

Formulating policies for the welfare of animals during long distance transportation

Andrea Gavinelli, Maria Ferrara & Denis Simonin

Summary

Long distance transportation of animals creates much public concern in the European Union (EU) and elsewhere, partly because of its visibility to the general public. The protection of animals during transport is thus a key element of EU policy for farm animal welfare. At the same time, animal transport has been vital to the structure of the food chain in Europe since the beginning of the Common Agricultural Policy. The authors describe the formulation of EU policy on long distance transportation. Initiatives are based on scientific risk assessment and considerations of international guidelines. The two main objectives of EU policy are to reduce long distance transportation as far as possible and to upgrade standards for transported animals. The extent of detail in regulations depends on the ability of the sector concerned to address issues and on continual upgrading of the awareness and knowledge of transport operators on animal welfare which is universally important for progress. The economic impact of legislative measures must be evaluated as part of the policy process, noting that proper animal welfare standards can generate direct and indirect economic advantages. Awareness of these welfare advantages in all sectors is essential for raising the quality of enforcement. Finally, policy goals should be monitored to verify the extent of their fulfilment. Efforts from competent authorities and transport companies in Europe are improving the situation. However, a strong legislative framework is likely to remain the best option for the coming years to ensure that

the welfare of transported animals is more than just a minimum.

Keywords

Animal protection, Animals, Community, European Union, Policy, Transport, Welfare.

Formulazione di politiche a tutela del benessere animale nei trasporti a lunga distanza

Riassunto

Il trasporto di animali a lunga distanza è diventato un tema di interesse pubblico nell'Unione Europea (UE) e anche nel resto del mondo, in gran parte per la sua visibilità. La protezione degli animali durante il trasporto è difatti un elemento chiave della politica dell'UE per quanto riguarda la tutela del benessere degli animali d'allevamento. Nel contempo, il tema del trasporto animale è divenuto un aspetto fondamentale della catena di distribuzione alimentare in Europa sin dall'istituzione della Politica Agricola Comunitaria. In questo lavoro gli autori descrivono il processo di formulazione delle politiche europee nel campo del trasporto animale a lunga distanza. Le iniziative sono basate principalmente sulla valutazione scientifica del rischio e sulle linee guida di riferimento internazionali. I due obiettivi principali delle politiche UE sono di ridurre i trasporti a lunga distanza per quanto possibile e di elevare gli standard per gli animali trasportati. Il grado di dettaglio delle norme dipende dalla competenza del settore coinvolto ad individuare e gestire i punti critici, dall'aggiornamento continuo e dalla sensibilizzazione sul benessere animale degli operatori addetti ai trasporti, aspetti riconosciuti

European Commission, Directorate General for Health and Consumer Protection, Unit D2, Animal Welfare and Feed, Rue Froissart 101, 1040 Brussels, Belgium
Andrea.gavinelli@ec.europa.eu, Maria.ferrara@ec.europa.eu, Denis.simonin@ec.europa.eu

come universalmente importanti per progredire in questo ambito. L'impatto economico degli atti legislativi va preso in considerazione come parte del processo politico, visto che elevati standard di benessere animale possono generare vantaggi economici diretti ed indiretti. La consapevolezza di questi benefici in ogni settore è essenziale per migliorare l'applicazione delle leggi e la qualità del servizio. Infine, i traguardi ottenuti dalla politica dovrebbero essere monitorati per verificarne il livello di realizzazione. In questo senso gli sforzi congiunti delle autorità competenti e delle compagnie di trasporto in Europa stanno migliorando la situazione. In ogni caso, un buon programma legislativo è verosimilmente la migliore alternativa per gli anni a venire al fine di garantire che il benessere animale durante il trasporto non si limiti a livelli minimi.

Parole chiave

Animali, Benessere, Comunità, Politica, Protezione animali, Trasporto, Unione Europea.

Introduction

In recent years, important advances have been made in the definition of animal welfare policies of the European Community (EC); this is acknowledged by the EC Treaty's *Protocol on Protection and Welfare of Animals* (10) which recognises animals as sentient beings. The Protocol requires that in formulating and implementing the Community's agriculture, transport, internal market and research policies, the Community and the Member States 'shall pay full regard to the welfare requirements of animals' (16).

The European Union (EU) animal welfare policies are founded on long-standing legislation (17) supported by internationally agreed recommendations and guidelines, including those developed within the framework of the Council of Europe (5) and the World Organisation for Animal Health (*Office International des Épizooties*: OIE) (20). The body of EU legislation on this issue is developed on the basis of clear scientific principles, taking into account public concerns, the input of stakeholders and possible socio-economic implications.

At EU level, there is a growing body of evidence that shows the interest of citizens in promoting animal welfare, not only for their own sake but also because 'consumers use animal welfare as an indicator of other, usually more important, product attributes such as food safety, quality and healthiness' (15). In 1997, Duncan and Fraser aptly wrote 'animal welfare is not a term that arose in science to express a scientific concept. Rather, it arose in society to express ethical concerns regarding the treatment of animals' (6).

The recent surveys published by the European Commission on the 'attitude of EU citizens towards animal welfare' that were conducted in 2005 (7, 8) and 2006 were key elements in the recent strategic choices of the Commission. The most recent survey was conducted in the 27 Member States and in the two candidate countries (Croatia and Turkey) (9) and confirms that animal welfare is an issue which citizens rank highly; giving the issue 8 out of 10 on average for importance. Most survey respondents perceive that welfare has improved in their country over the past decade, although 77% still believe there is more to be done.

Farmers are considered to be best placed to ensure these welfare improvements and Europeans have very clear opinions on whether producers should be rewarded for applying higher standards. In line with the Common Agricultural Policy reform which introduced the principle of cross-compliance and the possibility of extra payments for farmers who go beyond the statutory animal welfare standards, 72% agree with the principle that financial compensation should be used to alleviate any higher costs associated with improving such welfare standards.

A majority (63%) show willingness to change their usual place of shopping in order to be able to purchase more animal welfare-friendly products. The reasons that encourage consumers to make purchases in this way are related to the perception that such products are healthier and of higher quality.

Eurobarometer surveys highlight that European animal welfare standards are

perceived to be among the highest in the world and the last survey shows that 89% of EU citizens believe that similar animal welfare standards should be applied to food products imported from outside the EU. Indeed, current international trends increasingly point to making a 'business case' argument for higher animal welfare standards and 'creating business opportunity through improved animal welfare', while respecting the ethical and moral aspects of treating animals more humanely (19). Consumers want to receive assurances about how their animal-derived food is produced. This rising consumer concern is reflected in national and international recommendations, codes and legislation which now focus on animal welfare. In addition, many parts of the international food supply chain now have animal welfare assurance programmes that are likely to influence large livestock producers in emerging markets (18).

In this context, the European animal welfare policies have evolved considerably, motivated by the fact that they are ethically justified, they are demanded by the public and they can also make good economic sense (16). Furthermore, to be internationally successful and accepted in the long term, animal welfare objectives need to be balanced with economic concerns, while ensuring they are aligned with recognised environmental and social guidelines (19).

The Community Action Plan on the Protection and Welfare of Animals 2006-2010 (12) embodies the Commission's commitment to EU citizens, stakeholders and the other European institutions for a clear map of actions aimed to promote high animal welfare standards in the EU and, at international level, to introduce standardised animal welfare indicators.

The role of animal transport and the Community Action Plan

Animal transport has always attracted much attention from the public and the media. It is the most visible part of the farming industry. Incidents that lead to animal suffering during

transport are regarded by the public as unacceptable, whereas similar animal suffering may go virtually unnoticed in other situations, such as on farms or in slaughter plants. Since 1991, the EU has been debating the issue in order to raise the standards for the protection of animals during transport.

Long distance transportation deserves special attention for at least two reasons. Firstly, there are increasing doubts and reservations about the legitimacy of transporting animals (and even goods) over long distance for a short part of a process. Secondly, such flows may involve serious suffering of animals, thus making long journeys even more unacceptable for a number of citizens. In 2002, for 15 Member States in the EU, the transport of farmed animals was estimated at approximately 365 million animals a year, excluding poultry (13).

Formulating policies in this context is therefore a challenge that requires a rigorous method that takes a number of factors into consideration. This paper discusses the current process used at EU level to formulate policies on animal welfare with specific examples concerning long distance transportation.

General aspects of the elaboration of European Union policies

Animal transport is a matter that is predominantly regulated and harmonised at the EU level within the administrative arrangements of the Community. Present Community legislation (Council Regulation No. 1/2005) came into force in 2007 and this article refers to aspects of the preparation of this regulation (11). The preparation of this legislation was the responsibility of the European Commission, whereas its adoption resulted from negotiations between the different institutions of the Community (Commission, Council and European Parliament).

Initiatives to upgrade legislation in animal welfare are usually either based on formal scientific opinions or seek to address problems encountered in the field. Problems in the field

may be identified through complaints or institutional reports. A strict process of preparation and verification occurs before initiatives are adopted as proposals for legislation.

In the framework of improving the regulation process ('better regulation initiative'), the Commission has, in recent years, implemented a uniform process to elaborate policies. This includes a comprehensive impact assessment process as described here. It should be also mentioned that formulating policies not only means producing legislation. In the case of long distance transportation, coordination between legislative actions and other tools (such as research or training programmes) should also be explored.

Identification of the problem

Identification and analysis of problems and their roots is a crucial step towards addressing issues with proper policy objectives and means. For this reason, the Community has developed a common methodology for the identification and analysis of problems and long distance transportation is no exception for the application of this methodology. The methodology recognises that animal welfare risk assessment is primarily based on science and that field information and international standards and guidelines are also important to consider.

Scientific risk assessment

Animal welfare is based on different areas of scientific research; health, behaviour, physiology and ethology are examples of the various scientific fields that need to be taken into account in risk assessments on animal welfare. In this connection, the European Commission has elaborated and refined a general system for scientific opinions on animal welfare and other matters over many years. This system has successfully supported work on the legislative side of policy development. The scientific committees that operated initially have now been reorganised into an independent body called the European Food Safety Authority (EFSA) and allow the Community to benefit from the latest and

highest scientific opinions on animal welfare issues.

The responsibility of the EFSA in scientific risk assessment is to produce recommendations for policy that are based on a detailed review of the scientific literature. The role of science in policy making in the field of animal welfare is regarded as more than essential. As animal welfare science is a comparatively recent discipline, there are still regular and significant developments that need to be considered. Furthermore, animal welfare can be controversial and it is important to base policies on ideas that have been both scientifically and widely recognised.

Field information – the experience derived from the implementation of current standards

In addition to the scientific input, the Commission regularly receives field information from different actors involved in the transport of animals. The competent authorities of Member States provide the Commission with annual reports on their inspections (number and means of transport and animals inspected during transport, at destination, at departure and any intermediate place, such as markets, staging points or transfer points). Member States are required to submit an annual report to the European Commission on the number of inspections performed by the competent authorities. This obligation derives from the application of EU legislation on the protection of animals during transport, namely: Article 27 of Council Regulation No. 1/2005 (11). Commission experts from the Food Veterinary Office regularly visit Member States to verify the implementation of the EU legislation in this field. In addition, citizens and non-governmental organisations send complaints when breaches occur.

The international context

The transport of animals across EU borders involves a large number of animals. Transport of animals from Europe to the Lebanon or North Africa or to Russia is quite common, in particular for animals of high genetic value but also for slaughter and despite the withdrawal

of export refunds for the export of livestock for slaughter.

It is evident that the concern of citizens over the need to protect animals does not end at the borders of the EU and that concern heightens when transport may last for days and cross thousands of kilometres. Furthermore, very few countries in the world have rules to protect animals during transport that ensure the same level of protection as those of the EU. For these reasons, the Community is backing initiatives to ensure the implementation of better welfare standards, such as the OIE guidelines for the transport of animals by land and by sea.

The OIE adopted two guidelines on international transport of animals in 2005 (20). These guidelines are established on solid scientific data and are an excellent starting point to elaborate policies in the area. In less recent times, the Council of Europe adopted a specific Convention on the protection of animals during international transport, which was revised in 2003 and opened for signatures the same year (4). These decisions from the OIE and the Council of Europe represent a political landmark for the Community on animal welfare in the international context. Unfortunately, neither the OIE guidelines nor the conventions of the Council of Europe foresee appropriate instruments to ensure their implementation. For this reason, the Commission considers it important to insist on animal welfare as an issue for consideration in bilateral veterinary agreements.

At present, transport to neighbouring countries of the EU present a lower risk for animal welfare thanks to agreements like those with European Free Trade Association (EFTA) countries (Iceland, Liechtenstein, Norway and Switzerland) that include the harmonisation of animal welfare rules. Transport to countries in North Africa and the Middle East represent a higher risk for animal welfare due to the absence of bilateral agreements to implement animal welfare standards.

Principal critical aspects of long journeys

Long distance transportation raises a number of specific issues for the transport of animals. The main differences between short distance and long distance transportation indicate particular areas that need to be addressed when formulating future policies. These can be summarised as follows:

- Animal welfare risks increase with the duration of transport because transport of any sort can generate imbalances in welfare conditions for animals. These imbalances may relate to changes in social groups, higher density with difficulties in moving or lying down, limited or no access to feed and water, etc. If the transport is short and the conditions are good, animals may have no difficulty to compensate for any temporary and minor imbalances. When transport is prolonged, however, the ability of animals to cope with changes is stretched and resistance to stress and fatigue decreases. This is particularly true for animals with specific weaknesses; for example, unweaned animals, pregnant females, unbroken horses, wild animals, etc. It is also clearly the case when the journey crosses different climatic conditions with changes in thermal conditions taking place too fast for animals to adapt.
- Long distance transportation usually increases the complexity of the logistics and the risk of incidents/accidents having a major impact on the welfare of the transported animals. This is particularly critical when animals are transported by different operators with limited or even absent coordination.
- Long distance transportation frequently takes place between different countries, affecting the efficiency with which competent authorities may coordinate their efforts and enforce standards in a consistent and dissuasive way.

Defining the objectives

The process of policy formulation should establish clear objectives that correspond to problems and their causes as outlined above. Objectives may apply at different levels and it is often necessary to define a clear hierarchy and a particular logic to create linkages among them. The objectives established should also be consistent with other policy considerations. One of the major challenges in defining objectives is to make them precise and concrete enough to prevent varying interpretation and allow an evaluation of the results achieved (see section on policy monitoring and evaluation).

Since there are intrinsic difficulties in transporting animals over long periods of time, the first main objective for long distance transportation should be to apply limits as far as is possible. Transport conditions have been and can be still improved, but increasing the duration of journeys increases risk. Some animal welfare impacts are less likely to occur during short journeys. Other animal welfare impacts could go unnoticed for a longer time in long distance transportation.

The second main objective is to ensure upgraded standards for animals during long distance transportation. Better welfare conditions are necessary to alleviate the increased risks generated by long distance transportation. Vehicle equipment and design and operational factors, such as the watering and feeding intervals, journey times, resting periods and specific space allowances are the key considerations.

The third main objective is to ensure that transport standards for the animals are consistently applied from the point of departure to the final destination. Transport always involves multiple players, such as farmers, traders, assembly centre operators, specialised transporters and slaughterhouse operators. The number of these players may increase with the distance of transport and thus increase risks to the welfare of the animals being transported.

Developing the main policy options for the European Union

Several policy options can be combined to provide parallel approaches to an issue and combined approaches are applicable to long distance transportation.

The regulatory approach

The EU has traditionally taken a regulatory approach and this has been confirmed by the adoption of Council Regulation (EC) No. 1/2005 on the protection of animals during transport and related operations (11). There are a number of arguments in favour of a regulatory approach for transport over long distances.

Firstly, the animal transport sector in the EU consists of a high number of operators who are not well represented through specific organisations. Although transport over long distance may progressively become a highly specialised business in the EU, the sector is fragmented because operators transporting animals do not only perform this activity. Animal transport is often part of an overall business such as farming (transporting animals from one site to another, transporting breeding animals), slaughterhouses (collecting animals for slaughter) or traders (collecting and delivering animals for sale). In addition, such activities are divided by species and there may be no interaction between operators transporting poultry, pig or ruminants. Furthermore, there are many medium and small companies that transport animals. All these conditions make the development of guidelines or voluntary quality schemes throughout the chain of transport more difficult and this favours the option of a regulatory approach.

Another factor favouring a regulatory approach is the weak economic incentive to ensure the welfare of animals of low economic value during transport for slaughter; for example, spent hens, dairy cows and culled sows. The general lack of properly organised

transportation and the poor consideration to animals as 'sentient beings' increase welfare risks. For this reason, in the past, the United Kingdom decided to protect horses of low economic value with a specific legislative tool (the so-called 'minimum value rules'), where horses under a certain economic value were not allowed to be transported outside the United Kingdom.

The voluntary standards based approach

When industries are well structured and organised, they can provide high welfare standards for the transport of animals through a voluntary approach. For example, the International Air Transport Association (IATA) is well known today for its live animals regulations. The need for regulation in air transport is thus debatable since the sector provides well accepted welfare standards that are updated every year. However, the transport of animals by air is peculiar in many respects. The size of airline companies cannot always be compared to road transport companies and the highly technical nature of their daily operations have accustomed airlines to quality schemes and the implementation of complex standards.

Despite these considerations, many airlines have chosen not to transport animals anymore due to the bad public image that this type of activity can produce. Animals used for scientific purposes are a case in point. It is also known from several marketing studies that airline customers tend to rank airline quality on the services offered to transport their pet animals.

The situation for transport by land or sea is quite different. Transport companies are rarely known by the public and it is difficult to evaluate the real quality of their animal care through private codes of practice. A regulatory approach offers advantages where market forces do not reward or penalise the quality of welfare provided to animals. This particularly applies when the trade of animals is fragmented and involves several successive operators who lack an overall view of the consequences of their acts. Each actor tends to

minimise costs in the short term by providing the less expensive transport conditions (old vehicles, insufficiently trained staff, high density of animals, etc.), especially if losses of animals do not affect their economic viability. By contrast, when transport is integrated into an overall chain, as occurs in the international transport of animals of high genetic value, particular care is given to the welfare of the animals. Accordingly, a non-regulatory approach may be preferred in some specific cases.

Market-driven concepts

The Community Action Plan for the Protection and Welfare of Animals 2006-2010 adopted by the Commission in January 2006, emphasises the need for a more market-oriented approach to animal welfare. Encouragement of operators to develop certification schemes and guidelines for better welfare standards is one of the main proposals of the Community Action Plan. This implies a new regulatory approach where legislation provides a legal framework in support of a voluntary approach through a common methodology without providing comprehensive requirements. In particular, this approach could be developed and marketed in a fairly consistent way for systems of production that are well integrated. Application of the same approach becomes more challenging with transport operations performed by different actors who have no single overall coordination.

The role of proper knowledge and awareness

Poor animal welfare is not necessarily the result of economic pressure for low cost transportation. It often comes from ignorance and neglect from people in charge of transport and their indifference to animal sentience. Lack of knowledge of even the most basic needs of an animal can sometimes be found among the personnel in charge of enforcing the rules. The development of training programmes and information to raise awareness and technical knowledge about animal physiology, behaviour and welfare is therefore a definite consideration for policies and techniques to improve the transport of

animals. A solid technical and scientific network now exists for developing and sharing knowledge on animal diseases in the EU and worldwide, but there is no equivalent for animal welfare. The Community has set up a system of Community reference laboratories for each major animal disease and for zootecnics (foot and mouth disease, avian influenza, rabies, etc.). A similar Community reference centre for animal welfare could present an opportunity for developing better knowledge on this topic.

Animal welfare standards and animal welfare indicators

The nature of the standards to be regulated is another consideration for the policy process. Traditionally, standards for animal welfare have been input-based, that is based on the specific means for achieving good conditions for welfare. However, there is an increasing concern that the input-based approach does not always deliver what is expected and technical rules can sometimes create an excessive lack of flexibility. As a consequence, the new focus is more on outcomes than on means (so-called output-based) and uses animal-based welfare indicators.

Welfare indicators which can be used to assess the welfare of animals being handled or transported include behavioural measures, physiological measures that indicate difficulty in coping with the environment, measures of immune system function, measures of injury in transported animals, of clinical diseases, carcass measures, mortality measures, etc. Some of these measure 'short-term effects', whilst others are more relevant to prolonged problems. Where animals are transported to slaughter, measures of short-term effects, such as increased physiological responses, behavioural responses, injury or mortality are most commonly used. However, some animals are kept for a long period after transport, and measures, such as increased disease incidence or suppression of normal development give information on the effects of the journey on welfare (1).

Welfare assessment during transport cannot be based on a single indicator. Ideally,

behavioural and physiological indicators should be combined in order to obtain the best approximation of the state of the animal. In addition, all indicators should be validated for each species and each method analysed against a known stressor or artificial stimulation (14).

The Community Action Plan for the Protection and Welfare of Animals looks into current trends in research and introduces the concepts of 'validated and standardised welfare indicators' and 'welfare monitoring system' into policy making. These concepts may allow operators in the transport chain to act in a more autonomous way, provided that the overall outcome is positive for the welfare of the animals. For example, once baselines are established, transporters would not be obliged to follow defined detailed standards, but would be free to set up situation-related parameters based on welfare indicators that can reliably measure the state of animals. This approach is promising since it will encourage transporters to expand their knowledge of animal welfare and increase their responsibility. By developing research in this direction, it is likely that future legislation will progressively change from input-based requirements, which are based essentially on the means to improve the welfare of the animals, to output-based requirements, which focus on results for animals.

Impact analysis of the options

For an administrative body, such as the European Commission, impact analysis is probably the most complex and speculative phase of the process for formulating policies. Impact analysis is a crucial phase in preparing policy on animal transport and consists in the evaluation of the possible consequences that a policy could have on a number of aspects beyond animal welfare. Impact analysis is currently formalised at the Community level and includes a vast range of issues that fall under three headings, namely: social impacts, economic impacts and environmental impacts.

Impact analysis is especially important for formulating policies on animal welfare during transport because there is rarely consensus

among the different parties involved. Obviously, modifications to animal transport legislation will have an impact on the industry concerned. However, impact analysis has to extend to several aspects of animal transport that might not be apparent at first sight. For example, travel time limits for the transport of animals that are not harmonised with the social legislation for drivers may have an impact on the social conditions of drivers or on road safety.

Impact analysis can be a speculative exercise and difficulties may arise when different possible negative or positive impacts are evoked depending on the perspective taken by the different parties involved. Accordingly, impact analysis should be based, as far as possible, on factual information and reliable models and not simply on opinions gathered from stakeholders. However, collecting the relevant information can be a challenge for two reasons. First, information is not available in some cases and estimates are the only possibility. For example, the data in the EU concerning the number of journeys exceeding 8 h is incomplete and data on the number of vehicles dedicated to this type of journey is imprecise. Secondly, information may exist but access is not easy for public administrations.

The first step in establishing a sound impact analysis is the systematic collection of information by different means and the building of confidence in stakeholders. The European Commission has developed several approaches for this purpose and has publicised its initiatives for gathering information both externally and internally. In some cases, specialised forums proved efficient in the gathering of information. Some local administrations, such as those related to agriculture, transport or trade, maintain relevant information on animal transport. The consultation of stakeholders is essential to obtaining this information. However, stakeholders are not limited to the industry directly concerned (for example, farmers, slaughterhouse operators, animal traders and livestock markets operators). Organisations for animal protection are important and can provide information that is useful for assessing

the quality with which existing legislation is implemented. Veterinarians have their field experience and technical competency in animal production and are an excellent source of information on animal transport. Other officials in charge of controlling vehicles, for example the police or customs officials, can provide useful information. The knowledge of specific companies, such as those building vehicles or engineering experts can be helpful in clarifying issues.

Public administrations are turning more frequently to specialised consultants for the execution of full impact analysis on different issues as data becomes more readily available.

The information should provide a sound basis for identifying the most important impacts. In the case of long distance transportation, the following issues have often been identified as particularly critical in terms of possible impacts. There is tendency for particular stakeholders to oppose improvements to the welfare of the animals as a burden on economic viability. Sound economic analysis of journey times and space allowances, together with an increasing amount of scientific evidence, demonstrate that proper animal welfare conditions during transport provide economic benefits by reducing the number of carcasses of low quality.

Animal welfare as an economic advantage

Animal transport is probably the most visible part of the animal production process. Accordingly, animal protection organisations can help public authorities and private companies to monitor the process. Animal transport contributes strongly to the public image of the entire chain of animal production. As a consequence, any serious incident or complaint on animal welfare during transport may affect this image. Although public image and consequences on the market are difficult to estimate, investing in better animal welfare conditions during transport could provide economic advantages.

Improving animal welfare provides a number of economic benefits and the fact that some good animal welfare practices are not in place

by parts of an industry does not mean that they do not offer a positive outcome. An increasing number of retailers, animal welfare experts, animal welfare advocates, producers, processors and the public share the common goal that all animals used in agriculture production be cared for in a manner that takes into account their daily well-being and health. Different sectors of the food production system can work together to achieve positive change (2).

An expanding number of retail chains now performs audits to certify standards used in the rearing, transport and slaughter of animals destined for sale under their own label. These retail chains have a capacity to set higher standards for animal welfare if they choose to do so as a marketing policy. Some retailers currently insist on the lowest possible maximum journey times for animals travelling to slaughter and are more demanding than the legislation. In the United Kingdom, most retail companies now require that the journey time is of 8 h or less for red meat 'travelling' to slaughter (3).

Market opportunities lead to technical improvements for better welfare conditions which have a potential for direct economic benefits. Mortality rates can be decreased and animals travelling in good welfare conditions are likely to perform better than animals that experience highly stressful conditions. A case in point is the transport of young calves, where mortality should be monitored during transport and during the seven days that follow. Resistance to endemic diseases can be affected by transport conditions and upgraded welfare conditions can limit the occurrence of these diseases.

The provision of water and appropriate thermal conditions for animals transported for slaughter and gentle handling at loading and unloading improves meat and skin quality and provides better carcass weight. There is a worldwide trend for slaughter plants to employ certification schemes and quality programmes that include the assessment of animal welfare and the evaluation of the damage caused by bad treatment. Farmers may be penalised economically by

slaughterhouse companies when animals are in bad condition. This trend is forcing transport companies to select drivers carefully and to improve the quality of animal handling.

Journey times and resting periods

Journey times and minimum resting periods are probably the most controversial areas of animal transport because of the possible economic impact of regulatory measures and the difficulty in obtaining information on existing practices. These matters are covered by two sets of different legislations in the EU: one is legislation on the protection of animals and the other is the social legislation for professional road drivers. These two sets of legislation indicate the range of legally acceptable practices without providing information on the reality of the practices. Firstly, operators may not use all the options within the legislation. An example is the use of two successive drivers for non-stop driving of 20 h. This appears to have limited application to animal transport because of the shortage of professional drivers in some countries. Secondly, legislation is not systematically enforced and the economic impact of the legislation is, by nature, difficult to estimate.

At the micro-economic level, calculation of the cost implications of limiting journey times depends on a number of parameters that may vary among operators. Cost structures of transport may be peculiar to each transporter and to the distance of the journey.

Limitations to journey times may have a broad effect on the agricultural sector. Trade in animals from one region to another has expanded since the removal of customs barriers and the institution of the single market in 1993. The enlargement of the EU has probably opened opportunities for more widespread trade of live animals with farmers able to sell their animals across a larger area, thus obtaining better prices and reducing the importance of local monopolies. Agriculture in the EU is not a local business any more and producers often depend on selling their animals to international markets to overcome limited local possibilities. A good example of

such specialisation comes from Irish producers who export cattle for fattening in many different areas of the Community. Strict limits on journey times by road could substantially change the present economy of regions in Europe that depend partly on live animal exports. Member States like the Netherlands and Denmark have established a component of their livestock production on the export of live animals, such as piglets and heifers.

Space allowances

Impact analysis has always given controversial results about the provision of minimum space for animals although this matter would appear easy to estimate. There is current legislation on journey times. Again, this legislation does not necessarily reflect actual practices for similar reasons that apply to space allowances. EU standards provide a range of acceptable practices without necessarily reflecting the best scientific assessment for ensuring the welfare of animals. For this reason, certain operators provide more space than the minimum required by the legislation and the real impact of increasing space requirements may not come from a simple calculation based on existing standards.

There are a number of reasons for operators providing lower stocking densities for animals. Long journeys bring about the need for animals to rest, drink and eat. Such activities require more space for animals to lie down and have access to a water supply. High temperatures would also call for more space to facilitate ventilation. This may be particularly critical for animals like unshorn sheep.

Space allowances include the minimum heights of animal compartments and the economic implications here can determine the maximum number of decks on which animals may be transported. The total height of a lorry is actually limited by other standards and by the most common height of road tunnels in Europe, which is approximately four metres. Such constraints are important to consider when establishing specific standards for the minimum heights of compartments in which animals are transported.

Policy options for space allowances are not limited to a range of figures; for example, providing x square metres per animal for any transport. Different sets of figures could be envisaged depending on the duration of the journey. In fact, this option was considered by the Commission in its proposal on animal transport adopted in July 2003, where two sets of figures were presented for space allowances, one for short journeys and one for journeys exceeding 8 h.

Transport equipment

Long distance transport requires equipment for protecting animals against a changing environment (temperature, humidity) and providing feed and water, if necessary. Additional equipment necessitates additional costs and the balance between possible advantages and disadvantages requires careful assessment. Technology for road transport is constantly evolving and more transporters are equipping their vehicles with a number of tools to improve conditions for the animals. A constant micro-climatic environment can be particularly critical in long distance transportation because animals may be exposed to very different conditions during the journey from those experienced on their farm of origin. Systems of ventilation and temperature control will improve the welfare conditions of animals over long journeys.

Animals lose water through respiration, the emission of urine, faeces and evaporative thermoregulation and this loss can become critical during long distance transportation. Consequently, regular provision of water to animals will be important in maintaining their health and welfare. However, supplying water without properly designed equipment is a virtual impossibility.

The transport industry has recently used communication technology to develop powerful tools for enhancing its management. Satellite navigation technology can improve the welfare conditions of the transported animals by increasing the monitoring of a number of parameters and assisting the driver in better managing the overall welfare of the animals. Parameters for monitoring may be

travel time, feeding or watering intervals, temperature and humidity, possible traffic problems, etc. Such technology could also assist in the prevention of highly contagious diseases across Europe.

Information about animal movements in the European Union has been made more accessible by the European Commission's development of a European-based centralised system for issuing animal health certificates called 'TRACES' (ec.europa.eu/food/animal/diseases/animo/index_en.htm). At the same time, vehicles for long distance transportation of animals are being equipped with on-board computer and satellite navigation systems. A future innovation could link TRACES and these navigation systems to provide a synergy that could benefit both animal health and welfare.

Training of staff

Transporting animals, especially over long distances, is not only a matter of preparedness and equipment. The human factor remains critical because unexpected events can occur during any journey and can modify initial plans. Identifying animal welfare risks and taking initiatives to prevent them or to solve them, will sometimes depend on the driver alone. For this reason, the development of animal welfare competence in staff in charge of animals during transport is an important policy ingredient.

Training and education is probably the most effective way to improve animal welfare during the animal transport process and there are several approaches to the development of animal welfare competence. The legislative approach which is presently adopted by the Community would require drivers to obtain a licence to transport animals based on an independent examination. This necessitates the development of a training structure which imposes a series of costs for the transport sector and the national administration. However, training schemes are already operated by a number of private transport operators and they offer a number of benefits to the companies involved. Trained drivers are likely to take the right decisions in unexpected

events and to act in an autonomous and responsible way towards the animals. Official recognition of the increasing knowledge is also an efficient management tool because drivers are likely to be proud of their new competence and be motivated to provide better welfare to animals.

The information available shows that the behaviour of handlers towards animals whilst loading and unloading and the way in which people drive vehicles, are affected by the method of payment. The payments of bonuses to handling and transport staff when the incidence of injury and poor meat quality is low could improve welfare. On the other hand, insurance against loss caused by bad handling may reduce incentives for good practice and result in injury or poor meat quality.

Good knowledge of animal behaviour and suitable facilities are important for good welfare during handling and loading (1). Loading has been demonstrated to be the procedure that is most likely to be the cause of poor welfare among transported animals and the methods used should be carefully planned.

Administrative procedures

Different policy components need specific administrative tools and the impact of these should be evaluated. For example, upgraded standards for vehicle equipment could be simply declared compulsory or procedures could be designed to systematically inspect targeted vehicles and require specific accompanying documents.

The question of enforcement should be clarified as part of the policy choice and should result in the development of specific legal instruments. New standards may have limited effects if they are not accompanied by the corresponding instruments for enforcement. A particular procedure for approving vehicles, licensing drivers, etc., can increase the monitoring of particular standards by the competent authorities. Without systematic procedures and a monitoring programme, new standards may be checked only occasionally and, therefore, ineffectively.

New administrative procedures may create an additional burden for the companies and the

public administration, which may be excessively heavy in comparison with the results expected. Furthermore, new administrative obligations may unintentionally affect an untargeted group of operators. Accordingly, possibilities for derogation should be explored as part of the policy development process.

Comparing the options

Analysis of policy options and their possible consequences is a complex process. Several dimensions have to be considered, including impacts on animal welfare and health, social impacts for drivers and economic impacts for the transport, farming and food industries. Policy options can be compared by means qualitative and quantitative analysis and with similar criteria in order to clarify their overall advantages and disadvantages. An example of such a qualitative analysis is summarised in Table I which outlines possible options for staff training. Quantitative analysis could also be applied to space allowances for animals during long distance transport.

It is possible to identify the most appropriate combination of policy choices by comparing

the options and summarising their respective advantages and disadvantages with common criteria. However, the choice of final policy is not simply a technical matter. Opinions of stakeholders, European institutions and the different Member States are important in balancing the different advantages and disadvantages of each option. This is particularly true in animal transport where the determination of journey time limits has been the subject of heavy political debate.

Policy monitoring and evaluation

The monitoring and evaluation of policies has become an increasingly important component of policy development in the EU. Impact assessment as currently formalised is a fairly new instrument within the European Commission, although a number of similar tools have been applied in the past to the preparation of legislation. A key element in the new approach is evaluating whether the intention of the impact assessment is expressed during the implementation of the policy.

Table I
Example of comparison of policy options concerning the competence of drivers

Policy options	Advantages	Drawbacks
1. General requirement without documentary obligation	<ul style="list-style-type: none"> ■ No administrative burden for companies or the public administration ■ No additional training costs 	<ul style="list-style-type: none"> ■ No easy verification ■ Important discrepancies between companies ■ No improvements on the most critical transporters ■ No incentive for drivers
2. Certificate of competence only for the main livestock species	<ul style="list-style-type: none"> ■ Easy verification ■ Harmonised system ■ Improvement for the main livestock species ■ Improve driver's motivation 	<ul style="list-style-type: none"> ■ Administrative burden for most drivers ■ Additional cost for training ■ No effect on other species
3. Option No. 2 but only in the case of journeys exceeding 8 h	<ul style="list-style-type: none"> ■ As for option No. 2 but ■ Improvement for the main livestock species for journeys exceeding 8 h 	<ul style="list-style-type: none"> ■ Limited administrative burden ■ Difficulty to identify journeys exceeding 8 h ■ No effect on local transport ■ Additional cost for training
4. Certificate of competence for all species and all journeys	<ul style="list-style-type: none"> ■ As for option No. 2 but ■ Improvement for all species and journeys 	<ul style="list-style-type: none"> ■ Heavy administrative burden ■ Risk of overlapping with other regulation in case of exotic species (CITES) ■ Additional cost for training

It is not always easy to conclude if a particular policy choice has reached the desired objectives. It is therefore important to design instruments to monitor the effectiveness and efficiency of chosen policies before they are implemented. On the other hand, reliable indicators of the success or failure of a defined policy are often difficult to define and this may be so for animal transport. Furthermore, the development of practical monitoring tools may require a balance between the need to collect information and the administrative burden this collection imposes.

Until now, the regular reports required by the Commission have helped to evaluate the success of existing policies for animal transport. However, harmonised methodology is now needed to compare data from the different Member States. Properly defined indicators are crucial at the national level to identify areas of transport that require specific improvements and the way these improvements can be undertaken. The development of a harmonised system to record inspection results will probably contribute to a better evaluation of the decisions taken on animal transport and the Commission is presently considering such a system in the development of the tools connected to TRACES; a Europe-based centralised system for issuing animal health certificates (ec.europa.eu/food/animal/diseases/animo/index_en.htm).

Additional assessment instruments were introduced in the EU when Regulation No. 1/2005 came into force (11). This regulation requires Member States to register transporters and vehicles operating long journeys and, in doing so, will provide information on the development of long distance transportation in the EU. In addition, the compulsory use of satellite navigation systems on vehicles will provide further accurate information on the length of journeys. Information collected directly from vehicles could be appropriately transmitted and processed to provide regular monitoring and an accurate and immediate picture of the true situation. Information technology of this sort could help strike a balance between the administrative burden imposed by the collection of information and

the quality and quantity of information required to monitor the effect of a policy.

The development of monitoring instruments for better follow-up of the animal transport policy comes at a certain cost. However, accurate monitoring instruments that provide immediate information on animal transport would also provide a number of benefits. A precise view of the situation at a given time will help focus on the real difficulties of implementation rather than on the perceived problems. This is likely to decrease the administrative burden for transport operators, such as the current paperwork required for the follow-up of long journeys in the EU, while increasing official checks on the most sensitive areas of animal transport. In this regard, systems for analysing trade data that have been used by customs officials to detect sudden atypical trade flows that potentially indicate new forms of fraud. These systems have helped to considerably reduce the physical controls by officials and, at the same time, have facilitated trade previously hindered by heavy administrative procedures at national borders. Similar outcomes could be expected for animal transport from such technology. Furthermore, information on animal transport would be beneficial for related policies, such as the prevention of contagious diseases.

Conclusion

Policy formulation is an interactive process where regular revision and analysis is needed as situations evolve. There has been a general trend in recent years to develop public policies with a perspective that is broader than simply imposing legislation for a specific means designed to deliver a specific end. Outcome-based tools for evaluating animal welfare are promising and require adaptation to long distance transportation where the science is not yet sufficient for an entirely new approach. Transporters are progressively improving their competence and technology to properly manage the welfare of animals during long journeys. Some have developed quality systems to deliver uniform and consistent

welfare outcomes. Public authorities in Europe are also increasingly aware of the animal welfare dimension of their work and have cooperated with the European Commission to develop tools to improve the enforcement of current rules and the welfare of transported animals. Animal protection organisations have gone beyond being necessary watchdogs for bad practices that unfortunately still take place in Europe and have increased their constructive role by contributing to the training and the awareness of all interested parties.

The adoption of two important guidelines on animal transport by the OIE in 2005 is a

positive trend that can offer a better understanding of the current Community standards at an international level. However, substantial efforts are now required to fully endorse animal welfare as a priority by animal transport companies in Europe. The progress mentioned previously is far from being shared among the participants on a voluntary basis. Accordingly, strong public policy is likely to be the best option in the coming years to guarantee a minimum of welfare for animals during transport.

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