 freighters were outsourced.

During 2016, Cargolux employed an average of 446 maintenance staff, who produced 510,000 man hours, in line with the previous year.



## SERVING THE CUSTOMER

An increasing number of carriers join the ranks of satisfied Cargolux M&E customers who benefit from the airline's proven service and high quality of maintenance work.

In 2016, the Cargolux M&E team maintained the aircraft of Silkway Airways, Silkway Italia, Air Bridge Cargo, Atlas Air, Corsair, Air Atlanta, Wamos Air and Air Cargo Global.

Throughout the year, M&E also proved that it can react swiftly and flexibly, when it performed substantial ad-hoc work for a number of contractual and non-contractual customers on a time and material basis. Moreover, Cargolux continued to grow its customer base in the area of component repairs, notably for repairs of cargo power drive units.

Throughout the year, Cargolux M&E performed 27 A-Checks and 2 C-Checks on customer aircraft while revenue from all third-party work reached US\$ 19.1 million.





# FLIGHT OPERATIONS

2016 was a busy year for Flight Operations that not only saw the completion of the airline's fleet roll-over program but also a change of guard at the helm when Jason Holt decided to leave Cargolux and move on to a new opportunity in August. He was replaced by Claude Zehren who has been with Cargolux for more than 18 years.

The fleet renewal was concluded in October with the delivery of 747-8F, LX-VCN, the last of 14 747-8 freighters on order from Boeing. During the year, two leased-in aircraft left the fleet while one additional 747-400F on lease joined Cargolux, keeping the fleet size steady at 26 aircraft. This number includes four 747-400F that operate for Cargolux Italia.

While the fleet was not expanded, its utilization grew significantly during 2016. The combined fleet of the Cargolux Group flew 122,575 block hours on 21,296 network sectors against 114,792 block hours on 20,223 sectors in 2015. Throughout the year, the company flew 4,424 rotations out of its hub at Luxembourg airport, slightly more than the 4,301 rotations flown in 2015.

As a large freighter operator, Cargolux routinely records one of the highest daily aircraft utilization rates in the industry. In 2016, the daily aircraft utilization of the combined 747-400F and 747-8F fleet reached 13:27 hours; the daily utilization rate of the 747-8F alone grew to 15:41 hours.

The punctuality performance in 2016 improved over the previous year and reached 53% of all flights leaving within 60 minutes. While airport curfews are among the main reasons for delays, special shipments with sophisticated handling requirements are also causes for late flights.

Cargolux hired 56 new pilots during 2016, while 34 pilots left the company. This includes a large number of pilots employed by Lufthansa Cityline who flew for Cargolux on a fixed-term contract. At the end of 2016, Cargolux counted 463 pilots, 230 of which were Captains and 233 First Officers.

The selection process for new pilots was adapted and streamlined which led to a much shorter process duration, thus becoming more flexible and efficient.

In late 2015, Cargolux introduced the European Aviation Safety Agency's (EASA) flight time limitation rules (FTL) ahead of its February 2016 deadline. After its first full year in operation, the EASA FTL has proven

to be a valid and important tool that, for the first time ever, not only looks at scheduled work hours but also takes into account the individual body clock of pilots.

Cargolux also introduced a fatigue response system; such a system is not mandatory but the company felt it is necessary for the health and safety of its crews and operation. The airline now not only plans crew rosters in respect of avoiding fatigue situations but also considers whether previous rosters might lead to a fatigue risk. The system also incorporates day-to-day developments, such as roster changes, that could have a negative impact.

Responding to requests from its pilots who had indicated that the previous part-time offer did not fully meet their demands, Cargolux, in 2016, introduced the possibility of permanent part-time. In total, 63 pilots decided to accept the permanent part-time offer that fully started with the first roster of 2017. Throughout the year, Cargolux continued its effort to increase the quality of life of its pilot community by improving planning stability of time away from work.

The high season in 2016 turned out to be exceptionally good for Cargolux, but the massive amount of demand, coupled with an expansion of the airline's regular network throughout the year, not only brought new records in flight numbers, tonnage and aircraft utilization, but also increased pressure and workload for Flight Operations. A big thank you must go to the Flight Operations staff as well as the crews for their passion, dedication and relentless efforts that enabled Cargolux to operate a very demanding schedule with minimal disruptions.

As cost minimization becomes increasingly important, Flight Operations continued to analyze areas of potential savings. The Cargolux Fuel Efficiency Round Table was introduced with encouraging results. In 2016, the initiative saved over US\$ 1 million in fuel costs at Flight Operations alone. This translates to 2,031 tons of fuel that were saved, which also reduced the fleet's CO<sub>2</sub> emission by 6,398 tons.

The savings became possible through operational measures such as different flap settings, lower APU use or three-engine taxiing after landing. Other measures, such as the introduction of the electronic flight bag, helped to reduce weight by eliminating paper maps and introducing electronic maps in the cockpit. Additional initiatives are planned in the coming year that are expected to yield even higher savings.

For 2017, the fleet will remain constant, at the same time, Cargolux expects to hire 40 new pilots. The year will also see the implementation of a new flight planning software that allows to operate more cost-effective while retaining the company's high safety standards. This system is the centerpiece of Cargolux Flight Operations; the complete implementation will last into 2018, with first modules available in 2017. Its introduction will be coordinated by a newly-formed project office and also introduces changes in electronic flight folders, flight plans, fuel slips and load sheets.

## CARGOLUX FLIGHT ACADEMY

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Following regulatory changes and new requirements set forth by EASA, Cargolux restructured its crew training organization and created the Cargolux Flight Academy. The new organization was set up as a profit center that not only fulfills the pilot training requirements of the Cargolux Group, but also markets crew training capacity to third-party customers.

In contrast to other providers who mainly employ retired pilots, Cargolux's trainers are active line pilots with an average of 15,000 flight hours and way over 20 years of 747 experience at Cargolux under their belt. In addition, as cargo pilots, Cargolux trainers are versed in operating to demanding and difficult airfields in remote or less than ideal locations that passenger airlines usually don't fly to.

When launch customer Cargolux introduced the Boeing 747-8F, it also introduced the world's first 747-8F simulator and has since converted it to Level D status, the highest possible qualification. Cargolux, today, employs one of only four advanced 747-8 training units worldwide. Both Cargolux simulators, the 747-400F and 747-8F, are equipped with state-of-the-art visuals.

Together, both simulators recorded a utilization of 61%, or 10,490:16 hours in 2016. Of these, 6,480 hours were flown by Cargolux crews and 3,511 hours by external customer crews, including Cargolux Italia. Based on a 24-hour cycle, the 747-400 simulator was utilized for 67% of the time while the B747-8 Simulator had a slightly lower utilization rate of 56%.

In cooperation with Boeing and EASA, the Cargolux Flight Academy conducted the very first transition courses from the 747-400 to the 747-8; this led to an approved footprint for all such courses at other suppliers.

During 2016, 62 pilots went through the Flight Academy's Course A, 56 of those were Cargolux pilots. In addition, 1 pilot went through Course C while 26 passed through a Command Course during their promotion to Captain.

The airline's Flight Academy is the only approved training organization worldwide to offer 747 line training to third-party pilots. It also markets the capacity of Luxair's new cabin training simulator to third parties.



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## CONSOLIDATED FINANCIAL STATEMENTS







# CONSOLIDATED FINANCIAL STATEMENTS

OF CARGOLUX AIRLINES INTERNATIONAL S.A.

## CONSOLIDATED INCOME STATEMENT

For the year ended December 31, 2016

In thousands of U.S. Dollar	NOTES	2016	2015
Revenues	6	1,748,982	1,856,296
Other operating income	7	5,513	4,830
Aircraft lease expenses	8	(41,370)	(39,164)
Aircraft maintenance expenses	9	(82,502)	(85,376)
Depreciation and impairment	14	(210,035)	(202,767)
Fuel		(551,471)	(639,270)
Personnel costs and benefits	10	(250,317)	(236,860)
Handling, landing and overflying		(327,862)	(311,093)
Trucking, truck handling and interlining		(125,695)	(118,988)
Other operating expenses	11	(117,927)	(134,999)
<b>Operating profit before financing costs</b>		<b>47,316</b>	<b>92,609</b>
Financial income		15,298	7,067
Financial expenses		(72,972)	(73,668)
<b>Net finance costs</b>	12	<b>(57,674)</b>	<b>(66,601)</b>
Share of profit / (loss) of associates and joint ventures		1,851	(27)
<b>Profit / (Loss) before tax</b>		<b>(8,507)</b>	<b>25,981</b>
Current tax	13	14,040	23,498
Deferred tax	13	-	-
<b>Profit for the year</b>		<b>5,533</b>	<b>49,479</b>
<b>Profit attributable to:</b>			
Owners of the Parent		<b>5,533</b>	<b>49,479</b>
Non-controlling interests		-	-
<b>Profit for the year</b>		<b>5,533</b>	<b>49,479</b>

The notes on page 42 to 73 are an integral part of these financial statements.

## CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME

For the year ended December 31, 2016

In thousands of U.S. Dollar	NOTES	2016	2015
<b>Profit for the year</b>		<b>5,533</b>	<b>49,479</b>
<b>Other comprehensive income</b>			
<i>Items that will never be reclassified to profit or loss</i>			
Remeasurements of defined benefit liability / (asset)	22	(539)	1,066
Related tax	13	141	(311)
		<b>(398)</b>	<b>755</b>
<i>Items that are or may be reclassified to profit or loss</i>			
Effective portion of changes in fair value of cash flow hedges	5 / 12	16,029	15,790
Net change in fair value of cash flow hedges transferred to profit or loss	5 / 12	(3)	(9)
Income tax on other comprehensive income	12 / 13	(5,582)	(4,611)
Currency translation adjustment		(574)	(2,536)
		<b>9,870</b>	<b>8,634</b>
<b>Other comprehensive income for the year, net of income tax</b>		<b>9,472</b>	<b>9,389</b>
<b>Total comprehensive income for the year</b>		<b>15,005</b>	<b>58,868</b>
<b>Total comprehensive income attributable to:</b>			
Owners of the Parent		15,005	58,868
Non-controlling interests		-	-
<b>Total comprehensive income for the year</b>		<b>15,005</b>	<b>58,868</b>

The notes on page 42 to 73 are an integral part of these financial statements.

## CONSOLIDATED BALANCE SHEET

As at December 31, 2016

In thousands of U.S. Dollar	NOTES	2016	2015
<b>Assets</b>			
Aircraft and equipment	14	2,118,428	2,127,508
Other property, plant and equipment	14	81,686	63,948
Derivative assets		13,804	6,949
Investments in associates and joint ventures	15	75,314	68,970
Deposits with third parties	14	36,539	39,645
Deferred tax assets	16	43,487	49,017
<b>Total non-current assets</b>		<b>2,369,258</b>	<b>2,356,037</b>
Expendable parts and supplies		23,147	21,259
Trade receivables and other receivables	17	294,379	294,969
Other investments	18	99,373	69,127
Cash and cash equivalents	19	381,607	459,687
<b>Total current assets</b>		<b>798,506</b>	<b>845,042</b>
<b>Total assets</b>		<b>3,167,764</b>	<b>3,201,079</b>
<b>Equity</b>			
Issued capital		525,007	525,007
Share premium		5,846	5,846
Reserves		252,322	225,953
Retained earnings		49,293	16,711
Profit for the year		5,533	49,479
<b>Equity</b>	20	<b>838,001</b>	<b>822,996</b>
Non-controlling interest		-	-
<b>Total equity</b>		<b>838,001</b>	<b>822,996</b>
<b>Liabilities</b>			
Interest-bearing loans and borrowings	21	90,711	99,475
Finance lease liabilities	21	1,547,831	1,598,050
Employee benefits	22	7,951	7,629
Other payables	24	9,378	8,648
Derivative liabilities		23,787	35,849
Provisions	23	95,424	93,277
<b>Total non-current liabilities</b>		<b>1,775,082</b>	<b>1,842,928</b>
Interest-bearing loans and borrowings	21	6,666	6,430
Finance lease liabilities	21	241,130	232,453
Trade payables and other payables	24	279,202	259,799
Provisions	23	13,210	17,168
Taxes payable		14,473	19,305
<b>Total current liabilities</b>		<b>554,681</b>	<b>535,155</b>
<b>Total liabilities</b>		<b>2,329,763</b>	<b>2,378,083</b>
<b>Total equity and liabilities</b>		<b>3,167,764</b>	<b>3,201,079</b>

The notes on page 42 to 73 are an integral part of these financial statements.



# CONSOLIDATED STATEMENT OF CASH FLOWS

For the year ended December 31, 2016

In thousands of U.S. Dollar	NOTES	2016	2015
<b>Cash flow from operating activities</b>			
Profit for the year		5,533	49,479
Adjustments for			
Depreciation and impairment	14	210,035	202,767
Unrealized foreign exchange gains		(20,694)	(14,933)
Net finance costs	12	57,674	66,601
Share of profit of associates and joint venture		(1,851)	27
Loss on sale of property, plant and equipment	7	1,242	514
Fuel hedging	5	-	134
Change in provisions	23	5,564	4,373
Tax expenses	11 / 13	(11,864)	(19,917)
Use of provisions	23	(1,846)	(17,517)
<b>Operating cash flow before changes in working capital</b>		<b>243,793</b>	<b>271,528</b>
Changes in working capital		27,080	12,819
<b>Cash generated from the operations</b>		<b>270,873</b>	<b>284,347</b>
Income tax paid		(6,716)	(6,249)
Benefits of tax credits		13,269	22,823
Interest paid		(60,134)	(61,963)
<b>Net cash from operating activities</b>		<b>217,292</b>	<b>238,958</b>
<b>Cash flow from investing activities</b>			
Acquisition of property, plant and equipment	14	(122,220)	(40,313)
Acquisition of other investments		(53,379)	(30,350)
Loans granted to associates		(3,323)	(3,388)
Dividends from associates		119	77
Interest received		3,550	3,412
Reimbursement of advance payments		45,987	50,880
Proceeds from sale of property, plant and equipment		204	400
Proceeds from sale of other investments		23,464	69,401
Deposits with third parties		(975)	(1,200)
<b>Net cash from / (used in) investing activities</b>		<b>(106,573)</b>	<b>48,919</b>
<b>Cash flow from financing activities</b>			
Repayment of borrowings		(6,383)	(67,469)
Repayment of finance lease liabilities		(235,833)	(192,997)
Proceeds from borrowings		41,319	111,907
<b>Net cash used in financing activities</b>		<b>(200,897)</b>	<b>(148,559)</b>
Net increase in cash and cash equivalents		(90,178)	139,318
Cash and cash equivalents at January 1		459,687	306,046
Effect of exchange rate fluctuations on cash held		12,098	14,323
<b>Cash and cash equivalents at December 31</b>	19	<b>381,607</b>	<b>459,687</b>

The notes on page 42 to 73 are an integral part of these financial statements.

## CONSOLIDATED STATEMENT OF CHANGES IN EQUITY

For the year ended December 31, 2016

In thousands of U.S. Dollar

	Issued capital	Share premium	Non distributable reserve	Free reserve
<b>BALANCE AS OF DECEMBER 31, 2014</b>	<b>425,007</b>	<b>5,846</b>	87,102	176,570
Transactions with owners				
Allocation to free reserve	-	-	(18,600)	18,600
Capital increase through conversion of bonds (note 20)	100,000	-	-	-
<b>Total comprehensive income</b>				
<b>Profit for 2015</b>	-	-	-	-
<b>Total other comprehensive income</b>	-	-	-	-
<b>Total comprehensive income</b>	-	-	-	-
<b>BALANCE AS OF DECEMBER 31, 2015</b>	<b>525,007</b>	<b>5,846</b>	68,502	195,170
Transactions with owners				
Allocation to legal reserve	-	-	16,499	-
<b>Total comprehensive income</b>				
<b>Profit for 2016</b>	-	-	-	-
<b>Total other comprehensive income</b>	-	-	-	-
<b>Total comprehensive income</b>	-	-	-	-
<b>BALANCE AS OF DECEMBER 31, 2016</b>	<b>525,007</b>	<b>5,846</b>	85,001	195,170

The notes on page 42 to 73 are an integral part of these financial statements.

Currency translation reserve	Hedging reserve	Total reserves	Retained earnings	Total equity	Non-controlling interest	Total equity
(2,621)	(43,732)	217,319	15,956	664,128	-	664,128
-	-	-	-	-	-	-
-	-	-	-	100,000	-	100,000
-	-	-	49,479	49,479	-	49,479
(2,536)	11,170	8,634	755	9,389	-	9,389
(2,536)	11,170	8,634	50,234	58,868	-	58,868
(5,157)	(32,562)	225,953	66,190	822,996	-	822,996
-	-	16,499	(16,499)	-	-	-
-	-	-	5,533	5,533	-	5,533
(574)	10,444	9,870	(398)	9,472	-	9,472
(574)	10,444	9,870	5,135	15,005	-	15,005
(5,731)	(22,118)	252,322	54,826	838,001	-	838,001



# NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS

## 1. REPORTING ENTITY

The parent company, Cargolux Airlines International S.A. (the "Company" or "Cargolux"), was incorporated on March 4, 1970 and is registered as a "société anonyme" under the laws of the Grand Duchy of Luxembourg.

The registered address of the Company is Aéroport de Luxembourg, L-2990 Sandweiler, Grand-Duché de Luxembourg and the registration number is R.C. Luxembourg B 008.916.

The Company is an all cargo airline. It also maintains its own aircraft and provides third party maintenance and flight operations assistance (including crew training) to third parties at its Luxembourg headquarters. As at the balance sheet date, operations outside of Luxembourg that relate to the Company's business activities are conducted solely under branch and representative offices, except for Italy, where Cargolux mainly conducts its business through its subsidiary Cargolux Italia S.p.A., an all cargo airline based in Milan. As at the balance sheet date the Company operated its business through branches and representative offices in 34 countries.

The consolidated financial statements of the Company for the year ended December 31, 2016, comprise the Company and its subsidiaries, Cargolux RE S.A., Cargolux Italia S.p.A., Italia Aerologistics S.R.L. and Luxfresh S.A. (together referred to as the "Group") and the Group's interest in joint ventures and associates.

## 2. BASIS OF PREPARATION

### (a) Statement of compliance

The Group prepares its consolidated financial statements under International Financial Reporting Standards ("IFRS") as adopted by the EU (the "financial statements").

The Board of Directors approved the financial statements for the year ended December 31, 2016 on March 22, 2017 and authorized the publication of said financial statements on April 26, 2017, following confirmation by the shareholders thereof on that date.

### (b) Basis of measurement

The financial statements have been prepared on the historical cost basis except for the following material items in the financial statements:

- derivative financial instruments are measured at fair value
- the defined benefit liability is recognized as the net total of: fair value of plan assets plus service cost, actuarial losses minus actuarial gains and the present value of the defined benefit obligation.

### (c) Going concern

The Company believes that the operating cash flows and the credit facilities in place secure the liquidity needs of the Group for the foreseeable future and at least 12 months from the date of issuance of these financial statements (see notes 5 (e) and 21). Consequently, the financial statements have been prepared on the basis of the assumption of the Group's ability to operate as a going concern.



#### **(d) Functional and presentation currency**

The consolidated financial statements are presented in United States Dollar ("US dollar" or "US\$") which is also the functional currency of the Company. US dollars are rounded to the nearest thousand.

#### **(e) Use of estimates and judgments**

The preparation of financial statements in conformity with IFRS as adopted by the EU requires management to make judgments, estimates and assumptions that affect the reported amounts of assets and liabilities, income and expenses.

The estimates and related assumptions are based on historical experience and various other factors. These estimates and related assumptions are believed to be reasonable under the circumstances and on their basis judgments about carrying values of assets and liabilities that cannot readily be derived from other sources. Actual results may differ from these estimates.

The estimates and underlying assumptions are reviewed on an ongoing basis. Revisions to accounting estimates are given effect in the period during which the estimate was revised and in any future periods affected.

Judgments and estimates made by management in the application of IFRS that have significant effect on the financial statements are discussed in [note 29](#).

#### **(f) Changes in accounting policies**

The accounting policies set out below have been applied consistently to all periods presented in these financial statements.

In addition, certain comparative amounts in the financial statements and in the notes thereto have been reclassified to conform to the current year's presentation.



### 3. SIGNIFICANT ACCOUNTING POLICIES

#### (a) Basis of consolidation

##### (i) Subsidiaries

Subsidiaries are entities controlled by the Group. The Group controls an entity when it is exposed to, or has right to, variable returns from its involvement with the entity and has the ability to affect those returns through its power over the entity. The financial statements of subsidiaries are included in the consolidated financial statements from the date on which control commences until the date on which control ceases.

##### (ii) Associates and joint ventures

Associates are those entities in which the Group has significant influence, but not control, over the financial and operating policies. Joint ventures are those entities over whose activities the Group has joint control, established by contractual agreement. The consolidated financial statements include the Group's share of the total recognized gains and losses of associates on an equity accounted basis, from the date that significant influence commences until the date that significant influence ceases. Typically associates where the Group controls 20% or more of the equity but does not exercise control and joint ventures are equity accounted. When the Group's share of losses exceeds its interest in an equity accounted investee, the carrying amount of that interest (including any long-term investments) is reduced to nil and the recognition of further losses is discontinued except to the extent that the Group has an obligation to make payments or has made payments on behalf of that investee.

##### (iii) Transactions eliminated on consolidation

Intragroup balances and any unrealized gains and losses or income and expenses arising from intragroup transactions with fully consolidated entities are eliminated in preparing the consolidated financial statements. Unrealized gains and losses arising from transactions with associates are eliminated to the extent of the Group's interest in the associate.

#### (b) Foreign currency

##### (i) Foreign currency transactions

Transactions in foreign currencies initially recorded by the Group's entities at their respective functional currency spot rate at the date of the transaction first qualifies for recognition. Monetary assets and liabilities denominated in foreign currencies are translated into functional currency at the foreign exchange rates applicable at the balance sheet date. The foreign currency gain or loss on monetary items is the difference between the value of the item

expressed in the functional currency at the beginning of the period and the value of the item expressed in functional currency at the end of the period, using for translation purposes the exchange rate prevailing at the end of each relevant date. The year-end value reflects, if and as applicable, amortization, payments and interest accruals effected during the year. Non-monetary assets and liabilities that are stated at historical cost less amortization are translated into the functional currency using the exchange rate at the date of the transaction. Non-monetary assets and liabilities denominated in foreign currencies that are stated at fair value are translated into the functional currency at foreign exchange rates applicable at the date the fair value is determined. Foreign exchange differences arising on translation are recognized in the income statement.

##### (ii) Financial statements of foreign operations

The assets and liabilities of entities controlled by the Group that have a functional currency other than the US dollar ("foreign operations") are translated into US dollar at foreign exchange rates applicable at the balance sheet date. The rule also applies to goodwill and fair value adjustments arising on consolidation of foreign operations. The revenues and expenses of foreign operations are translated into US dollar at rates applicable at the dates of the transactions. Foreign exchange differences arising on retranslation are recognized directly in a separate component of equity.

#### (c) Derivative financial instruments, including hedge accounting

The Group uses derivative financial instruments to hedge its exposure to the fluctuation of exchange rates, interest rates and fuel prices arising from operational and financing activities. In accordance with its hedging policy, the Group does not hold or issue derivative financial instruments for trading purposes. However, derivatives that do not qualify for hedge accounting are treated as trading instruments.

The gain or loss in the fair value of the derivative financial instrument is recognized in the income statement unless the derivative qualifies for cash flow hedge accounting, in which case the effective part of the derivative financial instrument is recognized in other comprehensive income and presented in the hedging reserve in equity. Any gain or loss with respect to the ineffective part of hedge accounted instruments (as are gains or losses on trading instruments) is recognized in the income statement.

Hedge accounting is discontinued when the hedging instrument expires or is sold, terminated, or exercised, or no longer qualifies for hedge accounting. At that time, any cumulative gain or loss on the hedging instrument recognized in equity is retained in equity until the forecasted transaction occurs. If a hedged transaction is no longer expected to occur, the net cumulative gain or loss recognized in equity is transferred to income statement for the period.



#### **(d) Property, plant and equipment**

##### **(i) Aircraft and equipment**

B747-400F and B747-8F aircraft (including installed engines) and rotatable spare parts (including spare engines) are stated at cost, adjusted for any impairment, less accumulated depreciation.

Borrowing costs related to the acquisition of an aircraft are capitalized as part of the cost of this aircraft.

The initial cost of the aircraft includes the first "D-check" as a separate component. The costs of subsequent "D-checks" are capitalized when the first "D-check" (or second or third "D-check", as the case may be) occurs and the capitalized "D-check" is depreciated over the period to the next scheduled "D-check". The period of depreciation of "D-checks" is set forth in (v) below.

##### **(ii) Other property, plant and equipment**

Other items of property, plant and equipment are also stated at cost less accumulated depreciation (see (v) below) and impairment, if applicable (on which see (j)).

Where parts of an item of property, plant and equipment have different useful lives, they are accounted for as separate items of property, plant and equipment (see (v) below).



### (iii) Leased assets

#### 1. Finance leases

Leases under the terms of which the Group assumes substantially all the risks and rewards of ownership are classified as finance leases. The assets acquired by way of finance leases are recognized as non-current assets and are stated at an amount equal to the lower of their fair value and the present value of the minimum future lease payments at inception of the lease, less accumulated depreciation (see (v)) and impairment, if any (on which see (j)). The related liability is included under *Finance lease liabilities*.

In the context of sale and leaseback transactions, the recognition of any gain on the sale is deferred and recognized instead as finance income over the lease term. No loss is recognized unless the asset is impaired.

#### 2. Operating leases

Leases under the terms of which the Group does not assume the risks and rewards of ownership are classified as operating leases and are not carried on the Group's balance sheet. The net present value of future lease payments under operating leases is disclosed in the notes to these financial statements (see note 25).

In the context of sale and leaseback transactions, the related gains are accounted for as follows:

- they are immediately recognized as income when the transaction is realized at fair market value,
- they are deferred and amortized over the lease term when the transaction is realized under or over fair value.

#### (iv) Subsequent costs

The Group outsources the major aircraft overhaul checks, as well as the maintenance and repairs of engines to outside contractors, however performs the major overhaul "C-checks" internally. The cost related to line maintenance, "A-checks" and "C-checks" performed in Luxembourg are expensed when incurred under various line items in the income statement.

### (v) Depreciation

Depreciation is charged to the income statement on a straight-line basis over the estimated useful lives of each component, except engine components (life limited parts ("LLPs") and engine overhaul (shop visits)) which are depreciated based on cycles flown, or part of aircraft and other property, plant and equipment. The estimated useful lives and residual values of relevant assets are as follows:

	Useful life (average)	Residual value (average)
<b>Components of aircraft</b>		
○ Airframe	20 years	[15% - 9%] of initial cost
○ Engines (Carcass)	12 years	8% of initial cost
○ Engines (LLPs)	9,700 cycles	nil
○ Engines (Shop visits)	3,700 cycles	nil
○ 1 <sup>st</sup> and 2 <sup>nd</sup> "D-check"	8 years	nil
○ Subsequent "D-checks"	6 years	nil
○ Landing gears	10 years	nil
○ Rotable spare parts	10 years	nil
○ Equipment	5 years	nil

Depreciation methods, useful lives and residual values are reassessed periodically as circumstances warrant. Depreciation is discontinued when the carrying amount of the asset is below its residual or sale value.







#### **(e) Investments in subsidiaries, joint ventures and associates**

Subsidiaries, joint ventures and associates are accounted for in accordance with the basis for consolidation (see (a)).

#### **(f) Investments**

Treasury instruments are carried at fair value with variations in value flowing through the income statement. These assets are classified as current assets in *Other investments*. Related transaction costs are expensed when incurred.

Financial instruments are recognized / derecognized by the Group on the date it commits to purchase / sell the instruments.

#### **(g) Trade and other receivables**

*Trade and other receivables* are initially recognized at fair value plus transaction costs and subsequently measured at their amortized cost less impairment (on which see (j)).

#### **(h) Expendable parts and supplies**

*Expendable parts and supplies* are stated at the lower of cost and net realizable value. Inventories are carried on a first-in-first-out basis. Net realizable value is the estimated market price in the ordinary course of business, less estimated sales costs. Expendable parts and supplies are charged to *Aircraft maintenance expenses* when used.

#### **(i) Cash and cash equivalents**

*Cash and cash equivalents* comprise cash balances, call and short term deposits and shares in money market funds. Bank overdrafts that are repayable on demand and form an integral part of the Group's cash management are included as a component of *Cash and cash equivalents* in the Statement of Cash Flows.

#### **(j) Impairment**

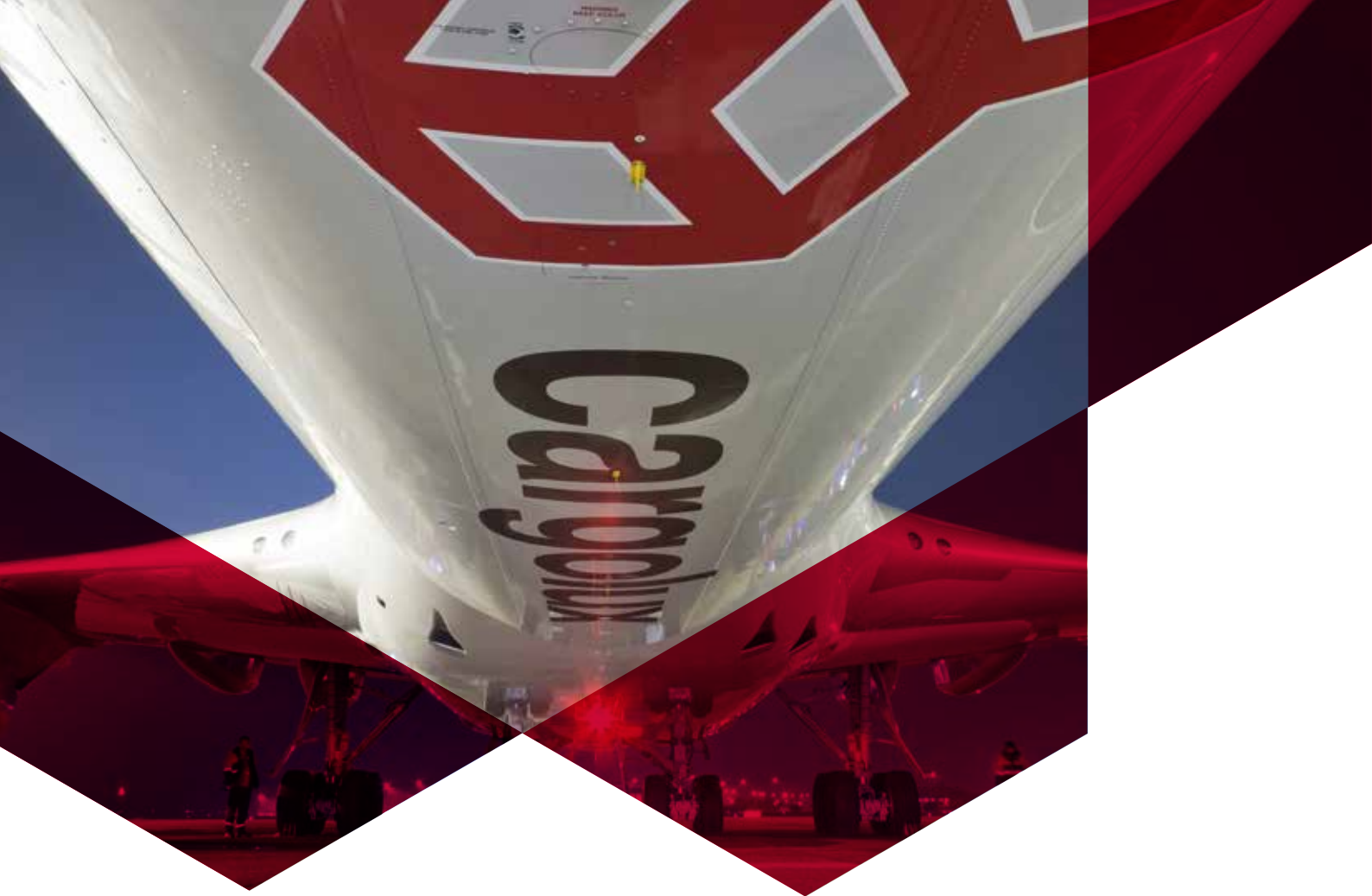
##### **(I) Non-financial assets**

The carrying amounts of the Group's non-financial assets, other than expendable parts and supplies (on which see (h) above) and deferred tax assets (on which see (q)), are reviewed at each balance sheet date to determine whether there is an indication that an asset may be impaired. If any indication exists, the asset's recoverable amount is estimated and the carrying value adjusted accordingly.

Impairment is recognized whenever the carrying amount of an asset exceeds its recoverable amount. Impairment losses are recognized in the income statement.

Calculation of recoverable amount:

The recoverable amount of assets is the greater of their fair value (less costs to sell) and value in use. In assessing value in use, the estimated future cash flows to be derived from the use of the asset are discounted to their present value using a pre-tax discount rate that reflects current market assessments of the time value of money and the risks specific to the asset. Impairment is reversed if there has been a change in the estimates used to determine the recoverable amount. Impairment is reversed only to the extent that the asset's carrying amount does not exceed the carrying amount that would have been determined, net of depreciation or amortization.



## (ii) Financial assets

A financial asset is considered to be impaired if objective evidence indicates that one or more events have had a negative effect on the estimated future cash flows of that asset.

An impairment loss in respect of a financial asset carried at amortized cost is calculated as the difference between its carrying amount and the present value of the estimated future cash flows. An impairment loss in respect of an available-for-sale financial asset is calculated by reference to its fair value.

Significant financial assets are tested for impairment on an individual basis. The remaining financial assets are assessed collectively in groups that share similar credit risk characteristics.

All impairment losses are recognized in income statement.

An impairment loss is reversed if the reversal can be related objectively to an event occurring after the impairment loss was recognized. For financial assets carried at amortized cost and available-for-sale financial assets that are debt securities, the reversal is recognized in income statement. For available-for-sale financial assets that are equity securities, the reversal is recognized directly in equity.

## (k) Interest-bearing liabilities and finance lease liabilities

Interest-bearing liabilities and finance lease liabilities are recognized initially at fair value less related transaction costs. Subsequent to initial recognition, interest-bearing liabilities are stated at amortized amount using the effective interest rate method.

## (l) Employee benefits - Retirement benefit costs

The Group maintains defined contribution and defined benefit pension schemes for its Luxembourg based employees.

Premiums paid to the insurance company in relation to defined contribution retirement benefit plan are charged as an expense as they fall due.

The defined benefit scheme in Luxembourg is accounted for as such under IAS 19, using the Projected Unit Credit Method, with actuarial valuations being carried out at each balance sheet date ([see note 22](#)).

Remeasurements of the net defined benefit liability, which comprise actuarial gains and losses, the return on plan assets (excluding interest) and the effect of the asset ceiling (if any, excluding interest), are recognized immediately in Other Comprehensive Income ("OCI"). Net interest expense and other expenses related to defined benefit plans are recognized in income statement.

## (m) Provisions

A provision is recognized in the balance sheet when the Group has a present legal or contractual obligation that can be estimated reliably as a result of a past event, and if it is probable that an outflow of economic benefits will be required to settle this obligation. If the effect is material, provisions are determined by discounting the expected future cash flows at a pre-tax rate that reflects current market assessments of the time value of money and, where appropriate, the risks specific to the liability. Accruals related to those provisions are recognized as finance cost over the period.

Heavy maintenance costs ("D-checks") relating to aircraft under operating leases are recognized as provisions on the basis of the heavy maintenance supplier agreement.

The Group accrues for re-delivery costs related to aircraft under operating leases as soon as it becomes apparent that the asset does not meet the return condition criteria set forth in the lease agreement.

## (n) Trade and other payables

*Trade and other payables* are initially recognized at fair value plus transaction costs and subsequently measured at their amortized cost.

## (o) Revenue - Services rendered

Cargo sales, net of discounts, are recognized as revenue when the transportation service is provided. Other revenue, primarily third party aircraft maintenance, is also recognized when the service is rendered.

## (p) Expenses

### (i) Operating lease payments

Rentals paid under operating leases are recognized in the income statement over the term of the lease. Lease incentives received are recognized in the income statement as an integral part of the total lease expense over the term of the lease.

### (ii) Finance lease payments

Minimum lease payments are apportioned between the finance charge and the reduction of the outstanding liability. The finance charge is allocated to each period during the lease term so as to produce a constant periodic rate of interest on the remaining balance of the liability. The interest expense component of finance lease payments is recognized in the income statement using the effective interest rate method.

### (iii) Net finance costs

*Net finance costs* comprise the net result of (i) interest payable on borrowings, and (ii) interest receivable on funds invested (*Cash and cash equivalents and Other investments*), and gains and losses (realized and unrealized) on *Other investments* and on interest rate hedging instruments that do not qualify for hedge accounting ([see \(c\)](#)).

Interest income and expense are recognized in the income statement as it accrues, using the effective interest method where appropriate. Dividend income is recognized in the income statement as *Other operating income* on the date the Group's right to receive the payments is established.

## (q) Income tax

*Income tax* on the income statement for the year comprises current and deferred tax. Income tax is recognized in the income statement except to the extent that it relates to items recognized directly in equity, in which case it is recognized in equity or in *Other comprehensive income*.

*Current tax* is the expected tax payable on the taxable income for the year, using tax rates enacted applicable at the balance sheet date, subject to any adjustment to tax payable in respect of previous years. Taxes that are not assessed on the Group's income (e.g. Net worth tax) are recognized in *Other operating expenses*.

*Deferred tax* is computed using the balance sheet method, providing for temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts used for taxation purposes. The amount of deferred tax provided is based on the expected manner of realization or settlement of the carrying amount of assets and liabilities, using tax rates enacted at the balance sheet date.

A deferred tax asset is recognized only to the extent that it is probable that future taxable profits will be available against which the deferred tax asset can be utilized. Deferred tax assets are reviewed at each balance sheet date and are reduced to the extent that it is no longer probable that the related tax benefit will be realized.

## (r) New and amended standards adopted by the Group

There are no IFRS or IFRIC interpretations that are effective for the first time for the financial year beginning on or after January 1, 2016 that had a material impact on the reporting result of the Group.

## (s) New standards, amendments and interpretations issued but not effective for the financial year beginning January 1, 2016 and not early adopted

A number of new standards, amendments to standards and interpretations are effective for annual periods beginning after January 1, 2016, and have not been applied in preparing these separate financial statements. Those which may be relevant to the Group are set out below. The Group does not plan to adopt these standards early.





IFRS 9, 'Financial instruments', addresses the classification, measurement and recognition of financial assets and financial liabilities. The complete version of IFRS 9 was issued in July 2014. It replaces the guidance in IAS 39 that relates to the classification and measurement of financial instruments.

IFRS 9 includes revised guidance on the classification and measurement of financial instruments, including a new expected credit loss model for calculating impairment on financial assets, and the new general hedge accounting requirement. It also carries forward the guidance of recognition and derecognition of financial instruments from IAS 39. The standard is effective for accounting periods beginning on or after January 1, 2018 and early adoption is permitted. The Group is yet to assess IFRS 9's full impact.

IFRS 15, 'Revenue from contracts with customers' deals with revenue recognition and establishes principles for reporting useful information to users of financial statements about the nature, amount, timing and uncertainty of revenue and cash flows arising from an entity's contracts with customers. Revenue is recognized when a customer obtains control of a good or service and thus has the ability to direct the

use and obtain the benefits from the good or service. The standard replaces all current revenue standards and related interpretations. The standard is effective for annual periods beginning on or after January 1, 2018 and earlier application is permitted. The Group is yet to assess the impact of IFRS 15.

IFRS 16, 'Leases' sets out the principles for the recognition, measurement, presentation and disclosure of leases. The objective is to ensure that lessees and lessors provide relevant information in a manner that faithfully represents those transactions. This information gives a basis for users of financial statements to assess the effect that leases have on the financial position, financial performance and cash flows of the entity. IFRS 16 eliminates the current dual accounting model for lessees, which distinguishes between on-balance sheet finance leases and off-balance sheet operating leases. Instead, there is a single, on-balance sheet accounting model that is similar to current finance lease accounting. The standard is effective for annual periods beginning on or after January 1, 2019. Like all groups that lease major assets for use in their business, the Group will see an increase in reported assets and liabilities.





## 4. DETERMINATION OF FAIR VALUES

A number of the Group's accounting policies and disclosures require the determination of fair value, for both financial and non-financial assets and liabilities. Fair values have been determined for measurement and / or disclosure purposes based on the following methods. Where applicable, further information about the assumptions made in determining fair values is disclosed in the notes specific to that asset or liability.

### (i) Investments in equity securities

The fair value of financial assets is determined by reference to their quoted bid price at the reporting date.

### (ii) Derivatives

Fair values of hedging instruments, representing unrealized gains and losses, are determined on the balance sheet date based on third party pricings and valuations, including valuations provided by the

Group's counterparties to the hedging transactions. Where feasible any counterparty valuation is verified by the Group using independent sources. The values assume a normal functioning of financial markets. Market volatility will necessarily have an impact on said pricings and valuations as well as the Group's eventual liability with respect of the hedging instruments booked at the balance sheet date.

### (iii) Other financial assets/liabilities

The fair value of non-current receivables and payables is determined by discounting future cash flows using current market interest rates. Other financial assets and liabilities are carried at the fair value (*on which see note 3 (j) above*).

## 5. FINANCIAL RISKS AND RISK MANAGEMENT

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### Risk management framework

The Group has exposure to the following risks with respect of its financial assets and use of financial instruments:

- ◊ credit risk
- ◊ liquidity risk
- ◊ market risk

The objective of risk management is to manage and control risk exposures within acceptable parameters, while optimizing the benefit expected to be derived from the investing and risk management activities, respectively.

### Credit risk

Credit risk is the risk of financial loss to the Group if a counterparty to a financial instrument or issuer of a security owned by the Group fails to meet its contractual obligations because of insolvency, bankruptcy or similar event.

### Liquidity risk

Liquidity risk is the risk that the Group will encounter difficulty in meeting the obligations associated with its financial liabilities that are settled by delivering cash or another financial asset. The Group's approach to managing liquidity is to ensure, as far as possible, that it will always have sufficient liquidity to meet its liabilities when due, under both normal and stressed conditions, without incurring unacceptable losses or risking damage to the Group's assets or reputation.

### Market risk

Market risk is the risk that changes in asset prices resulting from fluctuation in foreign exchange rates, interest rates or fuel prices will affect the Group's income or the value of its holdings of financial instruments.

### General

This note presents information about the Group's exposure to each of the above risks, the Group's objectives, policies and processes for measuring and managing risk, as well as the Group's objectives and policies for the management of excess cash. Where applicable, further quantitative disclosures are included throughout these financial statements.

The Board of Directors has overall responsibility for the establishment and oversight of the Group's risk management framework. The Board has established the Risk Management Committee, which is responsible for executing and monitoring the Group's risk management policies. The Risk Management Committee reports on a regular basis to the Board of Directors and its Audit Committee on the committee's activities and on the evolution of the Group's derivative portfolio.

The Group's risk management policies are established to identify and analyze the risks faced by the Group, to set appropriate risk limits and controls, to determine appropriate instruments to protect the Group against risks and to monitor risks and financial limits. Risk management policies and procedures are reviewed as required to reflect changes in market conditions and the Group's activities. The Group, through its training and management standards and procedures, aims to develop a disciplined and constructive control environment in which employees involved in the risk management activity understand their respective roles and obligations.



### *Risk management policies*

The Group buys derivatives in order to manage market risks. In connection with purchases of derivatives, the Group sometimes also sells derivatives. Such transactions are carried out within the risk management framework and control mechanisms described below. Where possible the Group seeks to apply hedge accounting for those instruments in order to reduce volatility in income statement. The Group's risk management policy prohibits short selling of options.

### *Investment policy*

The primary goal of the Group's investment policy is to optimize the returns while always preserving the invested capital. To this effect, the Group invests excess cash, according to Board approved limits, in investment funds, bank deposits, zero-coupons and structured products with a capital guarantee at maturity. The return on structured products depends on the performance of the underlying used, which may be equities, commodities, indices, currencies, securities or interest rates. Structured products are designated as *Other investments* and recorded at fair value in the balance sheet with any change in value flowing through the income statement. The Group does only purchase securities or structured investment products from a counterparty having a minimum, pre-determined credit rating and which makes a daily market in those securities or financial instruments.

### *(a) Credit risk*

#### *Cash, derivatives and other financial instruments*

Generally, the Group limits its exposure to credit risk by only making deposits with, investing in securities issued by and buying protection from counterparties that have a long-term credit rating of at least BBB- from Standard & Poor's and Fitch and Baa3 from Moody's. Any exception to this rule must be approved by the Risk Management Committee and is closely monitored and reported to the Executive Committee and the Board of Directors. Credit limits for each counterparty are in place and monitored on an ongoing basis. This enables the Group to cap the maximum amount of business that can be transacted with any given counterparty. Compliance with those credit limits is monitored on a daily basis.

The carrying amount of financial assets represents the maximum credit exposure.

### *Trade and other receivables*

The Group's exposure to credit risk is influenced mainly by the individual characteristics of the customer and the demographics of the Group's customer base, including the default risk of the industry and country in which customers operate. The Group distinguishes between countries considered as low risk and countries of higher risk depending on their geographical and political situation and monitors customers on either list separately.

The Credit Committee has established a credit policy under which each new customer not paying through CASS (Cargo Accounts Settlement Systems) is analyzed individually for creditworthiness before the Group's standard payment and delivery terms and conditions are offered. The Group's review includes external ratings, when available, and in some cases bank references. Purchase limits are established for each customer, which represents the maximum open amount allowed for trading without requiring approval from the Credit Committee; these limits are reviewed regularly. Customers that fail to meet the Group's benchmark creditworthiness may transact with the Group only on a prepayment basis or if they can offer collateral e.g. bank guarantees or letters of a credit. The creditworthiness of customers paying through CASS is assessed and monitored by IATA which runs this clearing and settlement system on behalf of the cargo carriers.

Not more than 10% (2015: 10%) of the Group's revenue is attributable to sales transactions with a single customer. The five largest customers of the Group represent 38% (2015: 38%) of the net cargo sales. More than 61% (2015: 57%) of the Group's customers have been transacting with the Group for over four years, and losses have occurred infrequently. In monitoring customer credit risk, customers are grouped according to their credit characteristics, including whether they are an individual or legal entity, whether they are standalone entities or part of a larger group, geographic location, aging profile, maturity and credit history. Customers that are graded as "high risk" are closely scrutinized and monitored, and future sales are made on a prepayment or collateral basis with approval of the Credit Committee.

The Group's credit risk exposure is mitigated by a credit risk insurance purchased from a professional and international insurer that partially retrocedes the risk to the Group's captive reinsurance company to cover delinquent customer payments.



The Group establishes an allowance for impairment that represents its estimate of incurred losses in respect of trade and other receivables (see note 17).

The maximum exposure to credit risk for trade receivables at the reporting date by areas was:

In thousands of U.S. Dollar	2016	2015
Area I	33,200	29,504
Area II	99,338	85,908
Area III	98,597	79,155
	<b>231,135</b>	<b>194,567</b>

Cargolux is a member of the IATA clearing systems CASS (Cargo Accounts Settlement Systems) and ICH (IATA Clearing House) commonly used by forwarders and airlines, respectively, to settle payments. In 2016, 79.63% of receivables were cleared through CASS and ICH (78.44% in 2015). As of December 31, 2016, 99.77% (99.64% in 2015) of the total outstanding trade debtors were within the contractual payment terms. The average DSO of trade receivables was 41.9 days in 2016 (40.4 days in 2015). In 2016 the Group suffered a credit loss of US\$ 0.01 million (2015: US\$ 0.49 million).

#### (b) Fuel risk

##### Fuel price

The price of fuel significantly affects the Group's earnings. At a 2016 average of US\$/tonne 422, the jet market price decreased by US\$/tonne 100 compared to the preceding year. During the year 2016, fuel prices gradually recovered from their multi-year low in January.

##### Fuel hedges

To manage its fuel price risk the Group uses derivative instruments, mainly options. Call options are purchased as insurance against high fuel prices. The Group is protected against high fuel prices above the call strike price and pays a premium for this insurance. The worst outcome of this strategy would be that the premium is not recovered. Fuel exposures are hedged over time. The hedging portfolio and the strategy are reviewed in regular meetings of the Group's Fuel Risk Management Committee. The Committee works within a Governance framework of Policy and Procedures and actively manages the fuel hedge portfolio, regularly reporting to the Audit Committee of the Board of Directors.

As at December 31, 2016, the fair value of fuel derivatives was as follows:

In thousands of U.S. Dollar	2016	2015
Derivative assets	-	134
Derivative liabilities	-	-
<b>Balance at January 1</b>	<b>-</b>	<b>134</b>
Non-qualifying hedges recognized in profit and loss	-	(134)
Derivative assets	-	-
Derivative liabilities	-	-
<b>Balance at December 31</b>	<b>-</b>	<b>-</b>

None of these positions have been considered for hedge accounting.

The Group has taken the decision to stop hedging fuel due to the significant decline of fuel prices, the extreme volatility in the market and the overall efficiency of its own fuel surcharge mechanism. Once this level of efficiency reaches an established trigger level, hedging activities will be reconsidered.





### (c) Currency risk

The Group is exposed to currency risk on sales, purchases and borrowings that are denominated in a currency other than the functional currency of the Group.

Generally, the Group does not incur non-dollar denominated indebtedness to finance its assets stated in US\$ in order to eliminate any related volatility in income statement except if the management sees in such financing an opportunity to reduce his currency exposition.

At the balance sheet date, the Group's exposure to foreign currency risk was as follows:

In thousands of U.S. Dollar	EUR	HKD	CNY	OTHER	% OF TOTAL
Deposits with third parties	6,493	106	54	305	19.0
Trade receivables and other receivables	74,098	48,750	42,443	35,243	71.7
Other investments	2,131	-	-	-	2.1
Cash and cash equivalents	189,653	12,769	13,417	22,298	62.4
Employee benefits	(6,925)	-	-	(1,026)	100.0
Interest-bearing loans and borrowings	(63,453)	-	-	-	64.7
Finance lease liabilities	(26,159)	-	-	-	1.4
Trade payable and other payables	(97,705)	(5,684)	(6,522)	(12,341)	42.4
Taxes payable	(14,213)	-	-	89	97.6

At the immediately preceding balance sheet date, the Group's exposure to foreign currency risk was as follows:

In thousands of U.S. Dollar	EUR	HKD	CNY	OTHER	% OF TOTAL
Deposits with third parties	5,822	125	62	309	15.9
Trade receivables and other receivables	111,678	44,282	27,265	29,598	77.9
Other investments	2,240	-	-	-	3.2
Cash and cash equivalents	108,875	5,162	22,973	18,706	33.9
Employee benefits	(6,691)	-	-	(938)	100.0
Interest-bearing loans and borrowings	(65,774)	-	-	-	61.6
Finance lease liabilities	(31,846)	-	-	-	1.7
Trade payable and other payables	(72,069)	(5,418)	(4,395)	(10,899)	34.6
Taxes payable	(18,999)	-	-	(55)	98.7

Relevant foreign exchange rates relative to the US\$ were as follows:

	AVERAGE RATE		REPORTING DATE SPOT RATE	
	2016	2015	2016	2015
EUR	1.10682	1.11034	1.05410	1.09260
HKD	0.12883	0.12899	0.12894	0.12902
CNY	0.15061	0.15919	0.14400	0.15408

Depending on market views, the Group hedges the foreign exchange risk related to payables and receivables through the use of forwards and options.

#### (d) Interest rate risk

The Group is exposed to interest rate risk on interest payments related to its on balance sheet debt and on rental payments. Additionally, the Group is also exposed to interest rate risk related to future, non-contingent interest bearing liabilities such as refinancing of current fleet outside the current reporting period. The Group adopts a policy of ensuring that its exposure to increases in interest rates on borrowings is capped or reduced while allowing the Group to benefit to a certain extent from a low interest rate environment. Generally, this objective is achieved by buying caps and selling floors. This strategy is generally deemed preferable than fixing the rate at the time the loan is contracted or the payment liability is crystallized, unless interest rates are deemed to be very low and in which case such rates are locked in via a swap or fixed interest loan, strategy that the Group has pursued in 2016 and is likely to continue to pursue in 2017.

Where possible the Group seeks to apply hedge accounting for those instruments in order to reduce volatility in income statement.

At the reporting date the interest rate profile of the Group's interest-bearing financial instruments was:

In thousands of U.S. Dollar	2016	2015
<b>Fixed rate instruments</b>		
Financial liabilities	976,925	1,095,633
<b>Floating rate instruments</b>		
Financial assets	480,980	528,814
Financial liabilities	982,648	919,734
<b>Interest rate derivatives</b>		
Nominal amount of underlying financings in place at the balance sheet date	681,111	736,207

As at December 31, 2016, the fair value of interest rate derivatives was a follows:

In thousands of U.S. Dollar	2016	2015
Derivative assets	8,561	9,855
Derivative liabilities	(54,060)	(70,280)
<b>Balance at January 1</b>	<b>(45,499)</b>	<b>(60,425)</b>
Net change in fair value recognized in equity	16,026	15,781
Non-qualifying hedges recognized in profit and loss	9,084	(855)
Derivative assets	15,443	8,561
Derivative liabilities	(35,832)	(54,060)
<b>Balance at December 31</b>	<b>(20,389)</b>	<b>(45,499)</b>

#### (e) Liquidity risk

The Group's approach to manage liquidity risk is to ensure that it will have sufficient liquidity to meet its liabilities when due, under both normal and stressed conditions. Major known 2017 liabilities and how the Group expects to cover same is discussed below.

The Group is subject to loan covenants for some of its borrowing and finance lease arrangements, which in case of breach, unless waived, would entitle the lending parties to demand prepayment of the loan. Financial covenants require the Group to respect certain balance sheet, interest and rental coverage ratios. Under one such covenant EBITDAR (Earnings before interest, tax, depreciation, amortization and rentals) must cover 1.3 times net interest expense plus rentals for the period and under the second covenant the shareholders' equity must represent at least 16.7% of total liabilities. As at December 31, 2016, the Group was in compliance with this and all other contractual financial covenants.

The following are the contractual maturities of liabilities:

In thousands of U.S. Dollar	Carrying amount	Contracted cash flows	2017	2018	2019	Further than 2019
Interest-bearing liabilities	(97,377)	(108,513)	(9,698)	(9,187)	(9,132)	(80,496)
Finance lease liabilities	(1,788,961)	(2,112,508)	(296,863)	(256,365)	(230,608)	(1,328,672)
Trade payables and other payables	(276,502)	(276,502)	(267,125)	(1,659)	(1,041)	(6,677)
Derivative liabilities	(35,865)	(37,080)	(12,106)	(8,382)	(6,431)	(10,161)
	<b>(2,198,705)</b>	<b>(2,534,603)</b>	<b>(585,792)</b>	<b>(275,593)</b>	<b>(247,212)</b>	<b>(1,426,006)</b>

In addition to routine capital repayment under interest bearing loans, finance lease liabilities and rentals under operating leases, the Group foresees the following payments during the year immediately following the balance sheet date:

- Capital expenditures relating to aircraft components (approximately US\$ 73.8 million).
- Payment of an anti-trust fine estimated at EUR 80 million to the European Commission, following the re-adoption of the Commission's 2010 decision in the "Airfreight" case (which was annulled by the General Court in December 2015).

The Group will be able to meet its financial obligations in 2017 out of a mix of the proceeds of operating cash flows and new debt mentioned below. The level of liquidity of the Group at the balance sheet date is expected to be maintained by the following additional measures during 2017:

- The Group intends to close a US\$ 20 million refinancing of one debt-free B747-400F.
- The Group also intends to issue a new "Schuldschein" loan for an amount of EUR 50 million.
- The Group maintains credit lines to ensure that it will be able to face its obligations when they fall due. As at December 31, 2016, the Group had the following credit lines available for drawing: US\$ 63.25 million (US\$ 47.5 million and EUR 15 million) with a maturity ranging from June to December 2017.

#### (f) Sensitivity analysis

In managing currency, interest rate and fuel price risks, the Group seeks to reduce the impact of short-to medium-term changes in values on the Group's budgeted earnings and cash flows. Over the longer term, however, permanent changes in any or all of the above would have a material impact on earnings and cash flows.

For the year 2016, it is estimated that a general increase/decrease of one percentage point in interest rates would have decreased the Group's profit before tax before marked-to-market of derivative instruments by respectively approximately US\$ 0.2 million and US\$ 0.01 million. Interest rate swaps and other hedging instruments that were in place at that time have been included in this calculation.

It is estimated that a general increase/decrease of one percentage point in the value of the US dollar against other foreign currencies throughout the year would have decreased/increased the Group's profit before tax by approximately US\$ 7.7 million. The impact on the Income statement of an increase in the value of the US Dollar can to a certain extent be mitigated by cash inflows from currency hedging.

It is estimated that an increase/decrease of US\$/tonne 50 in the price of jet fuel (basis barges Rotterdam) over a one-year period would have increased/decreased the Group's fuel bill by around US\$ 60 million. The impact on the Income statement of a fuel price increase can to a large extent be mitigated by cash inflows from the fuel surcharge program and in addition fuel hedging.

## (g) Fair values

The fair values of financial assets and liabilities other than those with carrying amounts that are reasonable approximations of fair values, together with the carrying amounts shown in the balance sheet, are as follows:

In thousands of U.S. Dollar	DECEMBER 31, 2016		DECEMBER 31, 2015	
	Carrying amount	Fair value	Carrying amount	Fair value
<b>Assets carried at fair value</b>				
Other investments	28,200	28,200	23,464	23,464
Interest rate transactions through profit and loss	15,443	15,443	8,561	8,561
Forward exchange contracts used for hedging	4,672	4,672	-	-
	<b>48,315</b>	<b>48,315</b>	<b>32,025</b>	<b>32,025</b>
<b>Assets carried at amortized costs</b>				
Loans and receivables	288,068	288,068	293,357	293,357
Cash and cash equivalents	381,607	381,607	459,687	459,687
	<b>669,675</b>	<b>669,675</b>	<b>753,044</b>	<b>753,044</b>
<b>Liabilities carried at fair value</b>				
Interest rate transactions used for hedging	(35,832)	(35,832)	(54,060)	(54,060)
Forward exchange contracts used for hedging	(33)	(33)	-	-
	<b>(35,865)</b>	<b>(35,865)</b>	<b>(54,060)</b>	<b>(54,060)</b>
<b>Liabilities carried at amortized cost</b>				
Secured bank loans	(34,688)	(30,176)	(41,071)	(36,558)
Unsecured bond issues	(63,246)	(54,302)	(65,556)	(56,579)
Finance lease liabilities	(1,861,639)	(1,432,468)	(1,908,740)	(1,562,452)
Trade and other payables	(267,125)	(267,125)	(241,589)	(241,589)
	<b>(2,226,698)</b>	<b>(1,784,071)</b>	<b>(2,256,956)</b>	<b>(1,897,178)</b>

The basis for determining fair values is discussed in [note 4](#).

## (h) Fair values hierarchy

In thousands of U.S. Dollar	DECEMBER 31, 2016			DECEMBER 31, 2015		
	Level 1	Level 2	Total	Level 1	Level 2	Total
Other investments	28,200	-	28,200	23,464	-	23,464
Interest rate transactions through profit and loss	-	15,443	15,443	-	8,561	8,561
Forward exchange contracts used for hedging	-	4,672	4,672	-	-	-
	<b>28,200</b>	<b>20,115</b>	<b>48,315</b>	<b>23,464</b>	<b>8,561</b>	<b>32,025</b>
Interest rate transactions used for hedging	-	(35,832)	(35,832)	-	(54,060)	(54,060)
Forward exchange contracts used for hedging	-	(33)	(33)	-	-	-
	<b>-</b>	<b>(35,865)</b>	<b>(35,865)</b>	<b>-</b>	<b>(54,060)</b>	<b>(54,060)</b>

Level 1: quoted prices (unadjusted) in active markets for identical assets or liabilities

Level 2: inputs other than prices included within Level 1 that are observable for the asset or liability, either directly (i.e. as prices) or indirectly (i.e. derived from prices)

Level 3: inputs for the asset or liability that are not based on observable market data (unobservable inputs)



## 6. REVENUES

In thousands of U.S. Dollar	2016	2015
Cargo sales	1,715,734	1,822,621
Maintenance revenues	18,838	19,331
Trucking, handling and other services	14,410	14,344
	<b>1,748,982</b>	<b>1,856,296</b>

Cargo sales represent revenues directly related to the Group's core business, i.e. air freight, net of customer incentives and rebates. The largest contributors to net turnover were Area II (Europe, Middle East, Pakistan & Africa) traffic with 44.2% (2015: 41.9%), followed by Area III (Asia & Pacific) traffic with 39.5% (2015: 38.6%), with the balance accounted for by Area I (the Americas) and charter traffic with 16.3% (2015: 19.5%).

## 7. OTHER OPERATING INCOME

In thousands of U.S. Dollar	2016	2015
Loss on sale of property, plant and equipment	(1,242)	(514)
Miscellaneous	6,755	5,344
	<b>5,513</b>	<b>4,830</b>

Miscellaneous includes mainly credits received from third parties.

## 8. AIRCRAFT LEASE EXPENSES

In thousands of U.S. Dollar	2016	2015
Aircraft rentals under dry leases	39,033	38,741
Return conditions provision in respect of dry leased aircraft	2,337	423
	<b>41,370</b>	<b>39,164</b>

At the balance sheet date the Group dry leased the following aircraft: LX-ECV, LX-OCV, LX-JCV, LX-FCL, LX-GCL, LX-WCV and LX-VCC.

## 9. AIRCRAFT MAINTENANCE EXPENSES

In thousands of U.S. Dollar	2016	2015
Engine repair and overhaul	26,499	30,395
Engine reserve	9,785	11,391
Heavy maintenance ("C-checks" and "D-checks" on dry leased aircraft)	775	(438)
Component and brakes repair	13,304	10,328
Stock consumption	12,276	12,068
Line maintenance at stations	7,519	7,485
Other maintenance expenses	12,344	14,147
	<b>82,502</b>	<b>85,376</b>

In 2015, additional provisions for engine shop visits for aircraft under operating lease agreements were accounted and heavy maintenance cost included provision releases of aircraft under operating lease contract.

## 10. PERSONNEL COSTS AND BENEFITS

In thousands of U.S. Dollar	2016	2015
<b>By category of expenses</b>		
Salaries, overtime, 13 <sup>th</sup> month	196,501	190,134
Social security	23,812	21,831
Employee benefits		
◦ Expenses related to defined benefit plans	515	553
◦ Expenses related to defined contribution plans	5,075	5,141
◦ Other (accident and invalidity insurance)	10,566	7,071
Training and sundry personnel charges	13,848	12,130
	<b>250,317</b>	<b>236,860</b>

Average number of staff by category	2016	2015
<b>Active</b>		
Flight Operations (including crews)	612	596
Sales and Marketing	306	292
Maintenance	475	445
Finance and Administration	138	138
General Management (Corporate Division)	31	48
Legal and Compliance Division	50	46
Commercial Planning	38	34
Global Logistics	247	218
Corporate Development	7	2
	<b>1,904</b>	<b>1,819</b>
<b>Other</b>		
Reclassified staff	4	3
Employees on early retirement	7	14
Apprentices	10	10
	<b>1,925</b>	<b>1,846</b>

As of December 31, 2016 1,645 (2015: 1,567) employees were based in countries of the European Union, of which 1,389 in Luxembourg (2015: 1,335).

The collective work agreement (CWA) covering Luxembourg based staff other than managers and exempt employees entered into force on December 1, 2015 covering the years 2015 to 2018.

## 11. OTHER OPERATING EXPENSES

In thousands of U.S. Dollar	2016	2015
GSA commissions	12,945	13,528
IT services	23,160	22,426
Travel & entertainment	25,514	26,911
Office and office equipment (rental and maintenance)	16,657	17,469
Legal, audit and consulting fees	9,621	16,860
Other aircraft expenses	8,832	9,357
Purchase, maint. & repairs of ULD & packing material	3,895	3,644
Office & printing material	3,260	3,485
Net worth tax	2,176	3,581
Foreign exchange loss, net	1,255	8,370
Miscellaneous	10,612	9,368
	<b>117,927</b>	<b>134,999</b>

GSA commissions represent commissions payable to the Group's general sales agents.

Legal, audit and consulting fees include US\$ 2.0 million (in 2015: US\$ 4.4 million) related to the anti-trust cases in various jurisdiction which are entirely provisioned ([see also note 23](#)).

Legal, audit and consulting fees also include an amount of US\$ 0.39 million (in 2015: US\$ 0.38 million) accrued for audit fees and an amount of US\$ 0.12 million (in 2015: US\$ 0.09 million) accrued for tax services to our external auditors.



## 12. NET FINANCE COSTS

### Recognized in income statement

In thousands of U.S. Dollar	2016	2015
Net change in fair value of financial instruments	9,567	-
Interest income on bank deposits	2,976	3,057
Interest on loans and receivables	2,582	3,700
Other financial income (IATA call day adjustments, discounts received)	173	310
<b>Financial income</b>	<b>15,298</b>	<b>7,067</b>
Interest expense	(70,398)	(74,571)
Net change in fair value of financial instruments	-	(1,172)
Accrued interest on net present value of provisions and liabilities	(1,002)	(1,570)
Other financial expenses (bank charges, loan agency fees, CASS commissions)	(1,572)	3,645
<b>Financial expenses</b>	<b>(72,972)</b>	<b>(73,668)</b>
<b>Net finance costs</b>	<b>(57,674)</b>	<b>(66,601)</b>

### Recognized in other comprehensive income

In thousands of U.S. Dollar	2016	2015
Effective portion of changes in fair value of interest cash flow hedges	16,029	15,790
Net change in fair value of cash flow hedges transferred to income statement	(3)	(9)
Income tax on finance income and finance costs recognized in other comprehensive income	(5,582)	(4,611)
<b>Finance income recognized in other comprehensive income, net of tax</b>	<b>10,444</b>	<b>11,170</b>



## 13. INCOME TAX EXPENSE

In thousands of U.S. Dollar	2016	2015
<b>Current tax expense</b>	(14,040)	(23,498)
Current year	(14,040)	(23,498)
<b>Deferred tax expense</b>		
Origination and reversal of temporary differences	1,445	(14,017)
Use / (Benefit) of tax losses	(1,445)	14,017
<b>Total income tax expense in income statement</b>	<b>(14,040)</b>	<b>(23,498)</b>
<b>Income tax expense recognized in other comprehensive income</b>	<b>5,441</b>	<b>4,922</b>

Origination and reversal of temporary differences mainly relates to different depreciation periods on aircraft and derivative accounting.

### Reconciliation of effective tax rate

In thousands of U.S. Dollar	2016 %	2016	2015 %	2015
Profit / (Loss) before tax		(8,507)		25,981
Income tax using the domestic rate	29.22	(2,486)	29.22	7,592
Share of profit of associates		541		(7)
Effect of current tax in foreign branches		6		65
Non-deductible expenses / Non-taxable income		3,819		(2,194)
Benefits of tax credits through finance lease		(15,150)		(24,978)
Unrecognized DTA		(724)		(3,930)
Tax exempt revenues		(46)		(46)
<b>Income tax expense</b>		<b>(14,040)</b>		<b>(23,498)</b>

The Group is subject to corporate income tax, municipal business tax and net worth tax in Luxembourg. The Group is also subject to certain taxes in foreign tax jurisdictions in which it maintains permanent establishments.

In 2008, the determination of the tax basis of assets and liabilities and the related taxable income were changed and resulted in tax losses which are amortized over a period of six years.

ITC benefits are now recognized as a tax credit and therefore recorded in the income statement under Current tax as ITC benefits generated directly by the acquisition of the aircraft. In 2016, these benefits amounted to US\$ 15.2 million (2015: US\$ 25.0 million).

Unutilized ITC benefits to-date generated through the acquisition of aircraft have not been recognized as a deferred tax asset and are reassessed on a regular basis. The reassessment of these benefits is linked to their expiry dates and they are not expected to be used due to the tax losses incurred in 2008, 2009 and from 2011 to 2014. As per the latest business plan, nil of ITC amounting to US\$ 96.5 million (2015: US\$ 95.0 million) was recognized as a deferred tax asset (in 2015: nil). In addition, an amount of US\$ 6.6 million (2015: US\$ 7.3 million) of deferred tax assets on tax losses was not recognized ([see note 16](#)).



## 14. PROPERTY, PLANT AND EQUIPMENT

In thousands of U.S. Dollar	Aircraft and equipment	Land and buildings	Other equipment	Payments on accounts and assets in course of construction	Total
<b>Cost</b>					
at beginning of year	3,040,450	10,304	63,906	45,170	3,159,830
Acquisitions	181,333	170	1,421	85,079	268,003
Transfer from assets under construction	18,519	611	72	(19,202)	-
Reimbursement of advance payments	-	-	-	(45,987)	(45,987)
Disposals (note 7)	(16,300)	(3,360)	(1,771)	(2,767)	(24,198)
<b>At end of year</b>	<b>3,224,002</b>	<b>7,725</b>	<b>63,628</b>	<b>62,293</b>	<b>3,357,648</b>
<b>Accumulated depreciation</b>					
at beginning of year	(912,942)	(8,683)	(44,012)	(2,737)	(968,374)
Charge for the year	(162,815)	(686)	(3,685)	-	(167,186)
Impairment loss	(42,849)	-	-	-	(42,849)
Adjustments for disposals	13,032	3,361	1,745	2,737	20,875
<b>At end of year</b>	<b>(1,105,574)</b>	<b>(6,008)</b>	<b>(45,952)</b>	<b>-</b>	<b>(1,157,534)</b>
<b>Net book value as of December 31, 2016</b>	<b>2,118,428</b>	<b>1,717</b>	<b>17,676</b>	<b>62,293</b>	<b>2,200,114</b>
<b>Net book value as of December 31, 2015</b>	<b>2,127,508</b>	<b>1,621</b>	<b>19,894</b>	<b>42,433</b>	<b>2,191,456</b>

### Impairment loss

As of December 31, 2016, the Group reviewed the carrying amount of aircraft in light of current market condition.

Following the review and the subsequent impairment tests applied, the carrying amount of several assets exceeded their recoverable amount. Accordingly the Group recognized an impairment loss of US\$ 39.7 million (2015: US\$ 41.2 million) against these aircraft. The estimate of value in use was determined using a pre-tax discount rate of 8% (2015: 8%). The recoverable amount is sensitive to the discount rate used, as well as the expected future cash inflows. A neutral impact of the Company's profit is estimated to be reached with a combination of a decrease by 100bps in the discount rate used and a decrease of US\$ 8.0 million in future annual cash inflows or with a combination of an increase by 100bps in the discount rate used and an increase of US\$ 17.7 million in future annual cash inflows.

### Aircraft subject to finance leases

The Group leases aircraft under finance lease agreements LX-RCV, LX-SCV, LX-TCV, LX-UCV, LX-VCV, LX-YCV, LX-VCB, LX-VCD, LX-VCE, LX-VCF, LX-VCG, LX-VCA, LX-VCH, LX-VCI, LX-VCK, LX-VCJ, LX-VCL, LX-VCM and LX-VCN (2015: LX-RCV, LX-SCV, LX-TCV, LX-UCV, LX-VCV, LX-YCV, LX-VCB, LX-VCD, LX-VCE, LX-VCF, LX-VCG, LX-VCA, LX-VCH, LX-VCI, LX-VCK, LX-VCJ, LX-VCL and LX-VCM). At the end of each of the leases the Group has the option to purchase the aircraft at a preferential or favorable price.

At December 31, 2016, the net carrying amount of leased aircraft under finance leases was US\$ 2,027 million (2015: US\$ 2,039 million).

### Security

At December 31, 2016, aircraft and equipment with a carrying amount of US\$ 2,072 million (2015: US\$ 2,091 million) are subject to mortgages to secure the bank loans relating to LX-RCV, LX-SCV, LX-TCV, LX-UCV, LX-VCV, LX-YCV, LX-VCB, LX-VCD, LX-VCE, LX-VCF, LX-VCG, LX-VCA, LX-VCH, LX-VCI, LX-VCK, LX-VCJ, LX-VCL, LX-VCM, LX-VCN and four GENx spare engines (2015: LX-RCV, LX-TCV, LX-UCV, LX-VCV, LX-YCV, LX-VCB, LX-VCD, LX-VCE, LX-VCF, LX-VCG, LX-VCA, LX-VCH, LX-VCI, LX-VCK, LX-VCJ, LX-VCL, LX-VCM and four GENx spare engines). On May 28, 2008 the Grand-Duchy of Luxembourg ratified the Cape Town Convention on international interests in mobile equipment (Cape Town 2001). The convention was enacted into Luxembourg law effective of December 12, 2008. Some of the Group's aircraft are subject to a mortgage registration in the Cape Town registry.

### Capitalized borrowing costs

Assets under construction include no capitalization of borrowing costs (2015: US\$ 0.9 million).

### Deposits with third parties

Advance payments to aircraft manufacturers are recorded under *Other property, plant and equipment* or *Deposits with third parties* depending on whether or not the Group keeps the risks and rewards of the aircraft under the intended financing structure.

## 15. INVESTMENTS IN ASSOCIATES AND JOINT VENTURES

The Group has the following investments in associates and joint ventures:

	Country	Ownership	
		2016	2015
Champ Cargosystems S.A.	Luxembourg	49%	49%
8F Leasing S.A.	Luxembourg	33%	33%
Global Aviation Technical Solutions GB (BVI) Ltd.	British Virgin Islands	50%	50%

In 2016, the Group made a contribution in kind to GATS amounting to US\$ 2.2 million (2015: US\$ 4.9 million).

Summary financial information for equity accounted investees, not adjusted for the percentage of ownership held by the Group:

In thousands of U.S. Dollar	Ownership	Carrying amount	Assets	Equity	Liabilities	Revenues	Profit / (Loss)
<b>2016</b>							
Champ Cargosystems S.A. (associate)	49%	28,609	73,831	36,970	36,861	65,877	4,705
8F Leasing S.A. (associate)	33%	6,132	131,165	12,696	118,469	12,961	1,126
Global Aviation Technical Solutions GB (BVI) Ltd. (joint venture)	50%	22,260	45,878	44,483	1,395	8,799	(1,441)
		<b>57,001</b>	<b>250,874</b>	<b>94,149</b>	<b>156,725</b>	<b>87,637</b>	<b>4,390</b>
<b>2015</b>							
Champ Cargosystems S.A. (associate)	49%	27,106	68,551	32,981	35,570	58,555	2,650
8F Leasing S.A. (associate)	33%	5,757	139,851	11,570	128,281	12,396	(2,362)
Global Aviation Technical Solutions GB (BVI) Ltd. (joint venture)	50%	20,738	42,670	41,429	1,241	5,570	(1,076)
		<b>53,601</b>	<b>251,072</b>	<b>85,980</b>	<b>165,092</b>	<b>76,520</b>	<b>(788)</b>



## 16. DEFERRED TAX ASSETS AND LIABILITIES

Deferred tax assets and liabilities are attributable to the following:

In thousands of U.S. Dollar	Assets		Liabilities		Net	
	2016	2015	2016	2015	2016	2015
Aircraft and equipment	14,266	9,352	-	-	14,266	9,352
Other property, plant and equipment	-	-	-	(634)	-	(634)
Derivative assets	-	-	(3,619)	(2,030)	(3,619)	(2,030)
Trade receivables and other receivables	-	-	(3,467)	(1,944)	(3,467)	(1,944)
Other investments	999	1,007	-	-	999	1,007
Finance lease liabilities	-	6,989	(677)	-	(677)	6,989
Employee benefits	511	461	-	-	511	461
Derivative liabilities	6,237	10,475	-	-	6,237	10,475
Trade and other payables	2,425	4,165	-	-	2,425	4,165
Provisions	-	-	(12,604)	(17,292)	(12,604)	(17,292)
Benefit of tax losses brought forward	-	-	-	-	-	-
Tax credit on loss carry forward	39,416	38,468	-	-	39,416	38,468
Tax assets / (liabilities)	63,854	70,917	(20,367)	(21,900)	43,487	49,017
Deferred tax assets	-	-	-	-	-	-
Deferred tax liabilities	(20,367)	(21,900)	20,367	21,900	-	-
<b>Net tax assets</b>	<b>43,487</b>	<b>49,017</b>	<b>-</b>	<b>-</b>	<b>43,487</b>	<b>49,017</b>

Deferred tax assets and liabilities are presented net because the Group has the legal right to offset.

Deferred tax adjustments of US\$ 5.4 million were recognized in equity in 2016 and US\$ 4.9 million in 2015 (see note 13).

An ITC for an amount of US\$ 96.5 million (2015: US\$ 95.0 million) and deferred tax assets on tax losses amounting to US\$ 6.6 million (2015: US\$ 7.3 million) were not recognized (see note 13).

## 17. TRADE RECEIVABLES AND OTHER RECEIVABLES

Trade receivables of US\$ 240.7 million (2015: US\$ 203.8 million) are shown net of any impairment losses recognized in the current year.

In thousands of U.S. Dollar	2016	2015
Trade receivables	240,717	203,814
Prepaid expenses	10,713	18,604
Advances paid to suppliers	9,515	4,154
VAT	5,627	8,478
Derivative assets	6,311	1,612
Other receivables	21,496	58,307
	<b>294,379</b>	<b>294,969</b>

Prepaid expenses include security deposits made in connection with operating leases, rental payments made in advance and other prepayments.

In 2015, other receivables include an amount which has been received in February 2016 from the EU Commission after the EU General Court ruled in favor of the Company and annulled the EU Commission's 2010 decision.

## 18. OTHER INVESTMENTS

In thousands of U.S. Dollar	2016	2015
Restricted cash	71,173	45,663
Securities held at fair value through profit and loss	28,200	23,464
	<b>99,373</b>	<b>69,127</b>

Restricted cash comprises an amount of US\$ 44.8 million (2015: 42.6 million) of pledged deposits related to aircraft financings and an amount of US\$ 2.2 million (2015: US\$ 2.2 million) securing letters of credit issued on behalf of the Group. Cash for an amount of US\$ 24.2 million (2015: US\$ 0.8 million) is pledged as collateral in derivative transactions.

## 19. CASH AND CASH EQUIVALENTS

In thousands of U.S. Dollar	2016	2015
Bank balances	169,887	99,992
Short term deposits	207,292	351,304
Money market funds	4,428	8,391
<b>Cash and cash equivalents in the statement of cash flows</b>	<b>381,607</b>	<b>459,687</b>

## 20. CAPITAL AND RESERVES

### Share capital and main shareholders

In thousands of U.S. Dollar excluding share numbers	2016	2015
Issued and subscribed 20,939,223 registered common shares of no par value (2015: 20,939,223)	525,007	525,007

At balance sheet date the main shareholders are:

	2016	2015
Luxair	35.1%	35.1%
HNCA	35.0%	35.0%
Banque et Caisse d'Epargne de l'Etat (BCEE)	10.9%	10.9%
SNCI	10.7%	10.7%
Luxembourg State	8.3%	8.3%

As at December 31, 2016, the share capital of the Company is represented by 20,939,223 common shares which are fully paid in. The extraordinary general meeting of shareholders of September 8, 2011 resolved to renew for a period of 5 years the Company's authorized capital of US\$ 100 million and grant authorization to the Board of Directors to issue such instruments. On February 7, 2013, the Board of Directors approved the issue of up to US\$ 100 million interest-bearing mandatorily convertible bonds, with a maturity of 2 years. The mandatorily convertible bonds were originally issued to Luxair, BCEE and SNCI on March 27, 2013 and have been converted into ordinary shares on March 27, 2015 using the authorized share capital.

### Reserves

Reserves comprise the legal reserve, various non-distributable reserves, the free reserve and the hedging reserves.

### Legal reserve

Under Luxembourg corporate law, the Company must allocate at least 5% of the statutory annual net profit to a legal reserve until this reserve reaches 10% of the issued share capital. The legal reserve is not available for dividend distributions.

### Net worth tax reserve

To forego payment of the net worth tax, the Company has utilized the option provided by Luxembourg law and decided to constitute and maintain a restricted reserve as of fiscal year 2003. Any dividend payments from this reserve during the restricted period would suffer tax.

### Hedging reserve

The hedging reserve comprises the effective portion of the cumulative net change in the fair value of cash flow hedge accounted derivative instruments.



## 21. INTEREST-BEARING LOANS AND BORROWINGS AND FINANCE LEASE LIABILITIES

This note provides information about the contractual terms of the Group's interest-bearing loans and borrowings. For more information about the Group's exposure to interest rate and foreign currency risk, [see also note 5 \(c\) and \(d\)](#).

In thousands of U.S. Dollar	2016	2015
<b>Non-current liabilities</b>		
Secured bank loans	28,057	34,688
Unsecured bank loans (Schuldschein)	63,246	65,556
Loan originated costs	(592)	(769)
<b>Total</b>	<b>90,711</b>	<b>99,475</b>
Finance lease liabilities	1,616,134	1,673,270
Loan originated costs	(68,303)	(75,220)
<b>Total</b>	<b>1,547,831</b>	<b>1,598,050</b>
<b>Grand total</b>	<b>1,638,542</b>	<b>1,697,525</b>
<b>Current liabilities</b>		
Interest payable on current and non-current liabilities	5,383	6,862
Loan originated costs	(9,723)	(9,869)
Current portion of secured bank loans	6,631	6,383
Current portion of finance lease liabilities	245,505	235,507
<b>Total</b>	<b>247,796</b>	<b>238,883</b>

### Terms and debt repayment schedule

Terms and conditions of outstanding loans were as follows:

In thousands of U.S. Dollar	Currency	Nominal interest rate	Year of maturity	Principal amount	Principal amount
				2016	2015
Secured bank loans	US\$	Fixed	2021, 2022	34,688	41,071
Unsecured bank loans	EUR	Euribor 6M + margin	2020, 2022	63,246	65,556
Finance lease liabilities	US\$	Fixed, Libor 6M + margin, EIB 3M + margin, Libor 3M + margin	2017, 2020 2023, 2024 2025, 2026 2027, 2028	1,861,639	1,908,777
<b>Total interest-bearing liabilities</b>				<b>1,959,573</b>	<b>2,015,404</b>

The maturity analysis is provided in [note 5 \(e\)](#).

## Finance lease liabilities

Finance lease liabilities are repayable as follows:

In thousands of U.S. Dollar	Minimum lease payments 2016	Interest 2016	Principal 2016	Minimum lease payments 2015	Interest 2015	Principal 2015
Less than one year	292,973	47,468	245,505	280,354	44,847	235,507
Between one and five years	945,975	136,099	809,876	959,221	153,819	805,402
More than five years	877,514	71,256	806,258	971,504	103,636	867,868
	<b>2,116,462</b>	<b>254,823</b>	<b>1,861,639</b>	<b>2,211,079</b>	<b>302,302</b>	<b>1,908,777</b>

Under the terms of the lease agreements, no contingent rents are payable.

## Capital Ratios

In thousands of U.S. Dollar	2016	2015
Outstanding loans	97,377	105,905
Outstanding finance lease obligations	1,788,961	1,830,503
<b>Total debt</b>	<b>1,886,338</b>	<b>1,936,408</b>
Less cash and cash equivalents and other investments	(480,980)	(528,814)
<b>Net debt</b>	<b>1,405,358</b>	<b>1,407,594</b>
Present value of future lease payments	148,406	184,509
<b>Adjusted net debt</b>	<b>1,553,764</b>	<b>1,592,103</b>
<b>Equity</b>	<b>838,001</b>	<b>822,996</b>
Net debt/equity	167.7%	171.0%
Adjusted net debt/equity	185.4%	193.5%

See also note 5 (e) above.



## 22. EMPLOYEE BENEFITS

In thousands of U.S. Dollar	2016	2015
Fair value of plan assets	(7,603)	(7,729)
Present value of net obligations	12,821	12,812
Recognized liability for defined benefit obligations (see below)	5,218	5,083
Other employee benefits	2,733	2,546
<b>Total employee benefits</b>	<b>7,951</b>	<b>7,629</b>

The Group maintains defined benefit and defined contribution pension schemes for its staff in Luxembourg. Effective January 1, 1997, the terms of the pension plan were amended for all staff who had not reached retirement age at that date. All staff who had retired at this date continue to be covered by the previous plan. Under the new schemes (covering under identical vesting rules the crews and the ground staff covered by collective work agreements and the managers), retirement benefits are generally paid in one lump sum. The rights to pension benefits commence at entry into service date and are fully vested after five years of service. The Group's pension fund obligations (other than the liabilities with respect of the pensioners at January 1, 1997) and related assets were transferred to a life insurance company in 2002 and are held separately from the Group. The Group is current with respect of its payment obligations of the annual premiums due under the Group's pension schemes and such premiums are expensed under *Personnel costs and benefits*.

The Group also maintains separate insurance schemes providing for death, orphan, widow and disability benefits. These schemes are covered by an insurance plan and the related insurance premiums are reflected as a current year operating expense.

The Cargolux defined benefit scheme is not a multi-employer scheme and sufficient information is available to determine the obligation, plan assets and costs to the Group. The funding requirements are determined pursuant to the projected unit funding method and the pension cost and provision have been assessed by a third party qualified actuary. The latest full pension scheme valuation was performed by the scheme's actuaries in January 2017.

### Movements in the net liability for defined benefit obligations recognized in the balance sheet

In thousands of U.S. Dollar	2016	2015
Net liability for defined benefit obligations at January 1	5,083	6,272
Contributions received	(347)	(347)
Pension payments	(381)	(400)
Expense recognized in the income statement (see below)	515	553
Foreign exchange impact	(179)	(636)
Remeasurements	527	(359)
<b>Net liability for defined benefit obligations at December 31</b>	<b>5,218</b>	<b>5,083</b>

### Expense recognized in the income statement

In thousands of U.S. Dollar	2016	2015
Current service costs	412	433
Interest on pension obligation	103	120
	<b>515</b>	<b>553</b>

The expense is recognized in *Personnel costs and benefits*. Principal actuarial assumptions at the balance sheet date (expressed as weighted averages):

	2016	2015
Discount rate at December 31	1.75%	2.25%
Expected return on plan assets at December 31	1.75%	2.25%

Assumptions regarding future mortality are based on published statistics and mortality tables.

## 23. PROVISIONS

In thousands of U.S. Dollar	Anti-trust	Legal	Return cost provision	Heavy maintenance program	Total
Balance at January 1, 2016	91,929	6,000	8,887	3,629	110,445
Provisions made during the year	-	1,972	2,817	775	5,564
Effect of net present value on provisions	-	-	389	301	690
Provisions used during the year	-	(972)	(1)	(873)	(1,846)
Provisions reversed during the year	-	-	-	-	-
Provisions reclassified	-	-	(1,684)	(1,459)	(3,143)
Effect of foreign exchange	(3,076)	-	-	-	(3,076)
<b>Balance at December 31, 2016</b>	<b>88,853</b>	<b>7,000</b>	<b>10,408</b>	<b>2,373</b>	<b>108,634</b>
of which current	4,630	7,000	1,580	-	13,210
of which non-current	84,223	-	8,828	2,373	95,424

In 2016, provisions were recognized to cover the Group against remaining liability risks from pending anti-trust related civil proceedings.

The return cost provision of US\$ 10.4 million represents the net present value of maintenance cost expected to be incurred to deliver the aircraft under operating leases to the lessor at lease-end in conformity with the delivery conditions stipulated in the respective lease agreements.

The Group provides for two (2015: two) leased aircraft the cost of major aircraft overhaul or so-called "D-checks" and the related costs are recognized to operating expenses in the line item *Aircraft maintenance expenses*, based on the estimated remaining number of years until the next major overhaul.

## 24. TRADE PAYABLES AND OTHER PAYABLES

In thousands of U.S. Dollar	2016	2015
Trade payables	96,259	60,887
Accruals for:		
- General and administration	15,756	16,149
- Maintenance	21,986	21,209
- Fuel	10,573	8,589
- Handling, landing and overflying	41,956	37,494
- Trucking, truck handling and interlining	12,315	10,897
- Incentive and worldwide commissions	21,843	16,888
Staff related costs	15,511	14,730
Derivatives liabilities	12,078	18,210
Anti-trust	392	22,092
Amount owed to related parties	3,241	3,204
Deferred income	26,882	30,086
Miscellaneous	9,788	8,012
<b>Total trade payables and other payables</b>	<b>288,580</b>	<b>268,447</b>
of which current	279,202	259,799
of which non-current	9,378	8,648



## 25. OPERATING LEASES

Non-cancellable operating lease rentals are payable as follows:

In thousands of U.S. Dollar	2016	2015
Less than one year	22,326	35,279
Between one and five years	84,046	92,431
More than five years	47,020	72,057

The present value of minimum lease payments related to operating leases of aircraft and the hangar facility amounted to US\$ 148.4 million (2015: US\$ 184.5 million) at the balance sheet date. This present value was calculated using actual rental terms and a discount factor equal to Libor, respectively Euribor end of the year rates.

## 26. CONTINGENCIES

### Legal proceedings

The Group is party to legal proceedings, both as defendant and claimant, from time to time in the normal course of its business. In addition, the Group was subject to investigations and proceedings from anti-trust authorities in the US, EU, Canada, Australia, New Zealand, South Africa, South Korea and Switzerland in connection with a worldwide investigation of air cargo carriers regarding alleged violations of anti-trust laws. In previous years, the Group reached settlements with and/or accepted penalties imposed by the competition authorities in the US, Canada, Australia, New Zealand, Switzerland, South Africa and South Korea. On March 17, 2017 the European Commission re-adopted its decision in the airfreight cartel case. The Commission's original 2010 decision was previously annulled by the EU General Court in December 2015 on procedural grounds. The re-adopted decision maintains the fine imposed on the Company at the previous EUR 79.9 million amount.

In the wake of the anti-trust proceedings, civil lawsuits were launched in the USA, Canada, England, the Netherlands, New Zealand, Norway, South Korea, Germany and Australia against a number of air carriers, including against the Group. The Group won its case in New Zealand and the plaintiff did not appeal, making the decision final. The class action suits in the USA, Canada and Australia had been settled in previous years.

In 2016 and prior periods, the Group constituted provisions to cover the Group's exposure with respect to the anti-trust related proceedings (*see also notes 11 and 23*).

## 27. RELATED PARTIES

### Identity of related parties

The Group has a related party relationship with shareholders, its subsidiaries, joint ventures, associates and with its directors and executive officers.

The Group is an entity that is controlled by the State of Grand-Duchy of Luxembourg directly and indirectly via its shareholders. The Group uses the exemption in IAS 24 and discloses below only the individual significant related party transactions. The Group has transactions and balances with government agencies and administrations that are customary to any entity and which have not been disclosed as a related party below.

### Key management personnel and directors

In addition to their salaries, the Group also provides cash (described below) and non-cash benefits (company car and fuel card) to members of the extended Executive Committee and area vice-presidents and contributes (as for other Group employees) to a defined contribution plan and to an accident/invalidity insurance on their behalf.

The compensations of the extended Executive Committee and heads of areas are as follows:

In thousands of U.S. Dollar	2016	2015
Salaries and profit sharing	6,802	6,467
Contribution to pension scheme and accident/invalidity insurance	1,575	1,689
	<b>8,377</b>	<b>8,156</b>

These amounts, which are paid in euros, are included in *Personnel costs and benefits* (*see note 10*).

Directors are given an annual fee for their supervisory work on behalf of the Group. In addition Board members who sit on the Compensation Committee or the Audit Committee of the Board are paid attendance fees. The total remuneration of Directors was as follows:

In thousands of U.S. Dollar	2016	2015
Directors	476	435



## Shareholders

- ◊ The Group paid landing fees to the "Administration de la Navigation Aérienne". The amount charged to operations for such services was US\$ 5.7 million (2015: US\$ 6.0 million).
- ◊ The Group paid handling fees and other service charges to Luxair in Luxembourg. The amount charged to operations for such services was US\$ 74.7 million (2015: US\$ 74.9 million).
- ◊ The Group paid no interest (2015: US\$ 1.3 million) on the mandatorily convertible bonds.
- ◊ Interest and commissions of approximately US\$ 0.04 million (2015: US\$ 0.02 million) were paid in 2016 and US\$ 0.33 million (2015: US\$ 0.46 million) of investment income was received in 2016 from banks which are shareholders.
- ◊ The Group receives freight and maintenance revenues from Luxair. The amount invoiced was approximately US\$ 1.0 million (2015: US\$ 1.0 million).

## Joint ventures and associates

During the year ended December 31, 2016 the Group paid US\$ 30.2 million (2015: US\$ 25.4 million) for IT services to Champ Cargosystems S.A., overhead fees and repair of component parts of US\$ 1.2 million (2015: US\$ 0.7 million) to Global Aviation Technical Solutions SECS and aircraft rentals of US\$ 12.6 million (2015: US\$ 12.4 million) to subsidiaries of 8F Leasing S.A..

Year end balances arising from sales purchases and services are as follows:

## Accounts receivable and deposit with related parties:

In thousands of U.S. Dollar	2016	2015
Associates and Joint Venture	23,379	19,994
Shareholders	178,478	170,854
	<b>201,857</b>	<b>190,848</b>

## Accounts payable and loan from related parties:

In thousands of U.S. Dollar	2016	2015
Associates and Joint Venture	4,847	4,563
Shareholders	10,783	4,101
	<b>15,630</b>	<b>8,664</b>

## Structured entities

A number of structures entities have been established for the purpose of aircraft financing, notably in the context of finance leases. Given the nature of the contractual arrangements, the assets and liabilities are shown on the balance sheet in accordance with accounting policy 3 (c).

## 28. GROUP ENTITIES

### Subsidiaries

	Country of incorporation	Direct ownership	
		2016	2015
Cargolux RE S.A.	Luxembourg	100%	100%
Cargolux Italia S.p.A.	Italy	40%	40%
Italia Aerologistics S.R.L.	Italy	98%	98%
Luxfresh S.A.	Luxembourg	100%	100%

The Group holds a 100% controlling interest in all its subsidiaries.

## 29. ACCOUNTING ESTIMATES AND JUDGMENTS

Certain critical accounting judgments in applying the Group's accounting policies are described below.

### Finance and operating leases

The Group entered into a lease arrangement in relation with the hangar it operates in Luxembourg. The lease contains three extension options for incremental five year lease periods. This option can be exercised for the first time on the 15<sup>th</sup> anniversary of the lease, i.e. on June 15, 2024.

In determining lease classification the Group evaluated whether substantially all the risks and rewards of ownership were transferred to the Group. Specifically, it was not considered as reasonably certain, at the inception of the lease, that the Group will operate the hangar beyond fifteen years.

Based on this judgment, it is concluded that the lease is an operating lease.

### Deferred tax asset and investment tax credits

Deferred tax assets are recognized on tax losses and/or investment tax credits (*see note 13*). Their recoverability is based on the most recent business plan available at each balance sheet date and represents a significant estimate. The recognition of ITC benefits generated through finance leases are reflected in current tax.

### Heavy Maintenance Check

The timing of "C" and "D-check" is determined in accordance with the Group's maintenance program which is based on recommendations of the manufacturer and is approved by the civil aviation authorities (DAC). The amount provisioned is based on prices derived from contractual arrangements concluded with providers and is discounted to the balance sheet date. As of July 2009 the Group performs the major overhaul "C-checks" in-house.

### Provision

The recognition of a provision requires that the management is in the position to make a reliable estimate of the amount of the obligation resulting from past events. When no reliable estimate can be made, a contingent liability is disclosed.

### Residual values of aircraft

Management estimates of residual values and carrying amount are reassessed regularly on the basis of fact and circumstances existing at year end. Estimated market values published by external appraisers, observable transactions or usage of the aircraft are among factors that would, when appropriate lead to revisions to the residual values, carrying amount and related impairment losses. This was the case in 2016 and 2015 (*see note 3 (d)(v) and note 14*).

## 30. SUBSEQUENT EVENTS

No event occurred after balance sheet date.

**Ernst & Young**

Société anonyme

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L-2017 Luxembourg

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## Independent auditor's report

To the Shareholders of  
Cargolux Airlines International S.A.  
Aéroport de Luxembourg  
L-2990 Sandweiler

### Report on the consolidated financial statements

Following our appointment by the Annual General Meeting of the Shareholders dated 27 April 2016, we have audited the accompanying consolidated financial statements of Cargolux Airlines International S.A., which comprise the consolidated statement of financial position as at 31 December 2016, the consolidated income statement, the consolidated statement of comprehensive income, the consolidated statement of changes in equity, the consolidated cash flow statement for the year then ended, and a summary of significant accounting policies and other explanatory information.

#### *Board of Directors' responsibility for the consolidated financial statements*

The Board of Directors is responsible for the preparation and fair presentation of these consolidated financial statements in accordance with International Financial Reporting Standards as adopted by the European Union and for such internal control as the Board of Directors determines is necessary to enable the preparation and presentation of consolidated financial statements that are free from material misstatement, whether due to fraud or error.

#### *Responsibility of the "réviseur d'entreprises agréé"*

Our responsibility is to express an opinion on these consolidated financial statements based on our audit. We conducted our audit in accordance with International Standards on Auditing as adopted for Luxembourg by the "Commission de Surveillance du Secteur Financier". Those standards require that we comply with ethical requirements and plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on the judgement of the "réviseur d'entreprises agréé", including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, the "réviseur d'entreprises agréé" considers internal control relevant to the entity's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by the Board of Directors, as well as evaluating the overall presentation of the consolidated financial statements.

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We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

*Opinion*

In our opinion, the consolidated financial statements give a true and fair view of the financial position of Cargolux Airlines International S.A. as of 31 December 2016, and of its financial performance and its cash flows for the year then ended in accordance with International Financial Reporting Standards as adopted by the European Union.

*Other matter*

The consolidated financial statements of Cargolux Airlines International S.A. for the year ended 31 December 2015 were audited by another auditor who expressed an unmodified opinion on those consolidated financial statements on 24 March 2016 .

**Report on other legal and regulatory requirements**

The management report, which is the responsibility of the Board of Directors, is consistent with the consolidated financial statements and has been prepared in accordance with applicable legal requirements.

ERNST & YOUNG  
Société Anonyme  
Cabinet de révision agréé

Werner Weynand

Luxembourg, 22 March 2017

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4

CORPORATE  
SOCIAL  
RESPONSIBILITY  
AT CARGOLUX







# SUSTAINABILITY REPORT 2016

## CORPORATE SOCIAL RESPONSIBILITY AT CARGOLUX

Recognizing its responsibility as an airline, Cargolux has, for a long time, sought to raise the awareness for environmental issues amongst its staff and has committed to lessen the impact of its activities on the environment as much as possible. To this end, the company has, on one hand, introduced measure for energy savings, recycling and waste reduction at its offices and facilities and, on the other hand, acquired modern, fuel-efficient and quiet aircraft for its fleet. In 2016, the airline completed its fleet rollover program with the delivery of its 14<sup>th</sup> new 747-8F, an aircraft type that is more fuel efficient and produces lower noise disturbances during take-off and landing than its direct predecessor, the 747-400F, itself still one of the quietest and most efficient aircraft in its class.

Not stopping here, Cargolux has initiated its Fuel Efficiency Round Table, a project that aims to identify areas of inefficient fuel usage and to implement change towards a more efficient and conscious fuel usage. The club has an economic goal (cutting costs) but also an ecological objective (less fuel consumption equals less CO<sub>2</sub> emissions). In Flight Operations, the initiative saved 2,000 tons of fuel during 2016 and reduced CO<sub>2</sub> emissions by 6,398 tons.

In June 2016, the company's environmental efforts were validated as Cargolux, true to its pioneering spirit, became the first airline worldwide to be honored with the Lean & Green award. The airline was recognized for its commitment to improve its carbon efficiency by 10% within five years.

Lean & Green was started in 2008 as an initiative of the Dutch Ministry for Infrastructure and Environment to reduce the carbon footprints of companies. Today, Lean & Green Europe is Europe's leading community for sustainable logistics. Lean & Green Europe combines corporate responsibility for reducing footprints with continuous improvement of operational performance and value for customers.

Until recently, logistics was perceived as a low-skill industry associated with a history of emissions and noise pollution. Due to the rapid introduction of

green technologies, advanced automation, software systems and high-tech advances in warehousing and tracking systems, as well as more collaboration in the supply chain, this perception is now outdated. Lean & Green Europe, with its award, recognized that Cargolux successfully faced the challenge of finding a healthy balance between environmental and economic concerns. The airline's customers and logistics partners, the major forwarders of this world, are well aware of the Lean & Green program and appreciate Cargolux's efforts. Being Lean & Green certainly gives Cargolux a competitive advantage and underlines its commitment to always deliver the highest service excellence.

Cargolux considers itself an ambassador for the Grand Duchy of Luxembourg and is deeply rooted in the country since its inception in 1970. The airline has developed strong ties with local communes and organizations, adding to Luxembourg's economic strength with significant contributions in 2016. The company's commitment also extends to promoting cultural and sports activities, as well as education, research and the support of humanitarian NGOs.



FIRST LEAN & GREEN  
AIRLINE WORLDWIDE

With a growing workforce of 1,389 people in Luxembourg at the end of 2016 and having created thousands of jobs in other industries directly related to its air freight activities at Luxembourg airport, Cargolux ranks in the top ten of Luxembourg's most attractive employers. Worldwide, the airline employed 1,856 people at the end of 2016.



IN THE  
TOP 10  
OF LUXEMBOURG'S  
MOST ATTRACTIVE  
EMPLOYERS



## PROGRESS IN 2016

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Cargolux sees a growing commitment for environmental and social awareness, both among its staff on one hand and customers and the industry on the other hand. This continues to contribute positively to the actions and programs the company has in place; programs that have been recognized by authorizations and organizations alike as shown by awards, such as Lean & Green, or labels, such as 'Superdreckskescht fir Betriber'. Cargolux strives to continuously expand its engagement towards the environment, its neighbors and the people whose livelihood rely on the economic success of the company.

## CSR GOALS: COMMITTED TO SUSTAINABILITY

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Cargolux's CSR program focusses on four areas of priority for its business. Each area is driven by specific commitments, goals and targets that involve all stakeholders within the company. The CSR program supports the company's vision as the *Global Cargo Carrier of Choice*

The CSR program is composed of four main pillars: Environment, People, Communities and Customers.

## ECOVADIS

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**In 2016, Cargolux achieved Ecovadis' Gold Rating status.**

Ecovadis provides a solution for the monitoring of sustainability in global supply chains; Cargolux is one of the companies audited by Ecovadis.

This produces a reliable assessment of the airline's corporate social responsibility performance through comprehensive feedback, benchmarks and tools. Its methodology is based on sustainable development standards of the Global Reporting Initiative GRI, the United Nations Global Compact and ISO 26 000.



## STAKEHOLDER ENGAGEMENT AND MATERIALITY

### a) Stakeholder list and engagement

Stakeholders play an important role in Cargolux's activities and affect the company's business in a number of ways. Cargolux employs various means to interact with its stakeholders, all the while maintaining transparency and an open dialogue. Cargolux's stakeholders include shareholders, employees, customers, investors and suppliers. They extend to the communities potentially affected by the company's activities, primarily those around the airport of Luxembourg, its primary operational hub. Finally, they also include government and local authorities, national and industrial representations, non-governmental organizations and auditing bodies.

The airline has adopted various means of communication to address its stakeholders, inform about developments and learn about opinions and ideas. These comprise:

- **Externally:** Cargolux continued and elaborated the exchanges in direct dialogue and written feedback, direct representation, events, company website and social media platforms, customer magazine and media. Representatives of the company regularly participate in a number of working groups in leading industry associations such as IATA, TIACA and A4E.
- **Internally:** Emphasis was put on the exchange and dialogue with internal stakeholders: a new Intranet was launched, improving accessibility to internal information for the entire staff. Exchanges take place via direct dialogue, the Intranet, staff newsletter and staff events. As part of a project focusing on company culture, a survey was performed amongst employees to better understand their view on Cargolux's values and culture. Under the auspices of the project, a cross-divisional working group was formed to provide ideas and feedback for further enhancing internal communications.

### b) Materiality Matrix

The company's CSR program was developed over the last couple of years, in line with the development of its business and with the input from the stakeholders. However, the identification and prioritization of key CSR issues remains an ongoing process that continuously evolves and provides a growing platform for stakeholder consultations. Without continuous development, the program would come to a standstill.

The airfreight industry has fought a myriad of challenges and difficult conditions for a number of years. It is an increasingly difficult environment for maintaining a financially sustainable operation that also respects the demands and needs of its stakeholders. Yet, despite the challenges, Cargolux has been eager to uphold its commitment to Corporate Social Responsibility.



## AT A GLANCE

### Key figures

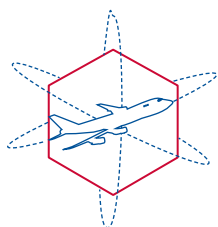
- 1,856 staff worldwide
- 7,550 million tonne-kilometers flown
- 26 aircraft – biggest fleet in the company history. 12 Boeing 747-400Fs and 14 Boeing 747-8Fs
- Europe's biggest all-cargo airline; 6<sup>th</sup> worldwide, based on FTKs
- First GDP certified airline worldwide
- First Lean & Green certified airline worldwide
- Complementary hub in Zhengzhou, China, more than 100,000 tonnes of freight flown in 2016
- 13:27 hours average daily aircraft utilization



## ABOUT THE COMPANY

Cargolux Airlines International S.A. is a leading global all-cargo airline, based in Luxembourg, operating a fleet of modern Boeing 747-8 and 747-400 freighters. It provides air freight transport services to freight forwarders in most parts of the world through scheduled and charter flights.

This includes the regular transportation of perishables, temperature and shock-sensitive goods, supply-chain goods, project cargo, finished commodities and live animals on its worldwide network that covers some 90 destinations. The company has developed a unique expertise in the handling of fragile and also outsized commodities that require increasingly sophisticated logistics and Cargolux's highly trained and dedicated staff guarantees the best possible service to customers.



WORLDWIDE NETWORK  
THAT COVERS SOME

**90** DESTINATIONS

Cargolux also offers third-party maintenance services at its maintenance center in Luxembourg. The company is specialized in Boeing 747 line and hangar maintenance up to and including C-Checks. Its service offering includes a range of specialized maintenance services such as, but not limited to, avionic modifications, structural repairs and worldwide AOG support.

Innovative concepts and the constant drive for quality have earned Cargolux a number of awards throughout the years. Among the awards that Cargolux received in 2016 were the 'Best All-Cargo Airline– Europe Award' from trade magazine Transport News as well as the '2016 Logistics Management Quest for Quality' award in the 'air cargo carriers' category.

## Operational structure of the organization

- ◊ Commercial Planning
- ◊ Corporate Development
- ◊ Corporate Services
- ◊ Finance and Administration
- ◊ Flight Operations
- ◊ Global Logistics
- ◊ Human Resources, Legal Affairs and Compliance
- ◊ Maintenance and Engineering
- ◊ Sales & Marketing

## Industry Associations and Organizations

- ◊ UN Global Compact

Cargolux is committed to operating and acting in a socially and environmentally responsible manner and has underpinned this commitment in 2007 when it signed up to the UN Global Compact, pledging to apply its 10 key principles.

- ◊ Corporate Charter for Social Responsibility and Sustainable Development

Already in 2005, Cargolux signed the Corporate Charter for Social Responsibility and Sustainable Development, an initiative launched by the Luxembourg Chamber of Commerce.

- ◊ IATA

The International Air Transport Association (IATA) is the trade association for the world's airlines, representing some 265 airlines or 83% of total air traffic. It supports many areas of aviation activity and helps to formulate industry policy on critical aviation issues.

Cargolux is member of IATA's Air Cargo Carbon Footprint (ACCF) working group.



#### ○ TIACA

The International Air Cargo Association (TIACA) represents, supports, informs and connects every element of the global air freight supply chain. The organization provides a unifying voice for the industry, works for global standards and raises the profile of air cargo.

#### ○ Airlines for Europe (A4E)

At the end of 2016 Cargolux joined A4E, which has become Europe's largest airline association, based in Brussels. A4E represents the interest of its airline members and their customers in a number of policy areas including a reform of European air traffic management framework, aviation emissions trading schemes, security issues and aviation taxes.

#### ○ Cargo iQ

Cargo iQ is the new name of the former Cargo 2000 initiative, a joint effort by a group of airlines and forwarders (members) that, today, is an IATA interest group aiming at improving the work processes in the air cargo transportation from shipper-through-to-the-consignee (end-to-end).

#### ○ SAFUG

Cargolux is a founding member of SAFUG (Sustainable Aviation Fuel Users Group), a cross-industry initiative that aims at promoting and bringing onto the market sustainable aviation biofuels.

The Cargolux Safety Review Board (SRB), the airline's highest governance body for safety-related issues, comprises all nominated persons, as required by EASA. The board regularly meets to analyze and advance the operational safety performance of Cargolux.

A number of safety performance indicators measure the effectiveness of safety barriers. These indicators are regularly presented to the process owners, as well as the SRB, to analyze potential problem areas and take pro-active risk control action.

All safety and risk management processes are documented in Cargolux's Management System Manual and are mandatory for all operational stake holders. The manual is approved by the Luxembourg Civil Aviation Authority (DAC).

The organization has recognized crew fatigue as a safety issue that needs to be monitored. Consequently, Cargolux has established a Fatigue Risk Monitoring System (FRMS) as part of its SMS, using recommended practices based on ICAO guidelines. A dedicated group of FRMS Safety Officers, pilots' representatives and flight operations management meets regularly to discuss fatigue-related issues and recommend to management processes and procedures to reduce and/or control crew fatigue.

Over 1,500 safety reports were submitted in 2016, including Air Safety, Maintenance Safety, Ground Safety and Fatigue Reports. These were all processes as per the Management System procedures. A steadily growing rate of pro-active reports enabled the airline to take actions before hazards become an event.

Several of the Cargolux Aviation Safety Department members are involved in safety industry groups and contribute to generating best practices that can then be implemented within Cargolux. These groups include amongst others, EASA CAT-CAT (Civil Aviation Collaborative Analysis Group), the IATA Safety Group, the IATA Hazard Identification Task Force, and the EASA European Operators Flight Data Monitoring Initiative.

## OPERATIONAL SAFETY

Cargolux maintains a Safety Management System (SMS) that is based on EASA requirements and guidelines and recommendations issued by ICAO, the International Civil Aviation Organization. The SMS embraces Flight Operations, Maintenance and Engineering, Design Organization, Aircrew Training (ATO & FSTD), Maintenance Training (MTO) and Ground Operations Divisions.

The Safety Management System is overseen by a dedicated team of investigators, analysts, risk management and safety experts, who directly report to the accountable manager. Additionally, safety critical issues are quickly addressed through direct communication between the aviation safety department and the responsible process owners.

The SMS includes pro-active and re-active safety reporting, flight data monitoring, hazard identification, risk management and management of change procedures. These and other elements are used to identify and mitigate potential safety related issues, thus keeping risks within acceptable levels, as low as reasonable possible.

## ETHICS AND COMPLIANCE

Cargolux, as a leading supplier of high-quality air cargo services to customers around the world, works in a variety of cultures. The airline has committed to support and strengthen an ethical business culture that promotes compliance with all applicable laws and regulations, as well as adherence to internal rules and policies. An ethical corporate, as well as individual, attitude fosters sustainable and profitable long-term business relations built on trust and avoids the risk of reputational or financial damage.

Since 2010, Cargolux has a strong, comprehensive compliance program in place that safeguards the company's business and assets and protects its employees by enabling them to better identify ethical challenges and giving them the tools to handle these adequately. The program, managed by a dedicated compliance department, involves all divisions of Cargolux and is actively supported by the company management.

It is based on a string of policies and conduct guidelines for personal and business behavior and supplemented by training schedules, communication initiatives and a compliance management system.

### Training

Cargolux has a compliance training program in place that incorporates online and classroom sessions, with recurring refresher training at regular intervals. It introduces the company's legal obligations, values and ethical principles to all employees, sales agents and legal representatives worldwide.

Cargolux's compliance classroom training program works in cycles lasting three years. In 2016, the company conducted a total of 2,336 hours of training for its employees and contractors. 698 Cargolux employees went through a compliance training in addition to 14 external trainees and 91 GHAs and GSAs. Topics included anti-bribery and anti-corruption, competition law, conflicts of interests, data protection and more.

### Export Control

Comprehensive procedures, as well as manual and electronic controlling systems ensure full compliance with embargoes applicable to individual countries. A targeted training imparts special procedures for shipping goods to restricted countries and enables Cargolux staff to ensure that the airline does not violate embargoes.

### Confidential Reporting

Cargolux has tasked a specialized, independent external organization with running a confidential reporting system. This enables individuals to report potential misconduct in complete confidentiality and helps Cargolux to uncover potential breaches of laws, internal rules or procedures and to prevent reoccurrences.

The company's own Compliance Consultation Desk aims to accurately and quickly respond to employees' questions regarding applicable rules and their interpretation. It has seen continuous growth in the number of submitted questions since its launch a few years ago, which demonstrates the increasing risk awareness of employees.

### Risk Analysis

Cargolux deals with a number of business partners and suppliers worldwide. In order to ensure that these companies work according to its business ethics and compliance principles, the company performs due diligence on partners classified as medium and high risk. This risk classification is country specific according to a corruption perception index and is also based on the type of services rendered.

Cargolux is based in a country with very high standards in respect of the observance of human rights. Human rights issues therefore play a minor role in the company's daily business at its home base. However, Cargolux's service level agreements require that its partners and suppliers also comply with its values and ethics code and observe human rights in their business activities.





# GENERAL DISCLOSURES

## PEOPLE

### Disclosure on management approach

#### *Focus on Culture*

From its very beginnings as a one-airplane charter airline to the largest all-cargo carrier in Europe today, Cargolux has always been viewed as a pioneer in the airfreight industry. Its successful climb to the top was driven by flexibility to changing market demands, the ability to grasp opportunities whenever they come and the will to explore new ways of doing business. In short, Cargolux has grown by constantly adapting its view on the air cargo industry and adjusting its strategy accordingly. Or, in other words, the people of Cargolux have consistently embraced change.

Throughout its existence, Cargolux has seen itself as a people-driven company powered by its most valuable asset, its employees. The staff turnover rate remains at a remarkably low level at 6.7% in 2016 and is an encouraging sign of the loyalty the employees place in Cargolux. Building on this commitment and dedication, the company continues to invest in a number of talent management activities that include initiatives such as succession planning in order to better recognize, develop and retain its high potentials.

In addition, these measures contribute to giving employees clearly defined career paths and development opportunities. Cargolux believes that its skilled and highly motivated employees are the basis for a strong and sustainable economic future. Employees that feel content, safe and secure in their work environment also best understand that, in order to move the company forward and to build tomorrow's success, they need to constantly adapt their actions and behavior to be aligned with the organization's values and vision, to effectively and actively contribute to a culture that, ultimately, creates business opportunities, has a positive impact on customer relations and, at the same time, also gives individual job satisfaction.

A positive culture can make all the difference for a company in a challenging business environment dominated by fierce competition, overcapacity and low yields. It separates the strong players from the weak. It is a delicate balancing act between often competing interests. Yet, it is worth paying attention to, because a strong culture aligned with the organization's ambitions is an essential element of a company's long-term success and sustainability.

Cargolux has started addressing this challenge with the launch of its 'Connecting Flights' project during 2016. 'Connecting Flights' encourages a close cooperation and open dialogue between all employees, working together to boost the Cargolux Spirit and to support the airline's vision of being the 'Global Cargo Carrier of Choice'.

Within only a few months after the launch of 'Connecting Flights' in August 2016, the volunteer teams have laid some solid groundwork and identified a number of improvement opportunities to work on. 'Connecting Flights', in a collaborative effort, helps to shape the company's future and to strengthen the spirit that made Cargolux big and successful.

A culture change is an ongoing process and it takes time. It takes a 'working-together' ethic and a common effort that puts the company's long-term stability and interests first. Changing some isolated values does not make a culture change. Companies that understand this are in the best position to succeed in face of future business challenges. Cargolux continues its 'Connecting Flights' journey in 2017.



## STAFF & EMPLOYMENT

### At a glance

- Total number of employees 1,856: 4.3% increase in staff throughout the Cargolux network
- Diversity: 5,4% more women compared to the previous year, overall 20% of Cargolux employees are female
- Cargolux employs people from 65 nations throughout the network, 44 in Luxembourg
- Seventh most attractive employer in Luxembourg

### Employees First

Cargolux gives high importance on building and nurturing mutually beneficial long-term relationships with its employees. The reputation and success of Cargolux is built on the team spirit and family-like atmosphere among the staff that was instrumental in the company's growth and prosperity.

The number of employees worldwide increased from 1,779 to 1,856 at the end of 2016. The majority of employees in Luxembourg (64.6%) are hired on full-time contracts governed by an advantageous collective work agreement, which provides protection and advantages to employees beyond those afforded by law. In addition, the company offers a range of attractive fringe benefits.



RECRUITED

**207** PERSONS

In total, Cargolux HR processed 6,590 applications and recruited 207 persons during 2016; this includes apprentices, trainees and pilots, both temporary and firm.

In other projects for 2016, The Cargolux HR Department introduced

- the "Connecting Flights" project, focusing on core values and strengthening the Cargolux Spirit;
- a worldwide appraisal and career development plan for managerial employees worldwide;
- an HR business partner/business coordinator set-up to assist the divisions in their people-oriented processes and projects;
- an enhanced part-time scheme for its flight crews;
- a succession planning scheme.

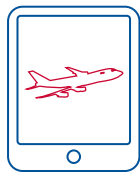
## VISION, MISSION AND SPIRIT

Cargolux continues to focus on achieving its vision to be the Global Cargo Carrier of Choice. The airline aims to build on its strengths in order to be the preferred partner for its customers, suppliers and service providers as well as its current and future employees, not only at its Luxembourg home base but, underpinned by an extensive global network, all around the world.

As the Global Cargo Carrier of Choice, Cargolux's mission is to deliver consistent flexibility and reliability through its valued and dedicated employees, creating sustainable benefits for all stakeholders in a safe environment.

In working towards realizing its strategic ambitions in an ever more competitive market environment, the airline has decided to place an even stronger emphasis on reinforcing its key values, which make up the Cargolux Spirit. The eight core values are the hallmark of Cargolux's success and act as the key guiding principles for the company's employees in their day-to-day actions in bringing the airline's mission to life. These values are at the center of the 'Connecting Flights' project, launched in 2016, which is aimed at reshaping the company's culture and revitalizing the Cargolux Spirit to serve as the foundation for an even stronger, more agile and forward-looking global team, united by common values. This project is closely aligned with other strategic talent management initiatives such as succession planning, clarification of career paths and placing more emphasis on talent development activities, including management and leadership trainings.

'Connecting Flights' also aims to provide a platform for tapping into the creativity and drive of employees all over the organization in order to bring about improvements and new ideas in open, collaborative cross-divisional working groups established outside the traditional hierarchical structures. These initiatives are expected to enhance the outcomes of the recently launched business process re-engineering project, which aims at further improving the efficiency and excellence of Cargolux's business activities.



### 'Connecting Flights'

IMPROVES THE EFFICIENCY  
AND EXCELLENCE OF

CARGOLUX'S BUSINESS  
ACTIVITIES.

## TRAINING AND DEVELOPMENT

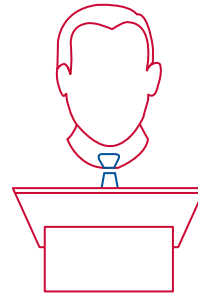
### Corporate Training and Development

Corporate training constitutes the second major pillar in Cargolux's training activities, next to Flight Training. Training at Cargolux covers two areas:

- a) Mandatory courses for all staff, e.g.: for pilots and mechanics to maintain and/or upgrade their license. This also covers training on new equipment, new technologies or the application of new procedures. This type of training is a legal requirement.
- b) Various types of training for staff that allows them to acquire new skills and develop their areas of competence and expertise. This type of training extends beyond legal requirements and constitutes a voluntary action on behalf of Cargolux.

Owing to the many regulations and high standards within the aviation industry, Cargolux follows a well-established training philosophy that has made training and development one of the company's greatest strengths. Cargolux offers a great variety of voluntary personal development courses beyond regulatory and mandatory training. The company strives to foster a culture for continuous education and development, teaching and learning – both in its headquarters and its stations all over the world.

All employees have access to a variety of soft skills training such as presentation skills and project management basics; courses that have proven to be very popular among the staff. The company also offers more complex programs dedicated to leadership and management, including the team leader program and the management development program. During 2016, Cargolux delivered an average of 64 hours of training per employee.



64

TRAINING HOURS  
PER EMPLOYEE

Cargolux is interested in knowing its people - what motivates them, what makes them unique and how the fit between the organization and individual career aspiration can be optimized. The company knows that only when people are happy at what they do, they will be able to utilize their full potential and perform at their best. In this way, training and development supports business continuity and increases individual job satisfaction.

### Talent management

Continuous development and transparent feedback improves competencies and performance, individually and as team. To support employees in this matter, Cargolux has designed an appraisal system for employees with managerial function, based on reviewing main tasks and responsibilities, setting objectives, analyzing competencies and creating an individual career development plan. The system was rolled out to the airline's global stations in early 2016.

### Succession planning

In order to guarantee business continuity and matching organizational needs with individual career development, Cargolux has launched a project implementing a structured succession planning framework. To ensure uninterrupted operations and to safeguard internal expert knowledge, Cargolux also works on implementing a global process that will enable the company to better recognize, develop and retain its talents.

## Flight Training

Following regulatory changes and new requirements set forth by EASA, Cargolux, in 2016, restructured its crew training organization and created the Cargolux Flight Academy. The new organization was set up as a profit center that not only fulfills the pilot training requirements of the Cargolux Group, but also markets crew training capacity to third-party customers.

In contrast to other providers who mainly employ retired pilots, Cargolux's trainers are active line pilots with an average of 15,000 flight hours and way over 20 years of 747 experience at Cargolux under their belt. In addition, as cargo pilots, Cargolux trainers are well versed in operating to demanding and difficult airfields in remote or less than ideal locations that passenger airlines usually don't fly to.

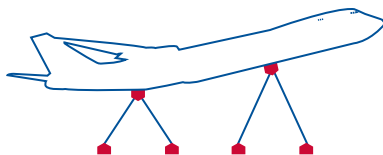
When launch customer Cargolux introduced the Boeing 747-8F, it also introduced the world's first 747-8F simulator and has since converted it to Level D status, the highest possible qualification. Cargolux, today, employs one of only four advanced 747-8 training units worldwide. Both Cargolux simulators, the 747-400F and 747-8F, are equipped with state-of-the-art visuals.

Together, both simulators recorded a utilization of 61%, or 10,490:16 hours in 2016. Of these, 6,480 hours were flown by Cargolux crews and 3,511 hours by external customer crews, including Cargolux Italia. Based on a 24-hour cycle, the 747-400 simulator was utilized for 67% of the time while the B747-8 Simulator had a slightly lower utilization rate of 56%.

In cooperation with Boeing and EASA, the Cargolux Flight Academy conducted the very first transition courses from the 747-400 to the 747-8; this led to an approved footprint for all such courses at other suppliers.

During 2016, 62 pilots went through the Flight Academy's Course A, 56 of those were Cargolux pilots. In addition, 1 pilot went through Course C while 26 passed through a Command Course during their promotion to Captain.

The airline's Flight Academy is the only approved training organization worldwide to offer 747 line training to third-party pilots. It also markets the capacity of Luxair's new cabin training simulator to third parties.



IN 2016

**10,490:16 hours**

B747-8F AND 747-400F

SIMULATOR UTILIZATION

## EASA FTL

In late 2015, Cargolux introduced the European Aviation Safety Agency's (EASA) flight time limitation rules (FTL) ahead of its February 2016 deadline. After its first full year in operation, the EASA FTL has proven to be a valid and important tool that, for the first time ever, not only looks at scheduled work hours but also takes into account the individual body clock of pilots.

## A SAFE WORKPLACE

### Disclosure on Management Approach

Cargolux strives to provide its employees with a safe and healthy workplace. The company wants to offer an environment where its employees feel comfortable and protected during their daily work. To this end, Cargolux has in place an effective health and safety management system and holds an OHSAS 18001 certification for its Health & Safety Department.


### Safety at work

Work plays a central role in people's lives who spend a large part of each day in the workplace. Given this, Cargolux believes that a work environment should not only be inspiring and conducive to creativity but also safe and healthy.

The Cargolux Occupational Health & Safety (OHS) Department has made efforts during 2016 to further promote health and safety awareness and developed a dedicated intranet site to promote safety practices among both employer and employee. Aimed at creating a system of continuous improvement, this intranet page is a new step forward in sharing information and promoting prevention.

The department supported the renewal of the OHSAS 18001 certification for the company's Maintenance and Engineering Division and introduced an IQ SMS reporting tool. During the outbreak of the Zika virus, an awareness program was launched for Cargolux pilots travelling to the affected countries in support of health and safety for crews. The department furthermore welcomed a delegation of the European Commission that was interested in how Cargolux is applying EU regulations, particularly in risk areas.

In an ongoing campaign, OHS runs a sensitivity campaign aimed specifically at staff working in high-risk areas. Thanks to a continuous presence of OHS in these areas, the number of lost days for accidents decreased to 346. Lost days for sickness also decreased and reached 12,163.



# GENERAL DISCLOSURES

## ENVIRONMENT

### AT A GLANCE

#### Key figures

- 26 747 freighters: 14 747-8F, 10 747-400F, 2 747-400ERF
- Average age of the fleet on 31 December 2016: 7.0 years

#### Fuel & Emissions

One of the best carbon footprint in its class

- Jet fuel 1 consumption: 189,381.62 tonnes
- CO<sub>2</sub> emissions: 3,746,552.05 tonnes CO<sub>2</sub>
- Carbon footprint: CO<sub>2</sub> footprint: 497 gr/FTK

#### Noise

One of the best noise footprint in its class

- 100% of the Cargolux fleet is compliant with ICAO Chapter 4

#### Waste

- Waste: 21.5% of produced waste is recyclable (Luxembourg only)

### Climate commitment

#### Our goals

Cargolux has defined near and long term goals that follow IATA's targets for airlines to reduce CO<sub>2</sub> emissions with the aim to eventually achieve carbon-neutral growth.

Cargolux commits to

- an average improvement in fuel efficiency of 1.5% per year until 2020;
- a cap on aviation CO<sub>2</sub> emissions from 2020, in effect carbon neutral growth;
- a reduction in CO<sub>2</sub> emissions of 50% by 2050, relative to 2005 levels.

### Fuel consumption

On its way to achieving these goals, Cargolux has made significant investments. The airline, in 2016, concluded its fleet rollover program with the delivery of its 14<sup>th</sup> and final 747-8 freighter. In 2005, the company became Boeing's launch customer for this aircraft type that was consequently developed with the input of Cargolux. The 747-8F, together with the 747-400F that Cargolux operates, allow the airline to lower the fuel consumption of its fleet, thus effectively reducing CO<sub>2</sub> emissions.

Not ending here, Cargolux has initiated its Fuel Efficiency Round Table with encouraging results. In 2016, the initiative saved over US\$ 1 million in fuel costs at Flight Operations alone. This translates to 2,031 tons of fuel that were saved in airline operation, which also reduced the fleet's CO<sub>2</sub> emission by 6,398 tons.



The savings became possible through operational measures such as different flap settings, lower APU usage or three-engine taxiing after landing. Other measures, such as the introduction of the electronic flight bag, helped to reduce weight by eliminating paper maps and introducing electronic maps in the cockpit. Initiatives in other departments complement the savings at Flight Operations. During 2016, the Fuel Efficiency Round Table implemented 13 fuel saving initiatives for Cargolux, 2 of those are now part of the company's standard procedures while 11 initiatives are still running as such. Initiatives in other departments include APU usage and weight reductions at Ground Operations and Maintenance, the latter also introduced calendar-based engine washing on the 747-8F. Finally, Flight Operations Support initiated an optimized random routing, fair weather alternatives and statistical taxi fuel.

In 2016, the Fuel Efficiency Round Table achieved 97% of its targets for Flight Operations.

The Fuel Efficiency Round Table is a perfect example of cross-divisional projects within Cargolux. Even though it is a Flight Operations Initiative, many other departments contributed to its success. Maintenance, Engineering, Ground Operations, Network and Crew Training – everyone involved in the Fuel Efficiency Round Table is an expert in their field and promotes the project in their division and department. The initiative offers more potential savings for the company that directly translate to a lower environmental impact. It could reduce fuel burn based on block hour by another 0.5%, which means that 240 kgs of fuel can be saved on each Cargolux flight.

In total, the airline targets to reduce its fuel consumption at Flight Operations by 1,700 tons and company-wide by 3,800 tons in 2017.

Access to high-quality data is crucial when improving fuel efficiency. In order to achieve this, Cargolux has invested in Honeywell's GoDirect software, formerly known as Aviaso. It is a technologically advanced fuel efficiency software that simplifies data gathering, analysis and reporting, helps identifying additional fuel savings and monitors the progress of existing fuel savings initiatives.

Cargolux Group Fleet Fuel Consumption:

- Jet A Fuel: 1,189,381.62 tons

GSE vehicles:

- Lead-free fuel: 3,210 liters

- Diesel: 20,851 liters

- Diesel / industrial machines: 74,482 liters

## Lean and Green

In June 2016, the company's environmental efforts were validated as Cargolux, true to its pioneering spirit, became the first airline worldwide to be honored with the Lean & Green award. The airline was recognized for its commitment to improve its carbon efficiency by 10% within five years.

Lean & Green was started in 2008 as an initiative of the Dutch Ministry for Infrastructure and Environment to reduce the carbon footprints of companies. Today, Lean & Green Europe is Europe's leading community for sustainable logistics. Lean & Green Europe combines corporate responsibility for reducing footprints with continuous improvement of operational performance and value for customers.

Until recently, logistics was perceived as a low-skill industry associated with a history of emissions and noise pollution. Due to the rapid introduction of green technologies, advanced automation, software systems and high tech advances in warehousing and tracking systems, as well as more collaboration in the supply chain, this perception is now outdated. Lean & Green Europe, with its award, recognized that Cargolux successfully faced the challenge of finding a healthy balance between environmental and economic concerns. The airline's customers and logistics partners, the major forwarders of this world, are well aware of the Lean & Green program and appreciate Cargolux's efforts. Being Lean & Green certainly gives Cargolux a competitive advantage and underlines its commitment to always deliver the highest service excellence.

## Ongoing programs

The company continues a range of programs that support the reduction of greenhouse gas emissions for its fleet of aircraft. These include:

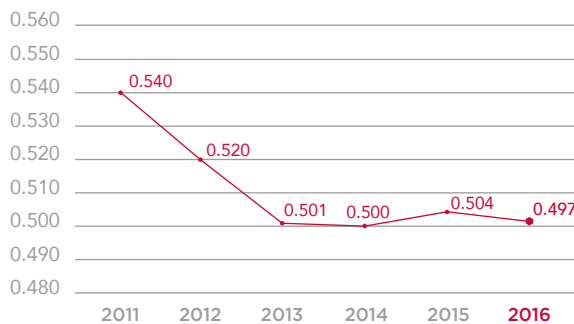
- Deep core engine washing. This is performed on the GEnx-2B, CF6-80C2B5F and selected RB211-524H2-T engines with low N3 speed margin. Engines are washed at an interval of 500 cycles or about twice a year.
- PIP - performance improvement package retrofitted to the GEnx engines of the airline's early 747-8Fs. In 2016, four engines went through the PIP upgrade, it is planned to upgrade another 10 engines in 2017.
- Optimization of APU usage when no ground power supply is available.

## Certifications

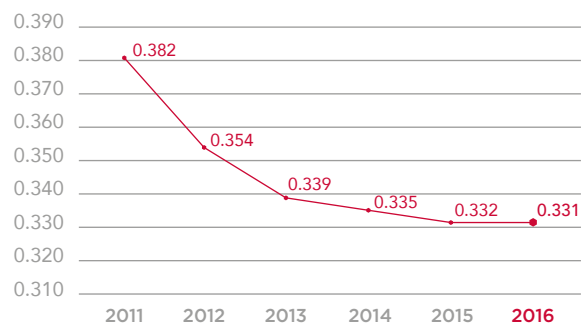
Cargolux holds ISO 14001 certifications for its Luxembourg hub, its Maintenance & Engineering Division, its Flight Operations and Training Division as well as its Global Logistics Division.

## Emissions

### CO<sub>2</sub> EFFICIENCY ( IN KG CO<sub>2</sub> / FTK )



### CO<sub>2</sub> EFFICIENCY ( IN KG CO<sub>2</sub> / ATK )



### Scope 1

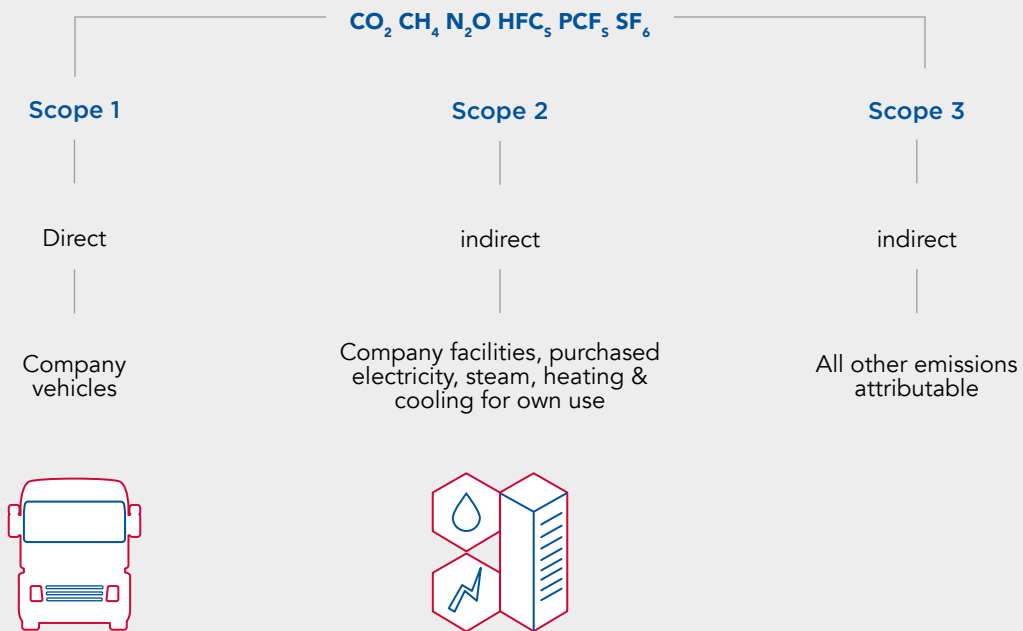
The airline group can show exemplary greenhouse gas emission intensity for its fleet of aircraft. Based on 11.3 million ATKs (available ton kilometers) for the Cargolux and Cargolux Italia fleets, the CO<sub>2</sub> efficiency reached 0.331 kgs CO<sub>2</sub> per ATK.

### Scope 2

Cargolux offices and facilities recorded a CO<sub>2</sub> emission of 2,235 tonnes for fuel and gas heating during 2016. Use of electricity emitted no CO<sub>2</sub>.

## Scopes

The Greenhouse Gas Protocol defines three scopes of emissions:



### Scope 1

Direct greenhouse emissions from sources that are owned or controlled by the company. In the case of Cargolux, emissions from the combustion engines of its aircraft, ground vehicles and industrial vehicles or machines.

### Scope 2

Accounts for greenhouse emissions from the generation of fuel or gas heating and purchased electricity by the company.

### Scope 3

Category that covers all other indirect emissions attributable to the activities of Cargolux, but from the company. Scope 3 has no relevance to the reporting of Cargolux and is not included here.

## EU emissions trading scheme (EU-ETS)

Cargolux complies with the EU-ETS reporting requirements and continues to monitor and report the CO<sub>2</sub> emissions.

## Trucking

Third-party trucking fleet operating for Cargolux in Europe

CATEGORY	QTY	%
Euro 6	24	2.5
Euro 5	259	27.2
Euro 4	672	70.3
<b>TOTAL</b>	<b>955</b>	<b>100</b>

## Noise control

World trade, global economics, human healthcare and a decent standard of living rely on sustainable air freight transport. Cargolux firmly believes that achieving this goal requires the collaboration of all partners in the transport chain as well as aircraft and engine manufacturers and governments.

At the same time, Cargolux is aware that its activities affect the communities around the airports it operates from and strives to minimize the impact of these activities as much as possible.

The emission of noise is therefore an important area of environmental concern for the company, especially at the airline's home base in Luxembourg where most of its aircraft movements take place.

Operating the world's quietest freighter aircraft in its class, both the Boeing 747-400F and the 747-8F, represents a significant measurable improvement for the surrounding communities. Introducing the 747-8F in particular, with its advanced engine technology and new wing design, reduced the 85db take-off noise footprint around airports by another 30%. Both aircraft types in the Cargolux fleet fully comply with the standards of ICAO chapter 4, the most stringent aviation standard.



Additionally, over the past years, the company studied and implemented a number of operating procedures to further reduce community noise with its existing fleet.

These include a 'Constant Descend Approach, developed in coordination with the DAC, that reduces noise disturbances over the approach sector to Luxembourg airport by following a continuous descend path all the way down to runway level. It minimizes the thrust required for the approach, as engines do not have to be spooled up for renewed level flight in a stepped approach.

Revised flap settings during the approach also reduces the amount of thrust engines have to deliver for landing. Landings in Luxembourg are limited to idle reverse thrust to reduce noise levels.

After landing, Cargolux aircraft shut down one of the four engines for three-engine taxiing to the parking position to conserve fuel and lower the noise level.

The aircraft's auxiliary power unit (APU) is not used for arrivals in Luxembourg to reduce the noise on the ramp. Instead of the APU, a ground power unit is used to supply electricity to the aircraft.

The airline is also studying a quiet climb procedure after take-off from Luxembourg airport that incorporates a climb to a certain level before reducing engine thrust while overflying noise-sensitive areas. At a given height, thrust is then restored to climb thrust. This procedure would be applicable to the company's new fleet of 747-8 freighters.

## Waste management

Cargolux runs a waste management system that enables the company to better control and segregate the waste it generates in Luxembourg. This system is operated by a specialized external company, managing and monitoring the correct collection, segregation and disposal of all categories of waste, including recyclables and hazardous waste.

FRACTION	QTY/kgs in 2016	QTY/kgs in 2015	Difference
Recyclable	91,172	74,103	23,03%
Oily Waste	23,031	21,801	-8,12%
Hazardous Waste	165,410	124,948	32,38%
Residual Waste	109,829	117,086	-6,20%
Others	7,826	6,007	30,28%
<b>TOTAL</b>	<b>349,268</b>	<b>343,945</b>	<b>14,63%</b>

Recycling is an important factor in the company's waste management system. All facilities and rented offices in Luxembourg are equipped with a waste-sorting and recycling system. Wastewater from the airline's maintenance operations and maintenance facilities in Luxembourg are directly collected by the airport sewage system followed by a wastewater treatment plant.

In addition, the company encourages its office staff to adopt measures that cut down on waste production, including the use of electronic storage for documents, electronic communication methods or greater use of recycled paper.

During 2016, the amount of recyclable waste grew by 23.03% while oily waste and residual waste declined by 8.12% and 6.20% respectively. The growth in hazardous waste was due to an unscheduled cleaning of one oil separator that resulted in the disposal of large quantities of oil contaminated water.

The overall amount of waste produced by Cargolux in 2016 went up by 14.63%. The growth in waste was driven by increased maintenance activities due to the higher fleet utilization, especially during the peak season, as well as the disposal of accumulated wood and steel waste at the maintenance center. The higher-than-before aircraft utilization also resulted in the disposal of more end-of-life tires than in the previous year.

The company handles oil-contaminated waste with an innovative oil absorber product as well as waste compactors that have the added benefit of reducing transportation costs and emissions that would otherwise result from the waste disposal process. The Cargolux Maintenance Center recorded no spills during the year while only one spill was recorded at the Cargo Center's tarmac.



**LABEL OF  
ENVIRONMENTAL  
EXCELLENCE**

Cargolux's waste management system holds the 'Superdreckskescht fir Betriber' environmental label. The next audit to retain this label will take place during 2017.





# GENERAL DISCLOSURES

## COMMUNITY SUPPORT

### Disclosure on Management Approach

As an investment in the future, Cargolux seeks to sponsor the next generation of air cargo professionals through a close cooperation with schools and institutes in Luxembourg. The airline has, for instance, a long-term, close cooperative relationship with the Lycée Technique Privé Emile Metz (LTPEM) in Luxembourg for an aircraft mechanic apprenticeship program.

Cargolux has traditionally put a strong emphasis on supporting future professionals and has participated in a range of initiatives in 2016 that included visits to schools and events that give youngsters the chance to explore job opportunities and career paths. With these activities, students can sample first-hand experience and impressions on the various aspects of the daily work life and learn about requirements and opportunities for a career in the air freight industry.

In addition, Cargolux continues its support of local artists and cultural institutions, as well as humanitarian causes through its cooperation with non-governmental organizations that help people in need.

### Recruitment and apprenticeship

Cargolux focusses on securing a motivated and highly qualified workforce for its present and future activities. To this end, the airline seeks to support young people in Luxembourg in their career choices and decisions. Throughout 2016, the Cargolux Human Resources (HR) team performed 13 company presentations that included visits to schools and participation at the local Girls and Boys Day. The team also attended six events for job seekers, presenting openings and career opportunities at the airline. During 2016, the company welcomed 41 trainees and offered 6 CIE contracts in collaboration with ADEM, the Luxembourg government's employment agency.



**41 trainees,  
6 CIE contracts**

IN COLLABORATION  
WITH ADEM

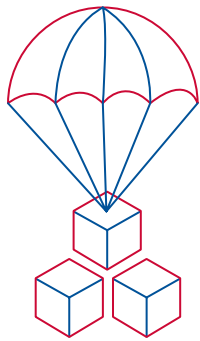
The company maintains its cooperation and close relationship with the Lycée Technique Privé Emile Metz (LTPEM) in Luxembourg that runs an aircraft mechanics apprenticeship program. Students that successfully pass their exam become B.1.1-licensed AML aircraft mechanics with an opportunity to gain employment at Cargolux. B.1.1-licensed mechanics are certified to perform mechanical and/or avionic works during base and line maintenance.

Graduates from Luxembourg's AML apprentice scheme obtain a license in accordance with EASA regulations, Part 66. After obtaining the AML, the junior mechanics have to complete an in-house type rating training for the 747-400F and 747-8F aircraft in order to be fully licensed to work on Cargolux aircraft.

In another successful year for the technical training organization, Cargolux, in 2016, employed five students in their first year of apprenticeship and five, including one female, students in their second year. The practical part of the apprenticeship takes place in Cargolux's own workshops. This not only applies to Cargolux students, but, in the frame of enhanced synergies between Cargolux and Luxair, also to students at Luxembourg's national carrier, who has three each in their first and second year of apprenticeship.

## Help to help

Cargolux not only seeks to support young people in their career search but also puts efforts into making space available for humanitarian causes by supporting NGOs who bring relief aid and medical goods to people affected by epidemics and natural disasters.



### CARGOLUX SUPPORTS

## NGOs

WHO BRING RELIEF AND MEDICAL SUPPLIES TO PEOPLE AFFECTED BY EPIDEMICS AND NATURAL DISASTERS.

In 2016, ten FOC shipments were flown, many of those to African countries. Cargolux also continued its long-standing support of the International Bazaar, one of Luxembourg's major annual charity events that brings together volunteers from over 50 nations to sell goods and specialties from their home countries. The proceeds from these sales are distributed among a wide number of larger and smaller aid and relief projects throughout the world. In 2016, Cargolux supported the stands of South Africa, Hungary and the USA.

Charity and social support are not only close to the company's heart, but also the employees'. In 2016, the Cargolux staff sports clubs supported the 'Fondation Hellef fir kriibskrank Kanner', a local organization supporting children suffering from cancer or other life threatening diseases and their families. In addition, a group of employees participated in a charity sport event organized by the international section of the Red Cross in Luxembourg, held in support of local charity organizations.

In another 2016 project, Cargolux agreed to a yearly financial allocation to the Luxembourg environmental foundation Hellef fir d'Natur to sponsor the acquisition of a woodland area and its transformation into a protected nature reserve that helps to safeguard the natural heritage and biodiversity in Luxembourg. This sponsorship runs for three years.

## The fine arts

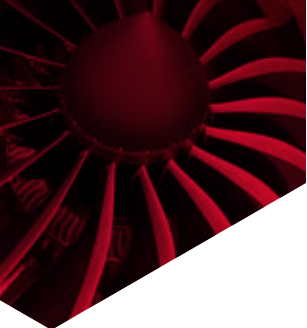
As a company firmly rooted in the Grand Duchy of Luxembourg, Cargolux believes it is important to support and promote Luxembourg's cultural activities. With a worldwide presence, Cargolux is in a perfect position to enrich the cultural life of its home country and to support Luxembourg artists in their international exposure. This support is strongly anchored in Cargolux's ambitions and the role it wants to play as a good citizen.

In 2016, Cargolux and Luxembourg Museum of Modern Art, MUDAM, have renewed their partnership agreement for another three years. Cargolux has a long-standing sponsorship agreement with MUDAM and regularly flies paintings, objects and other artworks for the museum's exhibitions, mostly between Europe, the United States and Asia. Because transportation usually represents a large part of an exhibition's costs, Cargolux's support contributes to tip the balance towards a successful completion of such projects and constitutes an essential logistical link between MUDAM and other museums around the world.

Cargolux has a longstanding expertise in flying artworks and valuable goods and its CV Precious product not only meets the highest security standards, but sets them. Logistical planning around an art exhibition does not start with the transport and, due to the size and bulkiness of the artworks, the feasibility of an exhibition becomes increasingly dependent on Cargolux's support and ample experience in the field of art transportation.







# GENERAL DISCLOSURES

## CUSTOMER CARE

### Disclosure on management approach

Cargolux strongly believes in service excellence, personal contact and detailed attention to customer needs as a foundation for a successful business built on cooperation and trust. With its activities, the airline seeks to boost the businesses and economic success of its partners. This has earned Cargolux a high level of trust and loyalty from its customers and business partners in the industry. Many of these long-lasting partnerships have grown over decades and Cargolux is proud that its efforts are recognized with the many industry awards it receives.

### For the customer

2016 was Cargolux's 'Year of the Customer'. However, the airline's efforts in enhancing its customer experience are ongoing as every year is first and foremost a 'Year of the Customer'. This was underlined by Cargolux's 'Powered By' initiative that honors its top customers by adding their names and logos to the livery of its aircraft. With this gesture, Cargolux stresses the importance of its successful long-term relations with several of the world's leading freight forwarders who play an important role in the global supply chains and who continue to power Cargolux's success. It is also a sign of friendship and the strengthening of common goals.



### POWERED BY THE CUSTOMER

Cargolux was the first airline worldwide to receive the Good Distribution Practice (GDP) certification that attests that Cargolux's management system meets the requirements of the EU directive 'Guidelines on Good Distribution Practice of Medical Products for Human Use', as well as World Health Organization guidelines.

Reflecting this expertise in its CV Pharma product, one of eight specialized offerings in its product portfolio, makes Cargolux a preferred carrier for the transport of pharmaceutical goods and underlines the company's commitment to the safe and fast movement of high-value, temperature-sensitive healthcare shipments across its global network.

In January 2016, Cargolux successfully passed its GDP Surveillance Audit, validating its GDP certification for another year.

To support a positive customer experience, the company established its Global Accounts Team that became fully operational in 2016. The team focused its attention on dedicated customer contacts in order to guarantee short reaction times to requests and market developments. The airline's Pricing Department also played an important role in customer relations and served the organization with enhanced data and information. The Product Team members were able to help customers with special cargo requirements and tailor-made solution for specific needs.

Speaking of products, Cargolux expanded its portfolio in June 2016 with two new additions, CV Select and CV Select+. These two features act as an additional layer in combination with any of the eight existing products.

The two additions present customers with a number of unique advantages. CV Select features preferred access to premium capacity and booking commitment, all combined with the airline's long-standing expertise and detailed attention to the specificities of different commodities. In addition, CV Select+ gives vastly reduced cut-off times of only 30 minutes before departure that customers' shipments can arrive at the airport.

Cargolux's CV Select and CV Select+ offers guaranteed access to the schedules that suit customers and their clients. With both options, Cargolux can guarantee full, optimal airport-to-airport service and real-time track and trace updates.

Also in June, Cargolux launched a new and updated website that greatly enhanced the customer experience with features, such as track and trace, that provides customers with the most accurate and up-to-date information in a particularly user-friendly way. The new site is optimized for mobile devices and offers five sub-sites with easy navigation that gives direct access to e-services as well as sales or maintenance-related information and fast points of contact.

As an additional communications tool, the company launched a new customer print magazine during 2016, 'Charlie Victor', that gives outsiders a glimpse into the world of Cargolux. The airline believes that close personal contact with its partners, as well as detailed



attention and an understanding of the customers' needs forms the foundation of a superior service offering and is central to what makes Cargolux different. The name 'Charlie Victor' refers to Cargolux's IATA code CV, which, in NATO alphabet, spells Charlie Victor.

## ABOUT THIS REPORT

This report provides information for the calendar year 2016. The previous report was published in April 2016. It is published annually.

Its elaboration is based on the continued analysis of the company's main impact and responsibilities, both with regard to the environment and society, and relative to the concerns raised by key groups of stakeholders in this area.

The 2016 report describes the company's efforts in a context where priorities were given to competing in the difficult market environment that challenged Cargolux and the global air cargo industry. Despite these difficulties, Cargolux took care to uphold its commitment to environmental and social issues and developed them even further.

This report is prepared in accordance with the CORE requirements of the GRI Standards guidelines of the Global Reporting Initiatives. Cargolux endeavors to constantly review and further elaborate its Corporate Social Responsibility program and the Sustainability Reporting Process.

This report pertains to Cargolux's operations and geographical presence overall, except where otherwise specified in the report. Certain indicators cover its Luxembourg-based activities only. These include figures relating the company's employees as well as data related to occupational health and safety. Data monitoring the company's waste disposal also relates to its facilities in Luxembourg only. The report does not cover the activities of separate legal entities fully or partly owned by Cargolux. Monitoring of fuel consumption and CO<sub>2</sub> emissions includes the data collected by Cargolux Italia.

### Contact point

Cargolux invites all interested parties to enter into dialogue about its sustainability policy, its activities and this report. The company's policy, further information about its activities and previous reports can be found on its website at <http://www.cargolux.com/about-us/corporate-responsability>. All comments and enquiries are welcome and can be forwarded through the contact form on the aforementioned webpage, or by writing to [corpcom@cargolux.com](mailto:corpcom@cargolux.com).



## APPENDIX SOCIAL AND ENVIRONMENT

Employment	2016	2015	2014
<b>Number of staff</b>			
Worldwide	1,856	1,779	1,710
Headquarter	1,389	1,333	1,305
Rest of the world	467	446	405
Percentage of women	20	20	20
Permanent contract	1,798	1,622	1,580
Newly hired	207	181	188
<b>CWA</b>	<b>1,199</b>	<b>1,164</b>	<b>1,148</b>
Female	13.2%	13.0%	8.42%
Male	86.7%	87.0%	58.71%
Turnover	120	107	76
Retention rate after parental leave	na	100%	95%
<b>Number of employees by age groups</b>			
Under 30	249	254	232
30-50	1,166	1,125	1,126
Over 50	441	400	352
<b>Absenteeism</b>			
Lost days for accidents	346	362	273
Lost days for sickness	12,163	12,741	13,304
Maternity leave	4,622	1,592	7,566
<b>Occupational Health &amp; Safety</b>			
<b>Number of injuries (accidents)</b>			
Internal	27	26	42
External	10	14	16
<b>Training</b>			
Number of training hours per employee	64	87	64

**Environment****2016****2015****2014****Materials**

A/C cleaning products, TOTAL (ltrs)

37,955

34,017

35,741

Honey bee

401

402

310

A/C cleaner

34,456

32,760

32,095

Hydraulic removal

3,098

855

3,336

De-icing and anti-icing product, TOTAL (kgs)

Tarmac/airside (ltrs/kgs)

3,400 / 1,600

6,000 / 2,750

2,500/2,500

Salt (parking/road)

11,075

13,175

4,005

Paper (DIN A4) (kgs)

24,522

24,400

30,630

Cartridges (pcs)

69

162

240

**Emissions****Direct emissions:**CO<sub>2</sub> emitted by aircraft (tonnes)

3,746,552

3,485,274

3,184,580

CO<sub>2</sub> emitted by GSE vehicles

261

289

233

**Indirect emissions:**

Facilities

2,475

2,475

2,513

**Consumption**

Water

10,309

9,183

9,296

Fuel (Heating systems for Lorang building)

79,210

70,052

87,599

Fuel (sprinkler pumps)

2,190

4,509

2,889

Electricity (kWh)

5,787,954

5,582,725

5,787,965

**The following data regarding the indirect  
Energy Consumption are only available for CMC:**

Heating (kWh)

5,445,500

6,227,000

5,627,100

Cooling (kWh)

483,700

443,500

466,600

Compressed air (m<sup>3</sup>)

1,040,123

994,885

1,004,077

Gas (m<sup>3</sup>)

966,882

1,090,762

1,088,487

**Fuel**

Jet A (tonnes)

1,189,382

1,106,436

1,010,978

GSE vehicles

Industrial Fuel (ltrs)

74,216

91,926

71,305

Diesel (ltrs)

20,851

15,123

13,542

Unleaded Gasoline 95 (ltrs)

3,210

1,970

2,949

**Waste**

Hazardous waste

165,410

124,948

176,046

Recyclable waste

91,172

74,103

90,625

Residual waste

109,829

117,086

76,029

Oily waste

20,031

21,801

25,219

Other waste

7,826

6,007

4,972

## GRI CONTENT INDEX

GRI STANDARD	DISCLOSURE	PAGE NUMBER(S) AND/OR URL(S)
<b>General Disclosures</b>		
GRI 102: General Disclosures 2016	102-1 Name of the organisation	Cargolux Airlines International S.A.
	102-2 Activities, brands, products, and services	Long-range transport of goods by air
	102-3 Location of headquarters	Luxembourg
	102-4 Location of operations	As a scheduled all cargo airline, the company operates flight to over 50 destinations throughout the world.
	102-5 Ownership and legal form	Joint-stock company (Société Anonyme)
	102-6 Markets served	Cargolux provides air freight transport services to freight forwarders in most parts of the world through scheduled and charter flights. This includes the regular transportation of supply-chain goods, finished commodities, project cargo, perishables, temperature and shock-sensitive goods and live animals, among others.
	102-7 Scale of the organisation	Highlights in Annual Report
	102-8 Information on employees and other workers	100
	102-10 Significant changes to the organization and its supply chain	nothing to report
	102-12 External initiatives	82
	102-13 Membership of associations	82
	102-14 Statement from senior decision maker	Annual Report
	102-16 Values, principles, standards, and norms of behavior	87
	102-18 Governance structure	Annual Report



GRI STANDARD	DISCLOSURE	PAGE NUMBER(S) AND/OR URL(S)
<b>General Disclosures</b>		
GRI 102: General Disclosures 2016	102-40 List of stakeholder groups	80
	102-41 Collective bargaining agreements	87   100
	102-42 Identifying and selecting stakeholders	80
	102-43 Approach to stakeholder engagement	80
	102-44 Key topics and concerns raised	81
	102-45 Entities included in the consolidated financial statements	This report does not include information on other entities, except for the CO <sub>2</sub> emissions and fuel data where CV Italia is included.
	102-46 Defining report content and topic Boundaries	99
	102-47 List of material topics	80   81
	102-48 Restatement of information	nothing to report
	102-49 Changes in reporting	nothing to report
	102-50 Reporting period	Calendar Year 2016
	102-51 Date of most recent report	April 2016
	102-52 Reporting cycle	Annual
	102-53 Contact point for questions regarding the report	corpcom@cargolux.com
	102-54 Claims of reporting in accordance with GRI Standards	99
	102-55	102-106
	102-56	108-109

## GRI CONTENT INDEX

GRI STANDARD	DISCLOSURE	PAGE NUMBER(S) AND/OR URL(S)
<b>General Disclosures</b>		
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and its boundaries	78   86
	103-2 The management approach and its components	78   86
	103-3 Evaluation of the management approach	78   86
GRI 201: Economic performance	201-1 Direct economic value generated and distributed	Annual Report
GRI 205: Anti-corruption	205-1 Operations assessed for risks related to corruption	84
	205-2 Communication and training about anti-corruption policies and procedures	84
	205-3 Confirmed incidents of corruption and actions taken	no incidents reported during reporting period
GRI 301: Materials	301-1 Materials used by weight or volume	101
GRI 302: Energy	302-1 Energy consumption within the organization	101
	302-3 Energy intensity	101   92
	302-4 Reduction of energy consumption	90   91
	302-5 Reduction in energy requirements of products and services	90   91
GRI 303: Water	303-1 Water withdrawal by source	101
	303-3 Water recycled and reused	nothing to report as we do not have this process in place
GRI 304: Biodiversity	304-3 Habitats protected or restored	97

GRI STANDARD	DISCLOSURE	PAGE NUMBER(S) AND/OR URL(S)
<b>General Disclosures</b>		
GRI 305: Emissions	305-1 Direct (Scope 1) GHG emissions	92
	305-2 Energy indirect (Scope 2) GHG emissions	92
	305-4 GHG emissions intensity	92
	305-5 Reduction of GHG emissions	91
GRI 306: Effluents and waste	306-2 Waste by type and disposal method	94   101
	306-3 Significant spills	No spills reported
GRI 401: Employment	401-1 New employee hires and employee turnover	100
GRI 403: OHS	403-1 Workers representation in formal joint management-worker health and safety committees	100
	403-2 Types of injury and rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities	100
	403-4 Health and safety topics covered in formal agreements with trade unions	89
GRI 404: Training and education	404-1 Average hours of training per year per employee	100
	404-2 Programs for upgrading employee skills and transition assistance programs	88
GRI 405: Diversity and equal opportunity	405-1 Diversity of governance bodies and employees	100

## GRI CONTENT INDEX

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GRI STANDARD	DISCLOSURE	PAGE NUMBER(S) AND/OR URL(S)
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<b>General Disclosures</b>		
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GRI 409: Forced or compulsory labor	409-1 Operations and suppliers at significant risk for incidents of forced or compulsory labor	100
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To the Shareholders of  
Cargolux Airlines International S.A.  
Aéroport de Luxembourg  
L-2990 Sandweiler

**Independent Limited Assurance Report to Cargolux Airlines International S.A.**

We have been engaged by the Management of Cargolux Airlines International S.A. ("Cargolux") to provide limited assurance on the "Sustainability Report" of Cargolux for the year ended 31 December 2016 as set out on pages 76-107.

**Management's responsibility for the Sustainability Report**

Management is responsible for the preparation and presentation of the Sustainability Report in accordance with the Sustainability Reporting Guidelines (G4) of the Global Reporting Initiative ("GRI") as described on pages 99, 102-106 and the information and assertions contained within it, for determining Cargolux's objectives in respect of sustainable development performance and reporting, including the identification of stakeholders and material issues; and for establishing and maintaining appropriate performance management and internal control systems from which the reported performance information is derived.

**Responsibility of the Réviseur d'Entreprises agréé**

Our responsibility is to carry out a limited assurance engagement and to express a conclusion based on the work performed. We conducted our engagement in accordance with the International Standard on Assurance Engagements (ISAE) 3000, Assurance Engagements other than Audits or Reviews of Historical Financial Information as adopted for Luxembourg by the Commission de Surveillance du Secteur Financier. This standard requires that we comply with applicable ethical requirements, including independence requirements, and that we plan and perform the engagement to obtain limited assurance about whether the Sustainability Report is free from material misstatement.

A limited assurance engagement on a sustainability report consists of making inquiries, primarily of persons responsible for the preparation of information presented in the sustainability report and applying analytical and other evidence gathering procedures, as appropriate. These procedures included:

- Assessment of the suitability of the reporting criteria and their consistent application.
- Inquires of management to gain an understanding of Cargolux processes for determining the material issues for Cargolux key stakeholder groups.

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- Interviews with senior management and relevant staff at group level and selected business unit level concerning sustainability strategy and policies for material issues, and the implementation of these across the business.
- Interviews with relevant staff at corporate and business unit level responsible for data capture and preparation of the information in the Sustainability Report.
- Comparing the information presented in the Sustainability Report to corresponding information in the relevant underlying sources to determine whether all the relevant information contained in such underlying sources has been included in the Sustainability Report.
- Review of material qualitative statements in the report with regard to consistency and plausibility.
- Reading the other information presented in the Annual Report 2016 of Cargolux to determine whether it is in line with our overall knowledge of, and experience with, the sustainability performance of Cargolux.

The extent of evidence gathering procedures performed in a limited assurance engagement is less than that for a reasonable assurance engagement, and therefore a lower level of assurance is provided.

#### Conclusion

Based on the procedures performed, as described above, nothing has come to our attention that causes us to believe that the Sustainability Report of Cargolux for the year ended 31 December 2016 is not presented fairly, in all material respects, in accordance with the Sustainability Reporting Guidelines (G4) of the Global Reporting Initiative as described on pages 99, 102–106 of the Sustainability Report.

Ernst & Young  
Société anonyme  
Cabinet de révision agréé



Werner Weyand

Luxembourg, 5 April 2017

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5

SPANNING  
THE WORLD







B767-400  
A340-120

17-8

# EUROPEAN TRUCKING NETWORK

## EUROPEAN ROAD FEEDER NETWORK FROM AND TO LUXEMBOURG

### AUSTRIA

Linz  
Vienna

### BELGIUM

Antwerp  
Brussels

### CZECH REPUBLIC

Prague

### DENMARK

Billund  
Copenhagen

### FINLAND

Helsinki

### FRANCE

Lille  
Lyon  
Marseille  
Mullhouse  
Nice  
Paris  
Strasbourg

### GERMANY

Berlin  
Bremen  
Cologne  
Dortmund  
Dresden  
Dusseldorf  
Frankfurt  
Hamburg  
Hanover  
Leipzig  
Nuremberg  
Munich  
Munster-  
Osnabruck  
Stuttgart

### HUNGARY

Budapest

### ITALY

Bologna  
Citanova Marche  
Florence  
Milan  
Rome  
Turin  
Venice

### NETHERLANDS

Amsterdam  
Maastricht  
Rotterdam

### NORWAY

Bergen  
Stravanger  
Oslo

### PORTUGAL

Lisbon  
Porto

### SPAIN

Alicante  
Bilbao  
Madrid  
Valencia  
Zaragoza

### SWEDEN

Gothenburg  
Malmö  
Stockholm

## ROAD FEEDER NETWORK FROM PRESTWICK

Aberdeen  
Belfast  
Birmingham  
Bristol  
Cardiff  
Cork  
Derby

Dublin  
Glasgow  
London  
Manchester  
Newcastle  
Norwich  
Shannon

## ROAD FEEDER NETWORK FROM MAASTRICHT

Luxembourg  
Amsterdam

## ROAD FEEDER NETWORK FROM BARCELONA

Alicante  
Bilbao  
Lisbon  
Madrid

Porto  
Valencia  
Zaragoza

## ROAD FEEDER NETWORK FROM MILAN

Barcelona  
Basle  
Bordeaux  
Civitanova  
Marche  
Firenze  
Fiumicino  
Geneva

Genova  
Lyon  
Marseille  
Munich  
Naples  
Nuremberg  
Stuttgart  
Toulouse

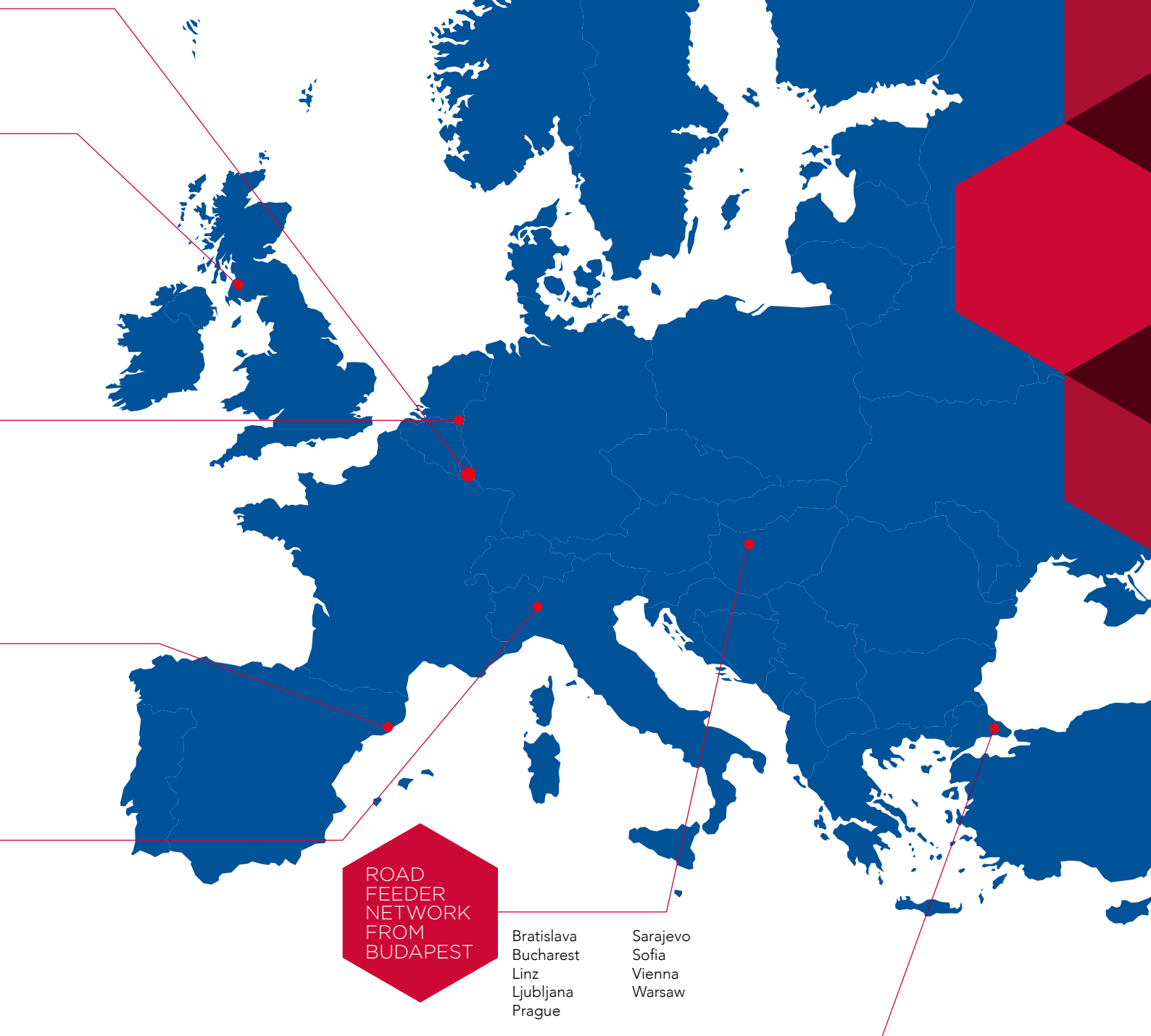
Turin  
Venice  
Verona  
Vienna  
Zurich

## ROAD FEEDER NETWORK FROM ISTANBUL

Adana  
Ankara  
Izmir

## TRUCKING SERVICES OUT OF CARGOLUX ONLINE STATIONS

Ad hoc trucking can be arranged upon client request, please contact our cargo services office for additional information.





# DESTINATIONS - ROUTE MAP 2017







○ ● (also) flown by Cargolux Italia

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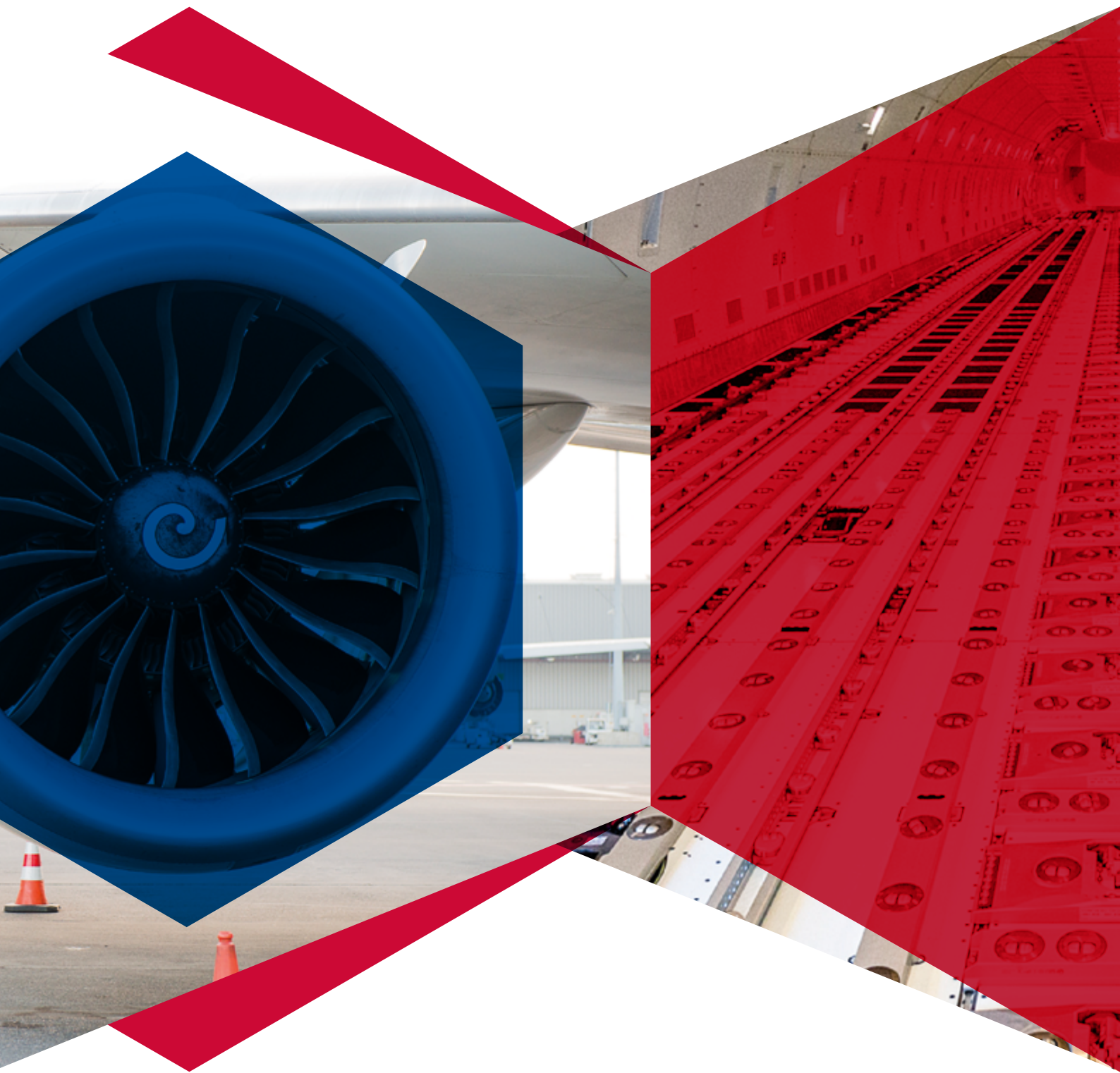
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Pages 56, 25

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Pages 11, 15, 17, 107





**cargolux**

*you name it, we fly it!*