

Good animal welfare in a socio-economic context: Project to promote insight on the impact for the animal, the production chain and society of upgrading animal welfare standards.

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Final Report Summary - ECONWELFARE (Good animal welfare in a socio-economic context: Project to promote insight on the impact for the animal, the production chain and society of upgrading animal welfare standards.)

Executive Summary:

In August 2008 the EconWelfare project (FP7 Grant KBBE-1-213095) was initiated with the main objective: to reveal what policy instruments might be effective in the route towards higher animal welfare representing the concerns of civil society and in which competitiveness of the livestock industry is guaranteed. The project was carried out by partners from The Netherlands, United Kingdom, Spain, Italy, Macedonia, Poland, Switzerland and Sweden (the Swiss partner was responsible for the surveys in Germany). It was constructed around three pillars or stakeholder groups (Animal, Society and Chain) and contained four main Work Packages. The first one aimed to identify and analyse current animal welfare standards and initiatives in the EU and third countries. The second asked stakeholders to analyse strengths and weaknesses of these standards and initiatives. The third developed policy instruments and indicators towards an Action Plan on Animal Welfare, and the final one looked at the benefits & costs of upgraded animal welfare standards and initiatives.

The main project conclusion is that although the overall goal of animal welfare policy should be the same everywhere in the EU, it is unlikely to be achieved in similar ways, with equal speed and at the same time everywhere in the EU. This is due to differences in level of legislation, price competition, national income, awareness of citizens and consumers, position of retailers, development of NGOs, farmer skills and awareness et cetera. Animal welfare enhancing policies will be most effective when tailor-made for specific contexts, but there are also EU wide policy options which will contribute to improving Europe's animal welfare status.

Other conclusions are first of all, that EU wide legislation is important to set the lower boundaries for farm animal welfare, and that these need to be enforced. Secondly, for efficient farms and businesses already operating with best possible practices, there is an inevitable trade-off between increasing animal welfare housing standards and production costs. At the same time, there is a potential for improving both animal welfare and production efficiency, either by improving e.g. handling practices or adopting best practices. Thirdly, that the most successful existing welfare enhancing initiatives combine multiple goals with the use of multiple policy instruments and are developed in cooperation by multiple actors. Fourthly, that more

transparency towards consumers and business-to-business is needed on animal welfare issues that are associated with animal products on the EU market. An EU harmonised welfare labelling system (rather than a single label standard) for animal products could strongly support this transparency.

The EconWelfare recommendations to policy makers are presented in three groups. The first group is related to the identified stages in animal welfare development. It recommends 1) that appropriate sets of policy instruments related to the identified stages of animal welfare improvement should be developed and made accessible for Member States, regions or sectors in that stage of development; and 2) to monitor current animal welfare levels and developments over time in Member States by a restricted set of animal-based indicators, as well as indicators at supply chain, society and institutional level. The second group of recommendations concerns a European Network of Reference Centres (ENRC), which could support Member States and stakeholders in the different stages of animal welfare policy development. The ENRC can be used to support compliance with legislation, to raise public awareness, support product development and gather data to support future decision making. A third group of recommendations concerns future research, and includes (among others) 1) Monitoring of current position on the AW development road; 2) Incentives for farmers to improve animal welfare; 3) the use of Belief Networks to support policy development.

Project Context and Objectives:

CONTEXT

The project proposal was prepared in response to the 7th Framework Programme for Research and Technological Development; call KBBE-2007-1-4-15 "Assessing the socio-economic consequences and costs benefits of measures promoting good animal welfare". Central in this call is support to develop European policies implementing the Community Action Plan on the Protection and Welfare of Animals 2006-2010 (hereinafter: Action Plan on Animal Welfare). A main area within the Action Plan on Animal Welfare is upgrading current standards for animal welfare minimizing the occurrence of harmful behaviour. Also European citizens demand high levels of animal welfare. The most recent EU-wide analysis on attitudes of consumers towards welfare of farmed animals (EuroBarometer, 2007) revealed that, although the majority of the EU citizens are convinced that animal welfare standards have been improved over the last decade, 77% share the opinion that further improvements are necessary. Rules or programs in order to secure progress in animal welfare, however, raise fear of increased costs for farmers and unfair competition of EU farmers in the world market. Another main area of the Action Plan on Animal Welfare addresses this aspect: any new measures should take socio-economic impacts into account. Therefore, to succeed in the Action Plan on Animal Welfare, Community policies on animal protection and welfare for the coming years should be in line with needs of the animal, perceptions of society and sustainability of the livestock production chain on a national and international level.

OBJECTIVES AND CONCEPT

The project is related to the policy instruments needed to achieve the aims of the Action Plan on Animal Welfare. The objective of the project is to reveal what policy instruments might be effective in the route towards higher animal welfare representing the concerns of civil society and in which competitiveness of the livestock industry is guaranteed.

To accomplish the objective, it was necessary to collect, integrate and discuss knowledge in relation to the following four questions:

1. What are the current animal welfare initiatives and standards within the EU and in the EU's most important trading countries?

A database was compiled on current animal welfare standards as well as on public and private animal welfare initiatives to improve the welfare of farm animals. To ease the insight into the different topics and ranges covered and enhance further activities in the project, the data was grouped by a newly-developed clustering method. A report containing an overview of clustered animal welfare standards and initiatives in selected EU and third countries was presented.

2. What are the strength and weaknesses of these initiatives and standards to the animal, society and the production chain and what are their proposed applications to upgrade animal welfare?

The state of art on current animal welfare legislation, completed with literature reviews and stakeholder meetings revealed what has been attained and what is missing regarding animal welfare to the opinion of consumers, citizens, catering organisations, retailers and interest groups, to the opinion of animal scientists, and to the opinion of farmers and livestock industry partners. Synthesis of this information proposed a wish-list of upgraded standards for each group (i.e. animal, society and chain representatives) and possible applications for it.

3. What policy instruments can be designed to promote high(er) animal welfare standards as aimed at in the Action Plan on Animal Welfare, and how can progress in the pathway towards these standards be monitored?

To identify and refine potential policy instruments and indicators, which can be used to assess the effectiveness of these policies, an international stakeholder workshop was held. This was subsequently followed by national activities to investigate feasibility of the instruments and indicators when implemented in different national contexts. After reaching consensus on sets of policy instruments and associated indicators, a final report on these was drawn up.

4. What are the benefits and costs of upgraded animal welfare standards and what are the implications for international trading patterns?

Micro- and macro-economic analysis were made regarding policies to upgrade animal welfare introduced within the EU animal product consumption chains. On a micro-economic level, farm inputs and outputs related to increased production standards were analysed and reported. On a macro-economic level, a broad analysis was made and reported on the competitiveness of the European agricultural chains in a world perspective. I

On the base of these four questions the project drew conclusions regarding a lack of objective information needed to develop appropriate policies. Recommendations for sound scientific research to support policy planning were made.

The answers on the questions were restricted to the welfare of terrestrial animals (so marine animals were excluded). A further selection was made for terrestrial animals that are kept for food production (excluding e.g. animals kept for fur production) and for the species that are kept on a substantial scale across the

different EU countries. Therefore, EconWelfare includes the dairy, beef, veal, poultry and pig production chains. Within these chains, animal welfare initiatives and standards on farm, during transport and during handling pre-slaughter were considered.

Project Results:

1. THE EXISTING SITUATION ON ANIMAL WELFARE INITIATIVES

Many public and private initiatives with respect to farm animal welfare already exist within the EU. Within the EconWelfare project, a survey of varied examples has been carried out in the partner countries, focussed on welfare enhancing initiatives in the field (public, private, regulatory, non-regulatory, organic, non-organic). Overall, 84 initiatives have been selected and analysed, concerning seven farm animal species (sows and fattening pigs, laying hens and broilers, dairy cows, beef and veal calves).

1.1 Content of initiatives

In the survey, the involved aspects and concrete norms for animal welfare in national legislation and in public/private standards were identified and compared to the basic EU legislation (Deliverable D1.2). The comparison of the AW legislation in selected EU Member States showed that Poland and Macedonia are in an adaptation process to comply with EU legislation. In Italy and Spain the national legislation does not substantially differ from the EU legislation, while the United Kingdom and The Netherlands have a few additional requirements in some areas. In particularly the Swedish and partly the German AW legislation go in several aspects beyond the EU norms.

A larger number of welfare aspects beyond the EU legislation were found in the analysed private AW standards in Europe, with a major or minor relevance from an ethological point of view. The main aspects beyond the EU legislation, found in at least 5 different standards, are summarised as follows:

Cattle

Tethering restricted, more space and light requirements, slatted floors forbidden or limited, specific bedding requirements, stable groups to avoid aggressive behaviours, outdoor access, more specific feeding requirements (e.g. roughage), longer weaning periods, provision of calving pens, adequate anaesthesia for castration, non-allowance of certain surgical practices

Pigs

Availability of litter, slatted floors forbidden or restricted, possibilities for investigation and manipulating activities, provision of roughage, no hormonal treatments, adequate anaesthesia for castration, limitation of certain surgical practices, more space allowance

Poultry

More light requirements, more perches and nests, access to dust baths, better management of litter materials, outdoor run and pasture, lower indoor and outdoor stocking densities, better access to fresh water, restrictions in breeding (mainly broilers), higher frequency of regular visits

Transport

Interdiction of sedatives/tranquilisers (not allowed in organic husbandry), provision of bedding material for the youngest in transport vehicles, more drinking, resting and feeding possibilities before transport,

adequate pathway/ramps design, the separation of unfamiliar groups, reduced length of journey

Slaughter

More lairage requirements (start of lairage, space, lighting, floors etc.), the avoidance of group mixing, the non-use of electric stimulation, time between stunning and bleeding, specific education of the staff

Note: these main aspects are not always the same as those indicated as the most distinguished ones by the external animal scientists.

Besides detailed information on each initiative, the results indicate that, beyond EU and/or national legislation, basically four development lines towards improved animal welfare can be observed:

a. Further development and implementation of specific high level animal welfare standards;

This is illustrated by some initiatives that are very ambitious to reach a high level of farm animal welfare and have developed very detailed standards with independent inspection and certification.

b. Integration of high animal welfare demands in the regulation for organic farming, private organic standards or partly in other high level sustainability initiatives;

For organic farming, an overall approach to high animal welfare is already implemented. Additional requirements beyond the EU rules for organic production are found in some private organic or otherwise sustainable standards.

c. Middle level approach to upgrade animal welfare standards;

This level is illustrated by standards, like GLOBALG.A.P. of large retailers who are integrating animal welfare in their company standards and using a business to business cooperation model. Also illustrated by local or regional initiatives, where animal welfare is integrated in the requirements as part of a social corporate responsibility and sustainability policy (e.g. in some local or territorial marketing initiatives or in community supported agriculture systems).

d. Modest improvement of basic animal welfare;

This is often done through better implementation of the legislation and complementary Codes of Practice as well as by general assurance schemes, often linked to food safety and quality assurance systems. Each of these approaches has advantages and disadvantages. The different approaches might influence each other, as some pioneer standards can demonstrate alternative ways that can, at a later stage, also be implemented by a larger group of farmers.

Third countries

Moreover, the animal welfare legislation of eight important livestock trading partners of the EU (e.g. Switzerland, Argentina, Australia, Brazil, Canada, China, New Zealand, United States) has been compared to the EU welfare legislation. The results show that national legislation of EU countries on farm animal welfare, in particular regarding pigs and the slaughter process, are more often beyond the EU basic legislation than national legislation of important livestock trade partners outside the EU. Furthermore, private non-organic and organic standards and legislation within EU countries often go further than organic and non-organic legislation in the selected third countries.

In order to group the animal welfare status of EU third countries with regard to the main animal categories as well as to transport and slaughter, four main categories can be made:

Group A - beyond EU legislation: in several main aspects clearly beyond EU rules
Switzerland;

Group B - comparable to EU legislation in main points (deviations on minor points)
Argentina and New Zealand;

Group C - slightly below EU legislation (deviations in several main aspects)
Australia, Canada and Brazil;

Group D - clearly below EU rules (many main aspects not regulated by national legislation)
China and USA.

The existing differences in levels of welfare legislation and standards between EU countries and important trade partners outside the EU might affect the competitiveness of the animal production sectors within the EU, especially if EU welfare levels will be further enhanced. Besides this, there are differences in approaches concerning regulation of animal welfare between EU Member States and third countries. Third countries for example often make use of Codes of Practice and/or leave regulation to the Member States (AU, CA, US). It seems important to find ways to better reconcile these differences in approaches between EU and the important trade partners.

1.2 Evolution in initiatives

In the survey, the initiatives were also characterised by degree of implementation, welfare objectives, applied instruments and involved stakeholders. Furthermore, success and failure factors were identified (Deliverable D1.1).

In enhancing animal welfare, several goals can be distinguished: a) improvement of the welfare of the animals involved (the overall goal), b) creating awareness among citizens, c) generating a demand for more welfare friendly products among consumers and d) inspiring others to develop new animal-friendly initiatives. When looking at a more historical perspective on the development of many initiatives, the classical setting was that a group of actors started with one goal, in most cases to improve animal welfare, and then usually chose one or maybe two instruments to realise that goal (in most cases legislation). Over time, more goals have been considered and were adopted. The number and type of actors involved was enlarged and we see more and more that different instruments become combined (e.g. regulation, education, labels and financial incentives).

The analysis and assessment of the animal welfare initiatives show that a few actor networks have already been quite successful in reaching multiple goals, using different policy instruments that involve broader networks (e.g. non-governmental organisations, chain actors, government and veterinarians).

The survey results indicate important differences in availability and effectiveness of welfare initiatives

among the different partner countries. Private market initiatives are under-represented in the new and emerging EU partner countries like Poland and Macedonia, who are focussing on compliance with EU welfare regulation demands or on the setting of legislation. There seems to be more or less a sequence in policy instruments to achieve higher AW levels, ranging from full, and only, legislation to completely free market. However, this is not always a linear relationship with animal welfare levels: in Sweden for example, high animal welfare levels are related to intensive public regulation and limited private initiatives.

Looking at the specific conditions in the partner countries, we see many differences in the national or regional contexts, e.g. in the level of animal welfare, culture, public awareness and farmers' skills in a certain country. These contexts substantially influence the possibilities for animal welfare enhancement. Public awareness and farmers' skills will be important preconditions for reaching higher levels of animal welfare: a hierarchy in welfare levels seems to be strongly related to a hierarchy in perception of animal welfare. Efficient ways to promote animal welfare therefore must strongly relate to the specific national or regional context. We reached an important project conclusion: 'there is not one solution that will equally fit all Member States at the same time'. An optimised mix of policy instruments should be tailor-made for the specific situation of a country or even of a region within the country.

The EconWelfare project intended to identify effective policy instruments that are able to help a certain community (context) to reach a higher level of animal welfare and animal welfare perception in the hierarchy, as by doing so the aims of the European Community Action Plan on Animal Welfare can be met. Two important questions have to be answered before useful policy instruments in specific contexts can be identified: a) what welfare enhancements are needed from the farm animal point of view and b) what are the attitudes of the relevant stakeholders in the different countries towards these relevant welfare enhancements?

2. POINTS OF VIEW: ANIMAL, SOCIETY AND CHAIN

2.1 The animal point of view

An extensive literature review has been carried out for different farm animal species (Deliverable D2.3). Subsequently, farm animal welfare experts from several countries have given their science-based opinions about the most distinguishing welfare aspects of existing standards and about important welfare issues that are overall still lacking from the animal point of view (Deliverable D2.4). The final report (Deliverable D0.5) gives insight into the most distinguishing aspects for on-farm welfare and welfare during transport and slaughter for the seven species.

The experts identified a number of welfare aspects to solve some of the most important welfare problems for the considered species. An important one is that housing systems should allow freedom of choice. An animal can achieve a positive emotional state when it is allowed to make constructive choices to cope with life. Good stockmanship is also considered to be extremely important to guarantee basic welfare of farm animals. Stockmanship may be improved by mandatory training, but also by economic and social incentives. Climate conditions provided on-farm but also during short and long transport is another important welfare factor. A maximum waiting time or better conditions in the lairage of abattoirs should be provided for. Not only slaughter is at stake: standards should be improved for euthanasia and emergency

killing. Moreover, transporters and slaughter staff should have economic incentives to improve animal welfare (i.e. according to the percentage of dead animals on arrival at the abattoir and to the stunning efficiency).

For each species separately, additionally a number of other relevant welfare issues is identified by the experts (see Deliverable 2.3). These lacking, or inadequately covered, welfare aspects give room for further welfare improvements.

Whether or not EU wide welfare improvements will be made depends, among other things, on the attitudes of stakeholders towards farm animal welfare in general and towards improvements on the specific issues in particular. In this respect, it is important to have insight into attitude variation between different (groups of) Member States.

2.2 Attitudes towards animal welfare

Literature surveys (scientific and 'grey' sources) have been carried out to gather insights into attitudes of stakeholders in the partner countries (Deliverable D2.1 and Deliverable D2.5). The surveys were focussed on stakeholders within society (consumers, retailers as an important voice of the consumer, and NGOs) and in the animal production chains (farmers, transporters and the supply and processing industry). Some key points are summarised below.

Consumers' organisations do not position animal welfare issues high on their agenda. In almost all analysed countries, these organisations are not very well informed about the real production conditions on the livestock farms. In general, they ask for more labelling information to consumers on how livestock products are produced.

Animal protection organisations do not necessarily represent the view of the majority of EU citizens, but new legislation in the field of animal welfare has often been induced by their campaigns to awaken public opinion on an issue. Most of these NGO's are well informed about the production circumstances on farms, during transport and in slaughterhouses. A small number of animal protection organisations are in favour of vegetarian or vegan food and are against any type of livestock production system. Animal protection NGO's have expressed a clear view on many of the discussed welfare standards in this study. Organic schemes are frequently indicated as guaranteeing the highest standards for animal welfare, but for some issues like dehorning or castration they still have room for improvement. Non-organic animal welfare standards are promoted by other organisations, but for several species the animal protection organisations present a 'wish-list' to go further in upgrading animal welfare, also going beyond the requirements of the voluntary standards. This holds in particular for the NGO's operating in the UK, the Netherlands and Germany. In Poland, the animal protection organisations call for a higher compliance of Polish livestock farmers with the animal welfare legislation of the EU. This point is stressed also by the NGO's in Italy, but here we find as well a strong willingness to go beyond the minimum legal requirements and an effort to awaken Italian public opinion, which up till now is less interested in animal welfare than consumers in the Northern EU countries. A similar situation can be ascertained in Spain, where many animal protection organisations are more concentrated on pet animals than on farm animal species.

Retailers are operating at the interface between consumers and citizens on one side and producers on the other side. In this role, they translate a new demand for animal welfare into specific initiatives. Some multiple retailers have launched animal welfare standards, either in collaboration with animal protection NGO's or autonomously. In the UK, the Netherlands and Sweden multiple retailers are most advanced in this direction, whereas in the other countries animal welfare standards have been prepared, but are not yet launched intensively as a clear market segment. The GLOBAL G.A.P. standard is seen by retailers as being progressive regarding animal welfare. This farm assurance scheme declares to focus on food safety (58% of content), animal welfare (16%), environment (14%) and workers health and safety (12%). Being a business to business, and not a business to consumer standard, the integration of GLOBAL G.A.P. by retailers is not shown to the consumer by product labelling, but it is integrated by retailers and part of the retailers' philosophy and branding. It has often been difficult to assess to what extent the standards of multiple retailer initiatives go beyond minimum legal requirements, as the standards are not always in the public domain. Many retailers stated that the animal welfare standards can create an interesting market niche, but they also stress the fact that animal welfare as a stand-alone attribute is difficult to market separately from other quality characteristics, like compliance with environmental standards or biodiversity.

Many farmers consider animal health the most important aspect of animal welfare and their main reason for aiming at higher on-farm welfare. In certain countries, adherence to minimum EU legislation is the main priority; upgraded welfare standards are still far away (e.g. Poland, Spain). Macedonian farmers, however, seem to welcome upgraded welfare at this moment as a means to improve their income from the export of animal products. For some farmers, consumer demand for higher welfare products is an important consideration (Netherlands, UK). Nonetheless, many farmers believe that consumers 'ignore' or 'don't remember' about animal welfare at the point of purchase. Swedish farmers, who are subject to a more restrictive national legislation in relation to the European baseline, demand simplification of the animal welfare rules through the development of more outcome-based measures and welfare indicators in the legislation, with a focus on the welfare of the animals and not on how different details are fulfilled. Some farmers in other countries (like Spain) are hostile to the evaluation system proposed by the Welfare Quality project, whereas some others are in favour of easier protocols and procedures. In general, farmers believe that animal welfare improving actions should be based on scientific knowledge, training and information. Most of the (conventional) farmers have defensive positions against current and future legal restrictions on animal welfare, for the following reasons:

- * too bureaucratic, creating competitive disadvantages European-wide;
- * the animal welfare criteria are not yet objective enough;
- * these criteria increase the production costs and restrict the competitiveness of animal production in comparison with other countries;
- * they require investments for adjusting husbandry structures;
- * they increase administrative costs for the companies;
- * the farmers worry about competition imbalances due to lack of harmonisation and enforcement of the EU animal welfare rules.

Organic farmers occupy a different position. They have their own welfare standards that go beyond EU baseline legislation. Their objective is not to maximize productivity but to improve ethical aspects of food production. The reasons for converting to organic production are mainly environmental and economic; the majority of organic farmers believe that welfare aims should be further upgraded in their schemes, with a

focus on natural behaviour.

Transport organisations in general are not very transparent in their attitude towards farm animal welfare issues. There is a lack of detailed information in most countries. This may be due to a low awareness of, or interest in, animal welfare issues, or perhaps because of concerns that such opinions may be interpreted negatively by the government and used against them (e.g. will prohibit certain methods of production that then increases production costs). Some transporters ask for more control and sanctions to assure the enforcement of existing rules; others demand to simplify transport bureaucracy. The objections of transport organisations towards animal welfare policies are, in almost all countries, similar to those of farmers: too bureaucratic, the animal welfare criteria are not yet objective enough, the competitiveness of the sector of transport and slaughter of animals is under pressure, the legislation is complex and difficult to interpret, it increases costs et cetera. Training of workers in the transport branch is considered to be important in terms of human safety and meat quality.

Slaughterhouses and other processing companies agree with farmers in being in favour of animal welfare improvement based on sound scientific research. As they are aware about the direct relationship between animal welfare and the quality of the meat produced, a general interest has been expressed in improving animal transport conditions. Most chain actors believe that existing welfare standards are sufficient for good welfare at slaughter. The Spanish representatives ask to find reliable, robust and easily measurable indicators to assess the proper stunning of animals. They also stress that social dialogue should be promoted to reach minimum standards of insensitivity in the case of sacrifices by religious rites.

The collaboration between NGOs, multiple retailers and actors in the production chain often creates the necessary conditions to launch animal welfare standards on the market.

2.3 Stakeholders' opinions concerning policy directions

In addition to the literature studies, the opinions of society about a selection of policy directions were collected by a seminar with representatives of multiple retailers' organisations as representatives of the expression of the demand of consumers and citizens, and non-governmental organisations (NGOs) dedicated to the protection of animal welfare (Deliverable D2.2). In addition, five national workshops have been organised (in The Netherlands, Poland, United Kingdom, Italy and Macedonia) in order to conduct the same exercise with key actors of the supply chain in different regions of Europe (Deliverable D2.6). In both the stakeholder seminar and the national workshops, the participants were asked to discuss four statements that refer to the main issues and problems related to public and private welfare enhancing initiatives:

- * Higher levels of animal welfare should be achieved primarily through mandatory EU legislation.
- * Farmers and farmers groups will only go for higher animal welfare if there are sufficient financial incentives.
- * Voluntary animal welfare schemes combined with labelling are the most effective in raising animal welfare, as they act through the market mechanism.
- * The best way to change consumers buying behaviour is to educate and inform them about animal

welfare.

It appears that retailers, NGOs and key actors in the production chain consider a combination of legislation and private initiatives the best way to improve animal welfare, whereby compliance with legislation probably could be controlled in a private-public partnership. Polish chain actors claim that creating awareness of citizens and farmers might be more important than regulation. All chain actors emphasize the necessity of a level playing field within the EU (also harmonisation in enforcement of legislation is an important element) and attention to competitiveness with third countries.

All agree that farmers should have a fair share of the margin within the production chain. Incentives for more welfare friendly products are necessary, whereby private incentives are believed to be more effective than public ones. Furthermore, a number of improvements of AW could be self-funded through higher animal health, which lowers costs of production. Even though there is competition between retailers, the NGOs ask them to work together to establish a baseline for minimum ethical standards (like the ban on selling cage-eggs in The Netherlands). Retailers agree, but also want to allow consumers to choose between standard products and premium products.

All chain actor participants agree that voluntary AW schemes combined with labelling are very effective in raising AW, as they act through the market mechanism and reassure consumers about food safety and AW. On the other hand, voluntary schemes need to be rewarded by consumers (through their purchasing behaviour) and might be only possible in niche markets. The possibility of creating voluntary systems in poorer countries like Poland and Macedonia might be limited, due to the low incomes and high costs of these food products. The NGOs and the retailers emphasize that, in voluntary schemes, both outcome and input assessment are important to evaluate animal welfare. The success of voluntary labels is linked up with campaigns on consumer information and education, in which retailers should be directly involved.

With reference to education and information as a way to change consumers' buying behaviour, NGO's ask retailers to be more clear and transparent by communicating how they are really involved in animal welfare, how much animal welfare is 'contained' in their products and what they guarantee to their customers. For example, they could publish their policy on animal welfare and the adopted schemes on their website. The retailers state that private retailer brands for consumers are much more important than labels, because consumers trust these brands. The question about how to communicate animal welfare to citizens remains open, due to the difficulty to make information simple and understandable. Chain actors believe that consumers should be adequately educated about AW and on objective AW parameters. They should be informed that intensive farming per se does not necessarily mean and imply animal non-wellbeing, paying attention to avoid incorrect or inadequate information that could create negative effects on the market. Chain actors agree that education and information are not sufficient to change consumer behaviour: price and income are also relevant factors for consumers' purchase behaviour. Consumers can be easily 'lost' if too much information is provided. They might be more interested in what VIP's and celebrity chefs have to say, rather than in scientific information. There is a need for commonly agreed definitions of AW and production systems with participation of all stakeholders in the food chain, to avoid emotional, ill-informed and inaccurate descriptions by some organisations in the media.

3. POLICY INSTRUMENTS TOWARDS HIGHER ANIMAL WELFARE

3.1 SWOT analysis on policy directions per country (-group)

As stated earlier, the specific situation of a country should be an important driver in choosing adequate policy directions and instruments for enhancing farm animal welfare within EU Member States. Based on previous insights about animal welfare levels, stakeholder attitudes and policy directions, the relative positions of the eight partner countries in the EconWelfare project can be identified on a two dimensional scale: the perceived level of animal welfare in the country (vertical axis) and the extent to which the implementation of AW requirements is driven by legislation or by market forces (horizontal axis;). These positions were the starting points for a SWOT analysis per country (Deliverable D3.1).

Generally, stakeholders in the North-Western part of the EU (UK, Sweden, the Netherlands, Germany) appear to be more concerned with animal welfare than in Italy, Spain, Poland and Macedonia. In the southern countries, people seem to be more indirectly concerned with animal welfare, as they are especially interested in food quality (taste), for which the production based on good animal welfare is assumed to be a prerequisite. Likewise some countries such as Sweden are very focussed on compliance with legislation, while in the UK compliance with private standards is an important driving factor. Overall, the two dimensional diagram reveals that countries in Europe have different dynamics and the extent to which countries have to deal with various issues, such as awareness of animal welfare, differs. Other differences between the countries include the level of enforcement of current legislation, price competition, global supply chains, dominant position of retailers and development of NGO's. This emphasizes that a 'one size fits all' route to improve the welfare of farm animals across the EU is not possible. See also final deliverable D0.5.

3.2 Feasible policy instruments and indicators

As a sequel to the SWOT analysis, a Policy Delphi exercise was carried out with approximately 200 experts from the eight partner countries (Deliverable D3.2 and Deliverable D3.3). It aimed to evaluate the relative importance of a selection of policy objectives, policy instruments and indicators that can assess the relative effectiveness of these instruments in delivering farm animal welfare objectives. The exercise therefore allowed for cultural, socio-economic and structural differences between countries as well as between different categories of experts.

The Delphi exercise, however, did not aim at building consensus, but at exploring the diversity of experts' opinions in the partner countries and to identify a short list of the most appropriate/most effective policy 'variables' (policy objectives, policy instruments and indicators) in a given context.

The response rate overall was 43%, but the contribution varied between the different partners countries, e.g. 6% of the total responses by NL up to 27% by Macedonia. Amongst all stakeholders groups, the respondents to the Delphi were divided as follows: public authorities (national and regional) 16%; civil society (including NGOs) 18%, farming community 11%, chain actors (including retailers, food processors, slaughterhouses, standard setting and certification organisations) 28%; others (including researchers and advisers) 28% (Hubbard and Garrod, 2011). Statistical approaches, taking into account the different number of replies from each country and each category of expert, were used.

3.2.1 POLICY OBJECTIVES

The two most highly ranked welfare policy objectives per partner country are:

Italy

- * Providing better education & information on animal welfare standards to chain actors (including farmers)
- * Improving on-farm standards of livestock rearing, management & handling

Macedonia

- * Providing better education & information on animal welfare standards to chain actors (including farmers)
- * Improving public awareness of farm animal welfare issues

The Netherlands

- * Developing new markets or increasing existing market share for animal welfare friendly products
- * Improving off-farm standards (e.g. during transportation, at the market or abattoir) of livestock management & handling

Poland

- * Providing better education & information on animal welfare standards to chain actors (including farmers)
- * Improving off-farm standards (e.g. during transportation, at the market or abattoir) of livestock management & handling

Spain

- * Providing better education & information on animal welfare standards to chain actors (including farmers)

Sweden

- * Improving public awareness of farm animal welfare issues
- * Improving on-farm standards of livestock rearing, management & handling

Germany

- * Improving on-farm standards of livestock rearing, management & handling
- * Improving public awareness of farm animal welfare issues

The UK

- * Improving on-farm standards of livestock rearing, management & handling
- * Improving off-farm standards of livestock rearing, management & handling

In the top 4 of almost all countries and expert groups are: a) improving on-farm animal welfare standards, b) improving off-farm animal welfare standards, c) providing better education and information on animal welfare standards to all chain actors (including farmers) and d) improving public awareness. Only The Netherlands considered developing new markets as the most important policy objective. Respondents from Poland, Macedonia, Spain and Italy, who are not very high yet on the 'perception of animal welfare' axis as illustrated in figure 3, put most emphasis on education of chain actors, including farmers.

The two most preferred policy objectives by the different stakeholder groups were:

Public authorities

- * Improving on-farm standards of livestock rearing, management & handling
- * Improving off-farm standards of livestock rearing, management & handling

Civil society

- * Improving off-farm standards of livestock rearing, management & handling
- * Improving public awareness of farm animal welfare issues

Farming community

- * Improving off-farm standards of livestock rearing, management & handling
- * Improving consumer trust and confidence

Chain actors

- * Providing better education & information on animal welfare standards to chain actors (including farmers)
- * Improving on-farm standards of livestock rearing, management & handling

Researchers/advisers

- * Improving on-farm standards of livestock rearing, management & handling
- * Improving off-farm standards of livestock rearing, management & handling

This overview reveals that public authorities and researchers/advisers consider improving on-farm and off-farm standards for animal welfare enhancement the most important policy objectives. Chain actors additionally emphasise the importance of providing better education and information to chain actors, including farmers, whereas the farming community puts some emphasis on improving consumer trust and confidence.

3.2.2 POLICY INSTRUMENTS

With respect to the different policy objectives, the following policy instruments overall seem to be the most appropriate (differences between countries and stakeholder groups are presented in Deliverable D3.2):

Improving on-farm and off-farm standards:

- * Education/training based initiatives for chain actors (including farmers)
- * Promoting relevant research and development'

Improving consumer trust and confidence;

Providing better education & information to consumers;

Improving public awareness:

- * Education-based initiatives for the general public'
- * Labelling schemes linked to public/private (with third party inspection and certification)

Providing better education/training on animal welfare standards to chain actors';

Improving public awareness of farm animal welfare issues:

- * Education based initiatives for chain actors

Developing new markets or increasing existing markets:

- * Labelling schemes linked to public/private sector (with third party)'

- * 'Education-based initiatives for general public

Furthermore, the Delphi results show us that the most effective policy instruments identified by experts include government regulation, especially monitoring of how well chain actors comply with regulations, transparency and consistency of the regulations; education initiatives, especially better education and information to chain actors; labelling, using officially recognised terms in voluntary assurance schemes with third party inspection; and incentive-based mechanisms facilitating new markets and innovations.

Regarding government regulation: There were significant differences in opinions with regard to cross-compliance measures and enforcement of legislation. The latter was rated not effective by the farming community. In contrast, the civil society group ranked enforcement of legislation as the second most effective measure; chain actors, public authorities and researchers/advisers prefer cross-compliance measures.

Regarding incentive-based mechanisms: All groups of experts considered subsidies on capital investments and national and regional schemes providing direct payments to farmers as the most effective measures. Farmers rated subsidies on capital investment as the most effective incentive-based measure. National and regional schemes were also considered to be effective.

Regarding labelling: The use of an EU officially recognized and identified term on labels to indicate the animal welfare status was assessed as the most effective measure. In contrast, negative labelling of less welfare friendly systems was perceived in general as not effective. However, there was significant variation between countries and the groups of experts: Italy, Macedonia and Poland are the strongest proponents for EU labelling. Farmers did not consider any labelling measure effective. The use of an officially recognised and identified term and an official EU or state level recognition of private labels (based on third party verification) was preferred by all other groups. With respect to industry-initiatives, only voluntary assurance schemes with third party inspection and certification were rated as an effective measure.

In general, for almost all policy objectives, industry-based initiatives without third-party inspection is perceived as the least appropriate policy instrument.

Overall, all measures for education initiatives scored high. Although there were differences between countries, education for farmers and the supply chain were assessed as effective. As regards capacity building, an increase in the provision of services offering advice and training is preferable to an increase in the activity of non-governmental organisations (NGOs) with a focus on animal welfare, which was rated highly only by Macedonia.

Although all measures for research and development activities scored high, farm-level research and developing new knowledge transfer initiatives to help share best practice in animal welfare were perceived

as the most effective. There were some differences between countries, but a good agreement existed regarding farm-level research, developing new knowledge transfer initiatives and promoting technological adoption and innovation. The farmers were also in favour of promoting technological adoption and innovation.

3.2.3 INDICATORS

Selecting appropriate policy instruments and effective measures to achieve them is important, but progress also needs to be monitored. For that, appropriate indicators needed to be identified. These were split into five major categories to cover the three pillars of the project (animal, chain and society)

Animal-based indicators are preferred by all categories of experts (Deliverable D3.3). Farm level indicators are also ranked highly, particularly those related to space, housing design and health care. At the chain and society level, preferred indicators related both to adoption of labelling and expenditure on enhanced welfare products. However, there are country and stakeholder differences on how these were ranked in effectiveness for specific policy instruments. Two major groups of indicators were assessed as the most effective for evaluating changes in the level of farm animal welfare: animal-based and farm-level indicators. Within the animal-based indicators, the most effective were indicators related to animal health, animal behaviour, and animal responses to how it is fed. As regards farm level indicators, indicators related to space and ventilation, health care programmes and housing design & bedding material were considered as the most effective. Although there are some differences between countries and expert groups, two subcategories of indicators were preferred as supply chain indicators: adoption of labelling and participation/membership of private standards schemes (with third party inspection & certification). Despite some differences between countries, the most effective institutional indicators were levels of monitoring of welfare standards/compliance and levels of detection of non-compliance to regulations, followed closely by the number of state-provided educational/training initiatives for chain actors (including farmers) and the amount of public money spent on R&D initiatives.

Generally, there was more agreement on the effectiveness of indicators than on the importance of the different policy instruments. This is understandable, put in the framework of different countries being at different stages of animal welfare development.

3.3 Road to further development of animal welfare

On the basis of the previous work, a model for an animal welfare road for development was deduced which is proposed to consist of five steps (Deliverable D3.4). Depending on where a country (or a sector) is on the animal welfare development road, different policy instruments will be most appropriate. Note, however, that at this moment the different steps on the road are arbitrary in that there is no information on the actual impact of each step on animal welfare. Some steps may also be boundary conditions to the next steps, without having much direct impact on animal welfare themselves. Also note that every new step comes on top of the previous steps. For example: sharing practices and compliance with legislation remains important, even when the policies get more focussed on market development, like raising awareness and product development.

The 1th step in animal welfare development is to comply with the legal minimum requirements. Associated policy options are sharing best practices among farmers and providing incentives to farmers and other chain actors to comply with the requirements.

The 2nd step. Once a sector complies with legal standards, the road to further develop animal welfare is to go beyond the minimum legal level. Using above-legal standards suggests that the higher standards are implemented voluntarily by farmers and other chain actors, using the issue to strengthen their competitiveness by targeting specific marketing segments. Sufficient awareness among consumers is a prerequisite. Increasing awareness can be achieved through public education and information about animal welfare and consumer power ('every purchase is a vote'). Governments may have a role in educating the public, but NGO's may be more effective in communicating to the public.

The 3rd step. Once awareness is present, the next step is to ensure that more welfare friendly products are available on the market. This probably requires multiple products that are priced at different levels. Involvement and approval of NGO's or a national or international (government approved) label with third party certification is necessary to make the product claims trustworthy. As noted before, voluntary schemes without third party certification are regarded as ineffective. An exception to this is Macedonia, probably because, given the low level of product differentiation in this country, even voluntary labelling would be a useful step forward on the welfare road.

The 4th step. When products are available at the market, the next step to grow further is by increasing their market share and the standards that they comply with. Marketing support may help to increase the market share, for example by making animal-friendly products a default option as an A-brand or the store brand of a retailer. As long as animal welfare is an important issue to consumers, there is an incentive for retailers to agree with higher standards from time to time (preferably higher than their competitors).

The 5th step. At some point, consumers might become 'tired' of the animal welfare issue and they may start focusing their attention on other issues. Stakeholders should prevent that animal welfare decreases, by integrating it with other issues in standards (e.g. as it is done in organic farming standards/regulation). This integration might help to reduce inspection costs for animal welfare. NGO's and other stakeholders involved in formulating standards are likely to be part of that process, while retailers are involved in providing shelf space and promotion to the products. However, integration may not be limited to standards. Public awareness can be reawakened by novel links to other areas such as food safety, sustainability, climate change et cetera. Legislators may also consider linking animal welfare requirements to other requirements in cross-compliance or to fair-trade issues.

Positioning of the partner countries on the road map towards higher animal welfare levels (the life cycle) generates the following impression.

Candidate Member States like Macedonia and relatively new Member States like Poland represent a specific part of the European animal welfare landscape. Upward pressure to improve welfare in these countries comes from pressure to meet the minimum EU legislative requirements. In emerging economies of Eastern Europe, economic growth remains the primary objective and improving animal welfare is contingent on this objective. Accordingly, policy measures may focus on attaching animal welfare as a

secondary objective to instruments like investment subsidies intended to help the economy. If this is done properly, it might even prevent the creation of the inherently animal-unfriendly production systems, as has happened in some Western European countries.

In Italy and Spain, the structure of animal interest groups that raise awareness among citizens is substantially less developed. In Spain, awareness about animal welfare among stakeholders is more or less absent. Therefore education and information as well as subsidizing NGO's might be supported to increase awareness first. Following the examples of their North-Western counterparts, some retailers in Italy have developed plans to improve animal welfare in their supply chains. Unlike their North-Western counterparts, these retailers wait however without much result for animal interest groups to put pressure on the system and increase consumer concerns. Improving the professionalism of NGO's, to critically raise issues and collaboratively work towards solutions in public-private partnerships, may help to start a pattern of action and reaction that improves animal welfare in these countries. But animal welfare is considered only important indirectly when purchasing regional products. Therefore, the EU can consider to extend regional standards by increased animal welfare requirements and by supporting development of regional concepts.

The UK, The Netherlands and Germany have a well-developed structure of animal interest groups and, accordingly, a high level of consumer awareness. The upward pressure to further improve animal welfare comes in the first place from competition between retailers that aim to secure certain levels of animal welfare through assurance schemes. Through imports of meat, British and German consumers even contributed to the welfare of animals in other countries. British consumers start, however, to show signs of fatigue and become increasingly aware of other social problems that start to compete for attention with animal welfare. The way forward is probably to integrate animal welfare with other social concerns and to address these issues jointly in market offerings. The Netherlands is to some degree comparable to the UK, but shows two important differences. The economic dependence on export markets is a barrier for further improvement (or companies are still reluctant or lack the creativity to use a higher level of animal welfare to their advantage). In addition, the country has a strong tradition of collaboration between public and private partners that leads to interesting new welfare schemes and market concepts and to filling the market vacuum between organic and mainstream products. Also in Germany, new market initiatives are developed in public-private partnerships. Further development of the assortment of animal friendly products that satisfy the demand of increasingly concerned consumers, seems a logical way forward for these countries.

The model is not easily applicable if legislation within a sector already exceeds the EU legislation, as is the case in Sweden. It remains unclear what happens to the curve after the top: it could dip down again; or remain a status quo; or go for further enhanced legislation. Furthermore, Sweden also could be positioned somewhere between step 2 and 3, with regard to private initiatives on AW product development. Upward pressure to improve animal welfare in Sweden in the past relied almost completely on national legislation. However, as they become increasingly integrated in the European market, Swedish farmers perceive the national legislation more and more as a burden harming their competitiveness. Our recommendation for this situation is to be creative in finding market opportunities (premium prices) for these more welfare friendly products, within Sweden and abroad. If this is not possible, decreasing the animal welfare legislation to EU level might become inevitable. Sectors or countries that get stuck in the process may

need a national stakeholder discussion to come out of their deadlock and so avoid the need to lower their legislation.

From the Delphi exercise, the preferred indicators to measure the effectiveness of the policy instruments at each step of the AW policy development road are extracted:

Step 1 Increasing compliance with EU legislation

Effective indicators are the levels of monitoring of welfare compliance and the levels of detection of non-compliance to the regulations. Countries with less developed awareness of animal welfare also ranked indicators affecting willingness and ability to comply as important, e.g. state provided education programmes for chain actors and general public (Macedonia, Poland) and public money spent on research (Spain).

Step 2 Raising awareness

Almost all countries and stakeholder categories rated changes in expenditure on enhanced animal welfare products as good indicators for public awareness. Countries with less well developed awareness of animal welfare (Macedonia, Poland and Spain) also rated indicators of changing awareness (itself) as an effective indicator.

Step 3 Product development

Effective indicators relate to adoption of labelling of animal welfare products and membership of private standards schemes with third party certification.

Step 4 Mainstreaming

An indicator such as changes in expenditure on enhanced welfare products would reflect changed market share of products.

Step 5 Integration with other issues

Membership of 'integrated' private standard schemes

Note: parallel collection of animal indicators, related to the actual level of animal welfare as it is experienced by the animal (animal-based indicators), is necessary! The relationship between the stage of animal welfare policy development in a sector and the welfare per se of the animals in that sector might not be linear.

As a next step in the EconWelfare project, a policy decision tree has been developed to help countries identify their current stage on the AW development road (life cycle) and to select the most appropriate instruments to make progress.

3.4 Policy decision tree

As noted earlier, countries in Europe, as well as specific regions or livestock sectors within countries, have different dynamics and rates of progress on (enhancing levels of) animal welfare. This implies that the choice of effective welfare enhancing policies is contingent on characteristics of that specific policy

environment. By means of inductive multiple case studies, a model in the form of a policy-tree has been developed, which relates available government-based, market-based and farmer-based policy instruments on the basis of critical differences in the policy environments (Ingenbleek et al. in prep). It guides policy makers in the broad sense step by step towards the policy instrument that is likely to be most effective at their stage of animal welfare development. Developing independent policies may be most effective in case a country possesses multiple systems that are relatively different from each other. In Spain for example, different regions of the country display different production and marketing systems, that sometimes even include different levels of legislation and enforcement systems. Thus the unit of analysis in the decision tree is a specific animal-based production and marketing system in a given country (hereafter referred to as sector).

Areas of attention in the policy tree are, among others, strengthening of compliance with legislation, policies for export and home markets, going beyond growth limits and creating awareness among citizens and consumers.

The first question that the tree asks is whether the level of legislation pertaining to the sector is higher, about equal or lower than the EU baseline level of legislation. Hence, the policy tree takes the level of EU legislation on animal welfare as the starting point of reference. Legislation sets the lower-boundary for animal welfare. The level of legislation indicates the driving force to improve animal welfare, i.e. if the level of legislation is lower than the EU requires, there is an immediate legal pressure to increase it (Poland, Macedonia). If the level is about equal or even higher than the EU requires, the pressure to further increase animal welfare focuses on the market. This is, for example, the case in Germany, the Netherlands, Sweden, and UK, as well as to a smaller extent in Italy and Spain.

A remarkable study outcome is that sectors with higher or lower levels of legislation may need levelling to the EU basis before market-based policies can be adopted and can be effective.

The model has been pretested by working it through with the project partners and in a workshop with stakeholders. In future research, the policy tree needs to be further refined. The effectiveness of policy instrument outcomes could be tested in field studies to further validate the tree.

4. (ECONOMIC) IMPACT OF UPGRADED STANDARDS

The estimation of the impact of upgraded animal welfare standards on competitiveness of EU farmers, on the efficiency of animal production chains and on international trade was part of the EconWelfare project. The findings are summarised in the following paragraphs.

4.1 Impact on farm level

A calculation model has been developed to assess the costs and benefits of upgraded animal welfare on-farm standards in the partner countries for the different farm animal species (Deliverable D4.1). For each animal species, an upgraded standard (moderate, premium) was constructed, composed of norms selected from the initiatives that were included in the EconWelfare survey (see Deliverables D1.1 and D1.2). The impact on farm production costs of applying these moderate and premium standards on the

whole of a country's livestock sector was estimated. We applied a ratio of 80-20% (for moderate and premium, respectively) for all farms in a country. Estimates on number of farms already complying with the requirements of the upgraded standards have been taken into account in the aggregation procedure. Thus, the aggregated results (total net costs or benefits for the sector, per average farm and per production unit) reflect only implications of introducing upgraded standards on the percentage of farms that do not comply yet.

As an example, the calculation results for the pig sector show that implementation of the moderate standard on 80 % of the farms and the premium standard on 20 % of the farms result in a net increase of direct costs within the range of 0.12 - 0.37 € kg Lw (between 10% and about 35 % of the Live Weight Price in the countries at stake). The highest costs increase can be found in The Netherlands, Sweden, Spain and Germany, which are, except Spain, all countries with a high (perceived) current level of animal welfare. This is mainly because a high percentage of farms in these countries do not comply with some more costly upgraded norms. In addition, high labour prices contribute significantly to the cost increase due to a greater labour input required by the upgraded standards. In the UK, where a majority of pig farms already meets the requirements of the upgraded Animal Welfare standards, the cost increase is the lowest of all the countries in the sample.

The deliverable D4.1 data reveal that upgrading of on-farm standards beyond the existing EU legislation would increase costs of production of pigs, eggs and broilers, whilst improving the on-farm standards for cows and beef cattle do not cause significant changes in financial results on farm.

For pigs (both sows and fattening pigs), laying hens and broilers the calculated additional costs in all cases significantly exceed potential benefits in production results, thus resulting in an increase in direct production costs. The main cause of net costs increase in poultry farms was the reduction of stocking density beyond the existing and future EU norm (2012). Net costs increase in pig farms was mainly due to additional requirements like roughage in the diet, avoidance of slatted floors, more space allowance and outdoor runs. The most costly norms in the upgraded standards, however, have a relatively high potential to generate benefits. Thus, replacing them by less costly measures would not significantly change the C/B analysis results for these species.

There are no large financial impacts of the upgraded AW standards in beef and veal production at farm level. In dairy cows, the upgrades even result in small net benefits. The main reasons for this are the absence of significant restrictions on cattle density, and on the other hand some requirements with a high potential of generating benefits, e.g. increased access to pasture, allowing for higher milk yields and/or reduced health problems/culling). Besides that, a high percentage of cattle farms already do comply with the upgraded requirements.

In the countries with already high levels of AW, e.g. UK and Sweden, the net costs of implementation of the upgraded standards are relatively lower.

The results of the C/B analysis indicate that upgrading of animal welfare standards unilateral within the EU countries not only causes a different impact on different EU countries, but also can cause a substantial increase in on farm production costs, which might hamper the international competitiveness of EU farmers. These additional costs will need to be compensated for through the market, in order to maintain economic viability of the primary production sectors.

However, it should be taken into account that costs are always more easy to calculate than benefits in

terms of better wellbeing of the animals and better production results that might be associated with it. Changes in the way animals are handled, independent from what housing standards they are subjected to, may be difficult to quantify in terms of financial costs and benefits, but will have a large impact on the animal's welfare. Furthermore, some benefits to the farming community are not easy to capitalize, for example an increase in working pleasure, pride, better connections with the local environment or a better sector image towards society.

4.2 Impact on the chain

Another project objective was to estimate the impact of upgraded animal welfare standards on the production chain in terms of costs and benefits, financial and otherwise (Deliverable 4.2). Because of the complexity of interrelationships between the characteristics and efficacy of specific on-farm and off-farm welfare standards, costs and benefits, farm structures, characteristics and efficiency of the chain and welfare outcomes, it is impossible to present a simple and meaningful calculation of impact of upgraded standards on the chain. In addition, and in contrast to the initial expectations of the project, there is no simple set of improved standards which emerge from this project for which it is useful to estimate potential costs and benefits. This of course is due to the principle message that 'no one size fits all', as a result of the observation that Europe's Member States and production chains move at different speeds towards higher levels of animal welfare (the AW development road) and specific upgrades and instruments apply to different countries, regions, sectors (species) and market segments.

For that reason, the EconWelfare project has tried to represent the consequences of imposing upgraded standards through the distribution chain by a twofold approach: 1) outlining a generally agreed framework with socio-economic principles and 2) by developing a procedure through which this general framework might be practically implemented, a chain belief network, to identify the most useful and effective routes to improving animal welfare.

4.2.1 SOCIO-ECONOMIC FRAMEWORK

For outlining the general framework with socio-economic principles, two types of conditions must be taken into account: supply conditions and demand conditions.

Supply conditions

The supply conditions for animal welfare are identified in terms of a Production Possibility Frontier approach. This approach separates the relationship between improved animal welfare and more efficient production on the supply side into two conceptually different issues: i) an inevitable trade-off between improved animal welfare and production costs for efficient firms (farms, businesses) that already operate with best possible practices, and ii) the potential for improving both animal welfare and production efficiency, either by improving technologies (new techniques and practices) or by encouraging less efficient and less AW friendly farms to adopt best practices and improve in both dimensions.

Clear implications of the supply side analysis are:

* Public (government) support should be directed towards helping the farmers and the supply chain to be as effective and efficient as possible, through sponsoring R&D; providing information, expertise and

training for the chain participants, including farmers; and taking into account the necessity of economic competition as driving force towards best possible practices.

* Social (public) decision making is necessary on trade-offs that should be made between efficient animal (chain) productivity and animal welfare, and thus what incentives and/or controls should be provided for the sector to encourage and persuade it to respond to civic and customer requirements and demands.

Demand conditions

The demand conditions are identified in terms of both society's regulations & legislation governing acceptable minimum standards and of consumers' willingness to pay for improved animal welfare products. Our analysis supports the previous EconWelfare conclusions in that there is an evolving mixture of government legislation/regulation of minimum AW standards and voluntary (private) initiatives, providing different consumer segments with improved animal welfare products. And furthermore, that there is an inevitable indefiniteness in social judgments about AW, which reflect differences in human valuations based on a range of socio-economic characteristics: ethical stance, interest, awareness, susceptibility to propaganda, religious affiliation, sentiment, ignorance, income, experience and so forth. As a result, in practice only the minimum acceptable level of animal welfare is specifically definable as a uniformly imposed and regulated minimum standard.

A frequently discussed item is the gap between citizen preference and actual consumer behaviour (willingness to pay). The analysis of potential reasons for this citizen/consumer gap and hence the importance of the 'free-rider' problem, indicates that the latter is unlikely to be substantially in practice (see Deliverable D4.2). And furthermore, that it is likely that public and chain education, improved information and welfare quality labelling and validation will all be progressively effective in further reducing the citizen-consumer gap.

Our findings reveal that there is not a real distinction between a legislative approach and a market approach: both involve more or less deliberate assessments of the costs and benefits of change and further improvement, and rely on public (consumer) support to be effective. The on-going evolution of the governed market will produce hybrids between the two, such as public-private partnerships, cooperation and collaboration. Public policy and intervention should seek to promote and assist these developments.

Furthermore, consideration of possible supply chain barriers again strongly supports the principle that animal welfare, for sectors in the higher part of the AW development road, needs to be integrated and marketed with other safety, sustainability and quality attributes of animal products, and to be associated with specific brand development. Attempts to treat animal welfare in isolation from other attributes otherwise runs strong risks of both consumer and chain overload. Similarly, improvement in the general capacity of food chains, to match efficient supplies with effective market demands (through better information, third-party disinterested validation and public and chain education), should include animal welfare considerations and not isolate animal welfare from other important health, safety and quality as well as sustainability attributes of the whole food chain.

The implication of the outlined socio-economic framework is that government intervention and policy in favour of improved animal welfare should focus on:

* Improving public and chain education and information;

- * R&D towards better identification of animal welfare and the conditions and practices leading to improvement;
- * Provision for public (third party) validation of labels and standards;
- * Monitoring, supporting and encouraging collaborative development of supply chains to become more competitive;
- * Promoting best practices.

Finally, the analysis implies that, if public subsidy for improved animal welfare is justified, a consumption subsidy is more appropriate than a production or producer subsidy.

4.2.2 CHAIN BELIEF NETWORK

Following the socio-economic framework, the project has attempted to represent the impact of imposing upgraded standards on the chain by a causal Bayesian Belief Network (BNN) of the potential consequences of upgrading standards. This BNN identifies the major elements of changes in animal welfare standards on the supply chain.

Four different types of animal welfare standard improvements, applicable to each of the existing on-farm and off-farm standards, are identified in this structure: Raise the legal minimum standard; Introduce (or increase participation in existing) premium (higher level) standard; Increase compliance with existing standards; Extend best practices by encouraging more people and businesses to manage and treat their animals as well as the best in the business. In each case, the effects of these possible changes to the existing system are conditioned by the 'strength' of the current (existing) standards and by the extent of market demand for improved AW. This picture allows for the possibilities that improving welfare standards in particular directions and in certain circumstances can generate benefits and/or cost reductions to the farmers or chain participants. The extent to which net margin changes reflect farm or chain net costs (costs minus benefits) depends on the extent to which there is a pent-up (currently unsatisfied) market demand for the products of improved standards. Finally, at the bottom of the network structure, there may be consequences for both the structure of the farm sector and the chain, and effects on total farm output and chain throughput, reflecting adaptations to changes in competitiveness.

Each partner country has contacted a number of animal welfare-economic experts as well as stakeholders in the production chain. They were asked to give specific examples of potential improvements and to give their judgement about the chain impacts according to this belief network. Ideally, such a process could generate sufficient diversity of examples and judgements to be able to discern general patterns in the relationships between improved standards and the consequences for the chain.

However, even this highly simplified representation of the possible consequences of improved standards in the chain (with only 16 'nodes' (variables)) generates too many conditional probabilities and therefore requires too many responses to 'train' the belief network with expert judgements (about 30,000). This is clearly impossible, so the network needed to be substantially simplified. Within the project boundaries, this simplification has been further dissected into three separate causal networks: a) to relate potential improvements in on- and off-farm standards directly to improvements in AW and b) to examine the relationships between these potential improvements for each of the on-farm (b1) and off-farm (b2) margins and output levels. These further simplifications provided the possibility to demonstrate the potential utility

of the approach in the future.

We explored the possible linkages between improved welfare standards, improved animal welfare and supply chain competitiveness in the belief network, calibrated with 85 responses from our stakeholder panel. Almost 75% of the responses considered that existing on-farm standards were at least 'strong', whereas fewer believed that off-farm standards are strong (56%). However, 63% consider that current market demand for animal welfare friendly products is weak to non-existent. Against this background, our respondents were asked to imagine improving on-farm/off-farm standards through one of the four major routes (raising legal minima et cetera) and consider the consequences. While the imagined changes were (not surprisingly) believed to improve animal welfare substantially, they were also believed to lead to a 1 in 3 possibility of reduced margins and competitiveness. On the other hand, even against a general background of weak market demand, these changes were believed by our panel to have a similar chance (1 in 3) of improving margins and competitiveness, albeit with more likelihood of reduced output/throughput and increased concentration in both the farm and chain sectors. Specifically, increasing compliance with existing standards is associated in this calibrated belief network with increased costs and reduced margins at both the farm and the chain level.

These results can only be treated as indicative, since 85 responses are not really sufficient to calibrate the belief system reliably. Nevertheless, the approach appears to be worth pursuit as a simplified method of identifying beliefs about the animal welfare system amongst stakeholders. More resources, wider consultation and more detailed analysis of the belief structures are needed to extend this approach to analysis of the consequences of improved standards throughout the EU marketing chains, especially as the judgements are likely to be strongly conditional on both the species and the country (region) being considered.

4.3 Impact on international trade and competitiveness of EU production

The previous section addressed the consequences of improved animal welfare standards on the supply or marketing chain. This paragraph addresses the consequences of improved animal welfare for international trade and competitiveness of EU animal production chains (Deliverable D4.3). These consequences, however, again all depend on the specific improvements considered and on the contexts and circumstances within which these improvements are made. The fundamental 'social physics' of international trade and of the economic conception of competition illuminate the essential structure of these consequences and are outlined in the next section (§ 4.3.1). In section § 4.3.2 another Bayesian Belief Network approach is outlined to illuminate the consequences of improved AW standards in international trade and competitiveness of EU animal production.

4.3.1 SOCIO-ECONOMIC PRINCIPLES

The simple economic story of improved animal welfare is that improvements from present levels of AW involve greater costs, without any necessary improvements in productivity or returns from higher valued products. Hence, other things being equal, improving animal welfare necessarily reduces competitiveness. Furthermore, it is not unequivocally clear whether present international trade rules and obligations under the WTO allow countries or the EU to discriminate between otherwise 'like' products on the basis of their production process, e.g. animal welfare conditions. If this discrimination is not allowed, reduced

competitiveness of European supplies will result in lower EU production and greater imports from the rest of the world (RoW).

To simulate the effect of changes in EU animal welfare standards, a simple analytical model is used, presuming that improved standards raise EU production costs by 5% under supply and demand elasticities of respectively 1.0 and 1.0 (EU) and 1.5 and 1.5 (RoW) (for details: see Deliverable D4.3). The results of this simple model indicate that imposition of an improved animal welfare standard which raises EU production costs by 5% leads to an EU production fall of 10% and EU consumption fall of 1%, resulting in a switch from net export to net import as production in the rest of the world will increase by 1%. However, consumption in the rest of the world also falls by 1% as a result of the increase in the equilibrium world price by 1%. Based on these outcomes, the effects of 5% increase in EU production costs on the 'economic welfare' of consumers and producers, expressed as proportions of consumer spending and producer revenues, can be calculated. Welfare change as % of expenditure/revenues: EU consumers -0.5%; EU producers -4.6%; EU total -5.4%; RoW consumers -0.6%; RoW producers +0.6%; RoW total 0.0%; World total -0.8%. The overall effect on the EU of improved AW standards that raise production costs by 5% is a loss of economic welfare of 5.4% of revenues/expenditures in the EU.

The simple consequences of the sorts of improvements examined at the farm level (Deliverable D4.1) have also been traced through the market systems of the EU in relation to the rest of the world using an EU system simulation model named Agmemod. The Agmemod model is a model of EU agriculture and food demand which uses a set of econometric equations to simulate production and consumption and hence net trade in each of the EU Member States for each of the major agricultural commodities including animal products. Agmemod relates market-clearing prices within the EU and with the rest of the world in a rather more complex fashion than is illustrated in the simple analytical model above. For instance, market prices are driven by econometrically estimated price relationships (see explanation in Deliverable D4.3). The results show the % changes in self-sufficiency in each country as a result of changing average costs of production, using as input the results of the farm level cost/benefit analyses as reported in Deliverable D4.1 (see § 5.1). The Agmemod results for pigs are illustrated in figure 8. The right hand side of the figure illustrates the change in production costs, the left hand side illustrates the associated change in self-sufficiency (changes in net-trade positions).

The Agmemod results for pigs (as well as for the other species) illustrate that there is no simple correspondence between the cost changes in each Member State and the consequences for self-sufficiency (net-trade) ratios. The consequences depend on the specific situations within the Member States and the relative changes on both the supply and demand sides of the markets between EU Member States and also with the rest of the world.

The simple economic analysis falls short in predicting the consequences of improved animal welfare standards. The simple economic model ignores three critical features of the real world:

- * People and their firms and households are different - not homogeneous. Some are better than others at producing animal products with good animal welfare, and some people are more willing than others to reward through their purchasing habits those producers and their supply chains who give more respect to animal welfare. As pointed out in § 4.2 (Deliverable D4.2) there are both supply conditions and demand side circumstances which may well resolve the apparent conflict between animal welfare and chain

competitiveness.

- * Markets can fail, especially for goods like animal welfare. Such goods (or services) can suffer from the free-rider problem, that arises because of the psychic externalities felt by citizens on account of consumption (and hence production and welfare) of animals by others. This feature may, under some circumstances, signal a need for collective rather than individual action, perhaps sponsored by government (Deliverable D4.2 provides the details).

- * The social world is in a continual and highly complex process of adaptation, innovation and experimentation, with as a result of 'evolution': a selection of appropriate strategies and behaviours, according to their fitness with the socio-economic and political conditions. Our market and political processes are continually probing and testing whether improved animal welfare provisions would be acceptable, in that the social benefits of a particular improvement outweigh the social costs (including loss of competitiveness).

It is obvious that the systems, networks and processes affecting animal welfare in the EU are extremely complex. These complex dynamics have not been examined in the EconWelfare project, and indeed there are no substantive analytic frameworks that are capable of dealing with this complexity. To further indicate the potential impact of upgraded welfare standards on EU and the international trade, the same approach has been adopted here as with the impacts on the chain: a belief network approach.

4.3.2 INTERNATIONAL TRADE BELIEF NETWORK

Most stakeholders share common beliefs and understandings about the basic relationships between the drivers and levers of change and the outcomes. Within the project, we tested this proposition and explored its consequences for international trade through the development of another Bayesian Belief Network. Based on the results of the SWOT analysis of existing policy measures (Deliverable D3.1) and a Policy Delphi Survey (Deliverable D3.2) of the importance of a range of animal welfare objectives and instruments, we discussed an outline representation of our common understanding of the core elements of the 'Animal Welfare System' with a number of expert stakeholders in an extended focus group and a further workshop with EuroFAWC.

The representation puts emphasis on matters like the state of the art concerning public and chain education, research, the socio-economic situation of the country-sector at stake, the current confidence in public administration and private markets, characteristics of the supply chain (efficiency for example), public attitudes and consumer demands towards animal welfare. It has as outcomes the level of animal welfare and the competitiveness of the chain (see Deliverable D4.3).

It is a highly simplified model and ignores a lot of potentially important detail. Even this highly simplistic picture of the AW system still suffers from considerable complexity (more than 800 conditional probabilities require upwards of 8,000 separate judgements of present conditions to 'train' the representation to provide coherent implications). Further simplification is both possible and necessary. In principle, this systematic representation can be operationalised to explore the possibility and extent of a major trade-off between improved EU animal welfare and the competitiveness of the EU animal production chain. This approach also provides mechanisms through which the effects of changes in the state of the key variables can be explored, as an aid to future discussions and negotiations about future strategy and policy.

To populate the network with data, each partner country has asked stakeholders to make an assessment of the current state of each of these nodes (either for the European system as a whole or for specific countries/regions and sectors). In total 82 responses were received. Within the resources of the EconWelfare project, we have been unable to obtain enough separate judgments for a substantially reliable representation of the results. Nonetheless, in the following section we will give a small illustration of the approach:

- * A small majority of respondents considered the supply chain reasonably strong at the moment. The respondents tend to judge labelling and public education weak rather than strong, while being more satisfied with the current states of chain education, R&D, trust in public administration, standards and attitudes;
- * Given these beliefs about the current state of the animal welfare system in Europe, it is possible to explore the consequences of improvements in the major drivers for both animal welfare and chain competitiveness;
- * For example, improving the state of public education from 31% good to 100% good would, according to the beliefs of the respondents, increase animal welfare from 17.3 % good to 22.4 % good and very slightly (insignificantly) weaken competitiveness from 57% to 56%. This consequence follows from the effects of public education on public attitudes, confidence in markets and trust in public administration, which in turn improve consumer demand, standards, labelling and supply chain capacity.

To operationalise the (further simplified) belief network and provide for a system which is capable of manipulation and exploration, it should be 'trained' with enough expert judgements about the current state of each of the identified variables. This might be realised by a relatively simple electronic Delphi-like survey among stakeholders.

Potential Impact:

DISCUSSION REGARDING IMPACT

In the separate EconWelfare deliverables, extensive literature reviews and discussions are included. In this final concluding report, we confine the discussion largely to the recent evaluation of the progress on the EU Policy on Animal Welfare (EUPAW) and possible options for the future, commissioned by DG Sanco and executed by GHK Consulting and ADAS UK (2010).

Several findings within the EUPAW evaluation match the findings of the EconWelfare project: there is a need for increasing levels of enforcement of existing legislation and more uniformity in enforcement systems across Member States. Animal-based indicators as included in the Welfare Quality® project and welfare assessment protocols are considered to be helpful to support legislation enforcement. The evaluation also puts emphasis on a) exploring non-legislative routes for achieving improved welfare conditions to complement existing legislation; b) on communication strategies as well as promotion of the development and harmonisation of labelling systems to enhance consumer awareness and confidence. Furthermore, it recommends stronger and more consistent monitoring and evaluation of communication activities through appropriate indicators. The EconWelfare results reveal which indicators stakeholders consider to be most appropriate.

The conclusions and recommendations of the EUPAW evaluation are expressed on EU level, and not on the level of individual Member States, regions or sectors. This might explain why the main conclusion of the EconWelfare project, i.e. that there is not one policy solution that fits all Member States equally well at the same time, is not on the EUPAW evaluation. Farm animal sectors within Member States or regions on a certain level of the animal welfare development road need tailored support in order to be able to reach higher levels of animal welfare. This is an important addition to the policy recommendation resulting from the EUPAW evaluation. It is more or less supported by a recent FAO study on legislative and regulatory options for animal welfare (Vapnek and Chapman, 2010), who conclude that, depending on the national context, the essential elements of animal legislation in their report may well need to be modified, implemented incrementally or supplemented with economic incentives or voluntary schemes and that the answer for each country will depend on local politics, priorities and resources.

CONCLUSIONS

The EconWelfare project was initiated with the main objective: to reveal which policy instruments might be effective in the route towards higher animal welfare representing the concerns of civil society and in which competitiveness of the livestock industry is guaranteed.

The main conclusions are listed below:

- * The overall goal of animal welfare policy should be the same everywhere in the EU, which is improving the welfare of farm animals as experienced by the animals themselves. Animal-based indicators are needed to monitor progress on this objective and deserve intensive policy support.

- * The overall goal is unlikely to be achieved in similar ways, with equal speed and at the same time everywhere in the EU. The main EconWelfare project conclusion is, that there is not one single policy solution towards welfare enhancement that will equally well fit all Member States (MS) at the same time. This is due to differences in level of legislation, price competition, national income, awareness of citizens and consumers, position of retailers, development of NGOs, farmer skills and awareness et cetera. Animal welfare enhancing policies will be most effective when tailor-made for specific contexts.

- * In the development road towards higher farm animal welfare, several stages can be distinguished. Depending on where a country or sector is on the animal welfare roadmap, different policy instruments will be appropriate. For efficient and effective support of welfare enhancement, it is important that policy makers (EC, MS, public bodies) take account of these stages and associated conditions. The animal welfare roadmap with the distinguished stages of welfare policy development and the more detailed policy decision tree, developed in this project, can help EU, MS governments and chain actors to find policy directions and instruments that can be supportive to EU Member States, regions and/or sectors in reaching higher farm animal welfare level in a way that best suits their circumstances.

- * EU wide legislation is important to set the lower boundaries for farm animal welfare, boundaries that will gradually move upwards over time. These need to be enforced, but in the new and emerging Member States, creating awareness among citizens and actors in the production chain by education and information campaigns is a necessary step to be able to comply with the minimum boundaries set by EU

legislation. After this has been realised, welfare enhancement beyond the EU minimum level should be aimed for by market-driven and farmer-oriented policy strategies. In the Member States where AW is more developed, a public-private partnership seems to be the most successful route to further improve farm animal welfare levels.

* For efficient farms and businesses already operating with best possible practices, there is an inevitable trade-off between increasing animal welfare housing standards and production costs. At the same time, there is a potential for improving both animal welfare and production efficiency, either by improving techniques and e.g. handling practices or by encouraging poorer performing farms and firms to adopt best practices and improve in both dimensions.

* EU wide (mandatory) upgrading of farm animal welfare standards based on design-requirements will have different impacts on costs of production in different Member States and thereby affect their relative competitiveness. It could also hamper the international competitiveness of EU farmers. Imposing higher minimum standards than a society is willing to pay for will lead to reduction in consumption levels or drive domestic producers out of business in favour of imported products. A market-driven approach, where any potential increase in production costs is compensated by premium prices under the prerequisite of willingness to pay by consumers (and retailers as intermediates), is preferable and more sustainable. Given the complexity of interrelationships between the variables of the 'animal welfare production system' in sectors, Member States and EU, Bayesian Belief Networks can be helpful to identify the consequences of changes in animal welfare standards and practices on AW levels, competitiveness of the chain and international trade.

* Private standards are often more demanding than public minimum quality standards like legislation and/or subject to regular monitoring by third-party certifiers, making it transparent to consumers that the products are of higher quality than required by the public standard. The overall sum of interests of producers, consumers and taxpayers is highest under a combination of a mandatory public standard at a relatively basic level coupled with differentiation and segmentation of private labels and standards. The overall sum of interests is reduced if the public minimum standard is set too high (due to, among other things, increased avoidance behaviour).

* The most successful existing welfare enhancing initiatives combine multiple goals with the use of multiple policy instruments (e.g. standard setting, labelling, information, research) and are developed in cooperation by multiple actors. Animal protection organisations in the more developed Member States often take the lead in the debate in society on animal welfare issues. The collaboration between NGO's, multiple retailers and actors in the production chain often creates the necessary conditions to promote animal welfare standards successfully on the market.

* More transparency towards consumers and business-to-business is needed on animal welfare issues that are associated with animal products on the EU market. An EU harmonised welfare labelling system (rather than a single label standard) for animal products could strongly support this transparency.

* At the EU level, the market for improved animal welfare products is considered to be a niche rather than mainstream, due to the state of development of the market. In the more developed Member States,

improved animal welfare is prominent in the market, as consumers can choose from a wider assortment and different price-quality levels that focus specifically on animal welfare or cover a broader range of sustainability issues. Within production chains, there is a well-founded resistance to develop brands and labels that solely relate to animal welfare (as certain chain members perceive animal welfare as a threat to their current position in the market). At high(er) animal welfare policy development stages, approaches which integrate animal welfare with other dimensions of quality and sustainability are clearly to be preferred (e.g. as is done in organic farming).

* The development of a restricted set of EU-wide harmonised indicators, linked to specific policy instruments to measure their effectiveness, is needed. Both to give the EC and national bodies insight into the current stage of animal welfare policy development in any given country or region, and to indicate the appropriate supportive policy instruments and the improvements that can be made over time. The chain and society indicators must be combined with animal related indicators, to monitor whether the policy initiatives are having the desired effect on animal welfare.

RECOMMENDATIONS FOR IMPACT

Recommendations to policy makers

The EconWelfare project has yielded a large number of results (including conceptual frameworks) which may help policy makers of different stakeholder groups to decide on the course they can take to improve farm animal welfare, or to help them understand the choices made by others. Our important recommendations to policy makers (public/private) are identified in three groups. The first group of recommendations is related to the identified stages in animal welfare development and these are therefore applicable to or should be (exclusively) aimed at countries, regions or sectors in that stage of development. The second group of recommendations concerns a European Network of Reference Centres (ENRC), which could support Member States and stakeholders in the different stages of animal welfare policy development. A third group of recommendations concerns future research.

1. Recommendations related to the stages of development

Main recommendations to the Commission regarding the stages of development:

* Develop appropriate sets of policy instruments that relate to the identified stages of animal welfare improvement as described in the animal welfare development roadmap, and make these policy instruments accessible for Member States, regions or sectors in that stage of development;

* Monitor current animal welfare levels and developments over time in Member States by a restricted set of animal-based indicators (relevant for all stages), as well as indicators relevant for a certain stage of development, such as farm level, supply chain, society and institutional indicators (see research recommendations).

Compliance with EU legislation (stage 1)

* Use EU legislation to ensure EU wide accepted minimum animal welfare standards. Leave higher welfare requirements to private or semi-private initiatives, which have standards beyond the EU rules (to 'the market');

* Allow for regional and market segment differences, whilst providing a level playing field through common enforcement of EU minimum standards. Reformulate the AW minimum legislation in a way that leaves more flexibility for national or regional variation. This implies the adoption of more animal-based indicators (besides necessary 'must' requirements; see Welfare Quality®) and a preference for the use of Codes of Practice-like recommendations;

* Increase the levels of enforcement of existing EU animal welfare legislation within the Member States:

- On EC level: create more uniformity in enforcement systems and more frequent inspection by FVO;
- On MS level: stimulate strengthening of compliance with legislation by analysing the underlying reason(s) for non-compliance: a lack of knowledge or a lack of willingness to comply. In the case of lack of knowledge about actual standards or about the reason why standards are formulated: apply the instruments of education and information sharing to chain members including farmers. In the case of lack of willingness to comply, stimulate the use of cross-compliance instruments like incorporation of welfare legislative demands in private quality systems ('carrot'; public/private cooperation) or set a higher penalty for non-compliance and a higher chance of being caught ('stick').

Raising awareness (stage 2)

* Support and encourage stakeholders (chain actors, NGO's) to make citizens and consumers in their country, region or market field more knowledgeable and informed about farm animal welfare, in a way that is appropriate for the specific target groups, using also modern web-based communication tools. The Member States where animal welfare issues are less developed, can learn from the experiences with welfare enhancing initiatives in the Member States higher on the AW development road (see Deliverable D1.2);

* Put a stronger emphasis on 'pull' measures instead of 'push' measures. This implies the use of instruments that increase consumers' awareness and that build a demand for higher animal welfare products, e.g. consumer information campaigns, support of animal welfare education initiatives in schools, awards for special animal welfare friendly systems.

* Link public awareness and information campaigns to the development and introduction of an EU harmonised labelling system for upgraded animal welfare.

Product development (stage 3)

* Support animal welfare market diversification;

* Stimulate the development and use of EU officially recognised product labelling system with respect to farm animal welfare. This will support easier trade between countries (making country specific standards unnecessary) and clearer communication to consumers. The EC should impose conditions on use of the

labelling system and encourage standard-setting organisations to use it.

* Direct public support towards helping farmers and the supply chain to be as effective and efficient as possible, through sponsoring R&D, providing information, expertise and training for the chain participants (including farmers), promoting best practices and taking into account the necessity of economic competition as driving force towards best possible practices.

* Use the instrument of Green Public Procurement policies (GPP) also to promote animal welfare friendly products and not only for reducing environmental impacts caused by the purchasing of goods, services and works with tax-payer money. This can be realised on different levels, for example by setting minimum targets for the amount of animal friendly products in food procurement programs:

- EU level: cooperation of DG Sanco with DG Environment (leading the GPP);
- National level: as part of national procurement programmes;
- City level: e.g. animal friendly food for schools, hospitals.

* Address and reduce conflicting policy areas. The Commission has an important role in finding ways to reduce the conflict between regulations or standards governing animal welfare and relevant other issues like environmental protection and food safety. These conflicts are likely to be reduced when standards become more animal-(performance-)based instead of prescribing housing and husbandry measures. Achieving the various goals and incorporation of potential trade-offs are then subject to entrepreneurship and management skills, supported by education and training measures.

Mainstreaming (stage 4)

* Stimulate transition towards a more dynamic governance model with public/private cooperation on enhancement of animal welfare. In this development stage, there should be an important role for market driven policy directions. A more dynamic governance model challenges public bodies to adjust their role:

- to interact in a participatory process with the private actors;
- to design more effective and efficient framework conditions for translation of multiple goals;
- to facilitate the formation of multiple acting and learning networks;
- to develop and offer appropriate instruments, with minimum bureaucracy and costs.

* Use the potential of pillar II measures of the CAP (direct payments as incentives for special high animal welfare requirements (in particular in areas, where higher costs of effective AW measures would lead to very high consumer prices) to develop market-based systems and cooperation to encourage better appreciation and adoption of animal welfare improvements;

* Analyse and discuss with stakeholders the possibilities, potential drawbacks and benefits of supporting consumption by subsidies instead of or in addition to the more common production support by subsidies. A consumption subsidy could be applied to any private or voluntary brand or label which adheres to verifiable welfare standards, determined by the authorities. It could probably solve the "free-rider" problem (Where consumers and citizens assume that others will not or do not care enough to make any one individual's contribution to improve animal welfare worthwhile, so everyone 'free-rides' on everyone else's contribution, and no one makes enough effort), which might keep consumers from buying welfare-friendly products and

might need less bureaucracy than production support, while actively encouraging appropriate supply and marketing chain responses.

Integration with other issues (stage 5)

- * Stimulate the integration of animal welfare issues in public/private standards with issues in other areas such as food safety, sustainability and product quality, in order to prevent consumers from becoming welfare 'tired' in their purchase behaviour or prioritising other issues. Stimulate involvement of NGO's in formulating comprehensive standards;
- * Reawaken public awareness by communicating novel links of animal welfare with other areas of societal concern (e.g. food safety, environment, sustainability);
- * Connect animal welfare requirements in cross-compliance to requirements in other legislative domains.

Enhancement of legislation (the policy cycle begins again)

- * Ensure active support by stakeholders on introduction of new animal welfare legislation, as it is a necessary precondition for successful enforcement and because public legislation will set the minimum quality standards which private standards (in a following stage) can build on (public/private cooperation in standard setting);
- * Make the cost/benefit judgement of new minimum legislation explicit, including the associated costs of enforcement.

2. Recommendations related to a European Network of Reference Centres

The EconWelfare findings strongly support the need for an independent body such as the proposed European Network of Reference Centres (ENRC; in EC Action Plan 2006-2010) to assist the European Commission in its development and implementation of animal welfare policies. An ENRC could support stakeholders in the different stages of animal welfare policy development. We have the following recommendations:

- * Use ENRC to support compliance with legislation in all Member States. This includes harmonisation in control and a standardised interpretation of the current legislation. It involves training of controllers and training and education of stakeholders, including the sharing of best practices to help farmers achieve the demands;
- * Use ENRC to raise awareness for countries in the second stage of our welfare development roadmap. This includes providing the public with information about animals' needs and correct handling;
- * Let the ENRC manage the Welfare Quality® outcome-based protocols, on which a farm can be classified as excellent, enhanced, acceptable or not classified. ENRC can in this way support product development by providing a sound and standardised basis for a voluntary labelling scheme for products with enhanced

animal welfare;

- * Use ENRC for data gathering from harmonised on-farm welfare inspections and ensuring data quality, analysing links between welfare problems and identifying associated risk factors. This can be used as a scientific basis for upgrading welfare legislation, monitoring progress made within the Member States and advice to stakeholders. The ENRC could also play a role in providing information for (gradual) reformulation of animal welfare legislation towards more outcome-based measures, thus promoting more flexibility for national and regional variation, in close cooperation with other bodies, especially the EFSA.

- * Ensure that the ENRC is not doubling work, by involving national well-experienced and competent institutions dealing with animal welfare.

3. Recommendations on future research

The results of the EconWelfare project highlight research questions which need to be addressed in an international context, to support future policy making. The following research topics are prioritized:

- * Giving insight in attainable AW goals;

The route to higher welfare will be different in different parts of the EU Community. The main area of monitoring and control should be the animal outcomes (or performance) achieved by the various initiatives, but other parameters might also be necessary. The Community will have to formulate attainable goals regarding animal welfare, supported by our citizens, and transparent and measureable by all those involved. What are these parameters? Who will assess (audit) and monitor them? What are feasible values (or reference levels) for each of these parameters, taken into account the differences in position on the AW development road? What are goal-oriented participatory guarantee systems, where the farmers and chain actors have a self-responsibility? What might be the most effective combination and synergy of animal related indicators and with more system related indicators?

- * Monitoring of current position on the AW development road;

Monitoring of the current position of a farm animal sector within a specific region or Member State on the animal welfare roadmap is conditional before a policy maker can efficiently make use of the policy support tree. Further research is needed to develop a restricted and unambiguous set of policy relevant, analytically sound and measurable indicators, with which this current position can be identified and summarized. It should be clarified, what data sources and resources/costs for monitoring for these indicators are needed.

- * Explaining dynamism in transition towards higher animal welfare levels;

For policy makers it is important to understand the reasons for dynamism and stagnation in animal welfare levels. What are the driving forces behind the transition towards higher animal welfare levels? Insight is needed in the processes that encourage debate, participation and involvement of consumers and citizens and the supply chain actors (including farmers), and on what might be done by the public authorities to promote and support these processes.

- * Incentives for farmers to improve animal welfare;

Better welfare offered to animals has to be implemented on the farm, during transport or at the abattoir. The stakeholders working with the animals are the key people to 'make a change'. EconWelfare has given insight into preferred incentives according to farmers, transporters and abattoir personnel. The key question remains, however, if and how these incentives will and can be applied. If the most promising incentives differ for different regions of Europe, how can the Community stimulate each of them in their own right, whilst avoiding market distortion and aiming for the same ultimate goal across the EU? How can the CAP measures be used in a more targeted way for animal welfare (in particular Pillar II direct payments for special higher level AW requirements as already applied in some EU Member State regions and in Switzerland)? What are the strengths and weaknesses of these incentives, what are the costs and benefits and who should apply them? What are the necessary implementation measures? What kind of monitoring systems are needed? What priorities should the ENRC focus on to improve communication and dissemination of better animal welfare practices and initiatives?

* International trade policies in relation to EU minimum AW standards;

The EconWelfare outcomes reinforce the message that the EU's legal basis for animal welfare is stricter than those of our main trade partners, and that within the EU there are even stricter levels in some Member States on animal welfare. To what degree can the EU Commission use tools in and outside the WTO agreements related to the quality of animal welfare of the products we import? How effective are bilateral trade agreements to improve animal welfare? Or should the Commission leave it to the market, and support e.g. business-to-business initiatives? What international mechanisms can be further used and developed to improve animal welfare?

* Further research on and with Belief Networks;

The Belief Network approach appears to be worth pursuit as a simplified method of identifying beliefs among stakeholders about the animal welfare system and analysis of the consequences of improved AW standards on chains, competitiveness of EU farmers and international trade. More detailed analysis of the belief structures, more resources and wider consultation (e.g. by a Delphi-like approach on internet) are needed.

List of Websites:

www.econwelfare.eu

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