ASIRPA

Socio-economic analysis of the diversity of Impacts of Public Research for Agriculture

Animal-based indicators for welfare assessment

October 2014

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Contents

Abstract

Context

European consumers are concerned by animal welfare and consider themselves not enough informed (European Commission 2007a;b). There is societal pressure for corporate responsibility and the care for animal welfare is part of it (Amos and Sullivan 2013). Economic actors and NGOs develop welfare friendly schemes and start to use welfare claims. This in turn caused a clear need to substantiate and harmonise those claims. For a long time, animal welfare has been addressed in terms of minimal requirements on resources, such as appropriate housing and feeding, care received… (e.g. European conventions by the Council of Europe and EU directives or regulations from the EU Commission). Animal-based indicators allow considering what matters to animals, rather than attempting to 'being good to animals' as perceived by humans. INRA and its partners contributed to a change in paradigm to include animal-based indicators rather than (only) norms on the environment to monitor and guaranty animal welfare.

Inputs and productive configuration

Stimulated by EU directives under preparation in the 80s-90s, researchers from INRA and technical institutes (Idele, Itavi, Ifip) started to work together and with private actors to assess farming systems and find remedial solutions to welfare problems. The AgriBEA network was created at INRA in 1998 with the aim of stimulating exchanges between scientists carrying out research on animal welfare. A similar network was built at EU level (COST Action 846 *Measuring and monitoring farm animal welfare*, 2000-2006). The exchanges within these networks facilitated bilateral collaborations and the co-construction of EU projects. The Welfare Quality® project (2004-2009) was an integrated European research project, with 43 partners from 13 European countries, with the aim of designing protocols for the evaluation of animal welfare, essentially based on measures taken on animals. In France, INRA, Idele, Ifip, ISA-Lille, and several universities (Toulouse, Paris6) contributed. Welfare Quality® was typically an inter-disciplinary project where most results demanded close collaborations between disciplines (animal sciences, social sciences, and mathematics). Exchanges with non-scientific actors were organised: farmers were interviewed and discussion panels were organised; an Advisory board - with representatives of producers (CopaCogeca, European dairy farmers), the food sector, veterinarians, certifying organisations, NGO (Eurogroup for animals), and observers from OIE and DG-Sanco - followed Welfare Quality® progresses.

Research outputs

One hundred scientific papers in peer-reviewed journals were released from Welfare Quality®. A book was produced to explain how Welfare Quality® was developed (Blokhuis 2013). The most important products of the project, in terms of impacts, are the protocols for the assessment of animal welfare for cattle, pigs, and poultry (Welfare Quality® 2009a;b;c). These textbooks explain the rationale for developing the protocols (e.g. the 12 welfare criteria), describe the various indicators to be checked on farms or at slaughter, and detail the calculation of scores to express the compliance of farms or slaughter plants to the 12 criteria. As much as possible, the indicators are taken on animals (body condition, clinical signs, behaviour, lesions). The WAFA software chain was created to calculate welfare scores (Champciaux *et al* 2009).

Knowledge flow and intermediaries

A website was created at the start of Welfare Quality®, a newsletter was released every 6 months, 11 fact sheets were produced in 5 languages, 19 reports were written with extensive information on the project results, a video was produced etc. In addition, the final Welfare Quality® rationale and the protocols were actively transferred to potential end-users during agriculture fairs and stakeholders' workshops. Three large stakeholders' conferences raised awareness among policy makers, producers, the food industries or retailers,

on the potential benefits of using animal-based indicators. In addition, the Welfare Quality® members exchanged regularly with EU organisations: the EU Commission (DG-Sanco), the EU parliament, and the European Economic and Social Committee. The European Animal Welfare Platform was put in place in 2008, with representatives of breeders, farmers, consumers, the processing industry, and NGOs; it looked for ways to improve animal welfare and to integrate Welfare Quality® protocols in existing quality assurance schemes.

After Welfare Quality®, EFSA produced opinions that largely refer to Welfare Quality® and concluded on the need to move towards risk assessment of welfare by using animal-based indicators. DG-Sanco and FVE initiated a training program for vet practitioners on animal welfare evaluation based on the Welfare Quality® protocols. In France, the RMT "*bien-être animal et systèmes d'élevage*" (2008 on), courses on animal welfare evaluation at high schools and universities, the ANSES thematic group on animal welfare (2012 on), and face-to-face meetings with key stakeholders help raise awareness on animal-based indicators of welfare.

Impacts 1: Adoption of animal-based indicators

Political impacts: At European level, Welfare Quality® outputs contributed to the formulation of European Union strategy to protect animals. In the Community action plan 2006-2010 to protect farm animals, the EU expressed a will to move from an obligation of means (that are to be checked on resources) to an obligation of results (to be checked on animals). Some animal based indicators have already been introduced in the broiler directive and the regulation on slaughter. The use of animal-based indicators is further stressed in the 2012-2015 Community action plan. The EU parliament supported this initiative. At national level, animal-based indicators are used to inspect slaughter plants according to the recent EU legislation (see above). In addition, the French ministry for agriculture supports a PhD thesis to assess the perception of controls by farmers (comparing animal- vs. resource-based indicators). Some countries (e.g. Denmark) envisage recording animal-based indicators on all farms.

Social impacts: animal-based indicators are used by animal welfare associations to dialog with stakeholders and show that animal welfare can be measured adequately. Several agro-food companies now include animal welfare in their strategy for 'sustainable sourcing' (e.g. DANONE, Carrefour, and Mac Donald's); they use animal-based indicators to highlight major problems, monitor progresses, or assess practices or systems and recommend the best ones. At slaughter, dedicated people is in charge of monitoring animal welfare and this contributes to a new value put on work by qualifying people. At farm level, the AssureWel program developed a methodology to combine existing farm assurance labels in UK and Welfare Quality® protocols; more than 90% UK farms have been monitored, leading to a decrease of critical welfare problems such as feather losses (-10%); this project is expanding Internationally (e.g. current discussions with Label Rouge).

Economic impacts: animal welfare programs can protect agro-food companies from societal crises and can be used to develop specific label (e.g. Lait2Vaches by DANONE). At production level, the adequate monitoring of animal welfare can reduce welfare problems whereby increasing production: higher milk yields, better carcass and meat quality, reduction of accidents during the handling of animals especially at slaughter.

Impact 2: Extension to other contexts

Welfare Quality® rationale is used to develop assessment systems for other animal species: farm animals (sheep, goats, turkeys, fur animals…), equids, pets, or captive animals (projects AWIN, SALINOV, WELFUR…). It is also being transposed to other contexts : alternative farming systems (collaboration between DG-Sanco and Slow Food association and the European Bank for Reconstruction and Development), the transport of animal (High Control Posts project), definition of key indicators for Precision Livestock farming (EU-PLF project).

At international level, the results of Welfare quality® and related projects contributed to the formulation of OIE Terrestrial Animal Health Standards. The present draft version of the revised code stresses the importance

of animal-based indicators to check that good welfare is reached. Both OECD, FAO and the World Bank are now taking into account animal welfare issues in their strategies.

Concluding words

The concern for animal welfare pre-existed the research done on animal-based indicators. The indicators designed thanks to this research helped address the issue of animal welfare in practice and encouraged the dialog between stakeholders, scientists, and society. Animal-based indicators are now put forward by many policy-makers, especially at EU level. Nevertheless, the use of animal-based indicators should not prevent from imposing minimal norms on the environment at the risk that poor systems are used again. There is a clear need to '**Ban the bad systems, assess the good ones'**. A pragmatic approach should be taken, combining any measure that can lead to welfare improvements, whether by promoting good environments or by controlling that the results obtained on animals are good. The consequences of such an approach on production should be more closely investigated in order to assess its economic impacts.

Context

The strong societal concern for animals has been expressed through various surveys and in-depth studies. European consumers consider themselves not enough informed about the welfare of the animals from which the products that they purchase are produced (European Commission 2007a;b). There is also societal pressure for corporate responsibility and the care for animal welfare is part of it (Amos and Sullivan 2013). Since the 70's European conventions for the protection of animals (by the Council of Europe) followed by EU directives or regulations to protect farm animals have been adopted. They focused on an obligation of means (space allowance, food, enrichment material…). The Farm Animal Welfare Council from the United-Kingdom defined 5 essential freedoms for the welfare of animal to be assured: freedom from hunger and thirst; freedom from physical discomfort; freedom from diseases, pain and injuries; freedom to express normal behaviours; freedom from fear and distress (Farm Animal Welfare Council 1992). The five freedoms are largely used to establish recommendations, legislation, or certification schemes. Economic actors and NGOs developed welfare friendly schemes on this basis and started to use welfare claims. This in turn caused a clear need to substantiate and harmonise those claims in order to place issues related to the fulfilment of animal welfare on a level playing field for all economic actors.

The so-called Amsterdam treaty (European Union 1997) recognises animals as sentient beings. This initiated a move towards what animals can perceive rather than thinking of what might be good to animals from a human perspective. Indeed, welfare has all to do with the state of the animal.

Each of the five freedoms can be assessed thanks to specific indicators. Research on animal welfare was more widely initiated in the 70's, starting mainly in the United-Kingdom but expanding through Europe. It was shown possible to demonstrate that animals have preferences and emotions (Dawkins 1983, Boissy *et al* 2007, Veissier *et al* 2009). Animal-based indicators were developed to consider what matters to animals, rather than attempting only to 'be good to animals' as perceived by humans. In addition animal welfare is determined by many factors, the sum of which can be difficult to check, whereas animal-based indicators have the potential to produce a more holistic view of the welfare of an animal (no matter the reasons why this welfare would be impaired or improved). There was thus high potential for such animal-based indicators to provide evidence of how animals experience their environment and for checking that a given environment provides (or not) good animal welfare.

Inputs and productive configuration

Stimulated by EU directives under preparation or revision in the 1980s and 1990s, researchers from INRA and engineers from technical institutes (Idele[1], Itavi[2], Ifip[3]) started to work together and with private actors to assess farming systems and find remedial solutions to welfare problems.

The French AgriBEA network was created at INRA in 1998[4] with the aim of stimulating exchanges between INRA scientists carrying out research on animal welfare and in order to better address this societal concern. From a group of only 40 INRA scientists, mainly from the PHASE division but also from the social sciences sector, the network very rapidly grew within INRA (scientists from various scientific divisions: PHASE, SA, GA, SAD, SAE2, CEPIA). After 6 months of existence, the network was extended to other actors involved in research: technical institutes, ANSES, high schools in veterinary medicine and agronomy, universities… At present about 150 people are affiliated to the network from various disciplines: behaviour, psychology, physiology, animal production, genetic, epidemiology, pathology, economy, sociology, philosophy. The activities of AgriBEA are open to a large public: NGOs (PMAF[5], OABA[6]), political actors (Ministry for Agriculture), and economic actors (e.g. farmers or farmers' organisations) often attend or even contribute to seminars organised by AgriBEA. A common culture regarding animal welfare was built, based on the acknowledgement that welfare has to do with the animal's perception of its environment and condition, as well as a common understanding of how to improve animal welfare through research, education, implementation of farming practices...

At EU level, a similar network was built thanks to the COST Action 846 *Measuring and monitoring farm animal welfare* (2000-2006). The French partners were again INRA and the technical institutes members of AgriBEA. The network was led by WUR (Harry Blokhuis, the Netherlands) and INRA (Isabelle Veissier) was one of the 4 members of the executive committee. There was a close connection between AgriBEA and this COST Action with all information from COST Action being disseminated to AgriBEA members and AgriBEA members taking part in many task forces of the COST Action. The exchanges facilitated bilateral collaborations, co-construction of projects and contributions to large EU projects.

The Welfare Quality® project (2004-2009) was an integrated European research project, with 43 partners from 13 European countries. The partners were animal scientists or engineers from the former COST Action 846, from a network of European social scientists, and from industries. In France, INRA, Idele, Ifip, ISA-Lille, and several universities (Toulouse, Paris6) contributed to the project. Welfare Quality® was typically an inter-disciplinary project where most results could not be obtained within one discipline but demanded close collaborations between disciplines (especially animal sciences, social sciences, and mathematics). The ultimate goal was to design protocols for the evaluation of animal welfare, essentially based on measures on animals taking into account expectations from citizens-consumers, producers and retailers. The methods were shared between partners, a database of welfare results was created, and the results and expertise from the different partners were pooled to design the final protocols. Although the consortium of Welfare Quality® included essentially research organisations, exchanges with non-scientific actors were organised:

- An Advisory board was put in place. It comprised of representatives of producers (CopaCogeca, European dairy farmers), food sector, veterinarians, certifying organisations, NGO (Eurogroup for animals), with

[1] Institut de l'élevage (bovins, ovins, caprins)
[2] Institut technique pour les volailles et les lapins
[3] Institut technique du porc
[4] AgriBea was first coordinated by 3 scientists from Physiology and animal production departments (merged thereafter into Phase) : Robert Dantzer, Frederic Lévy, and Isabelle Veissier. It is now coordinated by Alain Boissy and Cecile Arnould (Phase), Pierre Mormède (GA), François Hochereau (SAD)
[5] Protection mondiale des animaux de ferme
[6] Œuvre assistance aux bêtes d'abattoir

observers from OIE[7] and DG-Sanco[8]… (Annex 1)

- Producers participated in the research conducted in Welfare Quality®: 600 farms were visited across Europe and the farmers were interviewed on their perception of the visit, and discussion panels were organised.

Research outputs

One hundred scientific papers in peer-reviewed journals were released from Welfare Quality®. After the project, a book was produced by the steering committee to explain how Welfare Quality® was developed:

Blokhuis H, Miele, M., Veissier, I., Jones, B. (eds.), 2013. Improving Farm Animal Welfare: Science and Society Working Together: The Welfare Quality Approach. Wageningen Academic Publishers: Wageningen, 232 pp.

The most important products of the project, in terms of impacts, are the protocols for the assessment of animal welfare for cattle, pigs, and poultry (Welfare Quality® 2009a;b;c). The interactions with actors and their impacts on the final protocols are described in Miele et al. (2011). The Netherlands Standardization Institute (NEN, private non-profit organisation for the development and promotion of standards) helped in drafting the protocols so that they could form a standard. These textbooks:

- explain the rationale for developing the protocols (e.g. 12 welfare criteria, rationale for the evaluation models)
- describe the various indicators necessary to check that farms or slaughter plants comply with the 12 criteria (30-50 measures for the various animal types addressed in the project: dairy cows, fattening cattle, calves, fattening pigs, sows and piglets, laying hens, broilers),
- detail the calculation of scores so that data collected on farms or at slaughter are used to produce welfare scores and an overall evaluation of the farm or slaughter plant.

As much as possible, the measures are taken on animals (body condition, clinical signs, behaviour, lesions). When no valid or feasible animal-based indicators were available, then resource-based indicators were included (e.g. number of drinkers to indirectly assess absence of thirst).

The protocols are freely available from the website of the Welfare Quality Network[9]. This network was created at the end of the Welfare Quality® project in order to make the protocols alive and to incorporate refinements thanks to new knowledge and technology.

The WAFA software chain was created to calculate welfare scores. It includes a database to store the data from farms and slaughter plants and their welfare scores, and a website that provides explanations on the protocols and the overall statistics (average welfare scores across farms visited). A service is proposed to calculate welfare scores. So far, 1062 farms have been visited and their data included in the database. More farms were visited all over the world, without data recorded in the database.

Champciaux P Lamadon A Brun JP and Veissier I 2009 Welfare assessment of farm animal. Outil d'aide à l'évaluation du bien-être des animaux (outil de saisie, base de données, logiciel de calcul de scores de bien-être, outil de simulation, ressource d'informations, pages web interactives): vaches laitières, bovins à l'engrais, veaux de boucherie, porcs à l'engrais, poulets de chair. IDDN.FR.001.160016.000.R.P.2010.000.10800.

[7] World organisation for animal health
[8] DG *Health and consumers* from the European commission
[9] http://www.welfarequalitynetwork.net/network

Structure / Project	Role of INRA in the productive configuration and in the production of outputs
AgriBEA	Establishment, coordination
Cost Action 846	Member of the executive committee (4 members), coordination of activities on measuring welfare
Welfare Quality®	Contribution to coordination (member of the steering committee) Specific contribution in defining the 12 welfare criteria to be checked on farms /at slaughter (UMRH due to specific awareness of requirements for multicriterion evaluation, coll. with University Paris 6) Contribution to identification and validation of animal-based indicators in pigs (stereotypies, injuries, human-animal relationship: Pegase), poultry (clinical observations: PRC), cattle (human-animal relationship: UMRH). INRA experimental facilities were used to run experiments to validate indicators. Construction of evaluation model (investigation of multicriterion decision methodologies): Inra coordinated the work-package devoted to this construction and had a large contribution to it (e.g. one PhD thesis doing the pilot construction). This task required input from animal sciences (from INRA and other EU partners), from social sciences (EU partners of the project, not INRA) and mathematics (strong collaboration with Univ. Paris 6, co-supervision of the PhD thesis). Development of the software chain to calculate welfare scores from data collected on farms / at slaughter and to store data and score: INRA computer scientists fully supported this development. This task was under the full responsibility of INRA (3 computer scientists + 2 animal scientists).

Knowledge flow and intermediaries

During the Welfare Quality® project, several means were used to disseminate largely the results of the project and the final protocols: a website was created at the start of the project, a newsletter was released every 6 months, 11 fact sheets with main findings were produced in 5 languages, 19 reports (~100 pages each) were written with extensive information on the project results, a video was produced etc. In addition to this 'passive' dissemination, the final Welfare Quality® rationale and the protocols were actively transferred to potential end-users thanks to contribution to agriculture fairs, to presentations at stakeholders' workshops and the organisation of three stakeholders' conferences (Annex 2). These activities were organised according to a communication plan supported by a communication officer recruited for the project and members of the Steering Committee in charge of the science-society dialog (Mara Miele, Cardiff Univ.) and demonstrations (I. Veissier, INRA). Stakeholder's workshops and conferences raised awareness among policy makers, producers, the food industries or retailers, on the possibility and the potential benefits of using animal-based indicators. The Advisory Board of Welfare Quality® was also essential to establish a dialogue with potential end-users, including policy makers (OIE, DG-Sanco). In addition, the members of the Steering Committee of Welfare Quality® exchanged regularly with DG-Sanco during and after the project and were regularly requested to give talks in events organised at EU level (e.g. EU parliament).

In 2007, the European Economic and Social Committee and the European Commission (EESC)[10] held the workshop "Animal welfare: improving by labelling?". The rationale of Welfare Quality® and its first results were discussed by partners of the project, including INRA. The meeting concluded on the need to have tools for a scientific assessment of animal welfare.

[10] Consultative body of the European Commission. http://www.eesc.europa.eu/?i=portal.en.the-committee

The European Animal Welfare Platform[11] was put in place in 2008 in the course of the Welfare Quality® project. Members were representatives of breeders, farmers, consumers, the processing industry, and animal welfare organizations. The platform looked for ways to improve animal welfare at all levels of the food chain and contributed to the integration of emerging science-based animal welfare assessment systems with existing quality assurance schemes. Definitely Welfare Quality® was a significant input to the work undertaken by the platform (European Animal Welfare Platform 2011).

After the project ended, some actors played a major role in the dissemination and extrapolation of the results:

First of all, partners of the project - including INRA - participated in the EFSA[12] panel for animal welfare and related working groups. On request of the EU Commission, EFSA started to work on animal-based indicators in 2009. It reviewed the literature and organised stakeholders' meetings to discuss the potential of animal based indicators to assess the risks to animal welfare. In 2012, EFSA produced two opinions on the use of such indicators, one for dairy cows and one for pig, and a more general statement where concepts of risk factors and their consequences on animals were put forward, and how these consequences could be measured in practice was discussed (EFSA Panel on Animal Health and Welfare (AHAW) 2012a;b;c). This statement largely refered to the work done in Welfare Quality®. In 2013, a similar study was carried out to analyse ways to detect proper stunning and killing of animals (European Food Safety authority- AHAW Panel (Animal Health and Welfare) 2013). EFSA concluded on the need to move towards risk assessment of welfare by using animal-based indicators (see frame below). The benefits of using animal based indicators is nicely summarised on the video 'animal-based indicators' released by EFSA in 2012[13].

Technical meeting on the use of animal-based measures for the welfare of dairy cows, pigs and broilers (European Food Safety Authority 2012) - Extract

EFSA aims at moving towards quantitative risk assessment of the welfare of target animal populations. This can only be performed on the basis of the collection of standardised indicators by possibly using data sources on ABMs already existing and available in the field, and channelling the information in a single database. ABMs are indeed considered a real potential to steer EFSA work into that direction.

At the same time, DG-Sanco together with FVE[14] initiated a training program organised for vet practitioners on animal welfare evaluation based on the Welfare Quality® protocols. From 2011, seven workshops were organized in Hungary, Spain, Latvia, Romania, Italy, Netherlands and Poland. The next one will take place in France (organised by VetAgro Sup, a close partner of INRA). Until now, more than 900 veterinarians from over 20 European countries have been trained.

[11] 3-year (2008-2011) European Commission's sponsored project. It brings together different stakeholders in the food chain, from farmers, processors, retailers, food producers, and NGOs. Through this stakeholder approach and an EU wide consultation animal welfare issues were identified and prioritized for Beef and Dairy, Poultry Meat and Eggs, Farmed Fish, Pork. http://www.animalwelfareplatform.eu/Objectives.php. The platform was coordinated by the same person as for the Welfare Quality® project (H. Blokhuis). The Welfare Quality® results were an important input for the work of the platform.

[12] European Food Safety Authority, in charge of risk assessment regarding food and feed safety (including risks for animal welfare) for The European Union.

[13] https://www.youtube.com/watch?v=rn6pM56J0vg

[14] Fédération Européenne Vétérinaire

In France, several key elements helped disseminating knowledge and increase awareness on animal welfare:

- The RMT[15] "bien-être animal et systèmes d'élevage" was created in 2008 to stimulate exchange of knowledge between 60 partners from research sector, agricultural development, initial and postgraduate education, and professional training. Its various outcomes include reviewing resources and animal-based indicators for welfare assessment in different productions, exploring user's perception and ways for increasing awareness (CASDAR project EBE), materials for undergraduate students' education and professional training. The activities of the RMT and the CASDAR project are followed closely by the French ministry for agriculture (DGAL).

- High schools and universities organise courses on animal welfare evaluation where animal-based indicators are presented and their relevance is discussed. Such courses take place in agricultural, veterinary, or applied ethology curricula (in France: high schools VetAgro Sup, AgroCampus Ouest, ENSV, DU Ethologie appliquée inter-universitaire). INRA and VetAgro Sup scientists are the main contributors.

- The French Agency for Food, Environmental and Occupational Health and Safety (ANSES) set up a specific thematic group on animal welfare in 2012 to address issues related to farming methods for different animal species and topics such as indicators of animal welfare. Animal-based measures strongly underpin the risk assessment for animal welfare, as seen in the expertise on the slaughter of calves and adult cattle (Anses 2012; 2013).

- Face-to-face meetings with key stakeholders - often under the initiative of these stakeholders whose awareness had been raised thanks to the ample communication around the Welfare Quality® project - were held. For instance, INRA exchanged closely with representatives of Carrefour, DANONE, McKey, Charal, Bressor, Bongrain… This resulted in collaborative projects (e.g. DANONE-INRA project on dairy cows welfare). In addition, agreements were made between INRA on the one hand and PMAF[16] or Idele on the other hand in order to keep each other informed of activities related to animal welfare. The start-up ETRE was created in 2011 by an ex PhD student of INRA (Bourguet 2010) for behavioural and welfare studies.

Structure / Project	**Role of INRA along the chain of intermediaries**
Welfare Quality®	Contribution to the dissemination to stakeholders: this task was coordinated by INRA. Several INRA members contributed.
EFSA	Participation to the Panel on Animal Health and Welfare, to related working groups, and to the Anibham project
DANONE-INRA project *Welfare*	Running of a survey to characterise the level of welfare in French dairy farms and to relate it to resources and management. Two PhD students supervised.
ANSES	Contribution to thematic group *Animal welfare* (half of the members are from INRA)
RMT Bien-être et systèmes d'élevage	Member of the steering committee; Specific input in education material and in cost/benefit analysis of welfare indicators
High Schools, universities, professional training	Courses provided, syllabus elaborated
Idele, PMAF	Agreement with INRA to exchange information, working program and results
E.T.R.E	Start-up created by an ex INRA PhD student

[15] Technical Joint Networks are instruments from the French Ministry for agriculture to boost innovation by merging expertise from research, education, and development. http://agriculture.gouv.fr/IMG/pdf/Brochure_reseaux_mixtes_technologiques_2009.pdf

[16] Protection Mondiale des Animaux de Ferme

Impacts 1: Adoption of animal-based indicators

As suggested in the introduction, animal-based indicators allow assessing accurately the welfare of animals by considering the state of these animals (rather than the resources provided to them or the management practices).

Political impacts

European level: Contribution to the formulation of European Union strategy to protect animals

In the Community action plan 2006-2010 to protect farm animals, the EU expressed a will to move from an obligation of means (that are to be checked with resource-based indicators) to an obligation of results (to be checked with animal-based indicators). Some animal based indicators have already been introduced in the broiler directive in 2007 (Council Directive 2007/43/CE: the stocking density can be increased if the mortality is low) and in the regulation on slaughter (Council Regulation 2009/1099/EC: stunned animals have to be monitored to ensure that they do not regain consciousness before killing). The use of animal-based indicators is further stressed in the 2012-2015 Community action plan (see extract below).

Community action plan 2012-2015 (European Commission DG-Sanco 2012) - Extract

"Subject to an impact assessment, the Commission will consider the need for a revised EU legislative framework based on a holistic approach. In particular, the Commission will consider the feasibility and the appropriateness of introducing science-based indicators based on animal welfare outcomes as opposed to welfare inputs as has been used so far; the Commission will assess whether such a new approach would lead to a simplified legal framework and contribute to improve the competitiveness of EU agriculture.

Page 7:

"The possibility of using scientifically validated outcome-based indicators complementing prescriptive requirements in EU legislation will be considered when necessary with a specific attention to the contribution of such new approach to the simplification of the acquis. Animal-based indicators have been introduced in two recent pieces of EU animal welfare legislation (Directive 2007/43/EC laying down minimum rules for the protection of chickens kept for meat production and Regulation (EC) No 1099/2009 on the protection of animals at the time of killing).

Criteria developed by the Welfare Quality® project associated with a risk assessment system as applied in the food safety area (see the Food law) will be examined. The EFSA Scientific Opinions on the development of welfare indicators would be taken into account together with socio-economic factors in considering the relevant risk management proposals.

The use of outcome-based animal welfare indicators is also recognised at international level by organisations such as the World Organisation for Animal Health (OIE)."

The EU parliament recognised the importance of the strategy proposed by the EU Commission and again recalls the progresses that could be made thanks to the Welfare Quality® project[17] (see extract below):

Motion for a European parliament resolution on the European Union Strategy for the Protection and Welfare of Animals 2012-2015 ((2012/2043(INI)) – Extract

Within the field of animal welfare there has been an increase in the research carried out over the last decade, both in the EU and elsewhere, such as the Welfare Quality Project. This ever-growing scientific knowledge is the most logical basis for the Animal Welfare Strategy and legislation. It is important that this knowledge is used in all aspects of animal practice from the development of new technology and building of animal housing through pre-testing, to the overall supervision and control of animal welfare with the Union.

[17] http://www.europarl.europa.eu/sides/getDoc.do?type=REPORT&reference=A7-2012-0216&language=EN#title1

National competent authorities:

French Ministry in charge of agriculture: help in controls

Inspections of farms and slaughter plants are compulsory under the framework of cross-compliance (farmers must comply with EU legislation in order to benefit from European subsidies). The inspections are often based on checking the compliance of farms with norms such as space allowance or provision of certain types of food. To date, in France, animal-based indicators are used at slaughter to check the efficiency of stunning, in accordance with Regulation 2009/1099/EC. Animal-based indicators could be used more broadly, especially when no specific norms exist (e.g. for the farming of cattle). A PhD thesis is currently supported by the French Ministry for agriculture to compare the perception of animal-based vs. resource-based indicators by dairy farmers and their potential to stimulate actions to improve cattle welfare (Anne-Claire Dereclenne-Lomellini, thesis supervised and hosted by INRA).

Other EU countries

Similar initiatives were taken abroad. For instance, the Swedish Centre for Animal Welfare analysed the benefits of animal-based vs. resource-based indicators (ENCAW project). INRA contributed to this work (Veissier *et al* 2011). In the Netherlands, the Welfare Quality® protocols were implemented in 50 broiler, 50 veal and 50 dairy farms to try them out over 3 years (project co-funded by the private sectors (33%) and by ministry for agriculture and economy (66%)). In Denmark the government wishes to assess animal welfare at national level: existing datasets are used (e.g. data collected at slaughter, use of antibiotics, mortality) and a lighter version of the Welfare Quality® protocols is used.

Evaluation of the political impact (see Annex 3 for details on the analysis)

Dimension (weight)	Score (1-5)	Arguments
Mobilisation in public debate (x1)	4	Strong and novel messages easily identifiable. The knowledge produced matches a window of opportunity in the public debate. Media coverage is strong toward the general public and professionals. The debate concerns the whole relevant political sphere.
Use in public policy (x1)	5	Important use at several steps of the political cycle, at relevant territorial scales
Middle-term impact in diffusion of ideas (x1)	4	The knowledge may influence a debate with strong stakes. It circulates in scientific and non-scientific circles. Research results are renown and rarely distorted while circulating. The contribution of research to the debate is long lasting
Stake of the relevant policy (x3)	3	Limited stakes of the debate. Few economical or environmental aspects. Crisis involving a large population at national and international level.
TOTAL (/30) (/5)	=22 /30 = 4/5	

Social impacts

Animal welfare associations: sound basis for dialog with stakeholders

For animal welfare associations, the animal has an intrinsic value. Animal-based indicators provide a sound basis for addressing animal welfare issues, i.e. showing that animal welfare can be measured adequately, and this facilitates the dialog with industries. These indicators are used to assess practices and systems. Welfare Quality® protocols are used for the species for which they are available.

The face-to-face communication with lay people remains based on the description of systems, not on their exact effects on animals; this is due to the fact that people often hardly bare the description of animals suffering and trust animal welfare associations in the way they judge these systems. The communication through internet can more easily address the state of animals, probably because it reaches a younger public and internet imposes some distance with the real world.

Agrifood business: inclusion of animal welfare in companies' strategic plans

Business Benchmark on animal Welfare business (Amos and Sullivan 2013) - Extract

Farm animal welfare is an important business issue for all food sector companies; retailers, service companies, manufacturers, processors and producers. This is being driven by a range of factors including regulation, consumer concern, client demand, and the brand and market opportunities for companies that adopt higher farm animal welfare standards (or the risks of not addressing the issue).

Several companies now include animal welfare in their strategy for 'sustainable sourcing' (see DANONE, Carrefour, and Mac Donald's websites and also extract above). Animal welfare is seen as being part of corporate responsibility. The strategy is in general to request suppliers to comply with good level of welfare and technical advice is given to the suppliers to reach good standards. The companies often work with NGO to set up welfare plans or 'cahiers des charges' (PMAF, CIWF, Gaia…).

Animal-based indicators are used to:

- Highlight major problems in a production chain and focus on these points to set up a welfare programme. This was the case with DANONE: two PhD theses supported by DANONE and hosted and supervised by INRA identified the main welfare problems of dairy cows in France. These points are now included in the DANONE Dairy Animal Welfare Program (Danone and Phyllum 2012),
- Monitor progresses: in the above mentioned DANONE welfare programme, indicators are proposed for the farmers to evaluate the welfare of his/her cows; these are largely inspired by the Welfare Quality® protocols. Similarly, Carrefour asks its egg suppliers to put in place a management of animal welfare with precise indicators and two annual reviews,
- Recommend practices or systems' design that favour good results according to animal-based indicators of welfare.

From the contacts we had with these three companies, we understand that animal welfare is now part of internal values (ethical attitude) and external values (social responsibility) of these companies.

Slaughter plants: monitoring animal welfare, value added on slaughtering work

Regulation 2009/1099/EC leads to the establishment of a dedicated function at slaughterhouses - the Animal Protection Manager (APM) -, to the definition of standardised protocols, and to a specific monitoring of animal combined with health and quality requirements. A good practice guide is under preparation in France[18]. Animal Welfare training is being organised. This will contribute to a new value put on slaughtering work by qualifying people (Hochereau, WAFL2014).

Farmers

1- Monitoring and certifying animal welfare

In the UK a methodology was developed for working with existing farm assurance labels (Freedom food, Soil Association, Red Tractor). This initiative - called AssureWel - is led by the University of Bristol, a partner of Welfare Quality®. The full Welfare Quality® protocols were applied in 100 pig, dairy & hen farms to prioritise the indicators to select. Farms are then monitored with indicators very much aligned with the Welfare Quality®

[18] The good practices have been elaborated by technical institutes with inputs from industries. It was submitted to the Ministry for agriculture who asked Anses to evaluate them.

protocols. So far, the assessments have been implemented into more than 90% of non-caged laying hens, 95% of pig farms, and 90% of dairy farms in the UK.

AssureWel International is currently establishing. It will be a collaborative network of certification schemes - including Label Rouge -, to work together to share ideas and practical tips on how to implement welfare schemes based on results on animals.

2- Better perception of controls

At present, there seems to be a mismatch between farmers perception of animal welfare which focused on animal well-being (happy and healthy cow), and farm controls that are focused on resources. As a consequence, controls are perceived as a violence to the farmers work. Moving to inspection including animal-based indicators may thus be better accepted by farmers (thesis AC Dereclenne-Lomellini, in progress).

Animals: improvement of animal welfare

It is too early to analyse the entire benefits of introducing animal-based indicators for the animals themselves. Nevertheless, the first results of the AssureWel initiative show a 10% reduction in feather loss over 2 years in the UK.

Consumers and citizens: more accurate information on animal welfare status

Animal-based indicators could be used to better inform consumers and citizens about the status of the welfare of animals. Indeed, articles in Newspapers and TV programs have been released to explain how animal welfare can be assessed[19]. The EU Commission envisaged the possibility to label products according to the welfare of the animals they come from (European Commission 2009). Nevertheless, the results of the Welfare Quality® project suggest that animal welfare concerns are bundled with other concerns such as health, the protection of environment, food quality… and should not be taken apart. This is the strategy that was chosen in AssureWel internationals (see above).

Economic impacts

Industries (agro food business): protection against crises and communication

The industries that put in place an animal welfare strategy see several positive impacts of this:

- Prevention of societal crises: the industry protects itself against potential future criticisms if it had not included animal welfare in its strategy,
- An industry may use animal welfare arguments in its advertisements. However, most of the time the living conditions of animals are put forward (e.g. Mac Donald's guaranties that they use only eggs from free range hens) rather than the actual state of animals because insisting too much on the sensitivity of animals may diminish the consumption of animal products,
- Some labels for animal welfare have been developed, such as the Freedom Food label in the UK. Nevertheless, animal welfare claims are rather embedded into more general labels. This is the case for Lait2Vaches[20], a DANONE product which covers both organic production and animal welfare, and use specific animal-based indicators (body condition, lameness) to communicate with consumers.

Slaughterplants: protection of workers and improvement of carcass quality

There are several economic advantages to monitor adequately animal welfare at slaughter:

- Adequate monitoring of stunning protects workers against accidents during the handling of animals (which is primarily a safety issue but has also economic impacts)

[19] Arte program on dairy farming ad cows, to which INRA contributed (June 2014)
[20] http://www.les2vaches.com/notre-mission-bio/nos-combats/militer-pour-le-bien-etre-des-vaches/nos-engagements

- Reducing the stress of animals at slaughter has a large positive impact on carcass and meat quality (less bruises, less quality defects such as DFD meat, dark veal meat (Lensink *et al* 2001))

Farmers added value on their work, higher production

We expect several impacts on farmers:

- As for slaughter (see above), recognising the importance of animal welfare can add value to farmers' work,
- Improvements in animal welfare can increase production. It has been well documented that fear of humans results in lower production (lower growth in piglets, lower milk yield in cows). We recently highlighted a positive relation between low aggressiveness between cows and positive emotional state on the one hand, and milk yield on the other hand (Coignard *et al* 2014).

Impact 2: Extension to other contexts

Transposition of the Welfare Quality® rationale to develop assessment systems for other animal types

The strategy designed in Welfare Quality® has been used to develop assessment protocols for animal types not covered by the Welfare Quality® project:

- Other farm animals: in the AWIN[21] project assessment protocols are developed for sheep, goats, and turkeys. In France, a protocol was developed for sheep kept indoors and outdoors (project CASDAR Salinov),
- Pets and equids: in AWIN protocols are developed for donkeys and horses; protocols for horses were also designed by SLU (Sweden) and WUR (The Netherlands); a protocol for cats and dogs in shelters was developed by the Veterinary university of Vienna,
- Fur animals : the European Fur Breeders Association (EFBA) launch the WELFUR project[22] aiming at designing protocols for the assessment of the welfare of fur animals (foxes, minks) and applying them to all farms related to EFBA (Gaborit *et al* 2011). The aim of EFBA is to reassure consumers by describing the exact status of animal welfare on fur farms,
- A protocol was also developed for the welfare of dolphins, specifying how to check that dolphins are in a good state[23].

Transposition of the Welfare Quality® rationale to develop assessment systems for other contexts

So far, animal welfare has been dealt with essentially in the context of intensive farming (eg. the Convention for the protection of farm animals adopted by the Council of Europe, 1976). The assessment of welfare with animal-based indicators offers the possibility to address alternative systems. This is exemplified by the present collaboration between DG-Sanco on the one hand and the Slow Food association (that promotes local productions, from small farms, using local resources…) and the European Bank for Reconstruction and Development (that uses cahiers des charges including animal welfare issues to decide to support projects for development).

Although Welfare Quality® did not address directly the transport of animals, its principles were applied in the High Control Posts project[24] aiming at developing an EU animal transport certification system. The project runs in 8 control posts located at the cross roads of important flows of animals transported over long journeys.

[21] http://www.animal-welfare-indicators.net/site/ (EU co-funded project)
[22] http://www.efba.eu/welfur/
[23] http://www.tuitravelplc.com/sites/default/files/attachments/DolphinsinCaptiveEnvironments_IA_Aug2013.pdf
[24] http://www.controlpost.eu/joomla/ (project funded by DG-Sanco)

Animal welfare protocols have also been used to define key indicators in order to develop Precision Livestock farming (EU-PLF project[25]). Sensors and models to automatize the recording and ease the interpretation of results are investigated. This will help include animal welfare in the basic principles in the management of farms.

Extension to international level

At international level, the results of Welfare quality® and related projects certainly contributed to the formulation of OIE Terrestrial Animal Health Standards. The code for animal health defines common understanding to ease bilateral negotiations between countries in relation to animal exchanges. The draft version of the revised code lists recommendations for the environment and the management of animals (e.g. health management, housing…) and stresses the importance of animal-based indicators to check that good welfare is reached (see frame below).

Definition from OIE Terrestrial Animal Health Code (text under preparation)

Welfare 'means how an animal is coping with the conditions in which it lives. An animal is in a good state of welfare if (as indicated by scientific evidence) it is healthy, comfortable, well nourished, safe, able to express innate behaviour, and if it is not suffering from unpleasant states such as pain, fear, and distress. Good animal welfare requires disease prevention and veterinary treatment, appropriate shelter, management, nutrition, humane handling and humane slaughter/killing. Animal welfare refers to the state of the animal; the treatment that an animal receives is covered by other terms such as animal care, animal husbandry, and humane treatment.'

Both OECD, FAO and the World Bank are now taking into account animal welfare issues in their strategies[26].

Structure / Project	Role of INRA in the generation of various impacts
DG-Sanco	Exchange on progresses and results of Welfare Quality®
Thesis AC Lomellini	Supervision of the thesis
ENCAW	Definition of criteria to validate welfare indicators. Comparison of animal-based and resource-based indicators.
PMAF	Agreement between INRA-UMRH and PMAF to collaborate and inform each other regularly on activities
Danone	Collaborative project to identify major welfare problems in dairy cows, help in designing welfare program
Carrefour	Discussions
Slaughterplants	Help in designing Standard Operating Procedures (within EUWelNet project)
CasDar Salinov	Design of a protocol to assess the welfare of sheep (with Idele)
Welfur	Design of the evaluation model for the welfare of minks and wolves and of the software chain to calculate score
EU-PLF	Contribution to designing key indicators to be monitored on farms
OIE	Discussion, especially during EUWelNet project
EUWelNet	Contribution to coordination (member of the coordination team), in charge of formulating recommendations to DG-Sanco for the establishment of a coordinated European network for animal welfare.

[25] http://www.eu-plf.eu/

[26] OECD: http://www.oecd.org/chemicalsafety/testing/animal-welfare.htm;
FAO: http://www.fao.org/ag/againfo/resources/en/pubs_awelf.html;
Word Bank:
http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTARD/0,,contentMDK:20452612~pagePK:148956~piPK:216618~theSitePK:336682,00.html

Concluding words

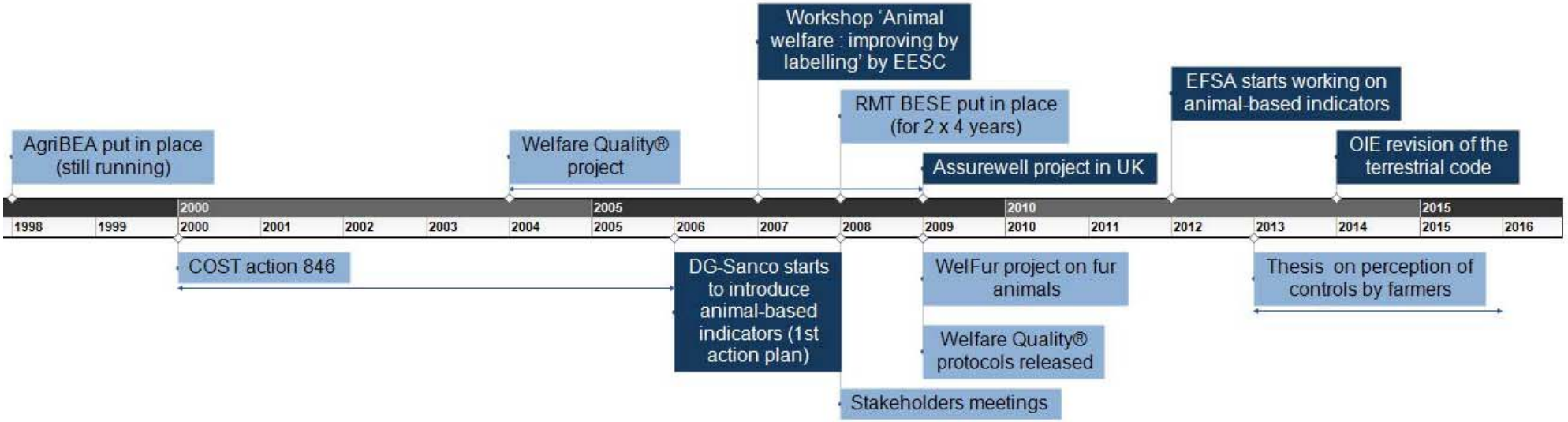
The concern for animal welfare pre-existed the research done on animal based indicators. The indicators designed thanks to this research helped to address the issue of animal welfare in practice and to encourage the dialog between stakeholders, scientists, and society.

Animal-based indicators are now put forward by many policy-makers, especially at EU level. We foresee an increasing use of such indicators. Indeed, the proposal for official controls on animal health and welfare, food, and plant health mentions explicitly the use of animal-based indicators (European Commission 2013, Artcile 13-3f). According to the conclusions of the EUWelNet[27] project, few reference centres for animal welfare could be put in place in Europe to help national competent authorities meet animal welfare requirements. In France, the law for agriculture under discussion at the Parliament proposes such a reference centre to be based in France.

Nevertheless, the use of animal-based indicators should not prevent from imposing minimal norms on the environment (especially for the housing of animals). Poor systems like battery cages for hens or narrow veal crates should not reappear on some farms until these are controlled and the poor welfare state of animals is demonstrated. As a matter of fact it has already been demonstrated that a good level of welfare cannot be reached in such systems. This led the partners of Welfare Quality® to conclude that what we need is '**Ban the bad systems, assess the good ones'** (Miele et al 2011). A pragmatic approach should be taken, combining any measure that can lead to welfare improvements, whether by promoting good environments or by controlling that the results obtained on animals are satisfactory (Main *et al* 2014). The consequences of such an approach on production should be more closely investigated in order to assess its economic impacts.

[27] Coordinated European animal Welfare Network (financed by DG-Sanco, with tha participation of INRA), http://www.euwelnet.eu/euwelnet

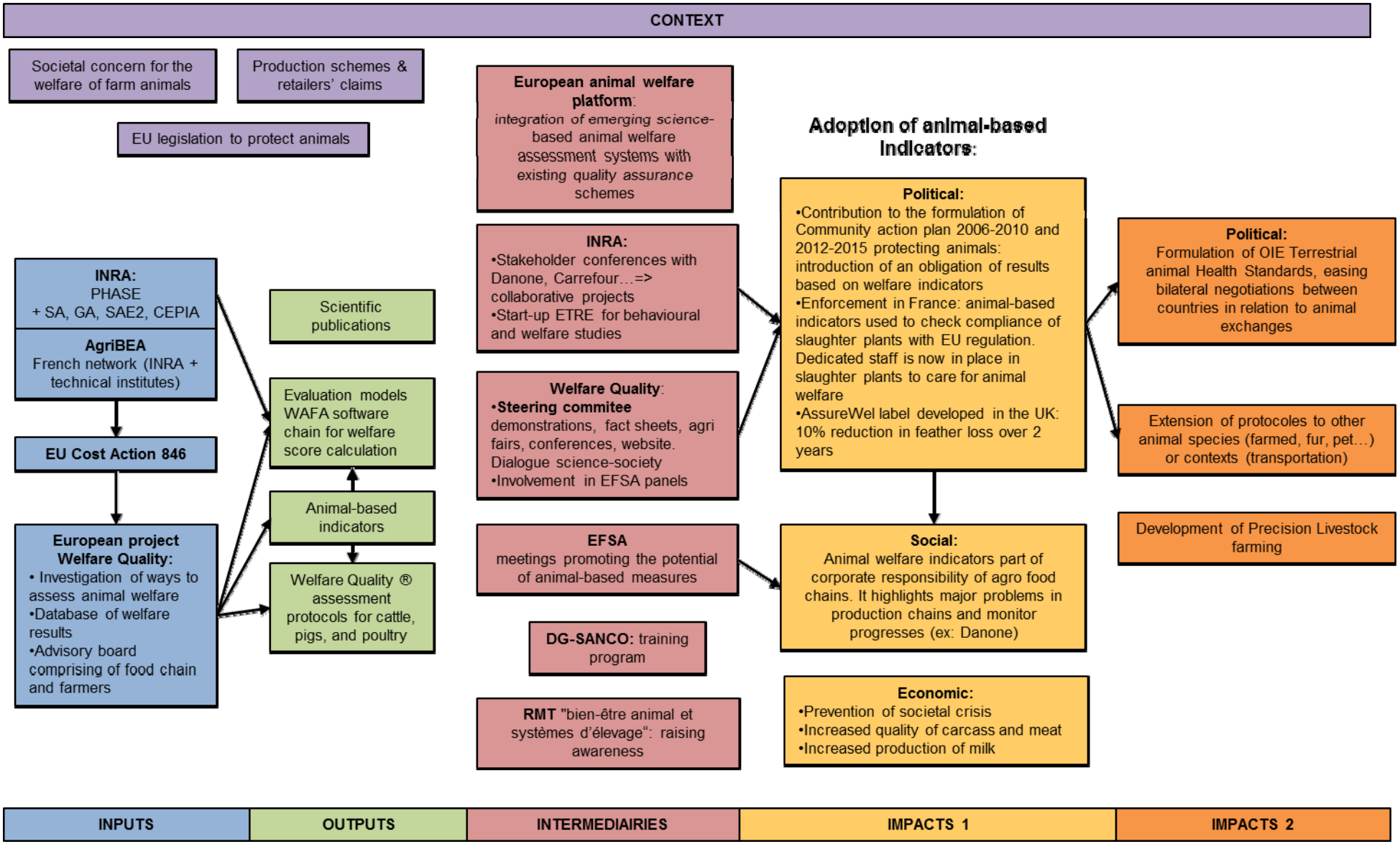
Chronology



Legend:

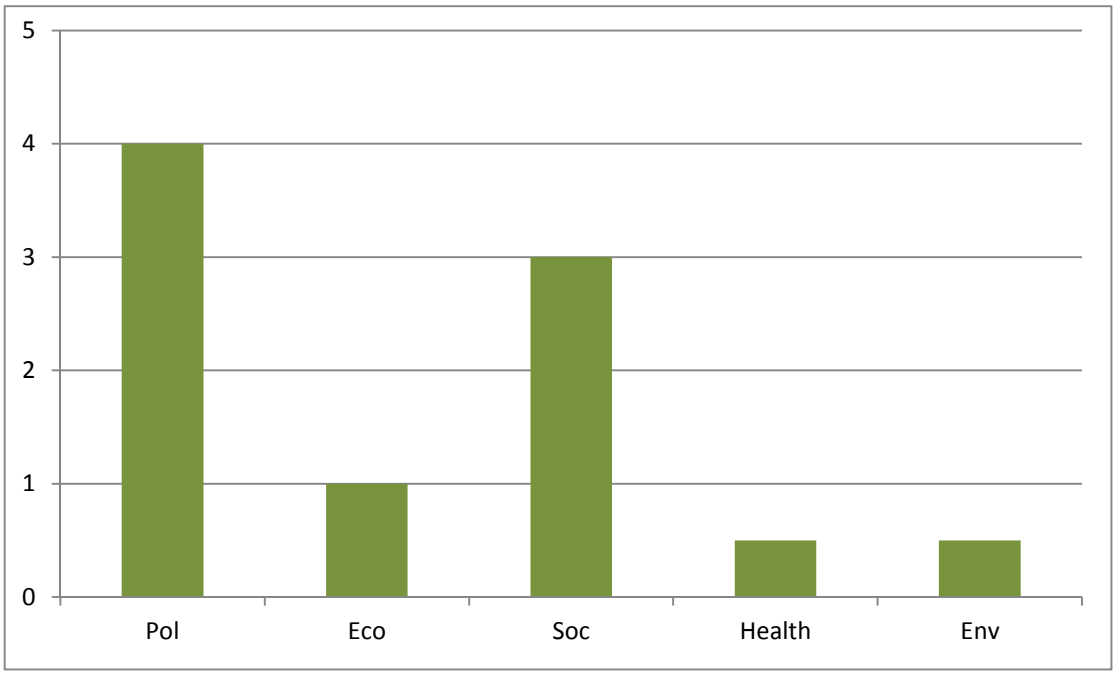
Events directly involving INRA | Other events (context...)

Impact pathway



Vector of impacts

Impact dimension	Importance (/5)	
Political	4/5	Regulations for the protection of animals at the European level (Community Action Plans) Enforcement through adapted inspections in France Mobilisation in public debate: Strong and novel messages easily identifiable. The knowledge produced matches a window of opportunity in the public debate. Media coverage is strong toward the general public and professionals. The debate concerns the whole relevant political sphere. Use in public policy: Important use at several steps of the political cycle, at relevant territorial scales Middle-term impact in diffusion of ideas: The knowledge may influence a debate with strong stakes. It circulates in scientific and non-scientific circles. Research results are renown and rarely distorted while circulating. The contribution of research to the debate is long lasting Stake of the relevant policy: Limited stakes of the debate. Few economical or environmental aspects. Crisis involving a large population at national and international level
Economic	1/5	Prevention of crises Positive impact of welfare on production
Social-Territorial	3/5	Inclusion in production schemes (farm) Standard operating procedures (slaughter) Internal and external values of stakeholders Information to consumers Fulfilment of citizens' concerns Can help farmers to be in line with society → maintenance of farms, visits by tourists



Annex 1: Members of the Advisory Committee of Welfare Quality® (February 2008)

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Dr Sonja van Tichelen - S.VanTichelen@eurogroupforanimals.org
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Notes: Dr Andrea Gavinelli (EC Directorate for General Health & Consumer Protection) will act as an 'Observer' at meetings of the Advisory Committee.

Annex 2: Agricultural fairs and stakeholders' workshops targeted to demonstration during the Welfare Quality® project

Country	Venue	Date	Main public
Belgium	National workshop on pig welfare	27 May 2008	Extension services, companies, administration and scientists
	Eurotier (International Agricultural Fair)	11-14 Nov 2008	Producers
Netherlands	Open day at ID-Lelystad	2008	Cattle sector: farmers, agri. students, advisors and other stakeholders
	Open day ILVO-Animal Sciences, Melle	26 Sept 2008	farmers, producers, scientists
Austria & Germany	International Green Week Berlin	Jan 2009	Citizens (consumers, processors, retailers)
	Biofach	Feb 2009	Processors, retailers, consumers from the organic sector
	Agraria 2008, Wels/Austria	Sept 2009	Producers, consumers
	Rieder Herbstmesse (Euro Agrar, Euro Tier)	Sept 2009	Producers, consumers
	Local agricultural exhibitions in Austria		
France	Space, Rennes	9-12 Sept 2008	Producers
	Sommet de l'elevage	2-4 Oct 20	All
	Sommet élevage, Clermont-Fd	Oct 2009	Producers
Italy	SANA International Exibition of Natural Products-Bologna	11 Sept 2009	Consummers, Retailers
	AgroSud Fair on agriculture and Dairy- Napoli	20 Feb 2009	Producers
Norway	Matstreif (national food festival) organised by InnovasjonNorge (InnovationNorway)	10-11 Oct 2009	Citizens (consumers, processors, retailers)
Sweden	Elmia*	22-25 Oct 2008	Farmers, students, retailers, consumers
	Mila	4-7 Feb 2009	Farmers, students, retailers, consumers
	Interfood	17-19 May 2009	Retailers, food processors
Spain	Expoaviga, International livestock technology exhibition	16 Avr 2008	Producers
	FIMA	24-27 Mar 2009	Producers Retailers, consumers
UK	The Royal Show (England)	3-6 Jul 2008	Producers, processors, retailers, food service businesses, equipment manufacturers, consumers, medias

Annex 3 Analysis of the political impact

Assessment of the dimension « Mobilisation in public debate"

Arguments	Observation on animal welfare case	Mark (/5)
Power and quality of the message	• Scientific credibility: Meetings 2007 at European Economic and Social Committee and the European Commission : need to have tools (labelling) for a scientific assessment of animal welfare • Change in stakeholders opinions: EU plan, OIE • Knowledge circulates also outside academic spheres (in the whole WQ consortium) and was clearly attributable to research contribution	5
Agenda-setting of new issues	• Novelty of research results: up to recently, regulations were based on prescriptive norms on the environment (specially housing). We argued that the focus should be on animals themselves. • Timely contribution in a window of opportunity since different labels and certification systems existed in Europe and required harmonisation and it matches a pressing societal concern.	3
Size and quality of media coverage	• Large and diverse media coverage through professional press and national press; Website, Newsletter sent to 300 organisations outside the project, 3 Welfare Quality® stakeholders conferences • Not much distorsion of message in media	4
Size and quality of the public debate	• Research results feed the debate: DG-Sanco and OIE took on board the idea of introducing animal based indicators of animal welfare (see EU action plan, reports and actual revision of the terrestrial code of OIE) • Public is diverse: Policy-makers, producers organisation, NGOs, Vets, Certification companies were involved in the debate • Long-lasting effect on public debate: although Welfare Quality® ended in 2009, there is still large discussions on whether we should use animal-based, resource-based indicators, or both • Research ideas consolidates some stakeholders' opinions. EFSA analysed the relevance and the feasibility of using animal-based indicators (reports in 2012 and DVD to advertised animal-based indicators). At the moment, there seem to be a consensus on the need to ban bad systems and to assess the good ones with animal-based indicators (to check that appropriate results are met) • The debate covers the whole sphere relevant for the policy.	5
TOTAL Mobilisation in public debate		17/20 =**4/5**

Possible contribution of INRA during the step of knowledge mobilisation in public debate:

INRA provided expertise and also largely contribute to the debate (contribution to workshops, close exchanges with policy-makers…)

Assessment of the dimension « Use in public policy»

Arguments	Observation on animal welfare case	Mark (/5)
Use at different step of the policy cycle	• Explicit citation of research results in texts (use in policy formulation): Welfare Quality® is expressively cited in the community action plan for animal welfare (2012-2015) and in the motion of the parliament on this action plan (2012). Animal based indicators have already been introduced in the broiler directive in 2007 (Council Directive 2007/43/CE) and in the regulation on slaughter (Council Regulation 2009/1099/EC) • Effect on practices (use in policy enforcement): The Welfare Quality® protocols are freely available so that anyone can use them. They are widely used over the world.	4
Geographical scale involved	• The influence is Europe wide (EU strategic plan) and also more recently international wide (OIE)	5
Novelty of the solution offered by research	• Novel solution as compared to existing ones: Animal based parameters are used with success at slaughter. There are still difficulties to implement animal-based indicators on farms: EFSA is seeking for indicators that could be collected from existing database, with the view of putting in place an animal welfare surveillance system in Europe.	5
TOTAL Use in policy-making		=14/15 = **5/5**

Possible contribution of INRA : There has been a large communication of the results and ideas of Welfare quality® thank to Stakeholders conferences, contribution of policy-makers in the advisory board of the project, close informal exchanges with policy-makers etc. INRA contributed largely to it. At the moment in France, INRA contributes to Anses working group on animal welfare and to the sub-group on animal welfare within the “conseil national d’orientation de la politique sanitaire animale et végétale” (CNOPSAV).

Assessment of the dimension "Middle-term impact in diffusion of ideas"

Arguments	Observation on animal welfare case	Mark (/5)
Role of knowledge in the debate	• Animal-based indicators mentioned explicitly in EU welfare plan 2012-2015 ; also in terrestrial code OIE • Possibility for generalisation of use: Not only WQ measures (pigs, poultry, cattle) but in general for all animals • The use of animal-based indicators can change the way farms are inspected and may stimulate innovation at farm level • Knowledge ma influence an important debate	4
Diffusion of knowledge	• Large audience: both scientific, targeted and large public • Some NGOs are afraid that some systems (eg battery cages) may be allowed in the future. We argued that bad systems should be banned and the good ones should be assessed. Criticisms from eg Idel and other organisation close to producers which are afraid to be assessed. Nevertheless, compulsory inspections at present are perceived as violence by farmers and a dialog based on animals rather than resources has the potential to be more constructive and better accepted. • Ideas diffused through training: Animal-based indicators are largely disseminated through education and training. Incorporation of animal-based indicators in SOP at slaughter houses. • Welfare quality® protocols or alike are largely used worldwide by many scientists and industries	5
Lasting of knowledge relevance and integrity of messages	• Sustainable investment of research on the topic: updates of protocols are planned. The Welfare quality Network prolongs Welfare quality with the aim of updating the protocols and extending it to other species • • Ideas are easily attributable to INRA and its partners: large share of the ownership of protocols • Renown of INRA and its partners: Welfare quality® is seen as a reference to develop various projects and schemes	4
TOTAL Middle-term impact in diffusion of ideas		13/15= **4/5**

Contribution possible de l'INRA : INRA contributes largely to the Welfare quality Network (member of the management team, contribution to the Task force on upgrading protocols)

Assessment of the dimension "Stake of the relevant policy"

Arguments	Observation on animal welfare case	Mark (/5)
Potential severity and systemic dimension of stakes	• Animal welfare is a growing concern in Western societies • Public values involved: The work contributes to ethical reasoning on animals. The protocols form a basis for international exchanges (the possibility of an international ISO norm on animal welfare is currently discussed) • Few economic and environmental stakes	2
Size of population and politics involved	• National and international population involved: The impacts can reach competent authorities (inspectors), producers, slaughterplants, agroindustries and retailers, and consumer-citizens. • Insurance value against potential crises, reduction of losses in production (on the farm, at slaughter) • No job stakes	4
Societal concern	• There is a growing concern for animal welfare worldwide (e.g. foie gras boycott) • Contribution of research to consensus-finding: By focusing on results (animal state), one can avoid lengthy discussions about the design of farming system (space allowance, feed, …). Animal-based indicators are especially suited for farming systems which are not conventional	3
TOTAL Stake of the relevant policy		=10/15= **3/5**

Possible contribution of INRA : INRA continues to work on animal-based indicators of welfare, exchange with competent authorities, contributes to DG-Sanco or EFSA funded projects to analyse the practicability of animal based indicators… Recently the comité Ethique INRA-CIRAD started to work on the researches that should be encouraged

Total mark calculation for Political impact

The global « political impact » mark is calculated by assigning the weighing factor 1 to the three first dimensions (Mobilisation in public debate, Use in public policy, Middle-term impact in diffusion of ideas) and a weighing factor 3 to the stake of the relevant policy. Using the marks calculated for each of these 4 dimensions based on the arguments presented in the 4 respective tables below, we calculate the final political impact mark: 4 out of 5 in the animal welfare case.

	Mark	Coefficient	
Mobilisation in public debate	4	1	4
Use in public policy	5	1	5
Middle-term impact in diffusion of ideas	4	1	4
Stake of the relevant policy	3	3	9
Total			22/30= **4/5**

Sources of data

Interviews

Country	Actor type	What actor?	Person interviewed	Person who carried the interview	Date of the interview
France	Intermediary	RMT	Beatrice Mouneix	Xavier Boivin	10/06/2014
France	Impact 1 political	DGAL	Jérôme Languille	Isabelle Veissier	28/05/2014
Europe	Impact 1 political	DG-Sanco	Andréa Gavinelli	Isabelle Veissier	12/06/2014
Europe	Intermediary	EFSA	Frank Berthe	Luc Mounier	22/05/2014
World	Impact 2	OIE	Alain Dehove	Isabelle Veissier	Interviewed during EUWelNet (2013)
France	Impact 1 economic & social	Danone	Camila Garcia	Isabelle Veissier	12/06/2014
France	Impact 1 economic & social	Carrefour	Remi Lecerf	Luc Mounier	21/05/2014
France	Impact 1 economic & social	McDonald's Europe	Patrik Holm-Thisner	Isabelle Veissier	Discussion during Welfare Quality®
France	Impact 1 : sociétal	PMAF	Ghislain Zuccolo	Isabelle Veissier	28/05/2014
NL	Impact 1 economic actors	Dutch initiative	Hans Spoolder	Isabelle Veissier	18/6/2014
UK	Impact 1	AssureWel	Andy Butterworth	Isabelle Veissier	Mail - done
DK	Impact 2	Danish initiative	Björn Forkman	Isabelle Veissier	Mail

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EFSA Panel on Animal Health and Welfare (AHAW) 2012c Scientific Opinion on the use of animal-based measures to assess welfare of dairy cows. *EFSA Journal EFSA Journal* 10: 2554[81 pp.]. Available online: **www.efsa.europa.eu/efsajournal**

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