



FRAMEWORK CONTRACT: EVALUATION IMPACT ASSESSMENT
AND RELATED SERVICES; LOT 3: FOOD CHAIN

Study on the impact of Regulation (EC) No 1/2005 on the protection of animals during transport

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DRAFT FINAL REPORT

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Abbreviations

IATA	International Air Transport Association
Art.	Article
AWI's	Animal Welfare Issues
BIP	Border Inspection Post
CA	Competent Authorities
CAP	Common Agriculture Policy
CP	Control Post
CRPA	Centro Ricerche Produzioni Animali
DG SANCO	Directorate General for Health and Consumer
DVD	Digital Versatile Disc
EAZA	European Association of Zoos and Aquaria
EC	Council Regulation
EEA	European Economic Community
EFSA	European Food Safety Authority
ESA	European Space Agency
EU	European Union
FVO	Food and Veterinary Office
GLONASS	Russian navigation satellite system
GPS	Global Positioning System
GNSS	Global Navigation Satellite System
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications
h.	hour
IATA	International Air Transport Association
Inc.	Incorporation



ITS	Intelligent Transportation System
JRC	Joint Research Centre
Kg.	Kilogram
km.	Kilometre
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LORAN	Long Range Navigation
LTD	Limited Company
MS	Member State
n.	Number
n.a.	Not Applicable
NGO	Non-Governmental Organization
PC	Personal Computer
Pl.	Planned
Re	Realised
Reg.	Regulation
SIM	Subscriber Identity Module
SMS sender	Short Message Service
TRACES	Trade Control and Expert System
UECBV	European Livestock and Meat trading union
WP	Work Package



Geographical name	Official name in English (protocol name)	Country code ²
Belgium	Kingdom of Belgium	BE
Bulgaria	Republic of Bulgaria	BG
Czech Republic	Czech Republic	CZ
Denmark	Kingdom of Denmark	DK
Germany	Federal Republic of Germany	DE
Estonia	Republic of Estonia	EE
Ireland	Ireland	IE
Greece	Hellenic Republic	EL
Spain	Kingdom of Spain	ES
France	French Republic	FR
Italy	Italian Republic	IT
Cyprus	Republic of Cyprus	CY
Latvia	Republic of Latvia	LV
Lithuania	Republic of Lithuania	LT
Luxembourg	Grand Duchy of Luxembourg	LU
Hungary	Republic of Hungary	HU
Malta	Republic of Malta	MT
Netherlands	Kingdom of the Netherlands	NL
Austria	Republic of Austria	AT
Poland	Republic of Poland	PL
Portugal	Portuguese Republic	PT
Romania	Romania	RO
Slovenia	Republic of Slovenia	SI
Slovakia	Slovak Republic	SK
Finland	Republic of Finland	FI
Sweden	Kingdom of Sweden	SE
United Kingdom	United Kingdom of Great Britain and Northern Ireland	UK



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Definitions

International trade: Trade between EU-27 and third countries. Also the terms import and export refer to situations of trade between one of the EU Member States and a third country.

Intra-EU trade: Trade between countries within the EU-27. Regulation (EC) 1/2005 refers to term intra-community trade. However the Community no longer exists, instead, the term “intra-community trade” has now been replaced by the term “Intra-EU trade”.

Long distance transport: Transport of live animals of duration of more than 8 hours including the time needed for loading and unloading.



Executive Summary

1. Introduction and objective

The transport and handling of live animals is a crucial step in the animal production process, involving many different operators (farmers, traders, slaughterhouses, control posts and transport companies), potentially affecting the environment, animal health, animal welfare and the spread of animal disease. Since the 1st of January 2007, live animal transport has been governed by Regulation (EC) 1/2005. This Regulation aims to provide a level playing field for operators while ensuring sufficient protection for the animals being transported.

This executive summary presents the findings of an evaluation of Regulation (EC) 1/2005. The objective of the evaluation was to provide a detailed assessment of the implementation of the Regulation (EC) and its impact on the animals being transported and on operators, with special reference to trade flows, navigation systems and the socio-economic and regional implications. The findings are based on literature studies, in-depth studies, data analyses and a questionnaire among stakeholders. More detailed information about the background, methodology and scope can be found at the end of the executive summary.

2. Results and conclusions

The key results and conclusions are as follows:

- The Regulation has led to a slight improvement in animal welfare. The incidence of distressed animals has somewhat fallen, with the biggest improvement observed in long-distance transport. The Regulation has consequently led to an increase in the number of navigation systems being installed. However, about 25% of transport companies still do not have a navigation system. Even when installed, the system is rarely utilised by the transport company, nor is it used to its full extent by the competent authorities to check compliance.
- The Regulation has increased costs for transport companies. In particular, they have incurred higher administrative costs since they have had to invest in modifications to their vehicles. These costs have not been passed on in the market prices for live animal transport; the market prices have remained constant or have fallen.



- The Regulation has had no impact on trade flows of live animals. Volumes of international trade increased steadily during the period 2005-2009.
- The Regulation has had no impact on regional development in remote areas. However, long-term effects cannot be excluded.
- There are huge differences between Member States in the progress they have made in implementing the Regulation and in how they are implementing it. In particular, there are differences in the degree of enforcement and on the penalties for infringements.
- The differences between Member States undermine the level playing field for operators, especially for transport companies.
- The differences between Member States in enforcement can have an adverse effect on animal welfare if journeys are extended to avoid more stringent Member States.

More detailed information follows on the results and conclusions for the eight key issues: animal welfare, navigation systems, trade flows, socio-economic aspects, administrative aspects, regional aspects, legal aspects and enforcement, and guides to good practice.

2.1 Animal welfare

One of the aims of Regulation (EC) 1/2005 was to improve animal welfare. To investigate this, a total of 15 indicators were defined. They were evaluated using information from the questionnaires.

The main finding has shown that Regulation (EC) 1/2005 has led to some improvement in animal welfare. More specifically, there were slight improvements after the introduction of Regulation (EC) 1/2005 in:

- the incidence of animals dead on arrival and animals unfit for transport;
- the incidence of lameness, severe injuries, bruises, dehydration and exhaustion;
- the incidence of poor animal welfare.

While the overall number of incidents of poor animal welfare reduced slightly after the implementation of Regulation (EC) 1/2005, there was a bigger fall for long journeys than for short journeys and this holds for all categories of animals.



With regard to the impact of the Regulation on transport quality:

- 80% of questionnaire respondents felt that the Regulation improved transport quality overall. Approximately 90% of the improvements are involved in long-distance and international transport.
- When asked to give a score, the respondents gave the change in quality of transport after the introduction of the Regulation around 3.5 out of 5 (where 1 means substantial decrease, 3 means no change and 5 substantial increase).

The number of installations of ventilation and watering systems in trucks increased continuously during the period 2005 to 2009. On the other hand, the installation of feeding systems fluctuated and no conclusions can be made regarding this. The extent of the improvement of facilities between 2005 and 2009 was given a score of about 4 out of 5 (a limited increase in facilities).

The number of transport companies, means of transport and drivers authorised by the national competent authorities increased between 2005 and 2009, with a large number being authorised in 2008.

There is no significant difference between breeding animals and animals destined for slaughter in their treatment during transport. This holds for all categories of animals.

As stated above, no significant improvement has been made in feeding facilities. The reason given was that most of the long-distance vehicles were already equipped with such facilities prior to the introduction of the Regulation.

Unfortunately, there is insufficient information from transport companies on transport documentation. The few responses received were diverse but most of the respondents said that the Regulation has not improved documentation by transport companies.

Training courses have been developed and implemented (according to 90 to 100% of responses) by Member States. The effect of these courses on the reduction of lameness, injuries and numbers dead on arrival, and on improving careful driving and animal handling was given an average score of 3.4 out of 5 (and up to 3.6 for careful handling of animals).



2.2 Navigation systems

Navigation systems facilitate the enforcement and supervision of the Regulation by the national competent authorities. The implementation of navigation systems was evaluated using 12 indicators.

More navigation systems have been installed as a result of Regulation (EC) 1/2005. The responses show that more than 40% of transport companies have now acquired a navigation system. Transport companies are more or less aware of the benefits of the system. However, the level of utilisation of the system is relatively low. About 60 to 70% of transport companies stated that the installation of a navigation system has not improved route planning or journey logs. Some companies do not generally use the system for route planning because the transporters are very familiar with the routes and instead use the system only when employing new drivers. As noted by some transport companies, another reason for not using a navigation system was its complexity.

The main findings are as follows:

- The responses show that more than 40% of the transport companies have acquired a navigation system.
- The percentage of vehicles equipped with a navigation system has increased from 2% (in 2005) to 77% (2009).
- 71% of the respondents did not feel there had been any improvement in journey logs.
- 61% of the respondents observed no improvement in route planning from installing and using navigation systems.
- 50% of the respondents thought that installation and use of navigation systems had improved the control mechanism for competent authorities.
- Most of the stakeholders (more than 60%) had not seen any improvement in communication from using navigation systems.



2.3 Trade flows of live animals

Regulation (EC)1/2005 might be expected to have a negative impact on live animal trade flows by increasing the costs of live animal transport relative to meat transport. Six indicators were defined to investigate these effects, and evaluated using information from databases.

The analysis showed that Regulation (EC) 1/2005 did not have an impact on the international trade flows of live animals in the 27 Member States. This statement is supported by the following facts:

- There was no break in the upward trend in the volume of international trade in live animals after the implementation of the Regulation in 2007.
- Both intra-community trade in meat and intra-community trade in live animals increased during this period.
- With the enlargement of the EU (with Bulgaria and Romania entering the Union), the outbreak of infectious diseases and changes in Member States' self-sufficiency in meat did not play a role in explaining the changing trade flows.
- The regional slaughter capacity in the EU is a key factor explaining the increase of international trade in live animals (e.g. the increase in slaughter capacity for pigs in Germany and increased transport of piglets and pigs from the Netherlands and Denmark coupled with decreased slaughter capacity in these two countries; increased flows of poultry between neighbouring countries like the Netherlands, Belgium, France, Germany and the Czech Republic). These changes are not related to the implementation of Regulation (EC) 1/2005 but are caused by differences in slaughter costs per animal and the policies of slaughterhouse companies.
- The breakdown of the main trade flows per animal category between EU Member States did not change but there was a general increase in volume for all categories.
- The indicator values show that there was no difference in the development of trade flows in the period 2005-2006 compared with 2007-2009.



2.4. Socio-economic aspects

The more stringent requirements imposed by Regulation (EC) 1/2005 on the transport of live animals should hypothetically increase costs. Three indicators were identified to evaluate the impact of the Regulation in this area.

The in-depth studies indicate that Regulation (EC) 1/2005 has led to an increase in transport costs. The main increase was due to mandatory modifications to the means of transport such as the characteristics of the roof, watering and feeding systems, artificial ventilation, satellite navigation systems, and measurement and monitoring systems for temperature control. The investment for these modifications has been estimated at around EUR 15,100. For horse transport, an additional investment is required for partitions, costing an estimated EUR 20,000. This increases the kilometre prices for vehicles transporting cattle, sheep and pigs by 2.2 euro cents, and by 5.5 euro cents per kilometre for vehicles transporting horses. In addition to this one-off investment, there is also an increase in variable costs due to additional administrative costs (see the section on administrative costs).

Despite the increased costs for transport companies, market prices for transport have remained constant (in the case of pigs transported from Denmark to Germany and sheep transported from Hungary to Italy) or have decreased (by 3.7% for cattle transported from France to Italy and by 8.7 % for horses transported from Poland to Italy). Prices have not risen because transport companies are still in competition with other European companies that are not complying with the Regulation.

Because of the variation of the amount of data from different stakeholders and countries, and sometimes insufficient data, it was not possible to perform statistical analysis. Rather, all results are based on mean values and tendencies. This holds for all data gathered by the questionnaire.



2.5 Regional implications

Six indicators were identified in order to evaluate the impact of Regulation (EC) 1/2005 on regional aspects.

There is no indication that Regulation (EC) 1/2005 affected the competitiveness of animal production in the remote areas of the 27 Member States. The following facts support this conclusion:

- In most of the remote areas, animal production was at the same level before and after the implementation of the Regulation. This is partly because quota systems (e.g. the milk quota) are based on historical production.
- Only one derogation (an option under Article 30 of the Regulation) has been reported. This was in Catalonia, which cannot be regarded as a remote area.
- Slaughterhouses are available in many of the remote areas.

However, this study was carried out too soon to get a picture of the long-term impacts of the Regulation. The competitiveness of the animal production systems in remote areas has not been investigated. If these production systems are suffering at present, it is possible that animal production and the number of head will decline in the coming years.

2.6 Administrative aspects

The Regulation might be expected to increase the administrative burden for transport companies because of the authorisation procedures and mandatory journey logs. Two indicators were identified to evaluate the impact of Regulation (EC) 1/2005 on administrative aspects.

The analyses showed that the introduction of the Regulation has indeed led to additional administrative costs. The administrative costs as a result of Regulation (EC) 1/2005 are mostly related to the time required to fill the journey log for each delivery, the subsequent submission to the competent authorities and the time spent on getting transporter authorisation and the certificate of approval for the means of transport by road. The estimated additional costs are summarised below:



- EUR 25 per journey for filling in the journey log and submission to the competent authorities.
- EUR 515 per vehicle for transporter authorisation.
- EUR 26 per vehicle for the certificate of approval.

It should be noted that these values were calculated using average wages within the 27 Member States. These additional costs will in practice vary between Member States given the huge variation in labour costs among Member States.

2.7 Legal aspects and enforcement

Eight indicators were identified for the legal aspects and enforcement.

The analyses have shown that not all Member States have implemented the Regulation in full. There are also large differences between Member States in how the Regulation has been implemented and enforced. This implies that the aim of a level playing field has not yet been achieved. There is also a potential adverse effect on animal welfare. On the other hand the Regulation has led to greater awareness of animal welfare among stakeholders.

The main findings regarding legal aspects and enforcement are as follows.

- Regulation (EC) 1/2005 is still not fully implemented in all Member States. Rules regarding the transport of pets and fish (Annex I, chapter V (2) of the Regulation) were not implemented in 2010 in four and seven respectively of the 16 Member States who responded to this question.
- New administrative measures such as the approval of vehicles, the certification of transport companies and drivers, and the introduction of journal logs in Regulation (EC) 1/2005 can in theory ensure a more systematic enforcement of the technical rules. However, given the first conclusion and far from optimum communication between different Member States, this is still not the case in practice.
- Differences in the manner and speed of implementation are undermining the level playing field for transport companies within the EU and the acceptance of the Regulation among transport companies (e.g. drivers in Denmark need a training course of five days every five years for the certificate while drivers in other Member States need only one training course of half a day).



- Differences between Member States are largely apparent regarding enforcement (the number of checks, the type of checks, the mandate of inspectors). This affects animal welfare if longer routes are chosen by transport companies due to stricter enforcement in some transit countries (e.g. Austria), which is as such a violation of Article 3(a) of the Regulation.
- More attention has been paid recently to the enforcement of journey log submissions (e.g. in Italy in 2009 about half of the infringements dealt with absent, irregular or incomplete journey logs).
- Journey times in journey logs are still not checked on a regular basis. The in-depth study of horses transported for between 20 and 24 hours according to the journey log showed that almost half of the journeys should have included a rest stop at a control post. This percentage increased from 2007 to 2009.
- Penalties differ between Member States for the same infringement (minimum fines ranging from EUR 75 in France to EUR 2,000 in Austria, and there are maximum penalties of 6 months' imprisonment in France and the UK). Only for Austria and the UK was some insight given into the judicial follow-up for the different categories of infringements. In both countries, between 77 and 83% of the infringements lead to an oral or written warning and 15 to 20% of the infringements result into a fine. Withdrawal of a certificate of approval is the exception rather than the rule, and the suspension of authorisation is relatively rare.
- Action plans (Article 27(2)) contain many training programmes, set-ups for checklists and guides. However, in many cases the action plan is not based on an analysis of the major deficiencies at present. Detailed analysis of the major deficiencies is lacking.
- Implementation of Regulation (EC) 1/2005 has contributed to greater awareness among inspectors, drivers and people handling animals during transport. Furthermore, the number of unfit animals being transported has decreased.



2.8 Guides to good practices

Guides to good practices have been developed in eight EU member states (the Netherlands, Italy, Ireland, the UK, Slovakia, France, Denmark and Romania). Most of these guides have been developed with the national government being heavily involved. Only in the Netherlands and Denmark were these guides initiated by production and transport system operators.

2.9 General remarks on data collection

Data was collected from the planned countries and stakeholders. However, it was quite difficult to collect sufficient data within the allotted time scale. The project team dedicated a significant amount of effort in getting answers from the national competent authorities. In the end we managed to get results from 18 of the 27 Member States after extending the response period by more than one month.

Given the fact that implementation and enforcement of Regulation (EC) 1/2005 varies among Member States and its implementation is still in progress, the impact of the Regulation may not become clear for a number of years, especially in the more remote areas of the Union.

2.10 Conclusions

The following conclusion can be drawn from this study:

- Implementation and enforcement of Regulation 1/2005 is still in progress in many MS (see reports of FVO and annual MS reports);
- Some progress has been achieved regarding animal welfare aspects by Regulation 1/2005. This opinion is shared by all stakeholders participating in this study. This holds in particular for the transportation of horses (partitioning) and animals unfit for transport (which is no longer permitted).
- A negative impact of the Regulation 1/2005 on animal welfare is that journeys, in some cases, are extended to take advantage of differences in enforcement and penalties between MS (see the example of Austria, box 6).
- Over all, there has been a slight improvement in animal welfare through Regulation 1/2005 as indicated from Scientists, farmers and welfare groups, while competent authorities consider that the regulation has not shown any positive indication on animal welfare;



- Navigation systems have become a mandatory feature for all vehicles transporting animals over 8 hours since the beginning of 2009. Whilst these systems have been installed, their utilization is relatively low even though are aware of the benefits of using such systems. The improvement of journey logs is low (journey logs in paper form are still the norm) and only half of the respondent Competent Authorities have seen improvements in control by using the information from these navigation system. This is still in progress. According to all stakeholders, communication between different stakeholders has improved only to a limited extent by the use of such navigation systems;
- There have not been any significant impacts in the trade flows of live animals due to Regulation 1/2005. TRACES data show that the historic trend of increasing international trade of live animals continued after the implementation of Regulation 1/2005;
- According to manufacturers of means of transport and transport companies, the investments and costs for transport companies increased by the implementation of Regulation 1/2005 due to the necessary adjustment of vehicles with insulated roofs, drinking devices, systems for heating drinking water, satellite navigation systems and artificial ventilation facilities. The costs for approval, training and administration increased the costs for transport companies. The market prices for transport of animals did not increase which means diminishing margins for transport companies which operate according the rules;
- Administration costs increased for National Competent Authorities and for transport companies after the implementation of Regulation 1/2005. For transport companies the estimated additional costs are 25 Euro per journey, 515 Euro for transporter authorization and 26 euro per certificate of approval for a vehicle. These costs are mainly labour costs and thus differ between Member States. No reliable information is available on the additional administrative costs for national competent authorities.
- There is no impact of Regulation 1/2005 on the competitiveness of animal production in the remote areas of the EU-27 in the period 2007-2009. As this is a short term study, long term impacts cannot be excluded;
- Regulation 1/2005 is not fully implemented in all MS in 2010 (see FVO reports);
- Regulation 1/2005 is implemented in different ways in different MS. This is harming the level playing field especially for transport companies;
- There is no uniform enforcement of the Regulation 1/2005 in the different MS (see annually MS-reports based on Article 27.2) ;



- Journey times in journey logs are not regularly checked according to a case study for horses in the period 2005-2009;
- Penalties differ between MS and are, according to the FVO mission in some countries, not dissuasive;
- Action plans of different MS show a huge variation and are often not based on the analysis of the main deficiencies detected (see annually MS-reports based on Article 27.2) ;
- According to some animal welfare organisations and national competent authorities Regulation 1/2005 has contributed to a better awareness of animal welfare aspects by different stakeholders involved in transport of live animals.



3. Recommendations

Two key recommendations are made based on this evaluation:

a. The implementation, enforcement and infringement penalties within the EU should be harmonised and communications between Member States should be improved.

Good practice guides should be encouraged, especially if initiated by operators in the live animal production and transport system. Compliance is likely to be greater if the initiative comes from the organisations themselves. The first recommendation is aimed at increasing the impact of Regulation (EC) 1/2005, especially on animal welfare during transport. It involves the following steps:

- Uniform definition and interpretation of all aspects of Regulation (EC) 1/2005 i.e. training, equipment, checks, infringement and action plans.
- A uniform method of enforcement within the EU Member States, including checks on journal logs and journey times.
- Improved communication between Member States (Article 26) and uniform reaction to notifications by other Member States.
- More harmonisation of penalties in the different Member States, with penalty levels that are an effective deterrent.

Harmonising implementation and enforcement of the Regulation and improving communication can expect to have the following results:

- There will be a level playing field for transport companies and control posts.
- There will be positive selection of organisations, especially transport companies and control posts, willing to operate according to the rules.
- Long-distance transport of live animals will become more expensive and trade flows may partly shift to the transport of meat.
- Animal welfare will increase.

b. The second recommendation is aimed at improving practice by operators. Guides to good practices should be supported because organisations in the animal production and transport system are more likely to



follow rules and standards set by themselves than rules imposed by national and international governments. In most cases compliance with these guides to good practice is checked by private parties. This can reduce the need for checks by competent authorities in the long run or make it easier to target more checks at companies not participating in certain certification schemes. This holds for all participants in the production system (farmers, transport companies, control posts and slaughterhouses). Incentives could be given to quality control systems and labels implemented by retailers for transported and slaughtered animals. The use of certified means of transport, certified control posts and certified slaughterhouses should be a minimum requirement for such quality systems.

4. Background and methodology

4.1 Background

Since 1991, the EU has provided a harmonised legal framework for animal transport. As part of that framework, the EU has adopted Regulation (EC) 1/2005 which came into effect on the 1st of January 2007. This Regulation aims to provide a level playing field for operators while ensuring sufficient protection for the animals being transported. Regulation (EC) 1/2005 amends Directives 64/432/EEC and 93/119/EC, and Regulation (EC) 1255/97.

Article 32 of Regulation (EC) 1/2005 states that before January 2011 “the Commission shall present a report to the European Parliament and to the Council on the impact of this Regulation on the welfare of animals being transported and on the trade flows of live animals within the enlarged Community. In particular, the report shall take into account scientific evidence on welfare needs of animals, and the report on the implementation of the navigation system, as referred to in Annex I, Chapter VI, paragraph 4.3, as well as the socio-economic implications of this Regulation, including regional aspects. [...]”.

This study was set up to collect and analyse data in preparation for the report referred to in Article 32. The evaluation was carried out in the period October 2010 through to March 2011 by a consortium headed by IBF.



4.2 Scope of the evaluation

The scope of the evaluation was subject to a number of restrictions. These concern the EU Member States studied, the categories of animals considered, the modes of transport considered and the method of analysis.

While all EU Member States were examined when considering intra-community trade and the export and import of live animals, the evaluation focused on ten EU Member States only (Germany, Denmark, Spain, France, Ireland, Italy, the Netherlands, Poland, Romania and the UK). These are countries with the largest volume of trade in farm animals; these ten countries trade at least 66% of all animals in intra-community trade.

The evaluation was restricted to the following categories of animals: horses, cattle, pigs, sheep, goats and poultry. Transport of pets and fish are not explicitly mentioned in the Regulation, however it does apply to the transport of all animals. This study therefore included an overview of the implementation of the Regulation by Member States for the transport of pets and fish.

Almost all animals within Europe are transported by truck. The evaluation of the Regulation therefore focused on this mode of transport. The use of livestock vessels (sea containers) was also assessed in those Member States where this mode of transport is common.

The analysis was limited to a comparison of animal welfare and other relevant factors prior to and following the implementation of Regulation (EC) 1/2005. More specifically, the period 2005-2006 was compared with the period 2007-2009.

4.3 Key issues

The key issues for the evaluation of Regulation (EC) 1/2005 were:

- 1) the impact of the components of the Regulation on the welfare of the animals being transported;
- 2) implementation of navigation systems;
- 3) trade flows of live animals within the EU;



- 4) socio-economic aspects;
- 5) administrative aspects;
- 6) regional aspects;
- 7) legal aspects and enforcement of the main elements of the Regulation by the different competent authorities;
- 8) guides to good practice.

The study assessed whether Regulation (EC) 1/2005 has been a determining factor driving change in the key issues listed above.

4.4 Methodology

Key issue indicators and sources for measuring these indicators were identified. In total, 55 indicators were defined for the eight key issues listed above. A questionnaire was then developed for the different stakeholders. The questionnaire was based on the analysis of indicators and other available sources such as the relevant literature, European Food Safety Authority (EFSA) studies, Joint Research Centre (JRC) studies, Food and Veterinary Office (FVO) inspection reports, Member State reports for 2007-2009 (as required under Article 27(2) of the Regulation) and databases such as TRACES and EUROSTAT.

Three methods were used for filling in the questionnaires: interviewing the stakeholder and having the researcher fill in the questionnaire; sending the questionnaire to the stakeholder, who then filled it in and returned it; letting the stakeholder download the questionnaire from the Internet (<http://www.ibf.be/animalstransport/>), fill it in and send it back to the project team.

The stakeholders considered for this study were farmers, slaughterhouses, trade and transport companies, control posts, national competent authorities, animal welfare groups and scientists working in the field of live animal transport. Two to four representatives from each group of stakeholders in the ten primary EU countries were asked to fill in the questionnaire. Only the national competent authorities were asked to complete the questionnaire in the 17 secondary Member States. In addition, a further 20 organisations operating at European level were asked to fill in the questionnaire.



The response was 179 completed questionnaires out of the 200 questionnaires sent. There was a relatively low response for the national competent authorities (only 8 from the 17 secondary Member States), the transport companies (25 out of the planned 47) and control posts (9 out of the planned 19). The highest number of responses was from farmers (72 responses, 20 responses planned). The low response rates among some stakeholders can be explained by the length of the questionnaire and the fact that the questions were difficult to answer. The response rate was increased through repeated contacts with the stakeholders (especially the national competent authorities) and by extending the deadline for returning the questionnaire (the deadline was moved from the beginning of January to 7 February 2011).

In addition to the questionnaire, five in-depth studies were executed in order to gain insight into a number of specific topics such as the type of navigation system used by transport companies, journey times for horses on long-distance transport, the transport costs of the main flows of live animals and transport by livestock vessel.



1 Introduction

1.1 Background

Transport and handling of live animals is a crucial link in the animal production chain with different operators (farmers, traders, slaughterhouses, control posts, transport companies) involved. Transport can affect the environment, animal health, animal welfare and the spread of animal diseases.

Since 1991, the EU has provided a harmonized legal framework on animal transport in order to provide a level playing field for operators while ensuring a sufficient level of protection to the transported animals. In 1995, legislation regarding the maximum transport time and minimum space allowance during transport was adopted. The Directive 95/29/EC introduced limits on travel times and maximum stocking densities for transporting animals within the EU as from 1997. Following an evaluation of this directive, the Commission requested the former Scientific Committee on Animal Health and Animal Welfare to provide an opinion on the welfare of animals during transport. This opinion was adopted in 2002, and the Commission used these scientific data to elaborate a proposal in 2001 that contained revised travel times and space allowances. On these aspects, the proposal tried to make compatible travel time limits required for animal transport with the EU social legislation applicable to drivers, and also defined driving and rest sequences. However, the Council finally adopted Regulation (EC) No 1/2005 which kept the requirements on travel times and space allowances for animals unaltered. The Regulation of 22 December 2004 on the protection of animals during transport and related operations is amending Directives 64/432/EEC and 93/119/EC and Regulation (EC) N° 1255/971 (hereinafter "the Regulation"). Nevertheless, the regulation introduced the obligation for vehicles transporting animals for more than eight hours to be equipped with a navigation system so as to have a better system for checking carriers on travel times. From the animal health point of view, it should be mentioned that several outbreaks of animal epidemics in past decade have been attributed to the transport of animals as one of the determinants in the spread of animal diseases. In particular, data has demonstrated that some outbreaks of foot and mouth disease were linked to the use of a "staging point". As a consequence, the Commission introduced amendments to reinforce animal health requirements for the use of staging points.

The current situation is still strongly criticised by organisations of animal protection that carry out regular surveys on animal transport. In addition to the fact that there is a significant gap between scientific recom-



mendations and current standards, they consider that many transporters regularly neglect EU standards on travel times and space allowances. As a consequence, they advocate for a maximum travel time limit of eight hours for any animal transported for slaughter. To allow this debate to continue based on facts rather than assumptions, it is essential to investigate the impact of EC 1/2005 in an objective and scientific manner.

Article 32 of Regulation (EC) 1/2005 foresees that, before January 2011, “the commission shall present a report to the European Parliament and the Council on the impact of this Regulation on the welfare of animals being transported and on the trade flows of live animals within the enlarged Community. In particular, the report shall take into account scientific evidence on welfare needs of animals, and the report on the implementation of the navigation system as well as the socio-economic implications of this Regulation including regional aspects. [...]”.

1.2 Objective

The objective of this project is to collect and analyse some¹ of the data needed to compile the report mentioned in Article 32 of Regulation (EC) 1/2005.

It is intended to provide a detailed assessment on the implementation of the regulation on transported animals and operators, with special reference to trade flows, navigation systems and the socio-economic and regional implications.

1.3 Scope of the evaluation

The scope of the evaluation is limited in several ways: EU Member States, species, means of transport and the type of analysis.

For this evaluation, all EU Member States are taken into account including transport from the EU to third countries (export of live animals) and transport to the EU from third countries (import of live animals). How-

¹ The commission has asked EFSA to provide the commission with the scientific data. The comparison of the current EU provisions with the latest scientific data is therefore not part of the present study



ever, the evaluation will focus on 10 EU countries that have a large proportion of trade in farmed animals (see table 1.1). Of all intra community trade of animals, these ten countries trade at least 66% of all animals. For pigs entering an EU MS this percentage is more than 93% in 2005 and 2009. These ten Member States are: Denmark, France, Germany, Ireland, Italy, The Netherlands, Poland, Romania, Spain and the UK. Besides these ten countries also Austria will be taken into account as a main transit Member State within the EU-27.

Table 1.1 Percentage of animals per species entering or leaving one of the 10 main EU Member States ¹ in 2005 and 2009 (as % of total intra- community trade in live animals).

Species	Animals entering a country ²		Animals leaving a country ³	
	2005	2009	2005	2009
Horses	89	74	75	73
Cattle	91	85	81	74
Pigs	73	77	94	93
Sheep (goats)	87 (90)	71 (67)	67 (90)	80 (88)
Poultry	71	66	78	70

¹10 main countries are: DE, DK, ES,FR, IR, IT, NL, PL, RO, UK.

²summation over the ten countries of number of animals entering a MS divided by the total amount of animals entering an EU MS.

³ summation over the ten countries of number of animals leaving a MS divided by the total amount of animals leaving an EU MS.

The evaluation shall be restricted to the following species: horses, cattle, pigs, sheep & goats and poultry. Transport of pets and fish are not explicitly mentioned in the Regulation, however the regulation does also apply to transport of other animals. Within this study, an inventory will be made about how Member States have implemented the Regulation in relation to the transport of pets and fish.

Almost all animals within Europe are transported by trucks. The evaluation of the Regulation will therefore focus on this mode of transport. Only for those Member States where transport by livestock marine vessel is



common, this form of transport will also be taken into account. This is indeed the case for flows of transport between Ireland and France (cattle and sheep) and between Italy and Greece (sheep).

The type of analysis will be limited by comparing the impact on animal welfare during the period before and after introduction of Regulation (EC) 1/2005. More specifically, the period 2005-2006 will be compared with the period 2007-2009.

1.4 Key Issues

The key issues of the evaluation of Regulation (EC) 1/2005:

- Measuring the impact of the components of the Regulation on welfare of animals being transported, trade flows of live animals within the EU, socio-economic aspects, administrative and legal aspects and regional aspects;
- Implementation of navigation systems;
- Enforcement of the main elements of the regulation by different competent authorities;
- Guides to good practices.

The study will analyse and determine if Regulation (EC) No 1/2005 has been a determining factor in changing the situation and in which direction.



2 Methodology

2.1 Introduction

The aim of this study is to assess ex-post the impact of Regulation (EC) 1/2005. This assessment is based on the guidelines in EC's impact assessment guidelines and their annexes (SEC (2009) 92). The core of this study is to analyse if Regulation (EC) 1/2005 has been a determining factor in changing the situation and in which direction.

The study has three phases:

- Preparatory phase;
- Data and information gathering phase;
- Analysis of the data and reporting the results.

During the preparatory phase the methodology was developed. During this phase per key issue in the Terms of References (see section 1.4), indicators were identified. Per indicator data sources were identified to value the indicator (see section 2.2). Based on this analysis a questionnaire per stakeholder group was developed and other data sources were identified (see section 2.4). Also stakeholders per Member State were selected (see section 2.5). Besides these general analyses, additionally five case studies were executed to deepen the insights in some aspects (see section 2.3).

During the data and information gathering phase, questionnaires were sent to the different stakeholders (see section 2.5 for the stakeholder lists per Member State). Questionnaires were filled in three different ways: by interviewing the stakeholder whilst the questionnaire was being filled in by the researcher, by sending in the questionnaire to the stakeholders by which they answered the questions and returned the questionnaire, and lastly by downloading the questionnaire from the internet (<http://www.ibf.be/animalstransport/>), answering the questions and sending it back to the project team. Annex 1 contains the questionnaire and an overview as to which questions were asked to which stakeholder group. Besides the questionnaire, data and information was also gathered from literature and databases like TRACES and EUROSTAT.



During the analysis phase, the indicators were valued, where possible, in a quantitative way. The values of the set of indicators were used to analyse if Regulation (EC) 1/2005 had been a determining factor in changing the situation regarding this factor and in what direction. This evaluation is accompanied by a discussion as to what extent the set of indicators cover the total issue, the consistency of the values of the indicators and the variation in the results.

2.2 Breakdown of key issues in indicators

As stated in section 1.4, eight key issues have been distinguished in order to assess the impact of Regulation (EC) 1/2005:

1. Welfare of animals being transported;
2. Implementation of navigation systems;
3. Trade flows of live animals;
4. Socio-economic aspects;
5. Regional implications;
6. Administrative aspects;
7. Legal aspects and enforcement of the regulation;

Guides to good practices are part of the overall evaluation. In table 2.1 to 2.8, for every key issue, the indicators and data sources per indicator are described.



Table 2.1: The indicators and their data sources in order to evaluate the impact of Regulation (EC) 1/2005 on the welfare of animals being transported.

Indicator	Data source
1. Number of dead on arrival	Literature
2. Number of lameness, injuries, etc. on arrival (<i>Article 3 and Annex 1</i>)	Inquiry
3. Number of animals not transported because of fitness for transport (<i>Article 3 and Annex I, Chapter I</i>)	Inquiry
4. Number of animals observed on arrival that are not fit for travel (<i>Article 3 and Annex I, Chapter I</i>)	Inquiry
5. Number of animals on long distance transport (and as % of total transportations)	Traces
6. Number of countries that have developed and implemented training courses for those handling animals (<i>Article 16, 17</i>)	Inquiry
7. Number of vehicles with improved design (loading and unloading, space, roof, floor and bedding, etc.) in line with the regulation (<i>Article 3</i>)	Inquiry
8. Number of vehicles that introduced an improved ventilation system in line with the regulation (<i>Article 3</i>)	Inquiry
9. Number of vehicles that improved feeding and watering during transport (<i>Annex 1, Article 3</i>)	Inquiry
10. Number of transporters that introduced an improved transport documentation (<i>Article 4</i>) system in line with the regulation	Inquiry
11. Number of assembly centres and control posts made any regulation enforcement (<i>Article 9</i>)	Inquiry
12. Number of countries that developed certifications (approval of livestock marine vessels and transport by road) in line with the new regulation (<i>Articles 17, 18, and 19</i>)	Inquiry
13. Any change made in inspection and approval routines for all means of transport in line with the new regulation (<i>Article 7</i>)	Inquiry
14. Any change in the requirements for transporter authorization by competent authorities in relation to the new regulation (<i>Article 5, 10, 11,12,13</i>)	Inquiry
15. Any measure taken in relation to infringements and notification of infringements by competent authorities (<i>Article 26</i>)	Inquiry



Table 2.2: The indicators and their data sources to evaluate the implementation of navigation systems.

Indicator	Data Source
1. Model (type) of navigation system installed in vehicles	Case
2. Main functions of the navigation system installed in vehicles	Inquiry
3. Number of vehicles that installed a navigation system	Inquiry
4. % of vehicles that installed and implemented a navigation system	Inquiry
5. Improved journey log because of the installation and use of navigation system	Inquiry
6. Improved route planning because of the installation and use of a navigation system	Inquiry
7. Improved control mechanism by competent authorities because of the use of a navigation system	Inquiry
8. Improved communication between drivers and stakeholders	Inquiry
9. List of constraints for installation of navigation system	Inquiry
10. List of constraints for efficient use of navigation system	Inquiry
11. List of benefits of installation of navigation system	Inquiry
12. List of any available navigation system packages or companies selling it	Inquiry

Table 2.3: The indicators and their data sources to evaluate the impact of Regulation (EC) 1/2005 on trade flows of live animals

Indicator	Data Source
1. Per species : number of animals transported (less than 8 hours, 8 to 24 /29 hours and more than 24/29 hours)	Traces
2. Per species: number of consignments (less than 8 hours, 8 to 24 /29 hours and more than 24/29 hours)	Traces
3. Entrance of new EU Member States	n.a.
4. Development of slaughtered animals per species in EU-27	Eurostat
5. Slaughter capacity per Member State	Eurostat
6. Establishment of new slaughterhouses per species	In- quiry/appr oval list
7. Regional specialization	Inquiry
8. Animal disease in EU	Inquiry



Table 2.4: The indicators and their data sources to evaluate the impact of Regulation (EC) 1/2005 on socio-economic aspects.

Indicator	Data Source
1. Number size and employment of transport companies	UECBV,
2. Transport costs per animal species and per cost item	Literature, Case, Inquiry,
3. Share of transport costs on overall costs in supply chain	Literature, Case, Inquiry

Table 2.5: The indicators and their data sources to evaluate the impact of Regulation (EC) 1/2005 for regional animal production.

Indicator	Data Source
1. Regional animal production	Eurostat, Literature Approval list,
2. Number of slaughterhouses in remote areas	Inquiry, Eurostat
3. Number of slaughtered animals in the areas	Inquiry
4. Applied derogation for certificate of approval for means of transport by road used for long journeys (art 18(4), art 30(6) and (7))	Inquiry
5. Implementation of the derogation	Inquiry
6. Reasons for not applying derogation	Inquiry

Table 2.6: The indicators and their data sources to evaluate the impact of Regulation (EC) 1/2005 on administrative and legal aspects

Indicators	Data Source
1. Time dedicated to administrative tasks	Inquiry
2. Labor costs per hour	Eurostat



Table 2.7: The indicators and their data sources to evaluate the enforcement of Regulation (EC) 1/2005

Indicator	Data Source
1. Number of authorizations of transporters per MS	Inquiry
2. Number of authorizations of means of transports	Inquiry
3. Number of consignments checked	MS reports
4. Number of infringements (offences)	MS reports
5. Institutions to enforce in place	FVO reports
6. Type of offences	Inquiry
7. Level of penalties for infringements	Inquiry
8. Follow up by the jurisdictional system	Inquiry

Table 2.8: The indicators and their data sources to evaluate the impact of Regulation (EC) 1/2005 to establish guides to good practices.

Indicator	Data Source
1. Development of guides of good practices	Inquiry
2. Costs of development of guides to good practices	Inquiry

2.3 Special cases

In this study five special cases will be investigated:

- 1) Austria will be investigated as a transit country. Also the impact of strict enforcement in Austria on transport of live animals will be investigated (enforcement);
- 2) Model or types of navigation systems installed in vehicles will be gathered and listed (navigation systems);
- 3) For horses it will be checked if the travelling times recorded in TRACES given the loading and unloading places are realistic compared to the travelling times according to internet applications. This is done for all journeys lasting 20 to 24 hours according to the information in TRACES for the period 2005-2009 (enforcement).
- 4) Transport costs for the main international flows of cattle, pigs, horses and sheep will be analysed to get insight into the costs of transport for live animals (socio-economic impact).
- 5) Transport by marine vessels. Summary of the literature about the animal welfare aspects of live animals transported by vessels.



2.4 Data sources

To value the indicators described in table 2.1 to 2.8 the following data sources have been used:

- TRACES for number of animals transported, number of consignments, travelling times, country of origin and country of destination;
- Eurostat for consumption of meat per MS, animal production per MS, number of animals slaughtered per MS, labour costs per hour per MS;
- FVO inspection reports in the period 2007-2010 related to aspects of Regulation (EC) 1/2005;
- Reports of Member States based on article 27(2) of Regulation (EC) No 1/2005;
- EFSA report: “Scientific Opinion Concerning the Welfare of Animals during Transport” EFSA Journal 2011; 9(1):1996;
- JRC report on navigation systems :*JRC Technical Note, G07-TRVA/ JH/(2006)*;
- EconWelfare reports (<http://www.econwelfare.eu/>);
- Literature;
- Results from a questionnaire (see annex 1) from different stakeholders and MS. Also the remarks made by respondents have been used for this assessment.

Also, information and data received from mainly animal welfare groups have been used for this impact assessment.

Because of the lack of uniformly available data for all EU MS, many indicators had to be valued based on the responses from the questionnaire. For most of the stakeholder groups (except farmers and animal welfare groups), the response was far lower than expected (see table 2.9). Another limitation was the fact that many of the respondents answered that no quantitative information was available and in other cases did not answer the question. Also some questions were answered in different ways (which may be due to the way the question was asked but also due to the availability of data).

One of the clear effects of these limitations is that many indicators for the key issues of animal welfare, implementation of navigation systems and enforcement are strongly based on opinions and perceptions of stakeholders. Nevertheless, regarding other key issues, more robust and reliable quantitative data was available.



2.5 Stakeholders

In table 2.9 the planned and realised numbers of stakeholders per stakeholder group and per Member State are described. About 200 questionnaires were planned. The planned number of questionnaires was realised by applying the following rules:

- At least two stakeholders per stakeholder group for the 10 main MS;
- Focus on transport companies (at least 3 for the main MS);
- One or two representatives of national competent authorities (depending on the national structure);
- For the “17 other Member States” only the national competent authorities;
- Invitation to all EU organisations involved in the transport of live animals, including zoos, pets and fish. The full list is in Annex 2, including if they responded.

At the end 179 questionnaires were received in addition to several letters from different stakeholders. Two of the most important stakeholder groups for this evaluation were the national competent authorities and the trade & transport companies. Despite all efforts, such as contacting them several times and extending the response period, the realised number of responses for the two groups was low compared to the expected number of responses. With regard to the transport of live animals all competent authorities of the 10 main MS responded. Of the 17 other EU Member States, we received a response from the national competent authorities of Latvia, Estonia, Finland, Sweden, Cyprus, Luxemburg, Slovenia and Slovakia. We also got a response from Croatia, which in 2010 was still not a member of the EU. Relatively many responses came from farmers in France and Spain.



Table 2.9 Planned and realised number of responses on the questionnaire per Member State and per stakeholder group.

Member State	Farmers	Slaughter House	Trade and transport companies	Control Posts	National Competent Authorities	Animal welfare groups	Scientist on transport	Total
Planned versus re- realised	PL RE	PL RE	PL RE	PL RE	PL RE	PL RE	PL RE	PL RE
NL	3 2	1 1	3 2	--	3 2	1 2	2 2	13 11
FR	2 18	3	11	1 3	1 1	2 1	6 1	26 24
ES	2 44	2 1	5 6	2 1	2 1	1 2	3 4	17 59
IT	2 2	2 3	3 1	3 2	2 2	1 1	3 3	16 14
PL	3 1	3 2	4 4	4 3	3 2	2 2	3 2	22 16
DE	- 1	5 2	5	5	5 1	4	5	29 4
DK	3	3	5 3	-	2 1	1	- 1	14 5
RO	2 3	4 2	4 2	2	2 1	2 1	2 3	18 12
UK	1	2	4 1	1	1 1	2	3	14 2
IE	1	2	3 1	1	2 1	2 1	2 2	13 5
TOTAL 10 main countries	19 71	27 11	47 20	19 9	23 13	18 10	29 18	182 152
Total 17 other countries		2	6		17 9 ¹	4	1	17 22
EU level						5		7
Grand to- tal	19 71	27 13	47 26	19 9	40 22	18 19	29 19	199 179

¹Inclusive Croatia, which is not a member of EU



3 Results

3.1 Introduction

For each key issue described in section 1.4, a separate section is devoted (section 3.2 to 3.8). In section 3.9 an overall evaluation of all the issues is presented.

Quantitative data for the total evaluation period (2005-2009) of all types of animals and all EU MS was not available. Nevertheless, with the availability of such data the definitions made it difficult to compare. This was, however, compensated in this study by presenting some case studies and by using the information gathered by the inquiry.

For each key issue, the section starts with the main conclusions followed by the results supporting these conclusions. Each section also contains the value of the indicators explained in section 2.2. Furthermore, for each indicator it is also discussed to what extent the implementation of Regulation (EC) 1/2005 has been a determining factor and in which direction.



3.2 Animal Welfare

3.2.1 Main Conclusions regarding impact of Regulation (EC) 1/2005 on Animal Welfare

(a) Slight improvement has been observed after the introduction of the Regulation (EC) 1/2005:

- The incident of dead on arrival, unfit for transport,
- Occurrence of lameness, severe injuries, bruises, dehydration and exhaustion
- Occurrence of animal welfare anomalies

(b) Occurrence of animal welfare anomalies

- Limited decrease or remained the same when compared to 2005- 2006. Relatively, a bigger difference (bigger decrease) was observed for the factor's additional provisions for long journeys' in all animal categories.

(c) Impact of the Regulation (EC) 1/2005 on transport quality

- Scientists, slaughter houses and animal welfare groups consider that the Regulation has improved animal welfare while competent authorities believe that the Regulation has not shown any positive impact on animal welfare.
- 80% of respondents considered that the regulation has improved the transport quality as a whole and about 90% of the improvement is related to long distance and international transport.
- In terms of scoring, the respondents scored the quality of transport after the introduction of regulation to about 3,5 out of 5.

(d) Improvement of facilities in vehicles

- Installation of ventilation and watering system increased continuously from 2005 to 2009, whereas installation of feeding system fluctuated and no conclusion can be made regarding this. Improvement of facilities from 2005 to 2009 scored about 4 out of 5.



- No significant improvement has been made regarding feeding and watering facilities, reason being that most long distance vehicles were already equipped with such facilities prior to the introduction of the regulation.

(e) Approval of means transport, transport companies and drivers

- Number of approved means of transport, transport companies and drivers increased from 2005 to 2009, and a significant approval was conducted in 2008.

(f) Inspection

- The number of inspections varied each year, and the incident of infringements was directly related to the number of inspections.
- 56% of the member states have made no change in inspection and approval routines for means of transport in line with the new regulation

(g) Treatment of breeding animals

- There is no significant difference in treatment during transport for breeding animals when compared with animals for transported slaughtering in all type of animals.

(h)Improvement of documentation system

- Unfortunately, no sufficient data has been acquired regarding transport documentation by transport companies. The limited responses varied and most of the respondents expressed that the regulation has not improved documentation by transport companies.

(i) Training courses

- Training course have been developed and implemented (90 to 100% of responses) by member states, and the effect of the course on reduction of lameness, injuries, and dead on arrival, and im-



proving of careful driving and animal handling scored to average of 3.4 out of 5 (and up to 3.6 for careful handling of animals).

3.2.2 Objective

The main objective of this work package was to provide scientific evidence on the impact of the regulation 1/2005 on animal welfare.

Specifically, it was intended to determine to which extent the application of the regulation has contributed to improve the welfare of the transported animals

For evaluation of the improvement, data was collected for the years 2005, 2006, 2007, 2008 and 2009.

Selection of welfare indicators and questionnaire

The key factors and animal welfare indicators were established prior to the development of the questionnaire, and these are enclosed in Table 2.1. As mentioned earlier, specific questionnaires were designed for all stakeholders.

3.2.3 Results

3.2.3.1 Dead on arrival and unfit for transport

Dead animal on arrival has been selected as one of the welfare indicators for improvement of animal welfare. The result from questionnaire investigation showed that there has been an improvement for all animal categories as given in Table 3.1, and Figure 3.1. High figures for dead on arrival for goats and sheep given from one country were disregarded, stated as more than 50%, which is far-off from reality, and the respondent might have possibly misunderstood the question. However, figures given in Table 3.1 for DOA still are almost 10 times the values reported in literature (Gade et al, 2005).

Not transported because unfit for transport: In all animal categories, except in poultry, the incidence of not transported because unfit for transport was reduced in 2008 and 2009. For poultry, the figure remained unchanged from 2005 to 2009.



Observed unfit for travel on arrival: In all animal categories, the number of animals that were unfit for transport on arrival decreased in 2008 and 2009 with respect to the years 2005 and 2006. (see Table 3.1).

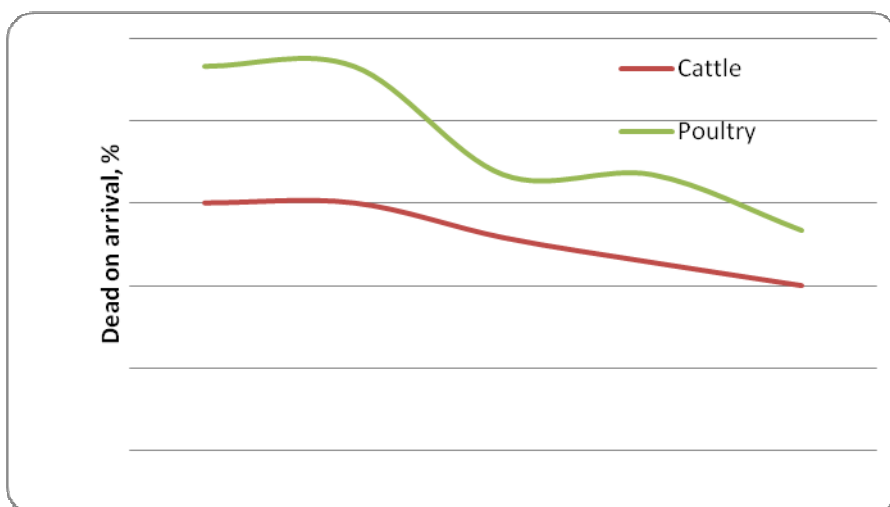


Figure 3.1: Dead on arrival in cattle and poultry

Table 3.1 Percentage of number of animals dead on arrival and unfit for transport

Number, %	Cattle	Pigs	Sheep and goats	Horses	Poultry
Dead on arrival					
2005	1.50	1.5	1.5	1	2.33
2006	1.50	1.5	1.5	1	2.33
2007	1.29	1.6	1.6	1.2	1.67
2008	1.14	1.2	1,2	1.2	1.67
2009	1.00	1.00	1,2	0.5	1.33
Not transported because animals are unfit for transport					
2005	1	1	1	0,75	1
2006	1	1	1	0.75	1
2007	1	1	1	0.5	1
2008	0.8	0.8	0.75	0.5	1
2009	0.8	0.8	0.75	0.5	1
Observed unfit for transport on arrival					
2005	1.5	1.17	1.25	1	1.67
2006	1.17	1.17	1.25	1	1.67
2007	1	1	1	0.75	1.33
2008	1	1	1	0.75	1.33
2009	1	1	1	0.75	1.33



3.2.3.2 Lameness, severe injuries, bruises, dehydration and exhaustion

Lameness: The percentage of number of animals with lameness decreased from 2006 to 2009 or remained the same particularly in breeding cattle, poultry, horses, goats and sheep (Table 3.2). Significant reduction can be observed for pigs transported for both slaughter and breeding, and for sheeps and goats transported for slaughter.

Severe injury: The percentage of number of animals with severe injuries decreased (eg. for pigs, cattle, sheep and goats) or remained the same (eg. for horses and poultry).

Bruises: There was an increase in the percentage for cattle (both for slaughtering and breeding); a decrease for pigs for slaughter but remained the same for sheep and goats, horses and poultry.

Dehydration: The increase in percentage was observed for cattle transported for slaughter while there was reduction for others (except for poultry where it remained the same).

Exhaustion: The percentage remained almost the same for cattle and poultry but decreased for pigs, sheep and goats as well as horses.

In general, the percentage of animals with the incidence of lameness, injuries, dehydration and exhaustion decreased from 2006 to 2009 or stayed at the same level. This holds for all species. A significant reduction can be observed for pigs transported for slaughter.



Table 3.2: Incidence of lameness, severe injuries(i.e. wounds, broken bones), bruises and dehydration

	% of the animals transported									
	Cattles		pigs		Sheep and goats		Horses		Poultry	
	slaughter	breed- ing	slaugh- ter	breed- ing	slaugh- ter	breed- ing	slaugh- ter	breed- ing	slaugh- ter	breed- ing
Lameness										
2006	1.5	1	1.72	1.36	1.53	0.66	0.67	0.5	0.83	0.6
2009	1.4	1	1.06	0.9	0.93	0.66	0.67	0.5	0.83	0.6
Severe injuries										
2006	1.38	0.8	1.44	1.27	1.03	0.54	0.5	0.5	1	0.6
2009	1.25	0.8	1.06	1.09	0.83	0.54	0.5	0.5	1	0.6
Bruises										
2006	1.2	1	1.94	1.09	1.33	0.66	0.67	0.5	1.29	0.6
2009	1.7	1.27	1.41	1.09	1.03	0.66	0.67	0.5	1.29	0.6
Dehydration										
2006	1.29	1.1	1.69	1.27	1.23	0.79	4.14	0.83	0.2	0.2
2009	1.56	1	1.08	0.9	0.93	0.66	3.86	0.5	0.2	0.2
Exhaustion										
2006	1	1.1	1.56	1.27	1.23	0.79	2	0.83	1	0.8
2009	1	1.18	1.25	1.09	0.93	0.66	1.71	0.5	1	0.8

The respondents were also asked to answer whether they observed differences in improvement of the incident of lameness, injuries and dead on arrival between national and international transport in the period 2007-2009 with respect to the years 2005 and 2006. Respondents ranked the incidents by ranking, i.e., 1 is far less, 2 is less; 3 no difference, 4 is more, and 5 is far more.

The results of the responses are reported in Figure 3.2. The rank scores in the range of 2 and 3, which means that there are less incidents in the period 2007-2009 compared with the period 2005-2006.

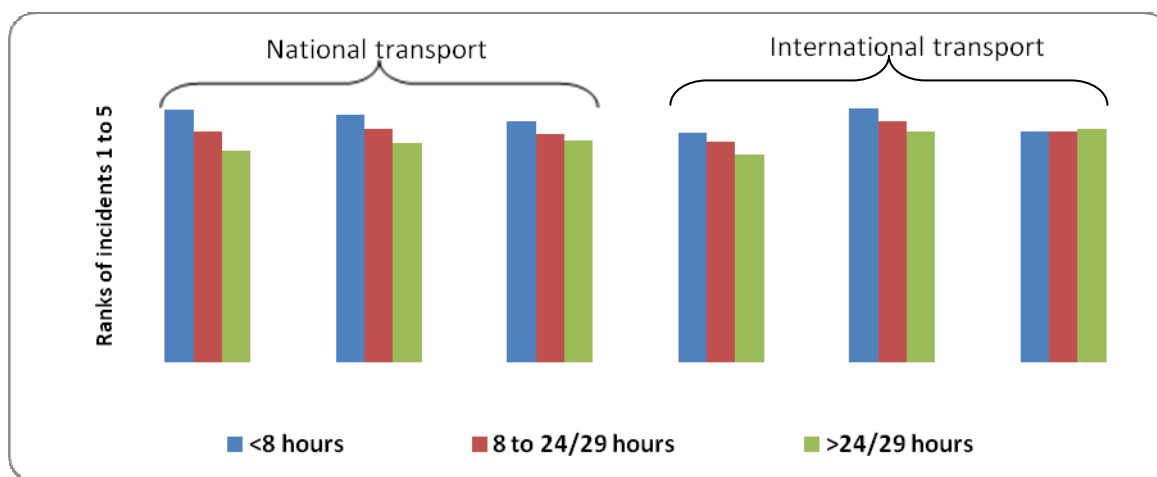


Figure 3.2: Improvement in reduction of lameness, injuries and dead on arrival after the introduction of the Regulation for national and international transport. The ranking is: 1 is far less, 2 is less; 3 is no difference, 4 is more, and 5 is far more.

Figure 3.2 shows that for both national and international transport there is slight decline in the period 2007-2009 when compared to the years 2005-2006. Dead on arrival declined more on longer transport than short transport, which means, the DOA was less for short transport even before the introduction of the regulation, and therefore the regulation had more impact on long distance transport than short distance transport. Relatively greater change was observed for transport time of less than 8 hours for both national and international transport. Figure 3.2 reports that except for the comparison factor, 'unfit for transport' for international transport, the difference decreased with increase in travel time.



3.2.3.3 Occurrence of animal welfare anomalies

The stakeholders were requested to evaluate the reduction of the occurrence of anomalies after the years 2005-2006, by numbering from 1-5 (1:strong decrease <-15%, 2:limited decrease -15- 5%, 3:no difference-5-(+5)%, 4:limited increase 5-15%, 5: strong increased >15%). Aspects considered were (see Table 3.3) fitness for transport, means of transport, transport practice, journey time, additional provisions for long journeys, transporters authorization, drivers certification.

Table 3.3 illustrates that in most cases, there is a limited decrease of animal welfare anomalies or remained the same in the period 2007-2009 when compared to 2005- 2006. Relatively, greater difference (a greater decrease) was observed for the factor “additional provisions for long journeys” in all animal categories. On the other hand, for the factor “journey log records” there is smaller difference especially for cattle, pigs and sheeps/goats.

Table 3.3: Reduction of the occurrence of anomalies after 2005-2006 as related to management activities during transport; the scoring means: 1: strongly decreased, 2:limited decrease, 3:no difference, 4:limited increase, 5: strongly increased.

Type of anomaly	Change in the period 2007/2009 compared to the years 2005-2006					
	Cattle	Pigs	Sheep and goats	Horses	Poultry	Other species
Fitness for transport	2.6	2.59	2.5	2	2.36	1.71
Means of transport	2.46	2.37	2.2	2.29	2.17	1.5
Transport practices	2.46	2.48	2.07	2	2.25	1.5
Journey time limits	2.68	2.66	2.56	2.15	2.33	1.25
Additional provisions for long journeys	2.27	2.35	2.13	2	2	1.29
Transporter's authorization	2.36	2.29	1.94	2.14	2.25	1.75
Driver certificate of competences	2.48	2.43	2.19	2.15	2.5	1.29
Journey log records	2.68	2.78	2.56	2.31	2.42	1.29



Other	2.22	2.36	2.5	2	2.33	1.29
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Similar questions, as above, regarding animal welfare anomalies were asked, whether the occurrence of animal welfare anomalies differs after implementation of 1/2005 using numbering from 1-5 (1:strong decrease <-15%, 2:limited decrease -15- 5%, 3:no difference-5-(+5)%, 4:limited increase 5-15%, 5: strong increased >15%). The aspects considered were space allowance, severe injuries, bruises, dehydration, ventilation, temperature, and unfit for transport (see Table 3.4).

The results show a limited decrease or no difference for most cases. However, for pigs, the results lie between no difference and limited increase (5-15%), in the case of ventilation and unfit for transport (see Table 3.4).

Table 3.4.Reduction of the occurrence of anomalies after 2005-2006 in various aspects during transport, the scoring mean; 1: strongly decreased, 2:limited decrease, 3:no difference, 4:limited increase, 5: strongly increased.

Type of anomaly	Change in the period 2007/2009 compared to the years 2005-2006					
	Cattle	Pigs	Sheep and goats	Horses	Poultry	Other species
Space allowance	2.73	2.94	2.54	2.13	2.40	2.05
Severe injuries (i.e. wounds, broken bones)	2.49	2.15	2.44	2.15	2.33	2.16
Bruises	2.57	2.14	2.48	2.13	2.25	2.13
Dehydration	2.63	2.15	2.54	2.43	2.41	2.20
Exhaustion	2.74	2.24	2.64	2.49	2.44	2.16
Ventilation	2.66	3.31	2.44	2.24	2.42	2.17
Temperature	2.78	3.37	2.43	2.20	2.26	2.05
Animals unfit for transport	2.77	3.27	2.41	2.14	2.42	2.14



Box 1: Transport by vessels

Transport by vessels

For flows of transport between Ireland and France (cattle and sheep) and between Italy and Greece (sheep) animals are transported by vessels. Also, cattle is transported from Europe to Lebanon.

Horses:

If there is sea movement, animals will be required to work to maintain balance and this has been shown to be an extremely important stressor during transport (Giovagnoli et al., 2002). On the additional provisions for sea transport, in horses it is recommended that the time spent on a lorry loaded onto a vessel should be considered as journey time. (source EFSA, 2011)

Transport by ship is seldom feasible. However, it is sometimes used in a roll-on roll-off situation, where the truck with animals is placed on a ferry to transport them to an island. The truck is placed on the upper deck to guarantee ventilation.

Cattle:

Earley et al. (2007) studied the effects of transporting 40 young cattle (heifers, average weight 245 kg) by truck from Ireland to France on a roll-on roll-off ferry at a stocking density of 0.93 m²/animal and then by road for 9 h to a French lairage, by comparison with 20 that remained in Ireland as controls. Transported heifers lost 6.2% of their live weight while control heifers lost 2.1%. During the sea crossing (22 h) from Ireland to France, heifers spent 39% of the time lying. Neutrophil numbers were greater ($p < 0.05$) at day 6 in heifers remaining on the transporter (in France) than in those that were unloaded. Using this limited range of measurements, no substantial difference was found between unloaded animals and those that stayed on the transporter during the rest period. In cattle, ventilation systems in vessels should have the capacity to prevent excessive heat load and electrolyte solutions should be made available on long sea journeys when there is a risk of heat stress (source EFSA, 2011). As reported in SCAHAW (2002), heat stress can present a major threat to cattle welfare that can, in extreme cases, result in mortality in transport. The problem is exacerbated when the vehicles are stationary for prolonged periods within the hold of roll-on roll-off vessels. Provision of forced fan ventilation can prevent exposure to excessive heat and humidity on both moving and stationary vehicles.

As regard to sea transport, the effect of transport on welfare is the accumulation of effects of road transport, resting conditions at staging points, and sea transport (as the animals are first transported using trucks and then ferries), and therefore, specifically the contribution of sea transport is not known yet (Gebresenbet, 2009).

Gebresenbet (2009) reported in his review that most of the studies made on sea transport used only death rate as indicator of animal welfare. The unloading methods and facilities, feeding regime and waiting time before unloading at the harbour were not known. No comprehensive studies have been made for sea transport by making continuous measurement and observation throughout the journey, except mortality rate, and therefore, studies related to only mortality rate do not indicate whether the animals died because of transport time or handling methods and waiting time at the harbour during unloading.



3.2.3.4 Impact of the Regulation (EC) 1/2005 on transport quality

Three questions were asked to be answered by all stakeholders' categories:

- (a) Impact of the regulation (EC) 1/2005 on the different aspects of the quality of animal transportation
- (b) Impact of the regulation in relation to national or international transport
- (c) Impact of the regulation in relation to short and long distance transport

For question (a), 141 (113 answered yes and 28 no) responded to the first question, and 80% of them confirmed that the regulation has impacted on different aspects of transport quality as a whole.

117 respondents provided an answer to question (b) where about 90% (104 in number) of them considered that the Regulation has had more of an impact on international transport than on national transport.

Question (c) asked to investigate whether the impact of regulation has shown more impact on short than on long distance transport. The results of this question in different aspects are presented in Tables 3.5. The respondents confirmed that the impact of the regulation is much more on long distance than short distance transport.

The general comments of the respondents, denoted by A, B, C, D, E, F and G, to the questions in last column of Tables 3.5, i.e., to what extent the regulation has improved and the benefits are given in Appendix A9.1.



Table 3.5: Impact of Regulation (EC) 1/2005 on different aspects of transport quality

Impact on aspects	Yes/No (Nr of respondents)		national/ international transport (no_of respondents)		short /long transport		To which extent? (eg. What are the benefits)
	yes	No	national	international	short	long	
Animal welfare	55	75	14	43	12	50	A
Transport time	29	50	12	47	10	48	B
Space allowance	85	43	11	33	8	34	C
Trucks design	107	24	9	49	5	100	D
Better handling by drivers	91	36	16	23	14	68	E
Infrastructure of control posts	25	87	3	82	3	81	F
Quality of handling at control posts	22	87	5	79	5	79	G
Percentage	50.74	49.27	83.57	83.57	11.03	88.98	

Quality of transport improved in terms of animal welfare, transport time, space allowance, trucks design, drivers, and control posts

The competent authorities and transport companies were asked to evaluate whether the regulation affected transport quality in relation to animal welfare, transport time, space allowance, trucks design, drivers, and control posts, by providing scores from 1-5 (1: strong decline, 2: limited decline; 3:no difference, 4:limited increase, 5:strong increase).

The result showed that the quality of animal transport almost remained the same regarding animal welfare, travelling time, space allowance and control posts while limited improvement was gained regarding the trucks and drivers aspects (Figure 3.3). The scoring value varied from 2.66 (nearly no difference) to 4.2

(nearly limited increase). Scientists, slaughter houses and animal welfare groups consider that the Regulation has improved animal welfare while competent authorities think that the Regulation has not shown any positive impact on animal welfare.

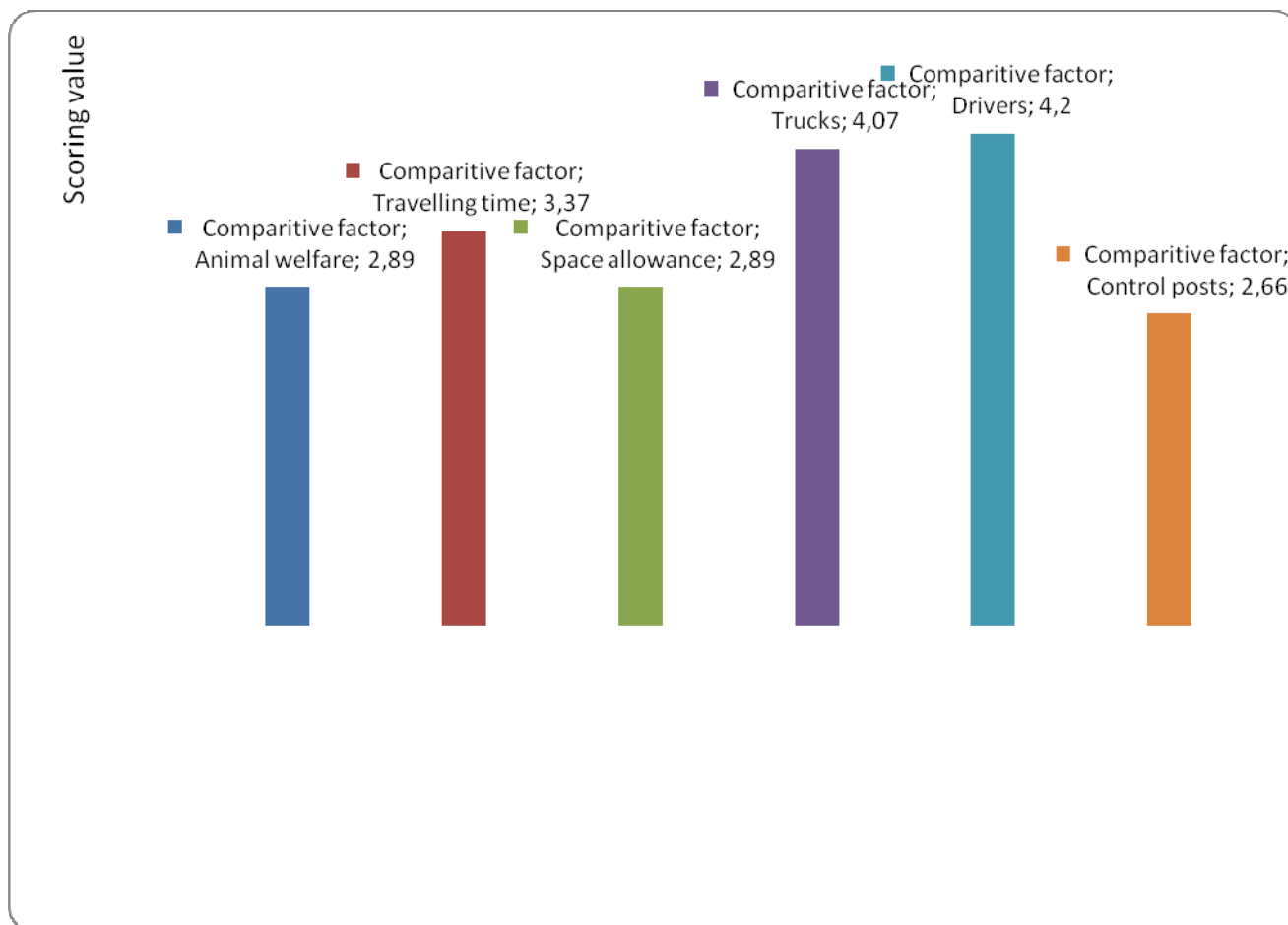


Figure 3.3: Impact of Regulation (EC) 1/2005 on quality of animal transport. The scoring mean: 1 is strongly declined; 2 is limited decline; 3 is no difference, 4 is limited increase and 5 is strongly increased.

3.2.3.5 Effect of the Regulation (EC) 1/2005 on meat quality

The question asked was: “Did, according to you, the regulation (EC) 1/2005 have an effect on the quality of meat of transported animals? Please indicate with numbering from 1-5 (1: strong decline, 2: limited decline; 3: no difference, 4: limited increase, 5: strong increase)”

The result showed that the overall score was 3.6, which indicates that the regulation has slightly improved the quality of meat.



3.2.3.6 Impact of the regulation on disease control

The question asked in relation to disease control was: “Were the limitations imposed on the transport of animals for disease control reasons subsequent to 2005? Please indicate with numbering from 1-5 the extent of these limitations. Where 1 is not much (small area or short period) and 5 is very much (large region and or long period)”

The responses from competent authorities and transport companies are presented in Table 3.6. The extent of the limitation imposed on the transport of animals for disease control reasons was relatively high in 2008 although it increased from 2005 towards 2009 for the three aspects indicated i.e. transport limitation, regions affected and type of animals affected.

Table 3.6: Limitation of transport of live animals caused by a disease outbreak

	2005	2006	2007	2008	2009
Transport limitation	1.27	1.64	2.2	2.8	2.64
Regions affected	1.36	1.9	1.92	2.43	2.23
Type of animals affected	1.20	1.56	1.83	2.15	1.92

3.2.3.7 Ventilation, feeding and watering facilities in vehicles

The respondents were requested to indicate the % of vehicles that installed ventilation, feeding and watering system. From Figure 3.4, it can be observed that the installation of ventilation and watering system increased continuously from 2005 to 2009, whereas installation of a feeding system fluctuated and no conclusion can be made regarding this.

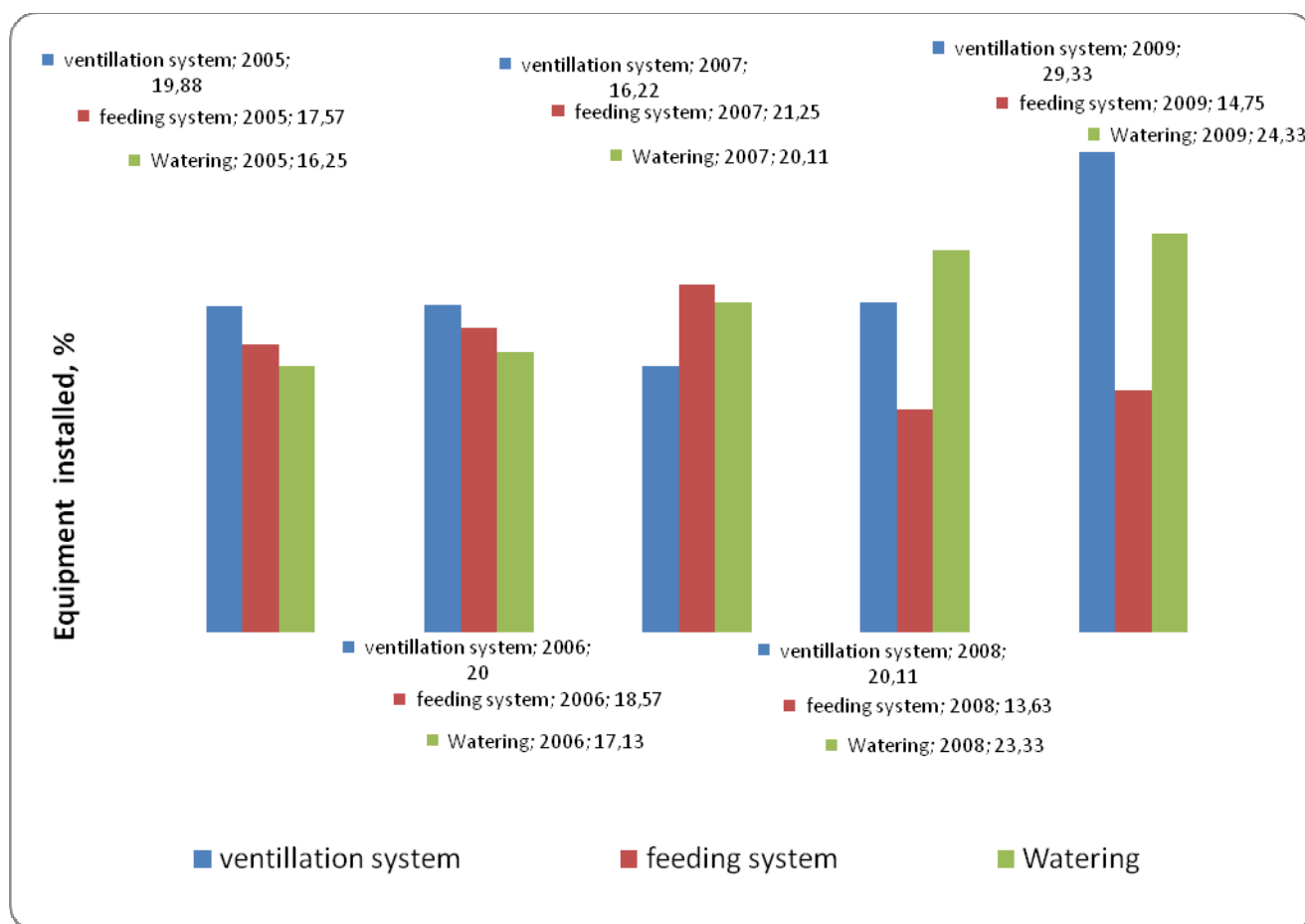


Figure 3.4: Percentage of vehicles equipped with ventilation, feeding and watering facilities

The respondents were requested to evaluate the level of improvement in terms of facilities in vehicles (loading and unloading, space, roof, floor, bedding, mechanical ventilation, feeding and watering) in 2009 compared with 2005 in the following aspects in line with the regulation (Article 3). The evaluation was done by scoring 1 to 5, where 1: strong decrease, 2: limited decrease; 3: no difference, 4: limited improvement, 5: strong improvement.

The result is reported in Figure 3.5, and all facilities scored all most equal, with an average value of 4.18 (meaning limited to strong improvements).

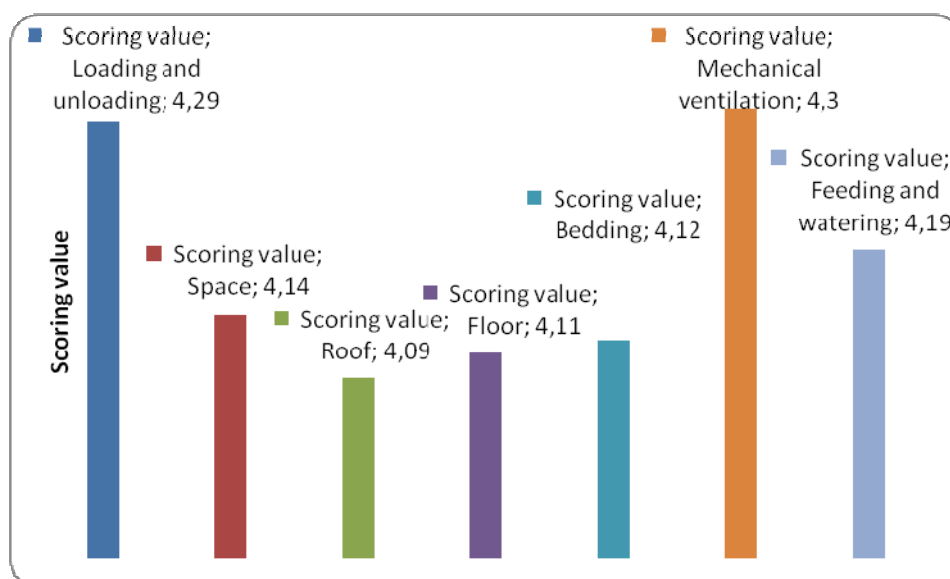


Figure 3.5: Improvement in terms of facilities during transport. The scoring mean: 1 is strongly decreased; 2 is limited decrease; 3 is no difference, 4 is limited improvement and 5 is strong improvement

Improvement of trucks design

The competent authorities and transport companies were requested to state on scale from 1-5 the level of improvement of the trucks design for national and international transport, by numbering from 1-5 (1: strong decrease, 2: limited decrease; 3: no difference, 4: limited improvement, 5: strong improvement).

The results show that the truck design has not improved or limited improvement for both national and international transport since the implementation of the regulation. However, for transport of more than 24 or 29 hours, improvement for international transport is better than for the national transport (see Figure 3.6)

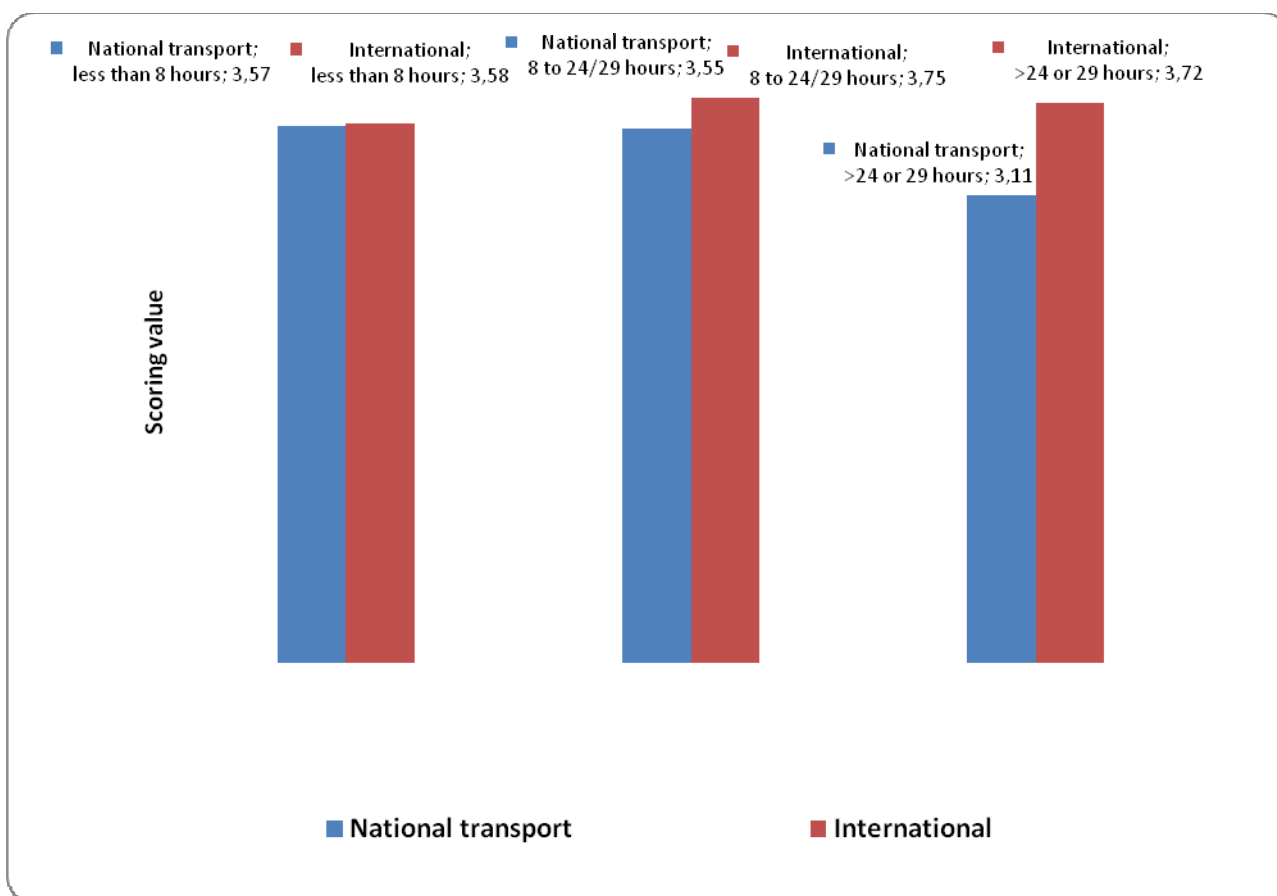


Figure 3.6: Improvement of trucks in 2009 when compared to trucks used in 2006 for animal transport. 1= strong decrease, 2= limited decrease; 3= no difference, 4= limited improvement, 5=strong improvement.

3.2.3.8 Approval of means transport, transport companies and drivers

In this study, number of approvals of means transport, transport companies and drivers by competent authorities were considered to evaluate the implementation of the regulation, and the respondents were requested to provide numbers on 31st of December from 2005 to 2009.

The results in Table 3.7 indicates that number of approvals increased from 2005 to 2009, and significant approval was conducted in 2008.



Table 3.7: Number of approvals of means transport, transport companies and drivers

	2005	2006	2007	2008	2009
Transport companies	4987	1138	1622	2490	456
Drivers	687	692	1112	35396	11146
Truck (Article 18)	716	840	1536	17001	4605

3.2.3.9 Inspection

The stakeholders were requested to provide figures on how many animals have been transported, inspected during transport and infringements that have been detected within their Member State during animal transport in 2005, 2006, 2007, 2008, 2009. No reliable data was reported for this period. The only conclusions drawn were that the number of inspections varied each year, and the incident of infringements is related to the number of inspections.

A further question was asked as to whether Member State of the respondents made any changes in inspection and approval routines for means of transport in line with the new regulation. Around 56 % of the Competent Authorities report they made no change in inspection and approval routines for means of transport in line with the new regulation. According to the FVO all Member States made changes in their inspection and approval routines.

3.2.3.10 Improvement of feeding, watering and documentation system

The questionnaire related to the above issues was to collect data on the number of vehicles that improved feeding and watering during transport (Annex 1, Article 3 or the Regulation).

No clear answers were provided. However, it looks that documentation system has already been used in some member states for long distance transport before the introduction of the regulation.

3.2.3.11 Transport documentation system

The respondents were requested to provide information whether transporters have improved transport documentation system in line with the regulation (Article 4).

Unfortunately, no sufficient amount of data was acquired regarding this issue. The limited responses varied and most of the respondents expressed that the regulation had not improved documentation by transport companies.

3.2.3.12 Treatment of breeding animals

The questionnaire related to the above issue was whether there is any difference in treatment during transport of breeding animals compared with animals for slaughtering and the respondents were requested to indicate with numbering from 1-5, where (1: indicates that breeding animals are treated far worse; 2: worse; 3: no difference; 4: are treated better; 5: are treated far better).

As reported in Table 3.8, there is no significant difference in treatment during transport for breeding animals when compared with animals transported for slaughtering in all type of animals.

Table 3.8: Evaluation of the treatment of breeding animals compared to animals transported for slaughter; scoring means: 1: indicates that breeding animals are treated far worse; 2: worse; 3: no difference; 4: are treated better; 5: are treated far better

	Cattle	Pigs	Sheep	Horses	Poultry
Treatment like (i.e. space allowance, better handling, ...)	3.09	3.09	3	3.05	2.93

3.2.3.13 Training courses

The question asked was whether training courses had been developed and implemented in line with Articles 16 and 17, and whether it was obliged to follow the courses or not. An additional question was also asked as to whether the FVO made any inspection and the remarks made and whether any action had been taken for the improvement.



As can be inferred from Table 3.9, training courses for drivers (100%) and staffs of component authorities (90 to 95%) have been developed and implemented. Even courses related to navigation system and other equipment were developed (more than 60%) and implemented (more than 70%). More than 80% of the courses were inspected. The general comments and remarks are enclosed in Annex 9.2.

Table 3.9: Development and implementation of training courses

	Developed		Imple- mented		Obligated		Inspected		Have actions been taken?	
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
For staff of competent authorities (Article 16)	17	2	18	1	14	3	12	3	11	2
Recording equipment	14	2	11	3	11	4	9	4	5	4
Navigation system	10	6	10	4	10	5	10	4	6	4
Drivers (Article 17)	19	0	19	0	18	1	14	2	10	4

Impact of personnel training

The above issue was raised in order to investigate whether the developed and implemented training courses have had an impact on factors such as reduction of dead on arrival, lameness, injuries, and improvement on careful driving and careful animal handling. The numbering was 1-5 (1: strong decline, 2: limited decline; 3: no difference, 4: limited increase, 5: strong increase). The average score for all factors was 3.4 out of 5, with the highest score of 3.6 for careful handling of animals (see Table 3.10).



Table 3.10: Impact of personnel training; the scoring mean: 1: strongly decline, 2: limited decline; 3:no difference, 4:limited increase, 5:strongly increase

Reduction of animal welfare problems (like lameness and injuries on arrival)	3.18
Reduction of animals dead on arrival	3.30
Careful driving	3.51
Careful handling of animals	3.64

3.3 Implementation of navigation systems

3.3.1 Main conclusions regarding navigation systems

For the questions related to the use of a navigation system during transport, we approached transport companies and national competent authorities. We received 48 responses (22 national competent authorities and 26 transport companies). Not all respondents answered to all questions. The range of responses varies between 33 to 75%. The main conclusions are as follows:

- As it can be observed from the responses, on average about 77% of transport companies have acquired a navigation system.
- Vehicles equipped with navigation systems: The percentage of vehicles equipped with a navigation system has successively increased from 2% (year 2005) to 77% (2009).
- Improvement of the journey log: 71% of respondents did not feel any improvement of the journey log.
- Effect on route planning: 61% of the respondents see no improvement of the route planning with the installation and use of a navigation system.
- Improvement of control mechanism: 50% of the respondents consider that control mechanism by competent authorities have been improved after installation of a navigation system.
- Communication between stakeholders: Most of the stakeholders (about 71%) do not see any improvement in the communication by using navigation systems. However, most of the respondents expressed that the navigation system improved continuous contact, communication stakeholders,



logistic management, control of arrival time, time saving, possibility of informing incident earlier, and easy location of facilities.

3.3.2 Council Regulation (EC) No 1/2005 and navigation systems

According to the Council Regulation (EC) No 1/2005 of the 22nd 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, it is mandatory to install a navigation system in vehicles for animal transport.

Satellite navigation in the context of vehicle telemetric is the technology of using a GPS and electronic mapping tool to enable monitoring, and controlling the movement of a vehicle from one place to another, as well as the ability to locate the position of the vehicle. Satellite navigation systems are used in planning the route and to navigate a journey.

Vehicle tracking is a way of monitoring the location, movement, status and behaviour of a vehicle or a fleet of vehicles. This is achieved through a combination of a GPS (GNSS) receiver and an electronic device (usually comprising of a GSM/GPRS modem or SMS sender) installed in each vehicle, communicating with the user (dispatching, emergency or co-ordinating unit) and PC- or web-based software. The data is then turned into information by management reporting tools in conjunction with a visual display on computerised mapping software. Details on the definitions of terms and concepts are given in Annex 3 Box B3.1 and B3.2.

Regulation (EC) 1/2005 states the requirement of updating certain important technical elements of this Regulation, in particular in the light of an assessment of its impact on the transport of live animals within an enlarged community and establish the specifications of the Navigation System to be used for all means of transport by road in the light of the future technological developments in the area such as the coming into fruition of the **Galileo** system.

Galileo is a global navigation system (GNSS) currently being built by the (EU) and European Space Agency (ESA). One of the political aims with Galileo is to provide a high-accuracy positioning system upon which European nations can rely on, independent from the Russian GLONASS and US GPS systems, which can be disabled for commercial users in times of war or conflict.

According to EU regulation, all means of transport by road must be equipped as from January 2007 for means of transport by road for the first time in service and as from 1 January 2009 onwards for all means of



transport, with the appropriate Navigation System allowing for recording and providing information in the journey log that comprises of:

- Planning,
- Place of departure
- Place of destination,
- Declaration by transporter, and
- Specimen anomaly report, and
- Information concerning opening/closing of the loading flap.

With the aforementioned background, in the framework of the administrative arrangement Nr 30042-2005-12 A1CO between Directorate General for Consumer Protection (thereafter: DG SANCO) and the Joint Research Centre (thereafter: JRC) *develop a navigation system for long road journeys as referred to in Regulation (EC)1/2005(JRC Technical Note, G07-TRVA/ JH/(2006))*.

3.3.3 Navigation system specifically for animal transport

State of the art

A few research reports are available on the development of surveillance systems for animal transport. On the basis of the problem described above, a transport surveillance system has been developed (Geers et al, 1997) which integrates the following information (Fig. 1): individual identification of animals, (un)loading place and time, temperature and movement. These data are collected by telemetry and GPS, and are transmitted to a dispatch centre by GSM.

Gebresenbet et al (2003) developed a smart animal welfare surveillance system to monitor environmental conditions (temperature, relative humidity, vibration) in the vehicle, animal behaviour, driving performance and dynamic route planning, where data could be transmitted to longer destination using a GPRS/GSM system. Later, similar systems were developed (Pasquale et al 2009) by Joint Research Centre where they conducted a study on the temperature during animal transportation (G07-TRiVA/(2009)).

There are companies that manufacture navigation systems specifically for surveillance of animal welfare during transport. EUROSCAN GPS-GPRS (<http://www.chsjedlicka.cz/en/transport-euroscan/>) is among those companies that produce relevant units for animal transport. The company has developed a system that is



able to monitor animal transport and the transportation of chilled and frozen goods. The system manages temperature measurement with recording, print, GPRS transmission, GPS checking during transport of goods.

Satellite navigation in the context of vehicle telemetric is the technology of using a GPS and electronic mapping tool to enable the driver of a vehicle to locate a position, to plan a route and to navigate a journey.



3.3.4 Objective

The objectives of this chapter are to:

- present a state of play on the implementation of the requirements on navigation systems in Regulation (EC) 1/2005, with due regard of the studies carried out by Member States and EU;
- determine to which extent the requirements on navigation systems has been (uniformly) applied across the EU and if the situation has affected the level playing field of business operators;
- present the main typology of navigation systems in use;
- gather information on how the competent authorities have implemented this requirement and how they have used the information collected by navigation systems for the purpose of their checks;
- analysis of how the systems have contributed to improve the level of enforcement on journey times; and
- determine the opinion of stakeholders concerning this requirement and amendment in this field.

Development of indicators

Main indicators for the evaluation of the impact of implementation of the installations of navigation system in transport vehicles were developed prior to questionnaire development and these indicators are reported in Table 2.2.

3.3.5 GPS based navigation model system

The majority of GPS navigation devices are intended primarily for use while driving. The main manufacturers of hand-held GPS system include:

- Magellan Navigation Inc.,
- Tom Tom Inc.,
- Garmin Ltd., as well as smaller companies like
- Mio Technology Limited,
- Navigation Inc., and

- Navman USA.

Most of these companies produce GPS devices that come preloaded with maps which can be updated or expanded through continuously available software updates including maps of the continental and details of specific countries.

Each manufacturer also offers its own series of GPS features. Popular features include text-to-voice systems, in which the device reads street names aloud as part of the spoken directions. Some GPS systems intended for driving also feature off-road or pedestrian modes, which alter their route selection according to the method of transportation.

Navigation tracking unit

The GPS based navigation unit determines the precise location of a vehicle at regular intervals and transfers data to a server or internet-connected computer, using a GPRS /GSM modem embedded in the unit (see Figure 3.7). It contains a GPS module to receive the GPS signal and calculates the coordinates. For storing data, it contains a large memory to store the coordinates, data pushers additionally contains the GSM/GPRS modem to transmit this information to a central computer either via SMS or via GPRS in form of IP packets. This allows the asset's location to be displayed against a map backdrop either in real time or when analysing the track later, using GPS tracking software (http://en.wikipedia.org/wiki/GPS_tracking_unit).

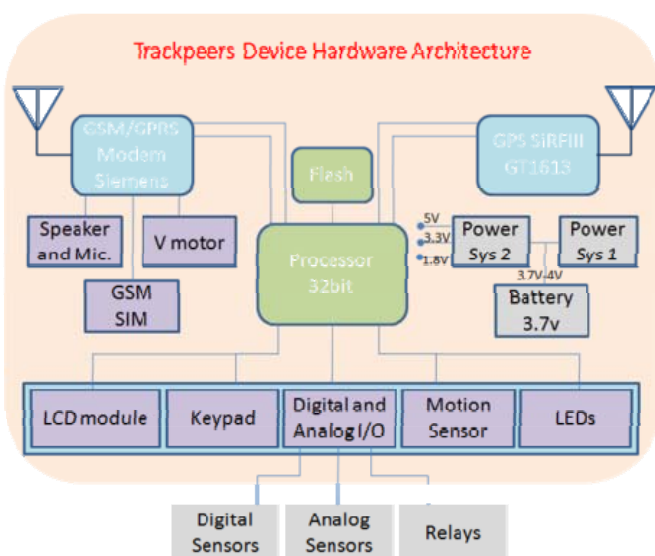


Figure 3.7: Typical GPS based navigation tracker unit (http://en.wikipedia.org/wiki/GPS_tracking_unit)

3.3.6 Results of the investigation on the implementation of navigation system using questionnaire

For the questions related to use of a navigation system during transport, we approached transport companies and national competent authorities. We received 48 responses (22 national competent authorities and 26 transport companies). Not all respondents answered to all questions. The range of responses varied between 33 to 75%.

3.3.6.1 Vehicles equipped with navigation systems

The respondents were requested to provide the percentage of vehicles equipped with navigation since 2005. As depicted in Figure 3.8, the percentage of vehicles equipped with a navigation system has progressively increased from 2% (year 2005) to 77% (2009). However, the variation is high among respondents, where the highest and lowest percentages are 99 to 22% respectively. The highest numbers of vehicles with navigation system are in UK (224) and Lithuania (167).

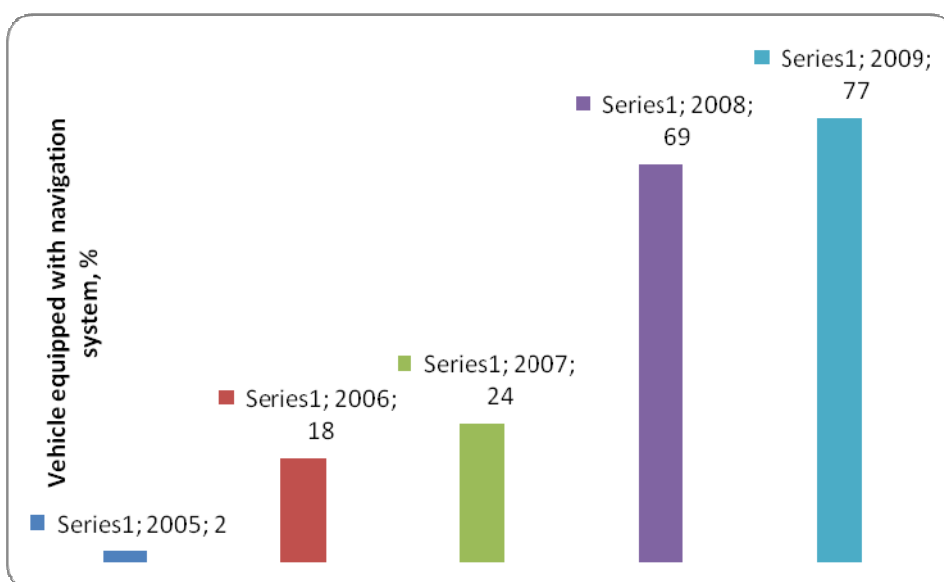


Figure 3.8: Percentage of vehicles equipped with navigation system in relation to the number of approved vehicles per year.



3.3.6.2 Improvement of journey log by installation and use of navigation system

The respondents were requested to report whether the journey log was improved after installation and use of the navigation system. Only 31 respondents answered to this question, and 71% of the respondent did not feel any improvement of journey log.

3.3.6.3 Effect of installation of navigation system on route planning

One of the main functions of navigation systems is to improve route planning to reduce both transport time and distance. It also helps to avoid queuing at place destination and roads that are not suitable for driving when animals are loaded. Around 61% of the respondents saw no improvement of the route planning with the installation and use of navigation systems. However, transport companies expressed that the reason why they are not using is that experienced drivers feel confident and know route planning from experience, and only new drivers are using the system.

3.3.6.4 Improvement of control mechanism

The question as to whether the installation of a navigation system has improved the control mechanism by the competent authorities was answered by the National Competent Authorities. About 73% of those who participated in the investigation answered fully. The answers “no” and “yes” were equal (50% yes and 50% no). This, however, shows a positive tendency that control mechanism has been improved and probably progressively increases in the future.

3.3.6.5 Communication between stakeholders

All stakeholders were requested to respond to the question as to whether the installation of the navigation system has improved communication between stakeholders, and the result is reported in Table 3.11. Most of the stakeholders (about 71 %) did not see any improvement in the communication by using navigation systems. However, the comments on the type of improvement were positive (continuous contact, better communication, better logistic management, better control of arrival time, time saving, possibility of informing incident earlier, easy location of facilities). Type of improvement in the last column of Table 3.11 is included in the footnotes below the Table.



Table 3.11: Improvement of communication between stakeholders

Improvement of communication between	Yes	No	No Data	Type of improvement
Slaughterhouses and transport companies/drivers	33	53	2	A
Control post and transport companies/drivers	34	58	4	B
Farmers and transport companies/drivers	36	62	4	C
Drivers/stakeholders	21	132	4	D
Overall percentage	29	71		

A= More telephone contact between different stakeholders, data and information transfer, reduced additional loading, better control of arrival time, rapid route change if needed, saving transport time

B= The transport is under better surveillance, easy location of facilities, an improvement of organisation inside the transport company, logistic improvement, better management, better control of arrival time

C= continuous contact, better communication, better logistic management, better control of arrival time, time saving,

D= continuous contact, better control of arrival time, control of transportation of livestock, possibility of informing incident earlier, easy location of facilities

3.3.6.6 Type of navigation models installed in vehicles

The respondents were requested to provide information on the types /models of the installed navigation system in their vehicles. The results are summarised in Table 3.12.

From the given responses, it can be noted that transport companies use simple GPS models for the determination of locations and to some extent for planning, without extra modules for navigation.



Table 3.12: Types and models of the navigation system installed and reasons for their preference.

Type /model of navigation system	Reason for preference	Name and address of a company selling
Carl Bro		Carl Bro
Mobicoach	fulfils 99% of the requirements of the company	Mobicoach, http://www.mobicoach.eu/
GPS		Data System
RedcoInfomobility	maintenance	Cefin System
Models are not know, but we use it and it is an approved system		
Navirec	Availability	
System to hauliers	It meets the general requirements in legislation	
Transics (4 transport companies use it)	It is an agreement between a slaughterhouse and transport companies	Transic

3.3.6.7 Main functions of the navigation systems installed

The objective of these questions is to investigate whether transport companies are aware of the features of the navigation system they have and to know the utilization level of the system by the transport companies. Only few transport companies could list all the main functions, while most of them mention only one or two function(s). The functions listed in the nine responses are:

- Route planning (2);
- Control speed (3);
- Estimation of the time required to reach destination (5);
- Follow trucks including number of truck's stop (2)
- Easy location of any place including destination (4);
- Temperature control (5);
- To know how many times the lorry stopped (2);



- Control of opening of door (3);
- Traceability (1);
- Control and checking transport duration (1);
- Driver identification (1);

3.3.6.8 Constraints related to the installation and efficient use of navigation systems

This question was asked in order to investigate whether there are technical difficulties in managing the installation of such systems, which may discourage an efficient use of the navigation system.

Most of the respondents left the questionnaire without answering, and only few answered that there is no such problem for installation. About 20% of transport companies answered that they only have the system in the vehicle but do not use it.

3.3.6.9 Benefits of installation of a navigation system

The respondents were requested to list the main benefits of using such navigation systems. This helps to indicate how transport companies are using navigation systems. The following list of benefits were given by the transport companies :

- To trace and follow the transport
- More easy way to communicate with abattoir and relocate if needed
- For administration and control purposes
- Information about location
- Welfare control
- Information about opening/closing of the truck's door
- Information about speed
- To find places and trace the route
- For unknown and long routes it is helpful
- Find all information needed
- To find specific place and the route becomes traceable by the slaughter company



3.3.6.10 Wishes for future improvement of a navigation system

The objective of this question was to collect information as to which improvements would increase the utilization level of a navigation system to support the implementation the regulation (EC) 1/2005. Unfortunately, only few transport companies answered to this question. However the following important suggestions were given:

- More quick updating and better coverage of Eastern Europe
- None (three companies answered “None”)
- A system, which can be reportable to member states’ competent authorities
- Develop an operations centre
- To have in all countries the same database, and stop with the paper administration
- To add on number and weight of the animals in the system
- Improve rural road network and improve reception capacity
- Poor signals and wrong roads information in rural places should be improved. It is a big problem mainly in winter
- Improve transmission capacity, update with road information
- For rural to improve the reception capacity and read road mapping system

3.3.7 General remarks

As it can be observed from the responses, about 77% of the transport companies have acquired a navigation system. The transport companies know, more or less, the benefits of the system. However, the level of utilization of the system is relatively low. About 60 to 70% of transport companies stated that installation of a navigation system has not improved route planning and journey logs. Some companies do not use the system for route planning because the transporters know routes very well and they use the system only in case of employing new drivers. As noted by some transport companies, the other reason of not using navigation systems is because of the complexity of the navigation system.

The competent authorities may need a check list when controlling the performances of navigation systems installed in the vehicles. Parameters that should be included in the check list could be taken from the EC Regulation (EC) 1/2005 and technical description of standard navigation models.



Even if the temperature system doesn't have to be part of the navigation system, in the modern goods transport including animal transport, temperature control system including warning component needs to be integrated in the navigation system. Even though a question regarding this element was not included in the investigation, experiences of the team members agree that none or very limited number of animal transport vehicles that have a navigation system installed also include a temperature control system.

A complete navigation system should be able to send and receive data from transport vehicles. This creates possibilities of effective control mechanism for competent authorities.

Some general comments of the respondents are presented in the box 3.

Box 3: Comments of respondents on the use of navigation systems.

- *Some respondents expressed very limited use of the navigation system.*
- *According to our opinion it has to be an improvement of journey log because of the installation and use of navigation system, but the details are recorded in the Member States where Croatian transport companies (for long distances) are registered*
- *The log book in paper form is still used in most, if not all cases*
- *The use of a navigation system is slightly low and remains limited because there are many different models with features that are not easy to grasp*
- *GPS is installed in all vehicles as trade demands (in spite of driving times less than 8h)*



3.4 Trade flows of live animals

Regulation (EC) 1/2005 did not have any impact on international trade flows of live animals in the EU-27. This statement is supported by the following facts:

- Historic increase of international trade of live animals continued after the implementation in 2007;
- Both intra community trade in meat and intra community trade in live animals increased during this period;
- The enlargement of the EU (with Bulgaria and Romania), the outbreak of infectious diseases and changes in self-sufficiency do not play an important role in explaining the changing trade flows.
- The regional slaughter capacity in the EU is a main factor explaining changes in international trade of live animals (i.e. increase of slaughter capacity for pigs in Germany and increased transport of piglets and pigs from The Netherlands and Denmark and decreased slaughter capacity in these countries; increased flows of poultry between neighbouring countries like The Netherlands, Belgium, France, Germany and Czech Republic). These changes are not related to the implementation of Regulation 1/2005 but are caused by differences in slaughter costs per animal and policies of slaughterhouse companies.
- The main trade flows per species between EU Member States did not change. These flows only increased in size.
- The calculated indicators show that trade flows are not developing differently in the period 2005-2006 compared to 2007-2009.

Within EU-27 regional production of meat does not equal regional consumption. This is the underlying reason for intra community trade of meat and live animals. In Annex 4 in Table B4.3 and B4.4 the intra community trade in meat and live animals per species is related to the total slaughtering in EU-27. From these tables it can be concluded that the intra community trade equals 20 to 30% of the tonnes of meat slaughtered, with marginal differences between species. This percentage increased during the period 2005-2009. The intra trade in live animals (heads as a percentage of heads slaughtered) is far lower. For cattle this percentage is about 15 % in the period 2005-2009, for pigs about 10% and for sheep ranging from 5 to 12%. So in volume the intra community trade in meat is far more important than trade in live animals. Horses are an exception, with a relative large trade in live animals compared to trade in meat (figures cannot, however, be presented because of missing values).



Table 3.13 describes the number of consignments of live animals (intra community trade and import/export to/from EU-27) for the period 2005-2009. The total number of consignments steadily increased during this period from 315,000 consignments in 2005 to almost 400,000 in 2009. Both short and long distance transport (respectively less and more than 8 hours of transport) increased during this period. The very long distance transport (more than 24/29 hours) peaks in 2007 and declines to the level of 2005 in 2009. Table 3.13 also shows that, except for the very long distance transport, the development before 2007 continues after the implementation of Regulation (EC) 1/2005. The entry of Bulgaria and Romania to the European Community did indeed change the type of trade but not the trade pattern. Up until 2007, this trade was classified as import or export but since 2007 it has been classified as intra community trade. The entry of Bulgaria and Romania especially affects the classification of the trade in horses, cattle and sheep.



Table 3.13: Number of consignments of live animals (intra community trade and import/export to/from EU-27) in the period 2005-2009 divided in duration of transport

	2005	2006	2007 ²	2008	2009
total	315,237	349,962	365,769	371,115	399,988
Travelling time					
<8 hours	214,831	221,026	225,205	225,198	261,387
8-24/29 hours	83,513	106,660	116,296	122,747	114,820
>24/29 hours	15,731	21,657	23,919	21,885	16,619
No time available	1,162	619	349	1,285	7,162

Source: Traces

Per species the following developments took place (see Annex 4 Table B4.1 and Table B4.2):

- **Cattle:** The total number of consignments fluctuated annually between 118.000 consignments from 2005 to 2007, and almost 130.000 consignments in between 2006 and 2009. Also the number of animals fluctuated in this period from 4 million to 4.4 million. The duration of transport does not change significantly during this period. Around 40% to 48% of the animals are transported in less than 8 hours and the same percentage between 8 and 29 hours. Around 6% to 16% of the animals are transported for more than 29 hours, with a peak in 2007 and the lowest numbers and percentage in 2009. Most cattle are shipped from France, Poland, Germany and Belgium to Spain, Italy and the Netherlands. Trade flows between the countries accounts for 65% and 55% of the total trade in cattle in 2005 and 2009 respectively.
- **Pigs:** The total number of consignments steadily increased from 85.000 in 2005 to 126.000 consignments in 2009 (increase of 48%) and the number of animals transported increased from 16.4 million to 27.8 million (increase of 70%). Most of the animals (55% to 70%) are transported for less than 8

² Bulgaria and Romania entered the EU. The trade changed from import/export to intra community trade



hours. This percentage decreased from 2005 till 2007 and increased between 2007 and 2009. The numbers of animals transported between 8 and 24 hours doubled between 2005 and 2006 from 4.6 million to 9.1 million and stayed at this level till 2009. This also means that the relative number of animals travelling 8 to 24 hours decreased from 43 % in 2006 to 28% in 2009. The relative number of animals travelling for more than 24 hours is stable at a level of 2% to 3% during the period 2005-2009, which implies that the absolute numbers are increasing. More than 67% of the animals originate from Denmark and The Netherlands in the period 2005-2009. The main destination is Germany with more than 50% of total animals in all years during the period 2005-2009.

- **Sheep and goats:** The total number of consignments is stable during the period 2005-2009 at a level of 13,000 to 14,000. About half of the consignments last less than 8 hours and 41% to 47% last from 8 to 29 hours. Only 3% to 6% of the consignments last for more than 29 hours. This percentage decreases during this period. Also the number of sheep and goats transported alive are stable during this period. The high numbers in 2007 -more than 9 million transported animals compared to the 4.5 million in the other years in the period 2005-2009 - cannot be explained. The number of consignments are only marginally different between 2007 and the other years. Most sheep are shipped from Spain, France, UK, Hungary, The Netherlands and Romania to Spain, Italy, Bulgaria, France, Ireland and Greece. Trade flows did not change and neither the size of the flows during the period 2005-2009.
- **Poultry:** The total number of consignments steadily increased from 68.000 in 2005 to 93.000 consignments in 2009 (increase of 37%) and the number of animals transported increased during this period from 795 million to 1,104 million (increase of 39%). Around 75% to 88% of the consignments last less than 8 hours in travel time. This percentage decreases in this period. At the same time the percentage of consignments lasting 8 to 24 hours increased from 10% to 22%. About 2% to 3 % of the consignments travel more than 24 hours. Most of the poultry is shipped from Czech Republic, Germany, France and the Netherlands to Belgium, Germany and the Netherlands. Trade between the mentioned countries accounted for at least 60% of total intra-community trade in the period 2005-2009.



- **Horses:** The total number of consignments increased from about 30,000 to 42,000 in 2008 and then decreased to 39,000 in 2009. The number of horses transported increased from 176,000 in 2005 to 224,000 in 2007 and decreased to 147,000 in 2009. About 33% of the consignments lasted less than 8 hours, 33% 8 to 24 hours and also 33% more than 24 hours. The main destination of the intra-community trade is Italy, importing 55-59% of all horses traded; except for 2007 (44% share of Italy and 29% share of France). The main countries of origin of the horses are Romania, Poland, Spain and France (60 to 70% of total intra community trade).

It can be concluded, from table 3.14, that the number of consignments needing a rest stop during the journey (after 24 hours for pigs and horses and after 29 hours for cattle, sheep and goats) increased from 14,300 to 21,300 in the period 2005-2007 and decreased to 14,600 in 2009 (figures according to Traces). As shown by the case study of horses in section 3.8, in reality much more consignments need a rest stop. The tendencies however will be the same. Of the total rest stops 36% to 43% consist of consignments with cattle, 30-41% of consignments with horses, 20-23% of consignments with pigs and 2-6% of consignments with sheep or goats. Consignments with horses needing a rest stop increased relatively and consignments with cattle decreased in the period 2006-2009. Gebresenbet et al (2010) concluded that there is more capacity available at control posts than demanded by transport companies. This holds true for all main routes (flows of animals) and all species during the whole year.



Table 3.14 Number of consignments (intra community and import to and export from EU-27) lasting more than 24 hours (pigs, poultry and horses) or 29 hours (cattle, sheep and goats) in the period 2005-2009

Species	2005	2006	2007 ³	2008	2009
Cattle	5356	8357	8671	7081	5293
Sheep& goat	855	863	587	454	485
Pigs	3270	4434	4180	3846	2905
Poultry	1432	2063	2579	2591	2012
Horses	4818	5940	7902	7913	5924
Total (excl- sive poultry)	14,299	19,594	21,340	19,294	14,607

Source: Traces

By the end of 2010 there were in the EU-27 at least 8,775 slaughterhouse for ungulates (section I; Greece does not report any slaughterhouse in this category) and 1,831 slaughterhouses for poultry (section II) (see: http://ec.europa.eu/food/food/biosafety/establishments/list_en.htm and related sites per country).

The number of total cattle slaughtered in the period 2005-2009 varied from 28 to 29 million. For 2009, Eurostat reported a total of 27 million cattle slaughtered, however also only 0.1 million slaughtered cattle for Romania is reported while other years show a stable number of 1.1 million slaughtered cattle in Romania. Also per Member State no big shifts in the number of animals slaughtered can be detected in the figures. The calculated slaughter-index varies between 3% and 5% per year⁴. This corresponds with the figures of international trade of live animals.

³ See footnote 1.

⁴ Based on the Churn index (Motta, 2004) a slaughter index is calculated per species per year:

$I = (\sum_i (SL_{i,t+1} - SL_{i,t})) / \sum_i SL_{i,t}$ (I =index, i= EU Member states, SL = slaughtered animals (in heads), t=year). This index gives an indication about the shifts in slaughtered animals per country within the EU-27.



The number of pigs slaughtered in the period 2005-2009 varied from 240 million to 257 million, with the highest value reported in the year 2007. The calculated index (see footnote 3) has a value between 3% and 6% per year. The decrease in number of slaughtered pigs is relative high in many of the 'small' countries like Estonia, Malta, Latvia, Lithuania, Slovakia and Slovenia. In absolute numbers, the decrease is high in Denmark (- 2.8 million slaughtered pigs), Poland (- 4 million), Czech Republic (-1 million). The highest increase in number of slaughtered pigs per year is realised in Germany (+16% from 2005 to 2009; or from 48 million to 56 million slaughtered animals). Besides Germany, Spain and Portugal also reported an increase in the number of slaughtered pigs of 1.4 and 0.8 million respectively. This increased number of slaughtered animals in Germany is realised by the increased transport of piglets and slaughtered pigs from Denmark and The Netherlands from 8 million to 14 million heads per year from 2005 to 2009.

The number of sheep & goats slaughtered in the period 2005-2009 rose from 72 million in 2005 to 76 million in 2007. In 2009, the number of slaughtered sheep dropped to a level of 56 million from 72 million in 2008. The decline in number of slaughtered animals occurred in all sheep meat producing countries: UK, France, Ireland, Italy and Spain, with the exception of Greece where the decline was limited. The calculated index is 3% to 5% in 2006 and 2007, however for 2008 this index increased to 11%. This drop in number of animals slaughtered did not influence the intra community trade in live animals. In 2009, 4.4 million animals were transported alive between EU member States. This figure almost equals the trade levels in 2005, 2006 and 2007.

The numbers of horses slaughtered shows a steady decline in the main production areas Italy and France (destination countries of live horses for slaughter) and stable levels in Poland and Spain (countries of origin of live horses for slaughter). The decline in number of horses slaughtered in Italy can be related to the decline in consumption of horse meat in Italy (in Italy about 50% of the horse meat is consumed within the EU-27). Because of missing values the index could not be calculated.



Table 3.15: Values⁵ of indicators and the remarks for the issue Trade flow of live animals

Indicator	Value	Remarks
1. Number of animals transported (total / short distance) a. Cattle b. Pigs c. Sheep and goat d. Poultry e. Horses	99 /102 130 /130 104 /109 125 /110 97 /81	For sheep exclusive 2007. If 2007 would be included the index would increase to 142.
2. Number of consignments (total / short distance) a. Cattle b. Pigs c. Sheep and goats d. Poultry e. Horses	99 / 95 126 /123 100 /96 122 /112 122 /105	From indicator 1 and 2 can be concluded that the number of animals per consignment decreases for horses. For other species there is a small increase or no change.
3. Entrance of Bulgaria and Romania	1-1-2007	Entrance was on same date as the implementation of Regulation (EC) 1/2005
4. Number of slaughtered animals per species in EU-27 a. Cattle b. Pigs c. Sheep and goats d. Poultry e. Horses	99 102 90 119 79	The indicator for horses is not reliable. From many countries and or years the number of slaughtered animals is not available.
5. Slaughter capacity per Member State Derived from the churn ratio (see footnote 5, and Matto, 2004)	Cattle 3-5% Pigs 3-6% Sheep 3-11% Poultry 3-7%	Sheep 2009 not calculated because of the missing values.

⁵ Value :can be quantitative or qualitative In both cases the period 2005-2006 is compared with period 2007-2009.



6. Establishment of new slaughterhouses per species	Number of slaughterhouses is declining, exception is Slovenia where the number increased from 28 to 47 in the period 2005-2009.	Only data per 1/1/2011 available. Only 4 CA filled in the number of establishments certified and the number of withdrawn certificates.
7. Regional specialisation	No impact	The only significant development in the period 2005-2009 is the increase of slaughtered pigs in Germany combined with increased transports of pigs and piglets from Denmark and The Netherlands. This development is more related to slaughter costs than to the implementation of Regulation (EC) 1/2005.
8. Animal disease in EU	No impact	CA and transport companies see only very limited impact of trade limitations (region, period, species) caused by infectious diseases.

For poultry the number of slaughtered animals is far from complete for the period 2005-2009. The index is based on figures from 21 EU-Member States (exclusive Belgium, Czech Republic, Germany, Ireland, Netherlands and Romania) and varies from 3% in 2008 to 8% in 2007.

3.5 Socio-economic aspects

3.5.1 Main Conclusion

Transport cost has increased with the introduction of Regulation (EC) 1/2005. These increased costs are mainly caused by mandatory adjustments of the means of transports and additional administrative costs (see section 3.7).

The mandatory investments in means of transport have been estimated at about 15,000 Euro, including a 4,000 Euro system for heated drinking water, which is not mandatory as such. However animals should have access to water (Regulation (EC) 1/2005, Annex 1, chapter III, Art 2.7). For horses, an additional investment estimated at 20,000 Euro is mandatory for building individual stalls. The additional costs related to these investments increases the total costs of transport--2.9 % for transport of horses and 0.6 to 0.8 % for all other species.

The additional costs for transport companies are not reflected in the prices for transport of live animals. In some cases, prices remained unchanged or even decreased after the implementation of the Regulation. This means that the margins of transport companies travelling in compliance with the rules declined.



3.5.2 Introduction

Several innovations have been introduced by the Regulation in place from January 2007 that may influence journey costs for the transport of live animals within European Union. For example, more liabilities are assigned to individual operators (organiser, keeper, transporter, driver and "attendant") and most of their law prescriptions are specified. Furthermore, in case of an infringement, additional checks may be required with the possibility of incurring in suspension or withdrawal of certificate for animal transport or prohibition of transit through the territory of a Member State.

More training for drivers and personnel handling animals is required; they have to follow training courses on relevant technical and administrative issues of legislation, successfully complete them and pass an examination in order to obtain a certificate released by the competent Authority, which is essential for the development of their activities. More controls are also carried out based on the use of new technologies "providing global, continuous, accurate services and guaranteed timing and positioning services", such as satellite-based navigation systems. The use of a journey log has become mandatory for all long journeys, with the inspection of animal's condition once they arrive at destination and recording, for example, number of fit, unfit and dead animals on arrival. Rules for the registration of transporters have become stricter (traceability, contingency plans, training courses, etc...) with obligation to hold a copy of authorization of the above-mentioned.

In addition to the already mentioned satellite navigation system, the means of transport by road must be equipped with artificial ventilation facilities, temperature regulating systems with a warning system in drivers' cabin and feed and water arrangements.

What happens before (for example, on farm) and after transport (for example, at slaughterhouses) is also regulated, with rules concerning both loading and unloading operations of animals and handling of animals. The personnel handling animals must carry out their tasks without using violent means that may cause unnecessary fear, injury or distress.

Finally, new liabilities are assigned to "attendants", which operate in intermediate stops (assembly places and control posts).

In this section the additional costs of transport by road has been investigated and transport costs were calculated based on 4 different case studies.



3.5.3 Methodology

In order to carry out the transport cost analysis, for each of the four case studies, two or three transport companies were consulted directly by CRPA in order to collect data about the prices they apply for the transportation of animals and about the investments they had to carry out on the means of transport in order to comply with Regulation (EC) 1/2005. Data concerning the extra investment costs have been also collected at companies specialised in the construction of trucks and trailers for the transport of animals.

From the questionnaire, a larger group of transport companies could be reached, which had to reply to questions concerning the costs of adaptation and on the means of transport. These data have been used as a final check on the information gathered directly from the transport companies.

3.5.4 Adjustment costs of means of transport by road

Regulation (EC) N° 1/2005 introduced some important modifications to the means of transport which mainly concern the following aspects:

- characteristics of roof;
- watering of animals;
- artificial ventilation;
- satellite navigation system;
- measurement and monitoring system of temperature.

Moreover, as regards the transport of horses, it should be considered that it is compulsory to transport them in individual stalls for long journeys (over 8 hours).

In Annex 7, all assumptions regarding the adjustments of means of transport are described. In Table 3.16 the major additional costs for adjustment of articulated lorry and trucks to Regulation (EC) N° 1/2005 are summarised.

Overall, additional investments for long journeys amounted to 13,300 Euros for an articulated lorry and 15,100 Euro for a truck consisting of a road tractor with trailer.

For the transport of horses an additional investment is necessary for building individual stalls by means of partition walls within the means of transport. This investment reduces the available housing area by about 9-10%. For example, an articulated lorry that was able to transport 21 horses before the introduction of



Regulation (EC) N° 1/2005 currently can only transport 19 horses. For an articulated lorry to be able to transport 19 horses, the additional cost for the building of individual stalls is approximately 20,000 Euros.

Table 3.16– Partial and total investments for adjustment of means of transport by road (cattle, sheep or pigs)

investment item	Mean of transport	
	Articulated lorry	Truck (*)
Insulated roof	1,000	1,500
Drinking devices with tank/s	2,750	3,500
Systems for heating drinking water (***)	4,000	4,000
Satellite navigation system (**)	3,800	3,800
Artificial ventilation facility	1,750	2,300
TOTAL	13,300	15,100
% Increase of investment in means of transport	6.7%	7.5%

(*) road tractor with trailer

(**) including measurement and monitoring system of temperature

(***) investments in systems for heating drinking water are not mandatory but are added because according to Annex 1 chapter III, art 2.7 animals shall be offered water.

3.5.5 Case studies for assessment of transport costs

For the transport cost assessment, four case studies were carried out. TRACES was used in order to identify the largest intra-community trade per animal species. Based on this data processing, four case studies were selected.

Analysing TRACES data the following main flows were identified:

- cattle (broutard) from France to Italy;
- pigs from Denmark to Germany;
- sheep from Hungary to Italy;
- horses from Poland to Italy.

Subsequently these flows are described on the basis of processing data recorded on TRACES related to the period 2005- 2009. In Annex 8 all technical assumptions have been described for the four above mentioned cases.



Table 3.17: Transport prices of live animals and compliance costs with Regulation (EC) 1/2005

	Case			
	Cattle	Pigs	Sheep	Horses
Place of origin	Varenes (F)	Kolding (DK)	Nyíregyháza (HU)	Radzymin (PL)
Place of destination	Verona (IT)	Cloppenburg (DE)	Acquapendente (IT)	Palo del Colle, Puglia (IT)
Distance	680 km	420 km	1,347 km	2,132 km
Duration of the journey ¹	11 h 00 min	7 h 48 min	19 h 20 min	31 h 54 min
Stop at control post	No	No	No	Yes
Before implementation of Regulation 1/2005				
Number of animals per journey	60 ³	750	600	21
Price of transport (euro)	2,700	1,200	3,900	4000 ²
Price per euro per km	3.97	2.86	2.90	1.88
Price in euro per animal	45.00	1.60	6.50	190
After implementation of Regulation 1/2005				
Number of animals per journey	60	750	600	19
Price of transport (euro)	2,600	1,200	3,900	3650 ²
Price in euro per km	3.82	2.86	2.90	1.71
Price in euro per animal	43.33	1.60	6.50	192
Adjustment costs of means of transport (euro per journey)	16.37	9.24	29.63	117.25
Increase of costs of transport (in %)	0.6	0.8	0.8	2.9

¹including loading and unloading and mandatory rest stops ; rest time at control post is not included.

²exclusive costs for stop at control post (375 Euro).

³ live weight 300 kg

⁴ live weight of 30 kg

From Table 3.17 it can be concluded that the price of a journey was equal or lower after the implementation of Regulation (EC) 1/2005 compared to the period before implementation. This means that the additional adjustment costs caused by the regulation are borne by the transport companies for all the four cases. The



adjustment costs vary from about 10 to 120 euro per journey, which in percentage terms oscillates from a 0.6% cost increase for cattle, and up to 2.9% for horses.

Transport costs are a substantial part of the total costs for animal production, especially if animals are transported over very long distances. In the above mentioned case studies, the total transport costs for cattle, pigs, sheep and horse are respectively 4.7%, 3.6%, 9% and 20.2% of the value of the animals on the truck.

Table 3.18: Breakdown of the costs items of transport costs of live animals for the transport of cattle from France to Italy for 2005 and 2008

Cost item	2005		2008	
	in euro	% of total costs	in euro	% of total costs
labour costs ⁽¹⁾	1,411	0.45	1,540	0.44
Fuel ⁽²⁾	611	0.19	764	0.22
Truck ⁽³⁾	602	0.19	618	0.18
toll	303	0.10	303	0.09
other	150	0.05	150	0.04
Overhead ⁽⁴⁾	83	0.03	108	0.03
	3,159	1.00	3,483	1.00

1. Labour costs increased because of increase of wages from 26.36 euro per hour in 2005 to 28.77 euro per hour in 2008 (see http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/dataset?p_product_code=TPS00173).
2. Fuel costs increased because of increase of diesel prices from 0.8624 euro per litre to 1.0787 euro per litre in 2008 (see www.bdo.nl).
3. Truck costs increased because of the additional investments according to regulation 1/2005 with 16.37 euro (see table 3.17).
4. Overhead costs increased because of the additional administrative costs for filling in the journey log and send it to the competent authorities (see section 3.7).

Source: Transport costs model (LEI-Wageningen UR).

From Table 3.18 it can be concluded that for the journey from France to Italy about 33% of the costs are labour costs for the drivers. This labour costs is increasing because of the increase of wages. Another important cost item is fuel costs. These costs strongly depend on the fuel prices which have been fluctuating a lot during the period 2005- 2010 (see www.bdo.nl). Also the truck costs and overhead costs are increasing for this journey however the relative costs are decreasing. This explains why a 6-7% increase of investment costs implies only a 0.6-0.8 increase of the total costs of transport. The additional costs related to the investment in partition walls and the lower animal density on the truck generates a transport cost increase of 2.9% for horses.



3.5.6 Results of the survey among stakeholders

Animal welfare groups, control post owners, slaughterhouses, scientists, national competent authorities and trade and transport companies were asked as to which part of the Regulation is most difficult to enforce/fulfil/administer/control, referring to specific articles of the Regulation.

According to *animal welfare groups*, the most difficult part to apply is related to journey and rest times (6 answers of 38), closely followed by additional provisions for long journeys (5 of 38), general conditions for the transport of animals reported in Article 3 (5 of 38), housing surfaces on means of transport (4 of 38) and the statements on the fitness for transport (4 of 38). With regard to fulfilment and administration, the most difficult parts are those related to the general conditions for the transport of animals listed in Article 3 and the certificate of approval of means of transport by road (Article 18), respectively. Finally, as regards the animal welfare groups, the most difficult parts of the regulation concerning the controls seems to be those related to the general conditions for the transport of animals listed in Article 3 and the training of staff of the competent authority (Article 16).

According to *control post owners*, the most difficult part to apply is related to journey and rest times. The few answers on other issues cannot be processed. The number of responses from slaughterhouses and scientist are too low to present their opinion.

National competent authorities were asked which cost item had changed most as a result of the implementation of Regulation (EC) N° 1/2005. Only in 5 out of 22 cases, adequate answers were provided and an increase in investment costs to adjust the means of transport resulted from the sum of these scores. The few answers related to the part of the Regulation which is the most difficult to enforce, fulfil, administer and control cannot be processed.

With regard to the development of guides to good practice which shall include guidance on compliance with Regulation (EC) N° 1/2005 (Article 29), from the answers of the competent authorities consulted, these have been developed in eight member states: Denmark, The Netherlands, Italy, Croatia, France, UK, Ireland and Romania.

Traders and transport companies were asked which **cost item** changed most as a result of the introduction of Regulation (EC) N° 1/2005 (question 30). All interviewees agreed upon the fact there had been an increase in investment costs to adapt the means of transport (70 points) followed by the administrative costs (58 points).



According to 87% of the transport companies, the introduction of Regulation (EC) N° 1/2005 has resulted in increased costs of the means of transport by road transporting animals (question 31).

In addition, transporters who answered in the affirmative way were asked to indicate for each species (cattle, pigs, sheep, horses and poultry) and journey time (<8 h, from 8 to 24 h, > 24 h) the extent of the increase in cost. For all species the highest scores were obtained for journeys longer than 8 hours:

- 28 (both from 8 to 24 h and > 24 h) versus 25 (< 8 h) for cattle;
- 35 (from 8 to 24 h) and 30 (> 24 h) versus 29 (< 8 h) for pigs;
- 22 (both from 8 to 24 h and > 24 h) versus 18 (< 8 h) for sheep;
- 19 (from 8 to 24 h) and 20 (> 24 h) versus 12 (< 8 h) for horses;
- 12 (both from 8 to 24 h and > 24 h) versus 8 (< 8 h) for poultry.

The allocations of **investment costs** related to means of transport by road and **costs** related to staff **training** are reported in the Table 3.19.

Table 3.19: Allocation of investment costs for means of transport by road (€ / truck) and costs for the training of staff (€ / person) after the introduction of Regulation (EC) N° 1/2005

A	B	C	D	E	F	A-F	G
N	n	n	n	n	N	11,300	1,500
1,000	200	6,000	5,000	500	2,000 (*)	14,700	1,500
-	500	500	-	-	N	-	-
1,000	1,000	250	300	500	8,500 (**)	11,550	100
2,000	2,500	3,000	2,000	500	0	10,000	350
N	n	n	n	n	N	-	55
N	n	n	n	n	N	-	55
-	-	-	-	300	-	-	75
N	n	n	n	n	N	-	200

A = roof insulation; B = temperature monitoring system; C = navigation system; D = ventilation system; E = annual contract with the provider of the navigation system; F = other investments; AF = total items A, B, C, D and F; G = training of staff. n = no data.

(*) system for evaporative cooling; (**) not specified.



Overall, the total additional costs to be considered for the adjustment of the means of transport by road amounted to 11,900 Euro per single vehicle (value slightly lower than that found during the analysis of several case studies, see Table 3.16). High variability was observed for individual items and, in particular, for the temperature monitoring system the additional costs ranged from 200 to 2,500 Euro, for the navigation system this ranged from 250 to 6,000 Euro and for the ventilation system from 300 to 5,000 Euro. This variation may be attributed to the fact that some equipment includes some items and others are single cost items. However, an important conclusion that can be drawn is that the total adjustment costs (A-F) given by these companies is in line with the investment costs reported in Table 3.16.

As regards to the cost for the training of staff (column G), given all the answers, an average of 479 Euro / person is obtained. Some companies have indicated very high costs (equal to 1,500 Euro / person) others very low costs of training staff. This is certainly due to the high variation of labour costs between Member States and to the different way of application of the courses.

The reduction in the number of animals arriving at their destination with bruises and / or injuries or death are reported as the main **additional benefits** obtained through the implementation of Regulation (EC) N° 1/2005 (see Table 3.20).

Table 3.20: Benefits considered by transport companies due to the implementation of Regulation (EC) N° 1/2005

Benefits	Percentage distribution of answers	
	YES	NO
Lower number of animals dead on arrival	24	76
Lower injuries	24	76
Lower bruises	24	76
Improved meat quality	18	82
Bureaucracy reduction	6	94
Other	3	97

Farmers were asked whether the introduction of Regulation (EC) N° 1/2005 had resulted in increased costs of the means of transport by road transporting animal (question 31). The larger majority of farmers share this view (97% of answers).

In addition, farmers who answered in the affirmative were asked to indicate for each species (cattle, pigs, sheep, horses and poultry) and journey time (< 8 h, from 8 to 24 h, > 24 h) the extent of the increased cost.



For all species the highest scores were obtained for journeys longer than 8 hours (both from 8 to 24 h and > 24 h): 141 versus 108 for cattle, 160 versus 110 for pigs, 124-126 versus 84 for sheep, 119-120 versus 80 for horses and 120 versus 81 for poultry.

Farmers were also asked if they had additional cost related to the implementation of Regulation (EC) N° 1/2005. Almost all farmers answered 'yes' (86% of answers). Much confusion has been made, however, when farmers have shown the main types of costs incurred, because the question was referred to the costs of husbandry and, instead, in many cases cost of changes on public transport were referred to. For example, according to Spanish farmers there was an increase in the cost of means of transport due to the installation of troughs and roof insulation. According to these farmers, journeys times and rest periods led to increased costs estimated at around 16-20%. The training of drivers has been indicated by other farmers.

Among the costs incurred by farmers, the costs related to slaughter of animals unfit for transport is certainly present; in fact, this operation must be performed by the veterinarian or staff specifically trained under his control.

Finally, farmers were asked the additional benefits obtained in the farm following the implementation of Regulation (EC) N° 1/2005 (see Table 3.21). According to the farmers, the animals that arrive at destination with bruises and / or injuries or death are especially reduced.

Table 3.21: Benefits considered by farmers due to the implementation of Regulation (EC) N° 1/2005

Benefits	Percentage distribution of answers	
	YES	NO
Lower number of animals dead on arrival	83	17
Lower injuries	65	35
Lower bruises	63	37
Improved meat quality	7	93
Bureaucracy reduction	0	100
Other	1	99



3.5.7 Final considerations on socio-economic issues

The transport companies of live animals within the European Union seem to be the most penalised by the introduction of Regulation (EC) N° 1/2005, in particular, as regards to the investment needed for the adjustment of means of transport, the higher administrative costs and competition of transporters not complying with the Regulation.

16 out of 21 competent authorities answered the question about the change in administrative costs. They answered that administrative costs increased to a limited extent (5 to 15%). The competent authorities did not have a total overview of the type of changes in administrative costs only example were given like:

- approval costs for trucks decreased in the Netherlands because no approval is required anymore for trucks driving less than eight hours;
- additional public costs for training (NL);
- only limited increase for competent authorities compared to the increase of administrative costs for control posts and trade companies (DE).

The administrative burden (see definition in section 1.2 of Action programme for Reducing Administrative Burdens in the EU (see website: http://ec.europa.eu/enterprise/policies/better-regulation/administrative-burdens/action-programme/index_en.htm) for the industry has been increased by the cost increase of:

- Filling in a journey log and sending it to the competent authorities (so far been paper work);
- Approval of the transport company;
- Approval of the means of transport;
- Approval of the competence of drivers.

These are all legal requirements. However the additional administrative burden cannot be estimated because also before the implementation there were legal requirements per MS, which were not investigated during the course of this study.

To reduce the administrative burdens, till now, no use is made of electronic and web-based reporting (as one of the respondents state: it is still all on paper). On EU level a pilot project is executed to realise a central electronic database for transport of live animals (JRC, Dear Trace, March 2011).



In Annex III of the action programme for reducing the administrative burdens, no reference is made to Regulation 1/2005.

As concluded in section 3.4 the Regulation did not affect the trade flows of live animals. The flows increased in size and this means that also the employment for transport companies increased (but not significantly impacted by the Regulation). The Regulation did have an impact on the administrative costs which is mainly labour. The total impact on employment however will be limited (so no significant impact on employment by Regulation 1/2005).

The means of transport by road for long journeys after the introduction of Regulation (EC) N° 1/2005 had to undergo significant changes, mainly on the characteristics of roof, watering of animals, artificial ventilation, satellite navigation system and measuring and control of temperature.

The processing of data collected by IBF at manufacturers of means of transport by road and the survey data showed a total additional investment of these interventions of 13,300 Euro on average per vehicle; the cost increases by about 6-7% per truck which consists of a road tractor with trailer. In the case of transport of horses the additional investment for the subdivision in individual stalls is estimated at 20,000 Euro per vehicle. The increase of total transport costs per journey oscillates between 0.6% and 0.8% for cattle, pigs and sheep and is 2.9% for horses.

The investment cost for the adjustment of the means of transport has been borne by the transport company and has not led to increases in market prices for transport of live animals. During the case studies, the incidence of this investment per kilometre travelled by vehicle during his lifetime was calculated: 0.022 Euro / km for vehicles transporting cattle, sheep or pigs and 0.055 € per km for vehicles transporting horses.

Despite these additional costs charged to transporters, the prices to transport live animals within the EU remained unchanged or even decreased. For example, in the case studies a decrease of 3.7% was reported for cattle from France to Italy and of 8.7% for horses from Poland to Italy, while the price remained unchanged for transporting sheep from Hungary to Italy and piglets from Denmark to Germany. Also transport companies from Germany reported unchanged prices for the transport of live animals while in the Netherlands an annual price increase of 2.3% was reported for the period 2006-2009. The lack of increase in prices is mainly due to "unfair" competition of transporters that travel at lower prices because they do not comply with the regulations in force both for animal welfare during transport (observing of journey times and rest periods of the animal with any stop at control posts, absence or inadequate adjustment of the vehicle, etc.



..) and for daily driving times (not respecting daily journey times, forgery of instrumentation on board, etc.). Control activities of the competent authorities should arrest this phenomenon more vigorously; otherwise the transport companies that travel in compliance with the rules will have unsustainable costs compared to the market price made by those who travel not complying the rules and the law.

The degree of non-compliance is the highest for transport of horses, as for horses the highest cost increase has to be faced by the transport companies. Enforced control on horse transport is therefore even more urgent than for other animal species.

3.6 Regional implications

There is no indication that Regulation (EC) 1/2005 has affected the competitiveness of animal production in the remote areas of the EU-27. The following facts support this conclusion:

- In most of the remote areas animal production is at the same level after and before the implementation of the Regulation. This is partly caused by quota systems (i.e. milk quota) based on historical production;
- Only one derogation based on Article 30 of the Regulation is reported (in Catalonia, which cannot be regarded as a remote area);
- Slaughterhouses are available in many of the remote areas.

The regional animal production, within the EU-27 is strongly historically based and partly frozen by the Common Agriculture Policy (CAP) by the introduction of market support, border protection and quota systems. One of the impacts is that the self-sufficiency of the different meat products are relative stable in the period 2005-2008 (see http://ec.europa.eu/agriculture/agrista/2009/table_en/D14-3-41431.pdf) : pig meat 106-108%, beef & veal 96 to 99%; poultry 101-103% and sheep 71-75%.

Also within the EU the self-sufficiency did not change (see Table 3.22) in the period 2005-2008. An exception is Germany where self-sufficiency increased in this period from 99 to 107. This means that meat or live animals have to be transported from countries with self-sufficiency higher than 100 to countries with self-sufficiency lower than 100.



Table 3. 22: EU countries divided in different categories of self-sufficiency of meat in the period 2005-2008

Self-sufficiency of meat (production as percentage of consumption)	EU countries
>150	Belgium & Luxembourg, Denmark, Ireland and Netherlands
100-150	Spain, Germany ¹ , France, Lithuania, Hungary, Austria, Poland and Finland
75-100	Czech Republic, Estonia, Italy, Cyprus, Slovenia
<75	Portugal, United Kingdom, Bulgaria

¹self-sufficiency increased from 99 to 107 in period 2005-2008.

Source: AMI-Marktbilanz; Vie und Fleish (Weiss et al, 2010); table 8.7

Derogation for remote areas

Based on the questionnaires only one derogation related to Article 18(4) and Article 30(6) and (7) of the Regulation is reported from Spain. In Catalonia decret 286/2006 is in place to develop the register of transport. From Cyprus no transport of live animals is permitted to the main land because control post are lacking at Port of Pireaus in Greece. Cypriot veterinarians do not give permits for these journeys. Only the competent authorities in Romania see effects of the implementation of the Regulation on the animal production within remote regions. Also Romanian small and medium enterprises asked for derogation. No information is available why the derogation has not been applied nor on the type of effects the Regulation has on animal production within remote areas in Cyprus or Romania.

Number of slaughterhouses

As stated in section 3.4 the total number of slaughterhouses in the EU-27 is decreasing. Only in Slovenia an increase in the number of certified slaughterhouses is reported in the period 2005-2009. The UK reports 10 certified slaughterhouses on Scottish islands and 2 on the Channel Isles. Estonia reports two slaughterhouses on Saaremaa, France reports three slaughterhouse on Martinique and three slaughter houses on Guadeloupe and Sweden reports one slaughterhouse in Gotland.

Animal production in remote areas of the EU

For 12 remote regions of the EU (Cyprus, Illes Balears (ES), Ciudad Autónoma de Ceuta (ES), Canarias (ES), Corse Sicilia (IT), Sardegna (IT), Malta, Região Autónoma dos Açores (PT), Região Autónoma da Madeira (PT), Scotland (UK) and Northern Ireland (UK)) the number of cattle, pigs and sheep are described in Annex 5. Al-



though there are lot of missing values it can be concluded that animal production does not differ much between the periods 2005-2006 and 2007-2009. This holds for cattle, pigs and sheep.

Discussion

There is no hard evidence that the implementation of Regulation (EC) 1/2005 had an impact on remote areas. In many areas animal production is still at the level before the implementation. However it is unknown what the long term impacts of the Regulation will be. Maybe farmers and slaughterhouses are suffering at this moment. This could mean that animal production will be reduced in the future.

3.7 Administrative aspects

Regulation (EC) 1/2005 requires filling out transport logs, request authorisations to transport and certificates for approval of the means of transport. By means of specific questions in the questionnaires this issue has been faced.

The traders and transport companies were asked the time required to fill the journey log for each delivery and subsequent submission to the competent authorities and time dedicated to obtain transporter authorization and certificate of approval of means of road transport. Relating to certification, time includes both the compilation of documents and the inspection of veterinarians on the vehicle.

The time requested to fill journey log and sent it to the competent authorities amounted on average to little more than 50 min for each load transported.

Considering that the average cost of time labour in the EU-27 countries amounts to 25.79 Euros (http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/dataset?p_product_code=TPS00173), it is possible to estimate the administrative costs per cargo to 21.49 Euros with obvious differences if the labour cost between countries is considered: for example, the cost per transport becomes 1.37 Euros in Bulgaria, 9.14 Euros in Portugal and 25.21 Euros in France.

The number of days spent to obtain transporter authorization was highly variable and ranged from 1 to 60 days with an average of about 13 days. There is the doubt however that the interviewee may have misunderstood the time spent for this activity of the time required to obtain transporter authorisation. Removing this suspect, time dedicated to this activity could be estimated at 2-3 days.



Considering the labour cost of Eurostat data previously used, it is possible to estimate a cost related to the time spent to obtain transporter authorisation approximately to 515 Euros with obvious differences if labour cost between countries is considered: for example, the cost becomes 33 Euros in Bulgaria, 219 Euros in Portugal and in France 605 Euros.

Also the number of minutes spent in obtaining the certificate of approval was highly variable; for each vehicle, it ranged from 15 to 480 min. According to 5 interviewees this period was around 60 min; this value is confirmed by information received from manufacturers of means of transport by road.

Considering the labour cost of Eurostat data previously used, it is possible to estimate a cost related to the time spent to obtain the certificate of approval around 26 Euro per vehicle with obvious differences if labour cost between countries is considered: for example, the cost becomes 1.65 Euro in Bulgaria, 11 Euro in Portugal and 30 Euro in France.

3.8 Legal aspect and enforcement

3.8.1 Main Conclusions

The main conclusions are:

- Regulation (EC) 1/2005 is still not fully implemented in all MS. Rules regarding transport of pets and fish (Annex I, chapter V (2) of the Regulation) are still not implemented in 2010 in 4 respectively 7 of the 16 MS which responded to this question in the questionnaire;
- New administrative measures like approval of vehicles, certification of transport companies, certification of drivers, and introduction of journal log in Regulation (EC) 1/2005 can ensure a more systematic enforcement of the technical rules. However given the first conclusion and a far from optimal communication between MS this is still not realised in practice.
- Differences in the way of implementation. This can influence the level playing field of transport companies within the EU (i.e. drivers in DK need a training course of 5 days every five years for their certificate while drivers in other MS need a training of only 0.5 days once);



- Differences between MS exists regarding enforcement (number of checks, type of checks, mandate of inspectors); This affects animal welfare if longer routes are chosen by transport companies because of stricter enforcement in some transit countries (i.e. Austria), which is as such a violation of Art 3 (a) of the Regulation;
- More attention is paid to the enforcement of journey logs (i.e. Italy in 2009 about half of the infringements dealt with absent, irregular or incomplete journey logs);
- Journey times in journey logs are still not regularly checked; the case of horses, transported between 20 and 24 hours according to the journey log, showed that almost half of them should have included a rest stop at a control post. This percentage increased in the period from 2007 to 2009;
- Penalties differ between MS for the same infringement (minimum fines from 75 euro in France to 2000 euro in Austria and maximum fines up to 6 months imprisonment in France and the UK);
- Action plans (Art 27(2)) contain many trainings, set up of checklists and guides but in many cases the action plan is not based on an analysis of the major deficiencies detected. Also an analysis of the major deficiencies is lacking.
- Implementation of Regulation (EC) 1/2005 has contributed to more awareness of inspectors, drivers and people handling animals during transport. Also the number of unfit animals for transport decreased.

3.8.2 Introduction

Regarding legal aspects and enforcement it is hard to get uniform facts and figures. This makes it impossible to compare the information between MS. This is partly due to differences in definitions and partly due to the different (speed of) developments in the MS regarding Regulation (EC) 1/2005. In this section many statements are supported by case studies. These case studies do not cover the total problem but give insight into the existing problems.

3.8.3 Legal aspects

FVO reports in the period 2007-2010 show that Regulation (EC) 1/2005 is still not fully implemented in all 27 EU MS. Most of the MS have no national regulation of the category other animals (Annex I, chapter V (2). In



Table 3.23 the answer of the competent authorities regarding the implementation of Regulation (EC) 1/2005 for pets and fish are listed. Of the 16 EU MS who answered the question 12 countries have implemented the Regulation for pets and 9 countries have implemented the Regulation for fish. In some countries like Romania, France, Bulgaria fines are relatively low (not really dissuasive). In Luxembourg applicants for authorisation for long journeys are not requested to provide contingency plans in the event of emergencies and no freedom of infringements is asked (also lacking in Italy).

Despite the fact that the Regulation has to be implemented in the same way in all 27 EU MS there still are discussions in different MS about part of the regulation (i.e. what is an economic activity (Art 5(1); length and start of a journey (art 2 j and m), art 3 (g) and Annex I chapter VII regarding height and space allowance of pigs and goats). It is not possible to calculate the costs associated with the lack of harmonization between different legislations. The lack of harmonization is caused by different aspects and would need a separate study to be able to calculate the associated costs.

The national implementation of Regulation (EC) 1/2005 differs in speed among different MS. FVO reports of 2007 conclude that the implementation is delayed in Hungary and Latvia, for Spain there is a delay regarding the requirements of Art 11. This directly influences the start of training programs of inspectors, the availability of guidelines, the checks and so on. In some MS, national rules conflict with Regulation (EC) 1/2005 (i.e. Belgium regarding Art 13(4) and Lithuania where transport of horse for more than 8 hours (12 hours for intra community trade) is forbidden.

Not in all EU Member States are official Veterinarians mandated to put a penalty on drivers or have restricted legal power (i.e. in Poland and Hungary).

EAZA believes self-regulation would represent the most efficient and effective approach to protecting the welfare of animals during transport between EAZA zoos and aquariums. EAZA has laid down its principles for animal transports in the "EAZA guideline on animal transport" (2010). EAZA members are encouraged to follow the IATA Live Animal Regulations for the transport of animals by air, and the AATA Transport Guidelines for road, rail and boat transports (source: position paper of EAZA, December 2010).

This is partly due to differences in definitions and partly due to the different (speed of) developments in the MS regarding Regulation (EC) 1/2005. In this section many statements are supported by case studies. These case studies do not cover the total problem but give insight in the existing problems.



Table 3.23: Way that MS implemented Regulation (EC) 1/2005 for pets and fish

	Country	Way of implementation of Regulation 1/2005 for Pets and Fish
1	IE	Answer: Implemented in part i.e. Certain aspects of Regulation 1/2005 are considered to apply to pets and fish. National legislation SI 675/2006 as for all species.
2	DK	The general provisions in the Danish animal welfare act apply
3	NL	regulation 1/2005 is national regulation
4	SE	SJVFS 2010:2
5	UK	The Welfare of Animals (Transport) (England) Order 2006 and equivalent UK national legislation.
6	LT	Implemented : no info of the way of implementation
7	FI	Animal Transport Act 1429/2006
8	PL	Ustawa o ochronie zwierząt Translated: " Animal Protection Act"
9	FR	In France, Regulation 1 / 25 applies to all vertebrate animals, without exception. So far, there is not any specific recommendation except Express transport pets: GBP. Specific text for circus animals in preparation.
10-12	RO	Ord.16/2010 for pets no info for fish
	IT	Pets: State-Regions Agreement: Fish not implemented
	ES	Pets; RD 751/2006 ; Fish not implemented
13-16	LU	Not implemented;
	SI	
	SK	
	EE	
17	DE	No Answer
18	HR	Croatia is not yet a Member State, quoted details are for national transport companies and drivers
	Croatia	

3.8.4 Enforcement

According to Art 27.2 Member States shall submit an annual report on the inspections provided. These reports of the period 2007-2009 have been used to get insight into the number of checks (% of animals checked or % of vehicles checked), the number of infringements of the total checks and the measures taken.

Comparison of the enforcement before and after implementation of Regulation (EC) 1/2005 is not possible because other rules were applicable before 2007 and information about checks and infringements are not available for the period before 2007.

For the period 2007-2009 there is a huge variation of the number of animals checked (differs per species from almost zero to more than 100%). From these reports it is not clear what kind of checks are executed (only animal welfare aspects or also the vehicles and documents). In all countries the percentage of in-



fringements is very low for checks at place of destination. Exceptions are SE, FI, LT, CY (2009) and ES with a percentage of infringements per check higher than 10%. The percentage of infringement at road checks are in most countries far higher than at place of departure or place of destination (this holds for almost all years and countries) (see annex 6 table B6.1). Low percentages infringements at road checks (less than 1%) are found in Poland, Hungary and Greece. This is more than 50% in SI (2007), SE (2007 & 2008), RO (2009) and BU (2009).

Also NGO like Animals' Angels checks transports of live animals (see: <http://www.animals-angels.de/Reports-and-Documents,1045.html>). By checking 72 long distance transports 294 infringements were detected.

The huge variation of infringements per check can be explained by the type of checks that are performed, the way of checking (at random, all journeys, based on a risk assessment) and what is regarded as an infringement. It can also be questioned if the Veterinarian Officers (and police) is equally equipped and educated to perform checks at consignments with live animals. An indication of the existing variation is given by the number of training programmes in the action plans of different Member States and remarks in the FVO reports.

From the available figures from the MS reports it is impossible to conclude that the number of infringements are increasing or decreasing, given the former discussion. Without knowing the whole context changes in number of infringements or infringements per check cannot be explained.

Information on the type of infringements is not available for any MS. In the MS report of Italy in 2009 an analysis is given of the main infringements encountered on checks of 162 vehicles (see box 4). The total of infringements amounted to 293 (1 to 8 infringements per vehicle). 22% of the infringements are related to the vehicle, 27% to animal welfare and 51% to transport documents. The infringements related to the vehicles are mostly caused by irregular or missing partitions, no adequate drinking devices (in one case the drinking devices were fully lacking) and no adequate loading platforms. The infringements related to animal welfare are caused by excessive loading, rest time not respected and unfit animals for transport. The infringements related to the transport documents are caused by journal logs (incomplete, irregular or absent) but also to the absence of transport authorisation, driver's approval certificate and vehicle approval certificate.

Box 4: Main infringements identified in Italy in 2009



Main infringements identified in Italy in 2009 (see MS report of Italy 2009)

The analysis refers to checks of 162 vehicles with 293 infringements.

Vehicle	58	Animal welfare	71	Transport documents	135
of which partitions	29%	of which excessive load	46%	journey log	62%
drinking devices	28%	rest time not respected	28%	health certification	4%
ventilation/ temp control	7%	animals unfit for transport	18%	transport's authorisation	13%

3.8.5 Penalties

Between different EU MS there are huge differences in penalties for the same infringements. In Annex 6 Table B6.2 an overview is given for nine MS with a range of several euro to thousands of euros. The FVO reports (2009/8245, 2009/8263 and 2007/7333) state that penalties in France, Bulgaria and Lithuania are not dissuasive.

Little is known about the penalties per infringements. Only Austria and UK give some information of the relation between infringements and the penalties. In both MS, most of the infringements are handled via an oral or written warning (77-83%) and only 15-20% of the infringements were fined (got a ticket) or a legal process was started.

Withdrawal of authorisations of transport companies, driver's certificates or approval of vehicles is exceptional. Only three withdrawal of transport companies are reported for Denmark and France in the period 2007-2009. Only Lithuania reports 10 to 24 withdrawals per year for transport companies, vehicles and drivers. Besides withdrawals also some temporarily suspensions are recorded. The efficacy of the withdrawal of transport companies is further questioned because many transport companies have more than one (domestic or foreign) authorisation. Withdrawal of one authorisation has little or no impact on the transport company in this situation.

A major problem with regard to the penalties is the poor communication between competent authorities of different Member States (Art 26 of the Regulation). Given the action plan in the reports of MS some progress can be expected in the future. A remark made by the Dutch competent authorities is that they lack an overview of the transport movements of Dutch transporters moving animals between other MS than the



Netherlands. The Dutch competent authorities have no possibility to take action if other CA gives a notification of such a transport company, vehicle or driver.

3.8.6 Action plans of MS

Since 2007 every MS has to report annually to the Commission an action plan based on the analysis of the major deficiencies detected (Art 27.2). For many MS (DE, EE, EL, HU, NL, IE, NL, SK and UK) such action plan is not reported in 2009. For Ireland this is based on the analysis that no major deficiencies were detected. For other countries the action plan is limited to training of inspectors and/or police, development of guides or checklist and communication with stakeholders (SE, SI, LV, LT, IT, FR, FI, ES, BG). Only a few countries analysed the checks and infringements and produced an action plan which is derived from this analysis (AU, B, CY, CZ, DK, PT, RO). Common actions are, besides training and communication, intensifying road checks (risk based checks), and implementing joint checks by Veterinarian Officer and the national police.

Given the differences between MS regarding legal aspects, the number of checks, the number and type of infringements and the way of checking it can be expected that action plans differ per MS. However action plans are slowly evolving during the period 2007-2009 and systematic analysis of the major deficiencies is often lacking.

3.8.7 Successes

The implementation and enforcement of Regulation (EC) 1/2005 shows a huge difference among EU MS. Despite these negative sides also positive elements are recorded:

- The awareness of animal welfare during transport is increasing in the supply chain of animal production (transport companies, drivers, and people handling animals during loading and unloading). Also the awareness of veterinarian officers and police increases;
- From several MS it is reported that the number of animals unfit for transport is decreasing rapidly, simply because it is not allowed to transport them anymore;
- Rapid implementation of navigation systems on trucks. It can be questioned if this is caused by this Regulation. The possibility for transport companies to check the drivers has strongly influenced the quick adaptation of navigation systems. However as reported in section 3.3.6.7 the installation does not mean that navigation systems are used.



3.8.8 Specific Questions regarding legal aspects and enforcement

In the term of references (SANCO/2010/D5/ 116733) the following questions were raised regarding the legal aspects and the enforcement:

- 1 To what extent do the new administrative measures contribute to ensure a more systematic enforcement of technical rules?

- 2 Enforcement of:
 - Fitness for transport

 - Means of transport

 - Transport practice

 - Additional provisions for long journeys.

- 3 Has the introduction of navigation systems contributed to improve the level of enforcement on journey times?

- 4 What factor has contributed to a successful enforcement of the Regulation?

- 5 Inventory of difficulties to enforce main elements of regulation.

- 6 To what extent do MS' rules on penalties contribute to ensure enforcement of the regulation?

In this section every questioned is answered.

Ad 1. In general the mentioned administrative measures ensure a more systematic enforcement of the technical rules. However:



- Implementation of the administrative measure is not uniform in all MS (i.e. checks for means of transport, certification of competence, training of drivers etc.);
- There is still discussion on definitions (i.e. what is an economic activity Art 1 (5));
- Electronic databases of authorisations are not available (i.e. Poland, Italy, Luxembourg) or cannot be accessed by regional inspectors or the public (see FVO report 2009-8255).
- Is not always effective. Transport companies which authorisation is withdrawn in one MS can ask for authorisation in another MS (Art 10 and Art 11).
- Developments take place at different speeds in the EU-27. I.e. the stricter enforcement of the technical rules by administrative means in Austria compared to neighbouring countries shifts the routes of transport companies from Austria via the neighbouring countries to avoid checks and fines. In many cases this is a violation of Art 3a (minimise the length of the journey).

Ad 2. Enforcement of fitness for transport means of transport, transport practice, additional provisions for long journeys.

Given the available information on the type of infringements it can be concluded that fitness for transport, means of transport, transport practice and additional provisions for long journey are enforced (see box 4). 10 competent authorities have the opinion that the number of anomalies with regard to these aspects did not increase after the implementation of the Regulation. Half of them sees no change while the other half sees a limited to strong decrease of anomalies. Slaughterhouses and transport companies (with no differences between species) have the opinion that regarding transport's authorisation, drivers' certificate of competences and journey log records (only the transport companies) more anomalies occur after the introduction of the Regulation. It remains unclear how often these aspects are checked and how often violations are recorded. In all EU MS approval systems for transport companies, means of transport (including additional equipment i.e. water devices, navigation system) and drivers are operational.

Ad 3. Has the introduction of navigation systems contributed to improve the level of enforcement on journey times? In general this question should be answered with 'yes'. A more precise answer is that this improvement is relative small compared to its potential. On the question "is there any improvement of control mechanism by competent authorities because of the use of navigation system? ". 8 Competent Authorities



answered with a 'yes' and 7 with a 'no' (7 times no answer). In box 5 the travelling times of consignments with horses travelling 20 to 24 hours according to TRACES have been checked by an internet tool (routenet.be). From box 5 it can be concluded that minimal 27% of 2264 consignments with a time schedule of 20 to 24 hours in 2007 could not reach destination within 24 hours and should have used a control post. This percentage increased after 2007 till 49% of 2413 consignments in 2009. Given the way of calculation (excluding (un-)loading and resting times) these are optimistic estimates. Consignments of other species were not checked however it can be expected that the situation will not be different for consignments of other species.

Ad 4. What factor has contributed to a successful enforcement of the Regulation?

A number of factors have contributed to a successful enforcement of the Regulation:

- a. Development of guides to good practices;
- b. Administrative measures like approval of transport companies, vehicles and drivers;
- c. The central database "TRACES".

Ad 5. Inventory of difficulties to enforce main elements of regulation

From the inquiry 9 competent authorities faced problems with the enforcement of the main elements of the Regulation. Encountered problems deal with navigation & recording systems (ES, DK, EE), non-harmonisation of travelling times for animals and drivers' resting time (NL), the non-definition of economic activities (SE, NL), interpretation of several definitions, uniform execution of the control. In general transport companies and slaughterhouses did not face many problems after the implementation of the Regulation. The biggest problem they face is that rules and enforcement are not harmonized within the EU-27.

Ad 6. To what extent do MS' rules on penalties contribute to ensure enforcement of the regulation

This question cannot be answered within the context of this study because:

- a. If transport companies act risk based, the results of this study supports this assumption, the risk of a penalty multiplied by the penalty has to be weighed against the financial advantages not obeying the rules.



- b. Penalties differ a lot per MS as do the risk to get a penalty. The example of Austria (see box 6) shows that many checks combined with a relative high penalty encouraged transport companies to choose different routes to reach end destination. Probably the journey time will increase because of this with possible negative impact on animal welfare and violation of Art 3 (a).

Box 5: Journey time of horse in TRACES

Journey time of horse in TRACES					
For the period 2005-2009 all journeys lasting 20 to 24 hours have been checked for their real time needed to drive from the loading place to place of destination (exclusive loading and unloading time, resting time etc.) by using the internet tool on routenet.be using a truck of 40 tonnes. So this a save comparison of the time needed in reality to the time stated in the documents of TRACES.					
Percentage of consignments needing more than 24 hours to reach the destination per year and per hour stated in TRACES					
Hours according to Traces	2005	2006	2007	2008	2009
20	22%	20%	15%	22%	23%
21	56%	64%	5%	8%	80%
22	55%	21%	22%	50%	46%
23	52%	45%	10%	56%	92%
24	44%	47%	37%	22%	29%
All consignments of 20-24 hours	41%	36%	27%	34%	49%

Box 6: Enforcement in Austria



Enforcement in Austria

Alexander Rabitsch made an overview of the shortcomings of consignments checked in Carinthia in Austria in 2008. Of the 121 consignments checked 53 (44%) had no shortcomings. Of the shortcomings 55% got a warning and 46% a report. 70% of the consignments with a report were consignments with intra community trade and 30% domestic trade. In total 117 offences were recorded half of which (in-)directly affect the welfare of animals.

Because of the number of controls in whole Austria in 2008 the number of shortcomings went down compared to 2007 because many drivers decided to take another route to avoid a check in Austria. This is not allowed according to the regulation (EC) 1/2005 art.3 (a)

3.9. Overall evaluation

Data has been collected from intended countries and stakeholders, and despite that it has not been easy to collect sufficient data within the time range planned, the following overall picture can be drawn.

In 2009 about 400,000 journeys of live animals took place. Since 2005 this number has been steadily increasing.

Regulation (EC) 1/2005 has been implemented with various velocity within the EU-27. Nevertheless, part of the Regulation is not yet fully implemented in some MS in 2010. This difference in speed can be explained by the difference in legal status when Regulation (EC) 1/2005 was adapted in 2005. In some countries institutions to approve and certificate transport companies, drivers and trucks and training programs were already in place at that time while in other MS these institutions had to be established. This also impacts the enforcement and the communication between Competent Authorities of the different MS.

Because of the differences between MS there are still possibilities for transporters, traders, control posts and slaughterhouses to operate in an illegal way. This is pressed by the hard competition in the different animal production chain (economic driven and not quality based). For example a journey of 30 horses transported illegally from Spain to Italy costs 4000 euro while a legal transport of 22 horse, including a stop at a control post will cost 5500 euro (Spoolder et al, 2008, annex 11). Also in this study it is shown that transport companies had to invest in their trucks while the market prices for transporting live animals went down in some cases (see section 3.5.5). Also the fact that many of the journey times are set at such level that stops at control posts are not needed fits in this picture. These practices only come to a hold if the risk of getting



caught is high and if the penalties are dissuasive. In the present situation checks at the place of origin and at the place of destinations do not detect the illegal operations (in some cases this is also not possible because animals get loaded and unloaded during the journey). The risk of getting caught during a road check is low. In 2009 61049 road checks are reported in the MS reports (39930 were reported by Poland, 6320 by the UK and 4680 by HU, which leaves about 10.000 checks in the other 24 MS). Given the number of 400.000 journey of international transport of live animals the risk of a check is low, even for international long distance transport. Added to the fact that penalties in some countries are not dissuasive (see FVO reports) and communication of notification is far from optimal illegal operations will continue.

Transport companies and control posts willing to operate in a legal and animal welfare friendly way will have difficulties to survive in such a market because many other chain participants like slaughterhouses, farmers or traders do not demand that the transport has to be legal (it can even be doubted if they are fully aware of the rules). Also the study of Gebresenbet et al (2010) shows that control posts willing to operate legally have tough competition from control posts not fully operating in a legal way.

Guides to good practices for transport of live animal have been developed in at least eight of the EU MS (The Netherlands, Denmark, Italy, Ireland, UK, Slovakia, France and Romania). Guides to good practices adopted by transport companies and other chain participants are a way of self-regulation. The guides of good practices are in most cases developed with a strong involvement of the national government. Only in The Netherlands (Excellent Livestock Transporter Quality System (ELTQS)) and Denmark (A/S Baltic control LTD) guides to good practices have been developed by organisations of transport companies in cooperation with other chain participants. In January 2011 also an EU project started to develop a certification system for high quality control post. Within this project, 12 control posts and certification organisations are involved to develop such a system including the adaptation of the control posts in such a way that animals can be treated in an animal friendly way and that spread of disease can be minimised. Information about the costs to develop guides of good practices are scarce (varies from a few thousand euro to 10 000 euro). The development of a certification system is far more costly. To develop a certification system for control post 'costs' 115 labor days (see Gebresenbet, 2010, Annex III, 12).

Transporting live animals in an illegal way does not always mean that animal welfare is compromised. The risk will be higher for international long distance transport and especially in the cases of overstocking and skipping stops at control post.

4 Discussion and conclusions

4.1 Discussion

4.1.1 Quality of the data

Data was collected from intended countries and stakeholders. However, it was easy to collect sufficient data within the time scale planned (see table 4.1). As the project team, we dedicated a significant amount of effort to get answers from National Competent Authorities. Eventually, after extending the response period by more than one month we managed to obtain results from 18 out of the 27 MS.

Given the fact that implementation and enforcement of Regulation (EC) 1/2005 varies among MS and its implementation is still in progress, the impact of the Regulation may not become clear for a number of years, especially in the more remote areas of the Union.

Table 4.1 Availability of information per indicator for assessing the impact of Regulation (EC) 1/2005.

Issue	No information available	Information from some stakeholders	Reliable set of data
Animal welfare	<ul style="list-style-type: none"> dead on arrival lameness, injuries fitness for transport measures taken related to infringements or notification of infringements 	<ul style="list-style-type: none"> Developed and implemented training courses vehicles with improved design improved transport documentation number of assembly centres and control post made any regulation enforcement developed certification inspection and approval routines for all means of transport change in transporter authorisation by C.A. 	<ul style="list-style-type: none"> number of animals on long distance transport
Navigation system	<ul style="list-style-type: none"> improved journey log 	<ul style="list-style-type: none"> Type of navigations systems installed main functions of navigation systems number of vehicles with navigation system improved route planning improved controls by CA improved communication between drivers and stakeholders. 	



		<p>constraints of navigation systems</p> <p>benefits of navigation systems</p> <p>available types of navigation system packages</p>	
Trade flows		Establishment of new slaughterhouse per species.	All others (based on TRACES and Eurostat)
Socio-economic aspects		<p>Number and size of transport companies for live animals</p> <p>transport costs per species and cost item</p> <p>share of transport cost in supply chain</p>	
Regional implication		<p>regional animal production</p> <p>slaughterhouses in remote areas of</p> <p>derogation for certificate of approval means of transport.</p>	
Administrative aspects		time dedicated to administrative tasks	Labor costs per hour
Enforcement		<p>authorisation of transport companies</p> <p>authorisation of means of transport</p> <p>number of consignments checked</p> <p>Type of offences</p> <p>Level of penalties for infringements</p> <p>Follow up by the jurisdictional system</p> <p>institutions to enforce in place</p>	
Guides to good practices	Costs of development of guides to good practices	Development of guides to good practices	



4.2 Conclusions

The following conclusion can be drawn from this study:

- Implementation and enforcement of Regulation (EC) 1/2005 is still in progress in many MS (see reports of FVO and annual MS reports);
- Some progress has been achieved regarding animal welfare aspects by Regulation (EC) 1/2005. This opinion is shared by all stakeholders participating in this study. This holds in particular for the transportation of horses (partitioning) and animals unfit for transport (which is no longer permitted).
- A negative impact of the Regulation (EC) 1/2005 on animal welfare is that journeys, in some cases, are extended to take advantage of differences in enforcement and penalties between MS (see the example of Austria, box 6).
- For the main groups of animals there are no indications that animal welfare during transport has improved substantially with the introduction of Regulation (EC) 1/2005;
- Navigation systems are mandatory for all vehicles transporting animals over 8 hours since the beginning of 2009. These systems have been installed however the utilization is relative low although transport companies know the benefits of the systems. The improvement of journey logs is low (journey logs in paper form are still the norm) and only half of the respondent Competent Authorities see improvements in control by using the information from these navigation system. This is still in progress. According to all stakeholders also communication between different stakeholders improved only to a limited extent by the use of navigation systems;
- Trade flows of live animals have not seen significant impacts due to Regulation (EC) 1/2005. TRACES data show that the historic trend of increasing international trade of live animals continued after the implementation of Regulation (EC) 1/2005;
- According to manufactures of means of transport and according to transport companies, the investments and costs for transport companies increased by the implementation of Regulation (EC) 1/2005 due to the necessary adjustment of vehicles with insulated roofs, drinking devices, systems for heating drinking water, satellite navigation systems and artificial ventilation facilities. The costs for approval, training and administration increased the costs for transport companies. The market prices for transport of animals did not increase which means diminishing margins for transport companies which operate according the rules;
- Administration costs increased for National Competent Authorities and for transport companies after the implementation of Regulation (EC) 1/2005. For transport companies the estimated additional



costs are 25 Euro per journey, 515 Euro for transporter authorization and 26 euro per certificate of approval for a vehicle. These costs are mainly labour costs and thus differ between Member States. No reliable information is available on the additional administrative costs for national competent authorities.

- There is no impact of Regulation (EC) 1/2005 on the competitiveness of animal production in the remote areas of the EU-27 in the period 2007-2009. As this is a short term study long term impacts cannot be excluded;
- Regulation (EC) 1/2005 is not fully implemented in all MS in 2010 (see FVO reports);
- Regulation (EC) 1/2005 is implemented in different ways in different MS. This is harming the level playing field especially for transport companies;
- There is no uniform enforcement of Regulation (EC) 1/2005 in the different MS (see annually MS-reports based on Article 27.2) ;
- Journey times in journey logs are not regularly checked according to a case study for horses in the period 2005-2009;
- Penalties differ between MS and are, according to the FVO mission in some countries, not dissuasive;
- Action plans of different MS show a huge variation and are often not based on the analysis of the main deficiencies detected (see annually MS-reports based on Article 27.2) ;
- According to some animal welfare organisations and national competent authorities Regulation (EC)1/2005 has contributed to a better awareness of animal welfare aspects by different stakeholders involved in transport of live animals.

4.3 Recommendations

a. To increase the impact of Regulation (EC) 1/2005, especially with regard to animal welfare during transport the following steps are necessary:

- A uniform definition and interpretation of all aspects of Regulation (EC) 1/2005 i.e. training, equipment, checks, infringement and action plans;
- A uniform way of enforcement within the EU MS including checks on journal logs and journey times;
- Improved communication between MS (art 26) and uniform reaction on notifications of other MS;



- More uniform level of penalties in the different MS and at least a level which is dissuasive.

By harmonizing the Regulation and enforcement and by improving the communication the following impacts can be expected:

- A level playing field for transport companies and control posts;
- Positive selection of organisations especially transport companies and control posts willing to operate according to the rules;
- Long distance transport of live animals will become more expensive and trade flows may partly shift to the transport of meat;
- Animal welfare will increase;

b. Good guides to practices should be supported because organisations in the total supply chain are more likely to follow the rules and standards set by themselves. In most cases these guides to good practice are privately checked and can reduce checks by Competent Authorities in the long run or make it easier to perform more checks on companies not participating to certain certification schemes. This holds for all participants in the supply chain (farmers, transport companies, control posts and slaughterhouses). Incentives could be given to quality systems of transported and slaughtered animals carried out by the final users i.e. retailers. Within such quality system certified means of transport, certified control post and certified slaughterhouses should be mandatory.



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