

search whose respondents were randomly selected representatives of freight forwarders, airlines, representatives of airports, research institutions and government departments. The survey involved 125 respondents, proportionally distributed between each of mentioned companies and organizations.

The results (Fig. 1) present that the market of live animals air transport is widely divided. The majority of respondents identified pets as the most common (38%). This group includes dogs and cats, which usually accompany people in their daily lives. Aquatic animals (14%), reptiles and amphibians (10%), birds (10%), farmed animals (10%) had approximately same market share. The study confirms the need of air transport of different species. Therefore, there is necessary to have and introduce strict regulations for this transportation of each species.

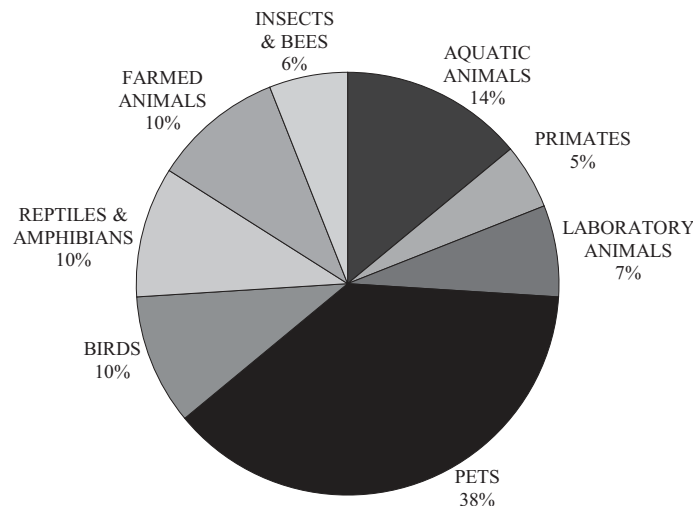


Figure 1. The share of individual groups of animals in the carriage by air of selected respondents  
Rysunek 1. Podział na indywidualne grupy zwierząt w transporcie lotniczym

Source: own elaboration based on IATA [2015].

US Department of Transportation report presents the conditions of transported animals worldwide. According to this report 154 animals died on board, 63 suffered injuries, and 38 disappeared in August in 2010, 35 animals died during the trip by American airlines, 9 injured and 2 missing in 2011, while 29 animals died, 26 were injured and 1 missing in 2012.

### **The live animals air transport regulations**

The key factors affecting the safe transport of live animals include: the aircraft Environmental Control System (ECS) settings; animal physiology; airport and en-route environments; ground handling [Guidelines for humane handling... 2001, Appleby et al. 2008, [www.skybrary.aero/index.php/Transporting\\_Live\\_Animals\\_By\\_Air](http://www.skybrary.aero/index.php/Transporting_Live_Animals_By_Air); access: 7.11.2016]. Combinations of species in transit complicate management of these key factors. The safe

transportation of live animals as air cargo is based on controlling three environmental factors: temperature, relative humidity level, and cargo compartment carbon dioxide (CO<sub>2</sub>) concentration. Each type of animal has unique environmental requirements for optimal health. Failure to properly control these environmental indicators may have an impact on animal welfare, comfort, and survivability, affecting animal cargo revenue ([www.boeing.com/commercial/aeromagazine/articles/2012\\_q2/4/](http://www.boeing.com/commercial/aeromagazine/articles/2012_q2/4/); access: 7.11.2016). The very important moment is than ground handling which include preparation the animals for transportation.

One of the worldwide document which defines correct preparation of animals air transport is Live Animals Regulations manual (LAR) created by IATA. It consists of set of global standards for animal handling in a safe manner. It is important that European Union indicates LAR manual as a reliable source of information, which describes requirements to ensure the humane treatment of animals during transport. LAR have been created deliberately for freight, airport apron, airport animal warehouses, airlines carriers, zoo workers and organizations which care for a dignified treatment of animals and respecting of their rights.

Since 1973 committee for the transport of animals has been creating new regulations in order to develop better legal system [Kierzkowski 2012]. Due to the lack of knowledge about animals handling, the first documents were simple and incomplete. As times began to change and also technology in frenetic pace, IATA has created official textbook, which currently, is obliged to be updated and published each year. In 2015 the 41st edition of Live Animals Regulations has been released. Consisting 13 chapters, which contains information concerning the sender, the carrier, required training for staff, requirements and restrictions. Moreover, the division of animals into categories, assignment to the types of containers for transport, the recommendation regarding labelling and handling process [IATA 2015]. As animals are shipped from cargo terminals, consequently they are obligated to have specific infrastructure, adjust facilities and qualified staff. In order to secure the animal welfare during the process, it is obligatory to supply cargo terminal and the handling company in necessary infrastructure and equipment for handling live animals, e.g. for shipments over 60 kg, fork lift is essential. As well as stationary and mobile X-ray.

It is confirmed by studies based on animals transportation, this process evokes a sense of anxiety and stress for animals [Hartung 2003]. Ensuring proper care and preparation of animals for transport is extremely important, as confirmed by the study, showing a negative impact on animal organisms. Stress can be caused by unknown, unique, not routine situation, the change of pressure and microclimate. The change in the behaviour of animals can cause panic and injury [Stewart 2002].

### **Live animals handling processing in Warsaw Chopin Airport cargo terminal**

There are three forms of transport of animals by air transport [Szczepańska 2012]: as luggage on board the aircraft (limited due to the airline regulations and for small pets only), as the luggage in the hatch (transport in specially prepared part of the plane), as a cargo shipment (animals transported unaccompanied). In this article the third example was taken into consideration, as only in this case staff of cargo terminal building is responsible for animals and prepare them for air transport.

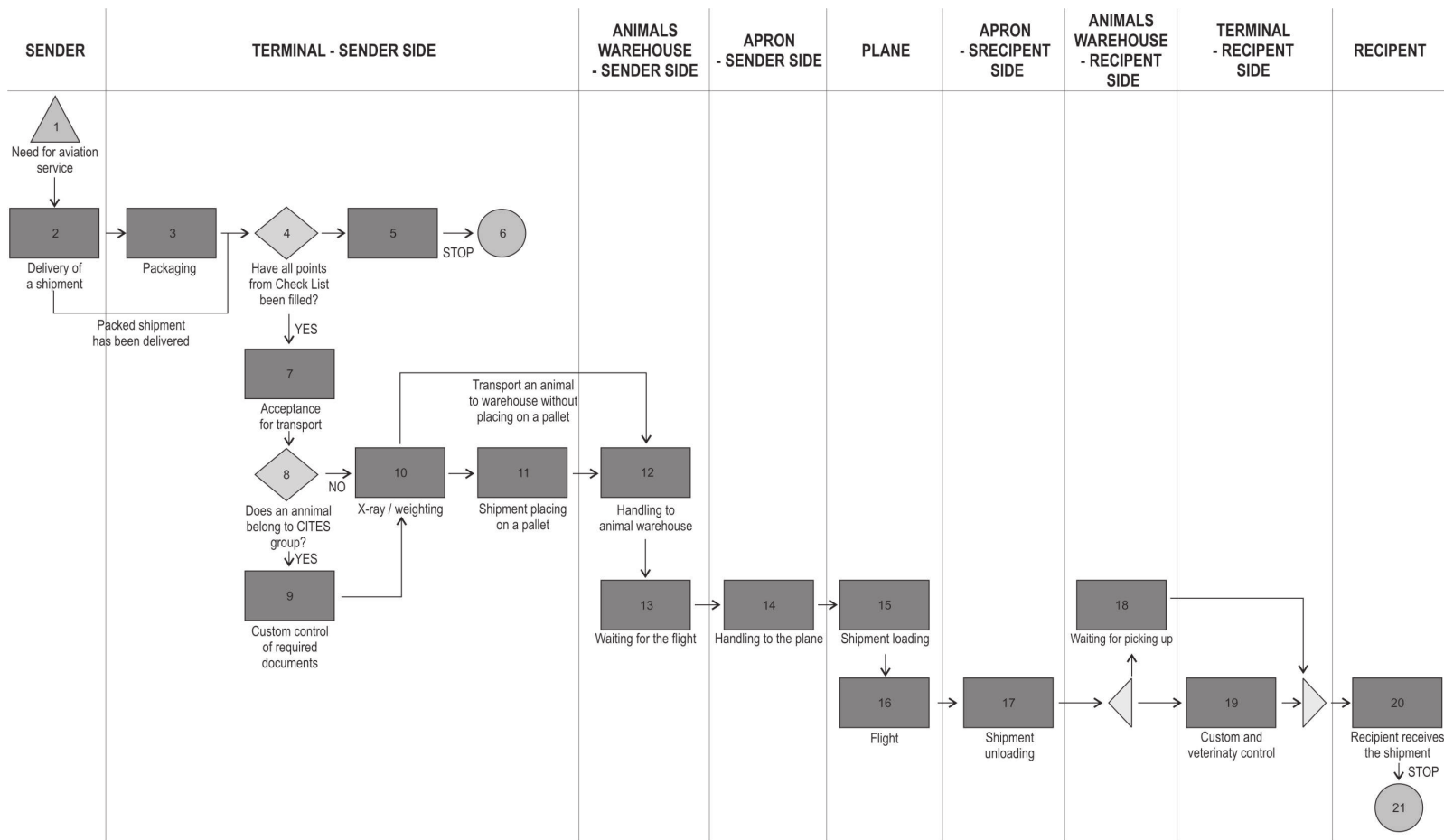


Figure 2. Process map of live animals handling in Warsaw Chopin Airport cargo terminal

Rysunek 2. Mapa procesu obchodzenie się z przesyłką z żywymi zwierzętami na terminalu towarowym lotniska Chopina w Warszawie

Source: own elaboration based on own observation and IATA [2015].

It is very important to highlight that operations included into animals handling should be perceived as process. This approach demonstrates perception of the surrounding area as a system which can be described using simple characters arranged in the right pattern.

In Warsaw Chopin Airport cargo terminal the process of animals handling includes the number of steps (Fig. 2). It has to be specified that it is a scheme for a general situation. It does not apply to specific cases in which transport is possible only by a few airports and airlines due to the lack of adequate infrastructure and transport modes (e.g. giraffe transport).

There are 21 operational steps creating the process<sup>1</sup>. It begins with the sender (1), who presents the need for animal transportation and is described as person, company or public institution. Next step is delivery animal to cargo terminal (2). The sender is obliged to fill proper documents (export/import/transit permit, the health certificate, certificate of the sender) regarding regulations of countries of origin and destination.

Additionally, what is extremely important, the sender must provide a proper package for animal. Packaging includes placing the animal into a container, preparing required documentation and identification labels according to IATA regulations – Live Animals Regulations manual (LAR) (3). Subsequently, the ground handling staff is responsible for the next element of the process which is check-list (4). Due to IATA recommendations it consists of 23 questions concerning: general acceptance including information on CITES list<sup>2</sup>, information on airway bill, shipper's certificate, proper container, proper marking and labelling and instructions about feeding and watering (Fig. 3). Live Animals Regulations requires to stop the process of animal air transport if at least one out of 23 answers is negative (5). In this case, unapproved shipment must be transmitted to the sender with a copy of the check-list. Its original hard copy remains with the handling company, additionally airlines keep files in case of an audit. As a result of rejection the process is stopped and ends (6).

When check-list is accepted the animals begins to be a shipment and is X-rayed, weighed, measured in order to improve safety (10). However, if transported species is on the CITES list, the agents from custom office are obliged to control import/export documents before taking any other activities (9). Documents must be free of corrections, deletions. Having fulfilled all the criteria, after all security checks and accompanied by an original checklist, the shipment is handled to the warehouse for animals at the airport (12). In Warsaw Chopin Airport cargo terminal there is a separate room in the warehouse, in which animals are waiting for the flight. The place is constantly ventilated, sound-proof, tinted, with a constant temperature 17°C, equipped with access to running water. It is highly recommended to charge the live animals on the plane nearly as possible as the time of departure, to shorten their exposure to stress (14, 15).

Copies of all documents must be available in origin airport in case of effort or control. Handling agent forwards original documents to plane crew. After landing they will be transferred to employees receiving the shipment.

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<sup>1</sup> Each step described is marked by its next number from Figure 2.

<sup>2</sup> Convention on International Trade in Endangered Species of Wild Fauna and Flora (also known as the Washington Convention) is a multilateral treaty to protect endangered plants and animals. Roughly 5,000 species of animals and 29,000 species of plants are protected by CITES against over-exploitation through international trade. Each protected species or population is included in one of three lists, called Appendices [Convention on International Trade... 2013].



The next step in transport process is flight (16). After arrival at the port of destination, shipment is unload and also transported to animal warehouse (17). Shipment is waiting to be received (18), while all necessary actions required by LAR can be completed (19). Frequently health control of animal is required by border veterinarians control. On the Figure 1 this procedure are presented in simplified version and placed as one symbol. This is due to the fact that depending on destination, type of animal action and their sequence may differ from each other. Moreover, detailed, careful and correct operations before shipment seem to be much more important from the entire process and safety point of view. After successful inspection and acceptance of cargo at destination, the animal is delivered to the receiver (20).

The process itself can be divided into a number of critical points. Even the very first step of providing the animal to the airport can be troublesome. Lack of proper container, failure to complete the LAR requirements or CITES regulations can occur to be a problem later in the process. Interviews with Warsaw Chopin Airport cargo terminal staff present that the most common problem is lack of proper label “This Way Up”, “Live Animals” and specialized animals containers in the proper size. This is the result of the market prices of these goods. Therefore, the sender of the shipment should take care of this element when preparing animal for transport.

## **Summary**

Many circumstances influence the choice of transportation mode for different kind of goods. The best possible conditions during transport should be ensured for live animals. In case of live animals transport the most important factor seems to be time which without the doubt is depended on the transport mode. Air transport over the long distance allows travelling time to be minimised. Precisely defined animal air transport process contributes to eliminate undesirable situations during ground handling of the consignment with animal inside.

Regulations designed by international organizations and foreign governments have allowed to limit the negative effects of animal travel. Requirements and restrictions are very strict and precise. Among the years IATA has been developing regulations regarding animal safety and welfare.

It is important to highlight that the essential part of the process is humane factor. Personnel is responsible for filling check-list, handling operations, and document workflow, therefore staff has to be well-trained and have a knowledge to provide comprehensive service for live animals. This confirms the hypothesis that human factor is essential in the process.

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