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ANIMALS´ LOGISTICS AND PROTECTION WITH A FOCUS ON SLAUGHTER ANIMALS DURING TRANSPORT IN ACCORDANCE WITH THE RULES

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ABSTRACT

This paper is devoted to the transport of slaughter animals. There are obstacles that needs to be pointed out, removed, and resolved. General requirements for the movement of slaughter animals within the Union have proven to be an unjustified administrative burden and costly. It also presents how important is to keep and follow all the rules provided by European Union to prevent any issues and keep the animals in good conditions and welfare during the transport. Bad conditions and not keeping the rules during animal transport can cause the stress of the animals and have a huge effect on their health. The stress can cause injuries and even a death of the animals that were healthy and had no signs of any sickness before the transfer. The main goal of the paper is to present the circumstances under which safe transport depends on choosing the correct logistical management, starting with the proper vehicles. Specific rules apply depending on the type and quantity of animals transported. The paper explains and summarizes the special establishment for road transport, including all mandatory actions, documents, and data centralisation (COMEX, TRACES, IMSOC).

Key words: animals; data; slaughter; transport; vehicles

INTRODUCTION

In the European Union, billions of animals, mainly cattle, sheep, pigs, and birds, are slaughtered for meat consumption. Meat and meat products are considered excellent sources of zinc, haem iron, bioavailable B vitamins, and essential amino acids. The consumption of meat is, however, inherently related to animal transport and slaughter. For thousands of years, ethical questions have arisen relative to the killing of animals for consumption [32].

The lives of people and living organisms in an advanced technical society are based on the transport of mass or a signal from one place to another. Transport is overcoming the space, i.e., the change of location, using traffic funds. Every transport system consists of transported cargo, vehicles, transport logistics, and workers in transport.

The transportation of animals to slaughterhouses is a major welfare concern. The number of slaughterhouses has decreased over time in Europe due to centralisation. This is expected to increase transport time for animals and consequently negatively affect animal welfare [20].

Transportation is an activity that directly involves moving people and things (cargo) with vehicles. It is the commercial (or non-commercial) part of the transport process and represents the transport performance. The task of transport is the right choice of vehicle and the most suitable transport process, during which various transport problems must be solved. The transport logistics refer to the organization and management during the transport itself.

To control and assess of the current situation across the Europe how the rules are followed, the European Parliament has set up a "Committee of Inquiry for Animal Protection During Transport", which can cause the resolution for calling stricter rules. The European Union law 1/2005 (EC 1/2005) [33], which addresses animal transportation safety, is not followed. The controls during the animal's transfer consistently fail. To prevent and minimalize bad conditions it is essential to provide continuous education not only for the drivers/carriers but also for all involved staff that are participating in whole process of logistics.

WHAT IS THE MEANING OF TRANSPORT?

Transport is the intentional movement (driving, sailing, and flight) on the transport routes or the operation of the transport facilities. It is also a branch of the national economy that ensures the movement of people, things, and animals. Animal transport is the movement of animals by one or more transport resources. It includes all related actions from administration, continuing with loading, unloading, transfer, and resting until the animal reaches its final destination and the transfer is completed (EC 1/2005) [8].

There are a lot of ways the animal can be transported. Under the transportation resources, we include road motor vehicles, railway wagons, ships, aircraft used for loading and transporting animals, as well as containers for land transport, ship transport, or air transport. The transporter can be any person or legal entity transporting the animals. It can be at their own expense or at the expense of a third party. The transported can also be a person or entity that provides resources for transport to a third-party for-profit purpose. The final destination place is the place where all transported animals are unloaded from the transport resources, except for resting and transhipment points. The final place of transport can be a new owner, relocation, or slaughterhouse (EC 1/2005) [8].

Vehicles used for animal transportation

Driving any vehicle involves great risk and responsibility. This responsibility is higher for drivers who transport animals. Drivers need to have professional knowledge and skills. They must have knowledge not only about their vehicle and the rules of the road but also about how to protect and take care of transported animals. This will help them not only in handling animals but also in identifying and distinguishing sick, hungry, and frightened animals that are behaving abnormally. Every vehicle and all the equipment for loading and unloading that is used to transport the animals must meet the basic design requirements (Fig. 1). Any motor vehicle or trailer used for the transport of animals must be constructed, maintained, and operated so as not to endanger the animals during loading, transport, and unloading. Furthermore, it must protect animals from injuries, unnecessary suffering, bad weather, excessive noise, and vibrations. At the same time, it must not have any sharp edges, protrusions, unnecessary gaps, or spaces that could cause injuries to animals, it must ensure the safety of the animals [22].

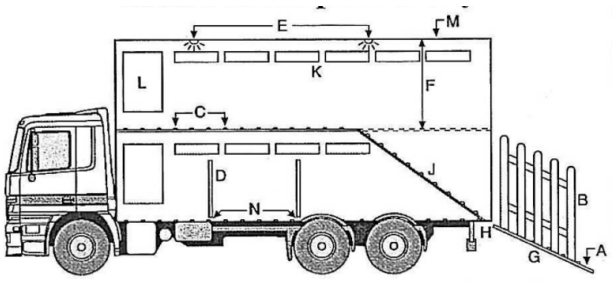


Fig. 1. Requirements for vehicles used for animal transport [22]

A – Loading ramp with steps; B – Sidewalls, minimal height 1.3 m; C – Steps or anti-slip flooring on each floor; D – Barriers: minimum height 1.27 for cattle, 76 cm for pigs, sheep and calves; E – Sufficient lighting for inspection; F – The height between the individual floors must be large enough for the animals to stand naturally and must provide adequate ventilation; G – Drop of the loading ramp no more than 29 degrees; H – The step at the upper end of the ramp must not exceed 21cm and the gap must not be wider than 6 cm; J – Drop of internal ramp no more than 33 degrees; K – Sufficient ventilation on all floors; L – Access to all floors; M – Roof; N – No larger gaps between the internal partitions and the floor.

When transporting animals, it is important to pay attention to:

a) Space and department – limitations of movement; b) Ventilation; c) Temperature and humidity – can cause heat stress; d) Noise; e) Movement of the vehicle and vibration; f) Water, feed and rest; g) Handling of animals; h) Loading and unloading.

Vehicles and their fittings that are used for livestock must be strong enough to contain the animals and prevent their escape. The design of the crate must be such that cattle cannot jump out of the crate under normal circumstances [18].

Vehicle identification

Vehicle that would be used for animal transport is identified based on a physical inspection and technical license of a motor-trailer vehicle (technical license) or a similar document, while checking in particular the vehicle registration number, type of means of transport (car, car with superstructure, semi-trailer, trailer, container, ...), brand and type designation of the means of transport [30].

Special establishment for road transport [8]

1. Animals must not be allowed to escape from vehicles, and those that do the transport must be built safely. Vehicles must be equipped with a roof that ensures effective protection against adverse weather.

2. The availability of tethering gear in large animal transport vehicles, should tethering of these animals be required. If it is required to divide the vehicle into compartments, the partitions must be strong enough.

3. Vehicles must have suitable equipment for loading and unloading animals. According to the applicable legal regulations, during the transport, the animal must be marked and registered, accompanied by a veterinary certificate and a companion document (EC 1/2005) [8] containing the following:

a) Owner and origin of animals,

b) Place of dispatch and place of destination,

c) Date and time of departure.

Based on the new rules of the European Union (1/2005/EC) it is required that all new vehicles transporting animals for more than eight hours have the appropriate equipment, including a satellite navigation system (GPS), a water security system for transported animals, a microclimate assurance system, and a warning system that alerts the driver to potential problems. Such vehicles must be officially approved in advance by the authorities. All older vehicles (after 2009) must have a satellite navigation system installed as well [11].

Modern technologies play an important role in the safety of animal transport. More modern transporters have, for example a recording camera which is directly displaying in the driver's cabin. The driver can have a full control and an overview of what is happening in the transporter, and whether the animal is trying to escape or could be injured. Thanks to the camera, he can react immediately [36].

Carrier registration

Every transporter that has its establishment or places of business in the Slovak Republic must be registered in the register of transporters maintained by the State Veterinary and Food Administration of the Slovak Republic and must be issued a certificate of ability to transport animals to the territory of the Slovak Republic and the territory of the European Union, which is numbered in a way that excludes confusion. Anyone who wants to provide the transportation of animals is obliged to apply for registration with the State Veterinary and Food Administration before starting the activity itself [28]. There are 2 types of the permit: Type 1 – the carrier's permit for short trips (up to 8 hours); Type 2 – the carrier's permit for long journeys (over 8 hours). Every Slovak transporter that transports animals and their transport is no longer than eight hours, but the distance is more than 65 km, must have a document on animal transporter registration (carrier registration). When animals are transported for more than eight hours, SVFA SR (State Veterinary and Food Administration of the Slovak Republic) requires that a copy be attached to the registered carrier's application for a registration document certificate of approval of a road vehicle intended for long journeys. This certificate is issued by the relevant regional veterinary and food authority. The request for this document must be sent to the SVFA SR within 24 hours at the latest before transporting live animals to another member state of the European Union [31].

Other necessary actions included

- To register at SVFA SR (State Veterinary and Food Administration of Slovakia), an application and an honourable statement are submitted, along with a copy of the business certificate or an extract from the commercial register.

- SVFA SR (State Veterinary and Food Administration of Slovakia) will issue the transporter a certificate of com-

petence to transport animals (transporter's certificate) and enter it in the list of transporters.

- The validity of the carrier's certificate may be suspended for 1 year.

- Withdrawal of the transporter's certificate and removal from the register of transporters may take 5 years.

- The ban on the registration of the transporter can last for 5 years.

Main general points that need to be complied in animal's transport

- According to EU legislation and directives for animal protection, no person shall transport or cause animals to be carried in a manner likely to cause injury or excessive suffering to them [4].

- Transportation arrangements must be made in advance to minimize the length of the journey and provide for the needs of the animals. Animals must be fit for transport.

- Workers who handle animals must be properly trained and competent.

- Whole transportation till the end destination must be carried out without delay and must include regular animal welfare checks.

- Animals must have sufficient height and floor space available. Water, feed and rest must be provided when needed [8].

Obligations of the carrier

- The means of transport must be cleaned and disinfected

- At the end of the transport, the transporter must ensure the cleaning and disinfection of used vehicles for the transport.

- The transporter places the animals appropriately so as not to cause them injury or unnecessary suffering.

- Ensures that the transport of animals is as fast as possible, without unnecessary delay to the destination.

- Must carry out loading and unloading of animals in the presence of the breeder.

- Do not leave the means of transport unattended during road transport of animals under supervision.

- The number of animals must correspond to the specified maximum number of animals according to the vehicle surface.

- Animals must be in special cages and containers during transport with suitable bedding according to the type of animal and fixed in a way that prevents it shifting or overturning during travel.

- The animals must have a sufficient supply of water during the journey.

- The animal transporter ensures sufficient air exchange without drafts and maintains the optimal temperature of the vehicle.

- The animal transporter must study the current legislation regarding the protection of animals during transport.

- The animal transporter must follow all established work legislation regarding the transport of animals, violation of the internal directive associated with damage to the animal at fault by the carrier is considered a misdemeanour, and the authority of the veterinary administration can cancel the decision on the animal transporter's permit (carrier's registration) [2].

To receive the authorization for journeys over eight hours, the transporter must provide:

- valid certificates of approval vehicles and containers,

- details of procedures enabling transporters to trace and record the movement of road vehicles under their responsibility and to contact the drivers at any time,

- contingency plans in the event of emergencies,

- all new vehicles used for the transport of farmed animals or horses (except registered horses) have a satellite navigation system. This requirement will apply to all vehicles (old and new) used for the transport of farmed animals or horses (except registered horses) from 2009 [27].

Training and competence certification for drivers of animal transport vehicles

- There are strict requirements laid down in the relevant regulation that drivers must first complete a training course before they can be tested to establish whether they are suitable to transport animals. It is not possible to test whether a person is a suitable driver to transport animals before they are sent on the training course. There are no requirements for two-stage training or for drivers to gain experience before they start to drive large, multi-decker trailers.

- By the Article 6 (5) and Article 17 of Council Regulation (EC) No 1/2005 on the protection of animals during transport it is mandatory for persons driving a road vehicle transporting animals to hold a certificate of competence. Based on this regulation, training is a prerequisite for an-

yone who want to provide the transport of animals. This certificate of competence confirms that the road drivers and attendants have completed a training on the technical and administrative aspects of this regulation, caring for the animals during transport and the impact of driving behaviour on the animals. But this training is not including the road safety aspects when driving certain vehicles. Therefor the attendants must undergo an additional separate training required by the directive on the training of professional drivers [10].

If the drivers want to transport animals, they must get an 'animal transportation certificate of competence' to be able to transport pigs, horses, cattle, goats, sheep, or poultry: for commercial reasons or journeys of 65 km and over.

There are many ways how to obtain the certificates (online courses, seminars, workshops, …). There are also different certification levels, based on the animal's species and type of transport (pet taxi, animal ambulance drivers, long distances drivers, …). But they all must to fulfil EU regulations requirements.

Plan of transportation

Transportation is a multicomponent phenomenon starting with the entrance of animals into the vehicle through its gate and ending with their unloading at the slaughter plant. It consists of the effects of multiple factors, such as vehicle design, handling at loading and unloading, among others, which have a great impact on the welfare [17].

It is the responsibility of the transporter to assemble a transport plan for the animal relocation if they transport animals intended for exchange or export to third countries or if the estimated duration of the transport will exceed eight hours. The carrier must have it attached throughout the journey to the health certificate. The transport plan must further determine all resting places and transfer points. Good planning of transportation can eliminate its negative effects on the animals. It is also very important to take into the account the weather.

The regulatory timeline is basically the chronological order and timeframe in which the travel prerequisites need to be completed. Timing may be critical. All needed appointments must be met and kept ensuring that the animals have the best quality circumstances for travel [1].

Some countries require that certain steps related to identification, vaccinations, tests, and treatments be done in a precise order and within a given timeline.

Requirements must be followed or else the animal(s) may not be allowed entry into the destination location or may be quarantined (possibly for an extended period of time) upon arrival.

The following steps are advised

- Schedule an appointment with veterinarian for animal's exam: Most states, territories, and countries require certificates of veterinary inspection to be completed by accredited veterinarians.

- Sharing information with veterinarian: The destination authorities (consulate or embassy of the country, state, or territory animal health department, etc.)

- Do not ask veterinarian to do anything illegal: Such actions would jeopardize a veterinarian's licenses, accreditation, and career, and may also result in prosecution by state or federal government.

- Arrangements for animal care in transit and at arrival.

- Keep a copy of veterinary inspection (certification) and all supporting documents [1].

Mandatory documents for transportation

Animal Welfare is a priority for the European Union. The EU first introduced legislation on animal protection during transport more than 40 years ago. The current legislation (the Transport Regulation) defines the responsibilities of the various parties in the transport chain and regulates the transport of live vertebrate animals within the EU, including checks on animals when entering or leaving the EU [15].

Each animal transported to the slaughterhouse must have a „passport". Accompanying document: a passport with the exact registered document number. Where is recorded the date of transportation, date of execution, date of birth of the animal, number of the animal, name and address of the animal owner, colour, sex, and origin of the animal. In addition to this passport, they also record all veterinary procedures. In addition to this passport, a document on the relocation of individual species must also be issued, for each species separately, where it is recorded from where and where the animal is relocated.

Other mandatory documents are health certification for live animals transported to slaughterhouses within the EU, all the modules are included in Commission Implementing Regulation (EU) 2020/2235 [25].

Centralised data

Each year, millions of live animals are transported by road, sea, rail, and air within, and to and from, the European Union, for a number of reasons, such as slaughter, fattening or breeding (Fig 2). To protect their welfare during those journeys, the EU adopted Council Regulation (EC) No. 1/2005 on the protection of animals during transport. An evaluation of the regulation showed that, when correctly implemented and enforced, it had a positive impact on animal welfare. However, in some area's weaknesses persist, largely due to insufficient implementation. On June 19th, 2020, the European Parliament set up the Committee of Inquiry on the Protection of Animals during Transport (ANIT). The work of the committee focused on investigating how EU rules laid down in Regulation 1/2005 are being implemented by Member States and enforced by the European Commission [35].

There exist national databases created for animal identification, farm registration and disease control:

Central registration of farm animals – it fulfills the tasks of the state in the field of registration of farms and animals of cattle, pigs, sheep and goats. It issues animal passports (currently for cattle) in accordance with Government Regulation No. 305/2003 Coll. and relevant legislation aimed at marking, registration and keeping of the Central Register of cattle, pigs, sheep and goats in connection with relevant EU regulations. Creates an electronic database of animal movements with a link to the IACS (the Integrated Administration and Control System) [26].

EU has two databases which provide the information on animal transport:

1. COMEXT – It is Eurostat's reference database for detailed statistics on international trade in goods [16].

2. TRACES – (Trade Control Expert System) is the European Commission's online platform for sanitary and phytosanitary certification required for the importation of animals, animal products, food and feed of non-animal origin and plants into the European Union, and the intra-EU trade and EU exports of animals and certain animal products [14].

It is important to mention IMSOC (Information Management System for Official Controls) which is a part of TRACES database. It implements electronically most of the provisions of the new OCR (Official Controls Regulation (EU) 2017/625). Based on that there is exchanging between Member States & Commission of all data-documents needed to perform Official Controls (Certification and eCertification). It also implements Administrative Assistance and Cooperation and unify the systems in relation to risk to human health, plant health, animal health and welfare. IMSOC provide tools to collect and manage the reports on official controls provided by Member States to the Commission. It gives us the opportunity to streamline communication to/from non-EU Countries and international organisations [24]. The rules for the operation of IMSOC are established in Regulation Implementing of Commission (EU) 2019/1715 [12].

Even if we have those databases there are no comprehensive centralised data on EU level. The main reason for this is that the EU legislation does not require member states to collect and report data on the transport of live animals. The Transport Regulation only requires member states to report on the inspections carried out. In the context of preventing transmissible animal diseases, the Animal health law requires member states to record animal movements in national identification and registration databases. These national databases were created for the purpose of animal identification, farm registration, and disease control. The Commission's view is that these databases are not appropriate for the extraction and analysis of data on animal transport [15].

TRANSPORT OF LIVESTOCK

Transport of livestock is undoubtedly the most stressful and injurious stage in the chain of operations between farm and slaughterhouse and contributes significantly to poor animal welfare and loss of production. When the rules are not followed, the effects of transportation and movement might include stress, bruises, trampling, suffocation, heart failure, heat stroke, sunburn, bloat, poisoning, predation, thirst, tiredness, injuries, and fights [9].

Livestock animals are homeothermic, it means that they must maintain a constant body temperature. A drop in temperature of 7 °C to 8 °C is undesirable, but animals are able to fully recover from this state under suitable conditions. If the body temperature of the animals increases, they enter a state of hyperthermia. An increase in temperature of only 5 °C is fatal in many cases. Animals constantly produce heat as a result of metabolism. However, they also must get rid of it in order to maintain a constant body

temperature. The combination of high temperature and high humidity can cause severe heat stress to animals in the vehicle. Since animals are constantly producing heat, the risk of heat stress is much greater than the risk of cold stress, especially when the vehicle is fully loaded. The risk of cold stress increases in cold weather and in a cold environment, with a sparsely loaded vehicle, and very young or shaved animals are more susceptible. Heat stress can be reduced by ventilation, reducing load density, traveling in the cooler part of the day. Animals must be checked regularly.

Water, feeding, and resting are the basis of animal well-being. The requirements depend on the species, previous feeding and consumption and the length of the planned trip. Animals should have access to fresh and clean water.

It is very important carefully place livestock into the vehicle. If animals are placed too tightly, there is a high risk of being trampled or suffocated. If they have too much free space around them, any sudden change in movement can cause a fall and injury [37].

Segregation during transport

It is preferable that the following classes of livestock be segregated and transported in separate groups: horned cattle, hornless cattle, adult bulls, cattle greatly different in size (cows and calves may preferably be transported together under some circumstances), and weak cattle, which should be segregated from strong cattle [18].

Preparing livestock for slaughter

Enhancing the conditions for livestock headed for slaughter has many benefits. Productivity, animal welfare, and employee safety will all increase as a result [5].

At the time of slaughter, animals should be healthy and physiologically normal. Slaughter animals should be adequately rested. They should be rested, preferably overnight, particularly if they have travelled for some time over long distances. However, pigs and poultry are usually slaughtered on arrival as the time and distances travelled are relatively short and holding them in pens is stressful for them. Animals should be watered during holding and can be fed if required. The holding period allows for injured and victimized animals to be identified and for sick animals to be quarantined. Millions of animals are transported every day around the world. Most animals farmed for human consumption are transported at least once, if not many more times, during their lifetime. It is important that these journeys are kept as stress- and injury-free as possible. Animals should be slaughtered as close to the point of production as possible. Transport should be minimized by traveling directly from the farm to the slaughterhouse [21].

Each slaughterhouse must have appropriate equipment and facilities for unloading animals from vehicles. Animals must be unloaded as soon as possible after arrival; if delay cannot be avoided, they must be protected against inclement weather and provided with sufficient air exchange. All the conditions and requirements for animal transport and housing in a slaughterhouse are included in Requirements for the protection of animals at the time of their slaughter 315/2003 [38].

Other important advice to carriers

- First, it is general welfare. Animals must always have the priority over merchandise.

- Animals of different species should not be housed in the same container, but there are exceptions to this. Compatibility depends on several factors, such as sex, state of maturity, physical size and the nature of the animals concerned.

- To avoid cross-infection, and for health and hygiene reasons, human contact with animals should be avoided. Animals, therefore, should not be housed near foodstuffs or in places to which unauthorized persons have access.

- No animal should be transported with radioactive material or other substances dangerous to health.

- Containers should be secured to the aircraft, rail wagon, lorry or ship to avoid any possible movement and, when being handled, it is important that every care should be taken to ensure that the containers are kept in a horizontal position.

- Advance preparation should be made for any necessary quarantine measures or other animal health regulations at the ports of intermediate stops or final destination [7].

During the pandemic situation of COVID–19, we were facing many issues and obstacles for the animal transport as well as the transfer of food and products made from raw materials and all related products. There was a significant risk of disease spread due to significant problems caused by transport delays that could last several hours. To prevent this emergency, the State Veterinary and Food Administration of the Slovak Republic has strongly rec-

ommended marking all the vehicles in visible places that had been used for those purposes

TRANSPORTING DURING THE GLOBAL PANDEMIC

To prevent the spread of COVID-19, the European Union has allowed countries in Europe to carry out health checks of people in all vehicles that cross borders on entry and exit to ensure prevention of the spread of the virus and provide medical assistance to those who may be ill. However, despite these checks, the EU has also stated that "the free movement of goods must also be guaranteed, and this is particularly important for essential goods such as food, including livestock" [3].

There are many agencies and organizations that are cooperating with the EU and its parts to control, report, and make suggestions for improving the conditions of animal welfare during animal transport, as follows:

FOUR PAWS – is the global animal welfare organisation for animals under direct human influence, which reveals suffering, rescues animals in need and protects them [22].

WOAH – World Organisation for Animal Health – provides technical support to Member Countries requesting assistance with animal disease control and eradication operations, including diseases transmissible to humans [23].

ECA – Court of Auditors – audits the accounts and oversees the implementation of the budgets of the institutions of the European Union [6].

Eurogroup for animals, Eurogroup for farming – As the pan-European animal protection organisation, the primary focus of Eurogroup for Animals is to work in the interest of animals towards a society in which they are valued and respected as sentient beings. Thanks to a united network, we protect animals by achieving better legislation, highest standards, enforcement and by driving societal change [13].

Council of Europe – It is the continent's leading human rights organisation. It includes 46 member states, 27 of which are members of the European Union [34].

HATS – Handling of animals at transport and slaughter: It is internationally recognized as one of the most forefront research centres in the area of animal welfare in connection with handling at transport and slaughter. They carry out research on Animal transport logistics; Herding and driving techniques; Overnight lairage; Stunning and stun quality; and Slaughterhouse work environment. Main focus is on farm animals. Members of the group serve as experts for the European Food Safety Authority (EFSA), national and international authorities, the industry and NGOs (non-governmental organisations). They have published many articles, books, chapters and held congress presentations. HATS also coordinates or participates in research projects [29].

CONCLUSIONS

The basic idea of all companies is to increase productivity and reduce costs with the goal of achieving the highest possible profits. The treatment of animals prior to slaughter has a significant impact on both the quality of the meat and its processing. Because of this, it is crucial to cut down on distance travelled and to do everything in your power to avoid having items in poor condition while being transported. Despite the greater distance, farmers choose to purchase their meat from cheaper slaughterhouses in order to profit.

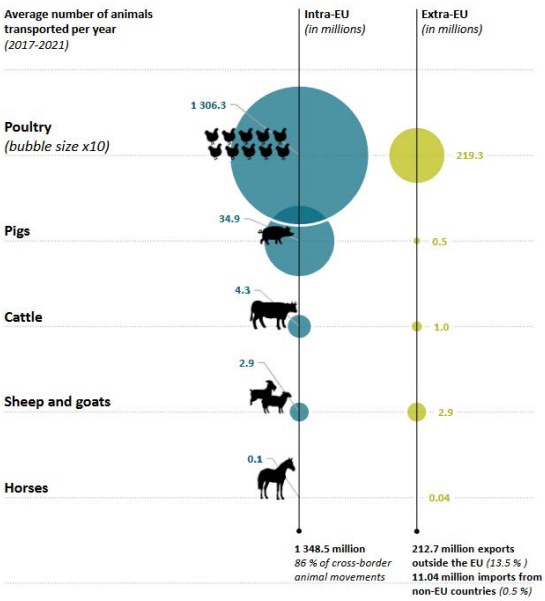


Fig. 2. Composition of live animal transport between member states and to or from non-EU countries in 2017–2021 (Data on domestic transport are not included in Comext) [2]
Source: ECA team, 2023.

REFERENCES

1. **American Veterinary Medical Association, 2023***: Transporting animals: Basic requirements and considerations.* Available at https://www.avma.org/resources-tools/pet-owners/petcare/cvi/transporting-animals-basic-requirements-and-considerations. Accessed May 28, 2023.
2. **Agyemang, M. O., Graziuso, E., Kalogirou, S., Lanzutti, M., Lindström, E., Maksinen, K., et al., ECA team, European Court of Auditors, European Union, 2023:** *Transport of Live Animals in the EU: Challenges and Opportunities*, Review 03, Vol. 01, QJ-07-23-137-EN-N, 978-92-847-9858-2, 10.2865/211704. Available at https://www.eca.europa.eu/Lists/ECADocuments/RV-2023-03/RV-2023-03_EN.pdf. Accessed July10, 2023.
3. **Animal equality**, **Animal Transport in Europe Continues Despite Welfare and COVID-19 Concerns, 2020:** *Animals being transported to Slaughter have been forced to languish in tucks all day while waiting to cross borders in Europe.* March 2020, updated, March 2023, Available at https://animalequality.org/blog/2020/03/25/covid-19-europe-animal-transport/. Accessed July 10, 2023.
4. **Business Companion**, **Quick Guides Animals and Agriculture, 2023**: *Welfare of Animals During Transport.* Available at https://www.businesscompanion.info/en/quick-guides/animals-and-agriculture/welfare-of-animals-during-transport. Accessed July 10, 2023.
5. **CESMAD SLOVAKIA**, **2020:** *Marking of Vehicles when Transporting Food* (In Slovak). Updated April 6, 2020. Available at https://www.cesmad.sk/informacie-podla-krajiny/28-slovensko/p/2985-oznacovanie-vozidiel-pri-preprave-potravin. Accessed February 20, 2023.
6. **Citizens Information**, **EU Institutions, Court of Auditors, 2022:** *Introduction.* Available at https://www.citizensinformation.ie/en/government-in-ireland/european-government/eu-institutions/court-of-auditors/. Accessed May 22, 2023.
7. **Convention on International Trade in Endangered Species of Wild Fauna and Flora:** *Transport Guidelines - ADVICE TO CARRIERS.* Available at https://cites.org/eng/resources/transport/advice.shtml. Accessed May 22, 2023.
8. **Council Regulation (EC) No. 1/2005 of 22 December 2004 on the protection of animals during transport and related operations and amending Directives 64/432/EEC and 93/119/EC and Regulation (EC) No 1255/97, 2005:** *OJ L* 3, 1–44. Available at: https://eur-lex.europa.eu/legal-content/SK/LSU/?uri=celex:32005R0001. Accessed May 22, 2023.
9. **Chambers, P. G., Grandin, T., Heinz, G., Srisuvan, T., 2001:** *Guidelines for Humane Handling, Transport and Slaughter of Livestock.* Food and Agriculture Organization of the United Nations Regional Office for Asia and the Pacific. Available at https://www.fao.org/3/x6909e/x6909e.pdf. Accessed August 11, 2022.
10. **EU Dog and Cat Alliance, 2020:** There's currently little EU legislation to protect dogs and cats, *Q: Peter Lundgren (ECR, SE) - Training and competence certification for drivers of animal transport vehicles*, Available at https://www.dogandcatwelfare.eu/eu-legislation/written-questions/q-mep-peter-lundgren-ecr-se-training-and-competenc/. Accessed May 20, 2023.
11. **Euractiv, Commission, 2007:** *Transport of Animals only with GPS.* Draft rules (In Slovak). Available at http://www.euractiv.sk/zdravotnictvo/clanok/komisiapreprava-zvierat-s-gps, updated January 5, 2007. Accessed March 13, 2023.
12. **EUR-Lex Access to European Union law, 2019:** *Implementing of Commission Regulation (EU) 2019/1715 of 30 September 2019 Laying Down the Rules for the Operation of the Information Management System for Official Controls and its Components (IMSOC Regulation)* (In Slovak). Available at https://eur-lex.europa.eu/legal-content/SK/TXT/?uri=CELEX%3A32019R1715. Accessed July 9, 2023.
13. **Eurogroup for Animals, 2023:** *Who we are.* Available at https://www.eurogroupforanimals.org/who-we-are. Accessed May 23, 2023.
14. **European Commission:** *Animal.* TRACES, Available at https://food.ec.europa.eu/animals/traces_en. Accessed May 20, 2023.
15. **European Court of Auditors, Curia Rationum, European Union, 2023:** *Transport of Live Animals in the EU: Challenges and Opportunities*, Review 0: 3, EN PDF, PDF/Volume_01/QJ-07-23-137-EN-N/978-92-847-9858-2/10.2865/211704, Available at https://www.eca.europa.eu/Lists/ECADocuments/RV-2023-03/RV-2023-03_EN.pdf. Accessed May 22, 2023.
16. **European Union:** Eurostat, *Focus on Comext.* Available at https://ec.europa.eu/eurostat/web/international-trade-in-goods/data/focus-on-comext. Accessed May 20, 2023.
17. **Faucitano, L., 2018:** Preslaughter handling practices and their effects on animal welfare and pork quality. *J. Anim. Sci.*, 96, 2, 728–729. DOI: 10.1093/jas/skx064.
18. **Food and Agriculture Organization of the United Nations, 2004:** Good practise for the meat industry, Section 5: Transport of slaughter animals. *FAO Animal Production and Health Manual,* 2*,* 1–16.

19. **FOUR PAWS International, 2023:** Available at https://www.four-paws.org/. Accessed May 22, 2023.
20. **Håkansson, N., Flisberg, P., Algers, B., Jonsson, A., 2016:** Improvement of animal welfare by strategic analysis and logistic optimisation of animal slaughter transportation. *Animal Welfare*, 25, 255–233. DOI: 10.7120/09627286.25.2.255.
21. **Humane Slaughter Association:** *Welfare During Transport*. Available at https://www.hsa.org.uk/welfare-during-transport/welfare-during-transport. Accessed February 19, 2023.
22. **Humane Slaughter Association and Council of Justice to Animals, 2012:** *The Way Forward, Protection of Animals During Transit*. Available at https://www.hsa.org.uk.
23. **Inicio, 2023:** *Who we are: Mission.* Available at https://www.woah.org/en/who-we-are/mission/. Accessed May 22, 2023.
24. **Klein, H., 2019:** *Information Management System for Official Controls IMSOC.* RASFF-AAC special working group, Brussels, 22 pp. Available at https://food.ec.europa.eu/system/files/2019-10/comm_oc_20191003_pres3.pdf. Accessed July 9, 2023.
25. **Legislation.gov.uk.,2020:** *Commission Implementing Regulation (EU) 2020/2235.* Available at https://www.legislation.gov.uk/eur/2020/2235. Accessed July 11, 2023.
26. **Mackovýchová, A., Dianová, M., Vidličková, E., 2023:** *Annual Report 2022* (In Slovak). Breeding services of the Slovak Republic, Available at https://www.pssr.sk/wp-content/uploads/vyrocnasprava/PSSR_vyrocna_sprava_2022.pdf. Accessed July 11, 2023.
27. **Scottish Government, Riaghaltas na h-Alba, Publication, 2016:** *Advice and Guidance, Commercial Animal Transport. Guidance: Guidance on the Welfare of Commercial Animals in Transport.* Available at https://www.gov.scot/publications/commercial-animal-transport-guidance/pages/main-requirements/#page-top. Accessed May 20, 2023.
28. **SLOV-LEX, legal and informational portal, 2023:** *Regulation of the Government of the Slovak Republic from July 9th, 2003, Establishing Details on the Protection for Animals During the Transport* (In Slovak). Available at https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2003/302/vyhlasene_znenie.html. Accessed February 19, 2023.
29. **SLU, Swedish University of Agricultural Sciences, 2022:** *Handling of Animals at Transport and Slaughter.* Available at https://www.slu.se/en/departments/animal-environment-health/research/research-project/hats/. Accessed May 28, 2023.
30. **State Veterinary and Food Administration of the Slovak Republic, 2021:** *Approval of Road Vehicles for the Animal Transport, Issuance of Certificates of Competence of Drivers and Guides and Authorization of Animal Transporters.* Last update June 6, 2021. Available at https://www.svps.sk/zakladne_info/mp1_2007_aw.asp. Accessed May 28, 2023.
31. **TASR, WNSITA, DROM, 2007:** *Transport of Animals with GPS* (In Slovak). Available at http://dromedar.zoznam.sk/cl/11163/136790/Preprava-zvierat-uz-len-s-GPS--2-. Accessed March 13, 2023.
32. **Terlouw, E. M. C., Veissier, I., 2022:** Animal welfare during transport and slaughter: an issue that remains to be solved. *Anim. Front.*, 12, 1, 3–5. DOI: 10.1093/af/vfac004.
33. **The European Union law 1/2005 (EC 1/2005):** *Official Journal of the European Union, Council Regulation (EC) No. 1/2005, from December 22, 2004, on the Protection of Animals During Transport and Activities Related to it and on Amendments and Additions to the Directives 64/432/EEC and 93/119/EC and Regulation (EC) No. 1255/97, 44.* Available at https://www.svps.sk/dokumenty/legislativa/nk_0001_2005.pdf, Accessed February 20, 2023.
34. **The Council of Europe in brief, 2023:** *Who we are.* Available at https://www.coe.int/en/web/about-us, Accessed May 22, 2023.
35. **Think Tank, European Parliament, 2021:** *Protection of Animals During Transport: Data on Live Animal Transport.* Available at: https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI(2021)690708, Accessed May 25, 2023.
36. **Transportero**, **Freight transport, 2018:** *Transporting Animals Quickly, Cheaply and Safely* (In Slovak). Available at https://transportero.sk/2018/01/17/preprava-zvierat-rychlo-lacno-bezpecne/, Accessed April 4, 2023.
37. **Urbanik, B., 2012:** Protection of animals during transport (In Slovak), *Rolnické noviny,* Jan. 12. 2012. Available at https://rno.sk/ochrana-zvierat-pri-preprave/, Accessed May 22, 2023.
38. **Wolters Kluwer, ASPI, 2003:** *Requirements for the Protection of Animals at the Time of their Slaughter 315/2003* (In Slovak). Updated December 2012, Available at https://www.aspi.sk/products/lawText/1/56117/1/2/nariadenie-c-315-2003-zz-ktorym-sa-ustanovuju-poziadavky-na-ochranu-zvierat-v-case-ich-zabijania-alebo-usmrcovania/nariadenie-c-315-2003-zz-ktorym-sa-ustanovuju-poziadavky-na-ochranu-zvierat-v-case-ich-zabijania-alebo-usmrcovania#c_1511, Accessed July 10, 2023.

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