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Report on the outcome of the EU co-financed animal disease eradication and monitoring programmes in the MS and the EU as a whole

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Final Report

Submitted by:

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List of acronyms

AC:	Autonomous Community
AD:	Aujeszky's disease
ADNS:	Animal Disease Notification System
AI:	Avian influenza
ASF:	African swine fever
BIOHAZ:	EFSA Panel on Biological Hazards
BDV:	Border diseases virus
BSE:	Bovine Spongiform Encephalopathy
BTV:	Bluetongue virus
BVDV:	Bovine viral diarrhoea viruses
CAP:	Common Agricultural Policy
CFSPH:	Centre for Food and Public Health
CJD:	Creutzfeldt Jakob Disease
CSF:	Classical swine fever
CWD:	Chronic Wasting Disease
DG:	Directorate General
DG ELARG:	DG for Enlargement
DG SANCO:	DG for Health and Consumers
DIVA:	Differentiating Infected from Vaccinated Animals
EBL:	Enzootic bovine leucosis
EBLV:	Enzootic bovine leukaemia virus
EC:	European Commission
ECDC:	European Centre for Disease Prevention and Control
EEC:	European Economic Community
EFSA:	European Food Safety Authority
EU:	European Union
FCEC:	Food Chain Evaluation Consortium
FVO:	Food and Veterinary Office
GBR:	Geographical BSE Risk
GDP:	Gross Domestic Product
HP:	Highly pathogenic
HPAI:	Highly pathogenic avian influenza

IDTB:	ILC Detector Test Beam
IPA:	Instrument for Pre-Accession Assistance
LPAI:	Low pathogenic avian influenza
MBM:	Meat-and-bone meal
MS:	Member States
MTB:	Mycobacterium tuberculosis
NMS:	New MSs
NSCP:	National Salmonellosis control programmes
OBF:	Officially free of bovine brucellosis
ObmF:	Officially free of brucellosis melitensis
OIE:	World Organisation for Animal Health (Office International des Epizooties)
OTF:	Officially tuberculosis free
OV:	Oral vaccination
PEP:	Post Exposure Prophylaxis
SCoFCAH:	Standing Committee on the Food Chain and Animal Health
SRM:	Specified risk material
SVD:	Swine vesicular disease
TB:	Tuberculosis
TCs:	Third Countries
TF:	Task Force
TSE:	Transmissible Spongiform Encephalopathies
UK:	United Kingdom
vCJD:	Variant Creutzfeldt Jakob Disease
WHO:	World Health Organisation
WTO –SPS:	World Trade Organisation – Sanitary and Phytosanitary Agreement

Glossary

Active surveillance

Active surveillance is targeted collection of data of specific diseases in defined populations over a period of time, in order to assess the epidemiological evolution of the diseases and the ability to take targeted measures for control and eradication.

Animal for slaughter

Animal intended to be taken to a slaughterhouse or assembly centre from which it may only move to slaughter;

Co-funding

Co-funding is the financial contribution of the Commission to EU Member States for control and eradication of certain animal diseases and zoonoses.

Competent authority

A domestic government body made responsible under that country's national law for the control or regulation of a particular area of legislation.

Compensation

Compensation means the financial contribution from the Competent authority to the owner of the animals that have been culled in the course of controlling or eradication of a particular disease.

Control programme

Programme to obtain or maintain the prevalence of an animal disease or zoonoses below a sanitary acceptable level.

Culling

Culling means the killing and destruction or slaughter of animals as one of the measures in the course of controlling or eradication of a particular disease under the authority of the Competent Authority.

Disease case

A case is a defined confirmation of infection in a particular animal or individual.

Disease status

Sanitary status of a defined animal population in a country or region, defining the level of the burden of disease.

Eradication programme

Programme to result in biological extinction of an animal disease or zoonoses and-or to obtain the free or officially free-status of the territory according to EU legislation, where such possibility exists.

Herd

An animal or group of animals kept on a holding (within the meaning of Article 2 (b) of Directive 92/102/EEC) as an epidemiological unit.

Incidence

The incidence of a disease is the disease occurrence in new cases in a defined population over a designated time period.

Monitoring programme

Programme to investigate an animal population or subpopulation, and/or its environment (including wild reservoir and vectors), to detect changes in the occurrence and infection patterns of an animal disease or zoonoses.

Outbreak

An outbreak is an occurrence of a disease in an animal or animal population, attributed to the same source of infection.

Passive surveillance

General surveillance which is not targeted, systemic, or risk-dependent as in active surveillance, but can be complementary to active surveillance. For example, in the case of avian influenza, passive surveillance is conducted on sick and dead wild birds with the objective of enhancing early warning of the occurrence of the disease and therefore contributing to early detection which is an objective of the overall surveillance activity.

Prevalence

The prevalence of a disease is the disease presence in a defined population (at animals or herd level) in a designated time.

Region

Part of a Member State's territory with a regional governing structure and that is subject to inspection by the competent authorities.

Reservoir

The reservoir is the animal where the infectious pathogen normally resides, and therefore is the common source of infection to other animals or humans.

Surveillance

Surveillance refers to activities to collect and record data on specific diseases in defined populations over a period of time, in order to assess the epidemiological evolution of the diseases and the ability to take targeted measures for control and eradication.

Third country

Country which is not an EU Member State.

Vector

A vector is a source, mostly an insect or tick, that can transmits certain infectious pathogens from one animal or human to the other.

Zoonosis

An infectious disease that is transmissible under natural conditions from animals to humans

Executive summary

This Report focuses on the implementation of the EU co-financed animal disease eradication and monitoring programmes, as required by Article 41 of Council Decision 2009/470/EC.

The aim is to provide an overview of the activities carried out under the relevant legislation in the period 2005 to 2009, and to review the achievements of the programmes against their objectives and overall aims. The study qualitatively assesses the effectiveness of the measures co-funded under the programmes, by examining their results and impacts and their role, both collectively and individually in terms of European animal health and public health. To this end, the programmes are reviewed in the context of the trend and evolution of each of the diseases covered by the study. While mainly focusing on the 2005-2009 period, the historical evolution of EU intervention in this policy area is also considered, by outlining the major changes that have occurred in the past twenty years (e.g. emergence of new diseases and changing risk factors, the evolution of funding criteria).

The study concludes that, in spite of some areas of concern, the programmes continue to play a crucial role in the effective management of the targeted animal diseases, by ensuring disease surveillance and eradication, as well as the prevention and rapid reaction to emerging and re-emerging animal diseases, which is a cornerstone of the EU Animal Health Strategy. This, in turn, offers clear net economic benefits to the relevant sectors and stakeholders, as well as the protection of consumers and public health in the case of zoonoses.

Finally, defining priorities at EU level provides the added value of ensuring the better targeting of transboundary diseases of high EU relevance, in terms of the need for coordinated EU action to *protect a key sector of the EU economy and the smooth functioning of the single market. It also plays a catalytic role in terms of MS efforts to achieve freedom from disease and the protection of public health, which represent key public goods for EU society.*

1. Introduction and background

As part of the overall EU Animal Health Strategy aimed at ensuring a high level of animal health, public health and consumer protection, the EU system of financial contributions for eradication and monitoring programmes aims to progressively eradicate animal diseases and/or implement disease monitoring in the MS and the EU as a whole.

A systematic EU approach to animal disease eradication, control and monitoring was first introduced for some diseases in 1977 following the adoption of Council Directive 77/391/EEC[1], which contains the basic framework for animal disease eradication and EU co-financing. The aim at the time was the eradication of bovine brucellosis, tuberculosis and enzootic bovine leucosis over a set time period. In 1990, the legal framework for EU financial assistance on animal health policy was further developed with Council Decision 90/424/EEC[2] on expenditure in the veterinary field; and in 2003, additional food-borne zoonotic agents were included in EU legislation (Directive 2003/99/EC[3]). Council Decision 90/424/ECC has been substantially amended several times and, in the interest of clarity and rationality, was codified, repealed and replaced by Council Decision 2009/470/EC[4]. The animal diseases which are eligible for EU co-financing are listed in Annex I of this Decision.

In 2006, a multi-annual approach for the eradication, control and monitoring programmes was introduced, in order to ensure a more efficient and effective achievement of their objectives. Since then, the EU co-financing system has therefore included the opportunity to provide financial contributions for the programmes on an annual or multi-annual basis (for a maximum of six years)[5].

EU funding is allocated according to priority, whereby the greatest weight is given to diseases of **public health importance** and those that have **major economic impact** due to trade implications and income losses for farmers, for the wider livestock industry, as well as adjacent sectors (rural economy etc.). The rationale for intervention is therefore directly linked to the protection of animal health, public health in the case of zoonoses and, also, to the importance of the livestock sector in the EU.

The **prioritisation of the funding** is decided and adjusted on an **annual basis** to ensure that it is fully appropriate to the situation actually prevailing. Each year, the Commission defines the priorities on the basis of its own internal assessment and evaluations of the situation in the Member States as well as at EU level. This **proposed prioritisation** is **discussed** with the

[1] Council Directive 77/391/EEC of 17 May 1977 introducing Community measures for the eradication of brucellosis, tuberculosis and leucosis in cattle. *OJ L 145, 13.6.1977, p. 44–47*

[2] Council Decision 90/424/EEC of 26 June 1990 on expenditure in the veterinary field. *OJ No L 224 of 18.8.1990*

[3] Directive 2003/99/EC of the European Parliament and of the Council of 17 November 2003 on the monitoring of zoonoses and zoonotic agents, amending Council Decision 90/424/EEC and repealing Council Directive 92/117/EEC. *OJ L 325, 12.12.2003, p. 31–40*

[4] Council Decision of 25 May 2009 on expenditure in the veterinary field (Codified version) *OJ L 155, 18.6.2009, p. 30–45*

[5] 2006/965/EC: Council Decision of 19 December 2006 amending Decision 90/424/ EEC on expenditure in the veterinary field. *OJ L 397, 30.12.2006, p. 22–27*

Member States through the Standing Committee on the Food Chain and Animal Health (SCFAH). The Commission's internal assessment is based on data submitted by Member States, FVO reports, audit reports, and results of the Task Force for monitoring disease eradication (TF)[6].

Monitoring, eradication and control for some animal diseases has been co-funded for several decades (since 1977) This is the case for the monitoring programmes for classical swine fever (CSF), and the eradication measures for bovine brucellosis and bovine tuberculosis, bovine leucosis, and ovine and caprine brucellosis.

During the 1990s, the co-funding of eradication and monitoring measures of these diseases made up more than 80% of the overall EU funding on the programmes and the financial contribution was distributed among roughly ten Member States, mainly those in the Mediterranean area (Spain, Italy, Portugal, France) where most of these diseases were traditionally endemic.

In recent years, diseases such as **avian influenza** and **bluetongue** have emerged, or re-emerged, in the EU territory. The EU has, therefore, extended its financial contributions to combat and monitor such diseases and an increased number of Member States have benefited from this co-funding. At the same time, the EU policy to combat certain diseases has evolved significantly with increasingly stringent and targeted measures following new scientific insights into the epidemiology of each disease and the risks of introduction, spread and transmission to humans (e.g. in the case of enzootic salmonellosis and transmissible spongiform encephalopathy-TSE- programmes).

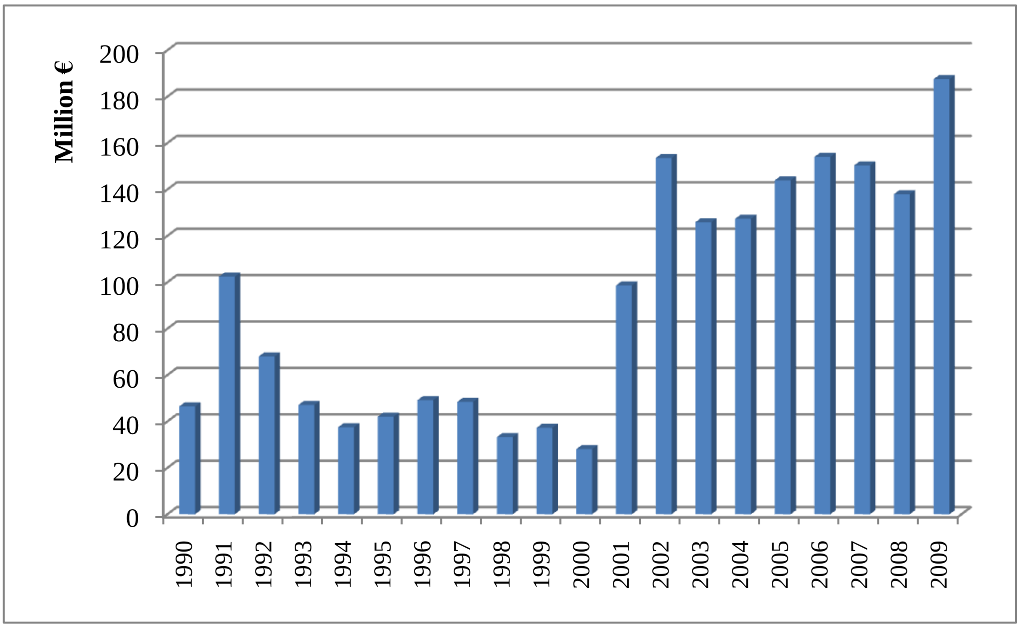
Over the period under review (2005-2009) thirteen diseases have been covered by EU co-financing, namely: avian influenza, African swine fever, Aujeszky's disease, bovine brucellosis, bovine tuberculosis, bluetongue, classical swine fever, enzootic bovine leucosis, rabies, enzootic salmonellosis, ovine and caprine brucellosis, swine vesicular disease, TSEs (BSE and scrapie).

Figure 1 presents the **evolution of EU co-funding since 1990**. It shows a clear upward trend since 1990, with a noticeable jump after 2000. In particular, significant increase in funding in 2009 was mainly due to the fact that the EU started co-funding the bovine tuberculosis eradication programme in Ireland in that year. As Ireland has been implementing the eradication programme since then only, the results of the programme have not formed part of the study. During the 1990s an average of €51 million per year was allocated and paid to such programmes under EU co-financing; over the last ten years, the annual average allocation and payments have more than doubled (to €122 million). This upward trend reflects the extension

[6] This Task Force (TF) was established in March 2000 in line with action 29 of the White Paper on Food Safety. The TF is formed by representatives of each Member States under Commission responsibility and annual or bi-annual meeting are held in Brussels. Its objectives are: a) to improve animal disease eradication and b) to improve the cost-benefit-ratio of animal disease eradication programmes that are co-financed by the EU. In addition, six TF sub-groups have been created: bovine tuberculosis, bovine brucellosis, ovine and caprine brucellosis, rabies, salmonellosis, and classical swine fever, to deal with specific diseases and to provide technical support.

of EU co-funding, both in terms of new diseases and in terms of the number of MS being co-funded.

Figure 1 EU co-funding (payments) of eradication and monitoring programmes, 1990-2009



Source: DG SANCO based on financial decisions from 1990- 2009

1.1. The value of the EU livestock sector

As is indicated above, the **ultimate objectives** of these programmes **are to encourage the improvement of the productivity of the livestock sector, while guaranteeing a high level of protection of animal health and public health,** and to contribute to the economic sustainability of the sector directly or indirectly affected by an animal disease outbreak (targeting effects on the rural economy, tourism etc. of EU measures to control outbreaks in particular).

The thirteen diseases covered by this Report have a major impact on the key livestock sectors - bovine, sheep and goats, pigs, and poultry.

Table 1 presents the **2009 economic significance** of these four sectors for the EU food and animal industry and lists the top six producers for each sector among the EU-27 Member States (further details and data on the economic significance of these sectors are presented in Annex 1 to this report). **The pig sector is the most economically significant** of the four sectors, accounting for 9.35% of total EU agricultural output and generating some € 3.1 billion of exports of pig meat to third countries in 2009.

Table 1 Economic significance of the livestock sector in the EU, 2009

Sector	Value share of agricultural output (2009, EU27)	Exports of meat to extra EU-27 (million €)	Top six MS producers
Bovine	8.25%	526	IE, BE, AU, UK, FR,IT
Sheep and goats	1.72%	41	UK, ES, GR,FR, IE, IT
Poultry	4.44%	1,136	FR, DE, IT, ES, UK,PL
Pigs	9.35%	3,096	DE, ES, FR, IT,NL, DK

Source: Eurostat (Economic Accounts for Agriculture) and DG AGRI

2. Description of funded measures and overall funding

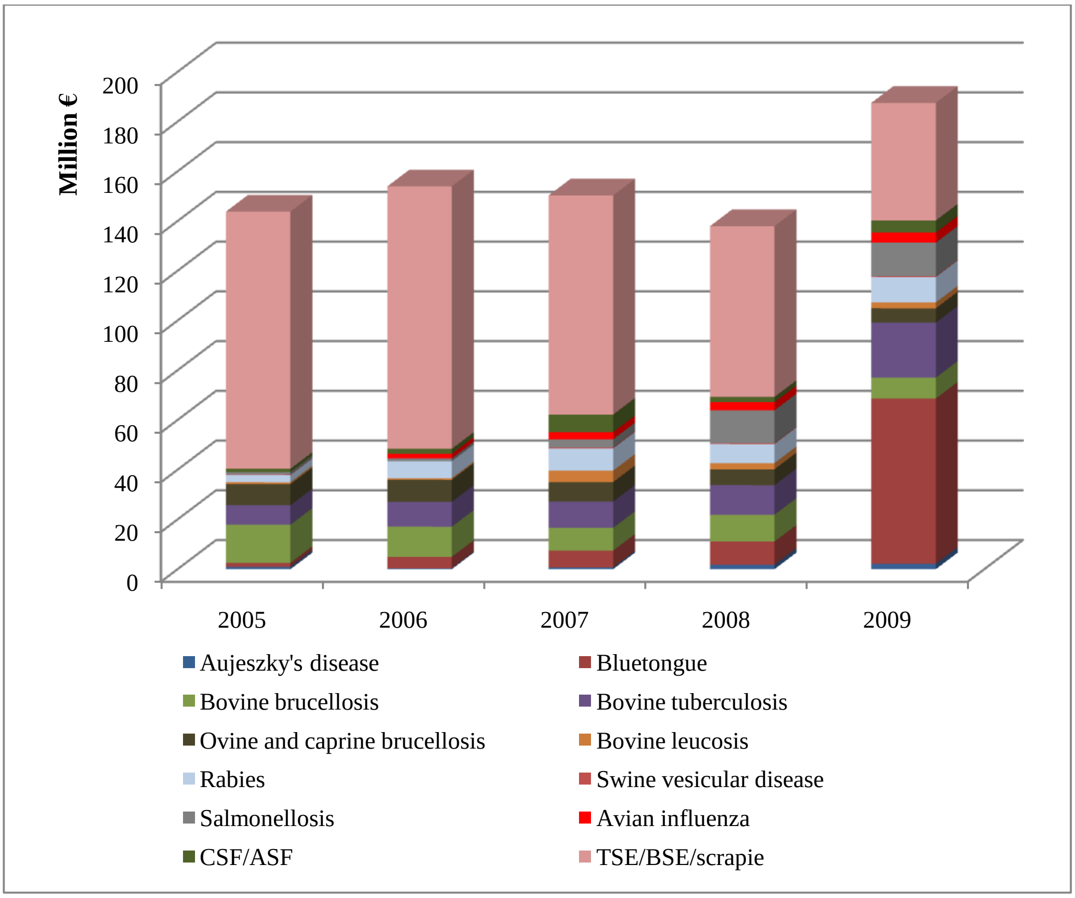
The veterinary measures undertaken under the programmes focus on the prevention, control and eradication of certain diseases and zoonoses present in specific Member States or areas of the EU.

In particular, the **EU co-funded** eradication and monitoring programmes **cover a wide range of measures** including vaccination, testing of animals, compensation for slaughtering or culling, and treatment**.** Generally, the financial contribution is at the rate of 50% of the cost incurred by Member States to implement specific measures up to a maximum amount, with the exception of the costs of TSE monitoring, testing and genotyping which have been funded at 100% up to a ceiling (for further details on measured co-funded see Annex 2).

Over the period 2005-2009 approximately 70% of the programmes have received an amount up to €250,000; 15% of the programmes have received between €500,000 and €1million; and 22% an amount between €1 million and €5 million. As **Figure 2** shows, there has been an increase in the overall funding during the period, from €143,961,557 in 2005 to €187,858,266 in 2009.

The total amount of funding has varied greatly between diseases (based also on the number of programmes approved for each disease), from avian influenza programmes which received slightly more than €12 million to TSE (bovine spongiform encephalopathy/scrapie) programmes which received approximately €413 million over the period. TSE programmes have absorbed the largest amount of funding, accounting for 53% of the overall budget, followed by bluetongue (€88 million), bovine tuberculosis (€62 million), and bovine brucellosis (€55 million).

Figure 2 EU co-funding (payments) by disease, 2005-2009



Source: DG SANCO based on financial decisions from 2005- 2009

3. Performance and results of the programmes

In order to examine the extent to which the co-funded programmes have been effective in contributing to the improvement of animal health within the EU, part of the study consisted of a qualitative and quantitative analysis of the epidemiological evolution of each relevant disease covered by the programmes. This compared the desired outcomes, effects as well as the impacts of the programmes on the overall EU situation and in each relevant MS, with a particular focus on the years 2005-2009 (for a detailed analysis of each disease eradication and monitoring programme, see Annex 2).

This analysis demonstrates that, over the period reviewed (2005-2009), the EU co-funded eradication and monitoring programmes have been increasingly successful in terms of achieving the desired outcomes except in some Member States where some areas of concern still remain.

Most of the diseases targeted by the programmes have been **progressively eradicated** from large areas of the EU. This is evidenced by a **significant expansion in disease free zones in the EU** during this period (e.g. **in the case of bovine tuberculosis, bovine brucellosis, and classical swine fever**). In most other cases, the targeted diseases have been effectively contained and incidence or presence has been brought under control. The results of the analysis are discussed per disease in the following sections.

3.1. Areas of concern

The main **areas of concern** in eradicating **brucellosis in sheep and goats** are in **Greece** and **southern Italy**, where particular implementation issues of the programmes adversely affected the performance of the programme. It is important to note that where programmes have failed to perform due to poor or incorrect implementation at Member State or local level, the Commission has effectively taken corrective action or imposed penalties in terms of not approving the programme or reducing the funding in subsequent years. In the case of Greece, the Commission approved programmes during the period 2005- 2007 and in 2009 (in 2008 Greece did not submit a brucellosis eradication programme for sheep and goats) but a 100% penalty was subsequently applied and no payments were made due to the poor implementation of the programme. For the same reason, the Commission imposed penalties of 70% of the approved budget for the region of Sicily for the years 2007, 2008, 2009.

3.2. Mixed success

In some cases, **despite the progress**, **results tend to vary** between diseases and there are still some EU regions where **problems persist**. Reasons for this include **epidemiological factors which affect the performance of the measures** taken but also implementation issues at Member State level.

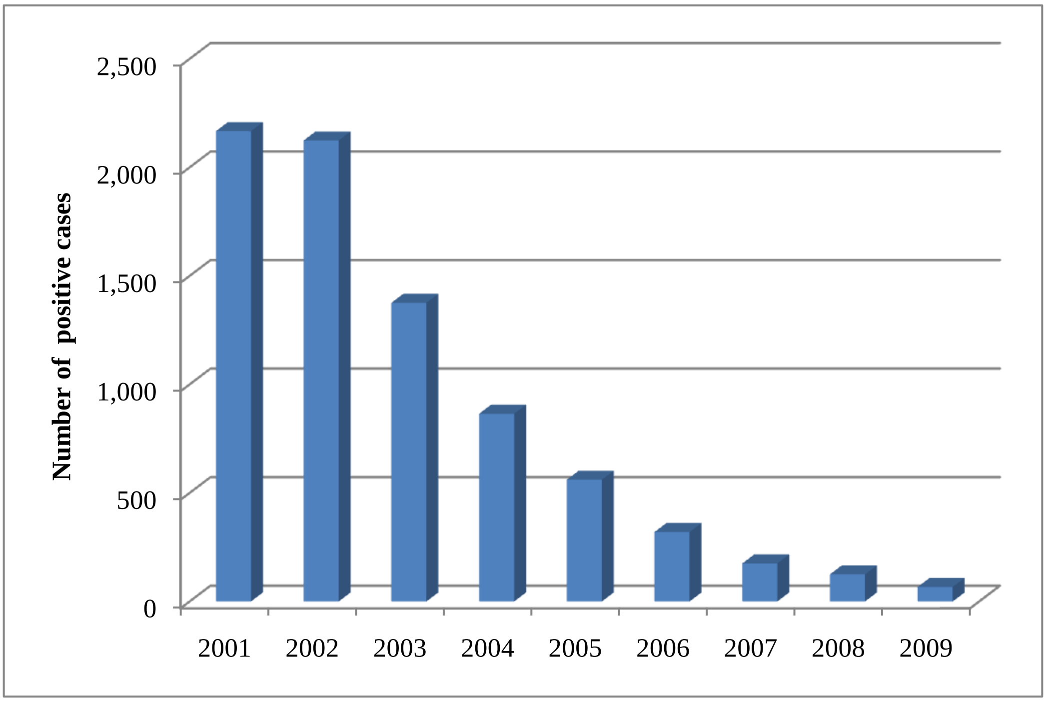
In Portugal and Italy, due to particular circumstances related to the implementation of the bovine brucellosis eradication programmes in certain regions, **there are significant variations in performance at regional level.** In **Italy** the presence of bovine/buffalo brucellosis differs significantly by region. In northern and central Italy several regions and provinces are officially free, whereas in the southern regions the prevalence and the incidence of the disease are still high in bovines and buffaloes. In continental **Portugal**, there are also geographic variations in terms of the prevalence of the disease, which is higher in the regions of Alentejo and Tràs-os-Montes compared to the rest of the country. Nonetheless, there are notable improvements. Particularly in the **Azores** the implementation of the vaccination programme has yielded **excellent results** with herd prevalence dropping from over 3% in 2006 to just over 1% in 2009.

3.3. Notable achievements

The implementation of **BSE monitoring and eradication programmes** was a necessary element in a series of measures taken at EU level that led to a dramatic drop in the detected BSE cases within the period 2001-2009, an average annual decrease of 35% has been observed. By 2009, only 67 positive cases (see **Figure 3**) were found from over 7 million tests performed. As a consequence, Member State requests for BSE eradication, i.e. culling of BSE-infected animals, have dropped in line with the very substantial reduction in new BSE cases. BSE, which constituted a major threat to the EU market and public health, has now almost disappeared. BSE monitoring provides assurance on the EU situation and the basis for the safe relaxation of rules. **The application of stringent EU measures laid down against BSE has therefore had a very significant impact on minimising the incidence of the disease**.

As regards **TSE monitoring** in sheep and goats and **scrapie eradication**, the programmes supported Member States in implementing the enhanced requirements introduced at EU level that resulted in the improvement in the detection of infected flocks, the application of the eradication measures to these and, through discriminatory testing, the provision of the assurance that these cases are not related to BSE infection.

Figure 3 Evolution of BSE positive cases in the EU, 2001-2009



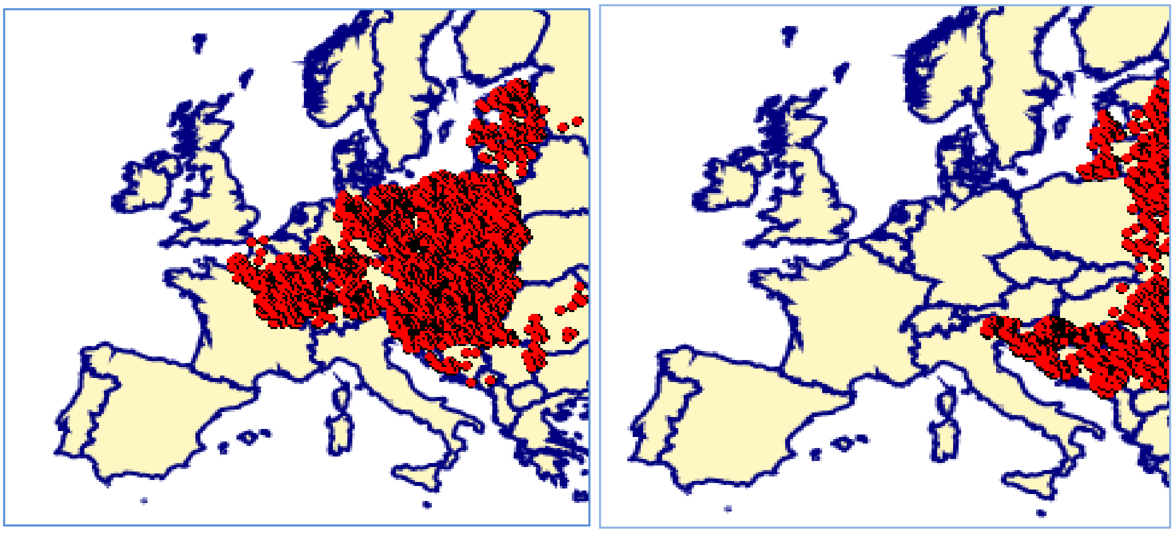
Source: DG SANCO-Draft report on the monitoring and testing of ruminants for the presence of TSEs in the EU in 2009

In the case of **rabies**, the co-funded oral vaccination programmes, launched at the end of the 1980s, have proved very successful, as they have **led to the steady eradication of rabies from several Member States**. Between 2005 and 2010, the total number of positive rabies cases at EU level has decreased very significantly from 2,575 cases to 695. The eradication of rabies from Europe is now in sight. This is a unique situation in the world as the EU has achieved rabies eradication on a scale which has never been experienced anywhere else before.

As **Map 1** indicates, the disease has now been confined to the east of the EU and the rabies eradication programme has, therefore, progressively shifted from "old" EU Member States that have attained the objective of eradication, to eastern European Member States and cooperation with neighbouring non-EU countries. An EU financed plan on rabies vaccination has been running in Kaliningrad as of 2007 and is intended to be continued until 2014 at least. The Commission is finalising the provision of funding for the creation of vaccination belts through bilateral agreements between interested Member States with their respective neighbours where rabies is still a threat. Third Countries that are at the moment being considered under this plan include Russia, Ukraine, and Belarus. The EU is also financing cooperation activities on rabies (and CSF) with western Balkan countries within the Instrument for Pre-accession Assistance (IPA) (for further details see Annex 2).

Map 1 Evolution of rabies cases in wildlife in the EU, 1992 and 2009

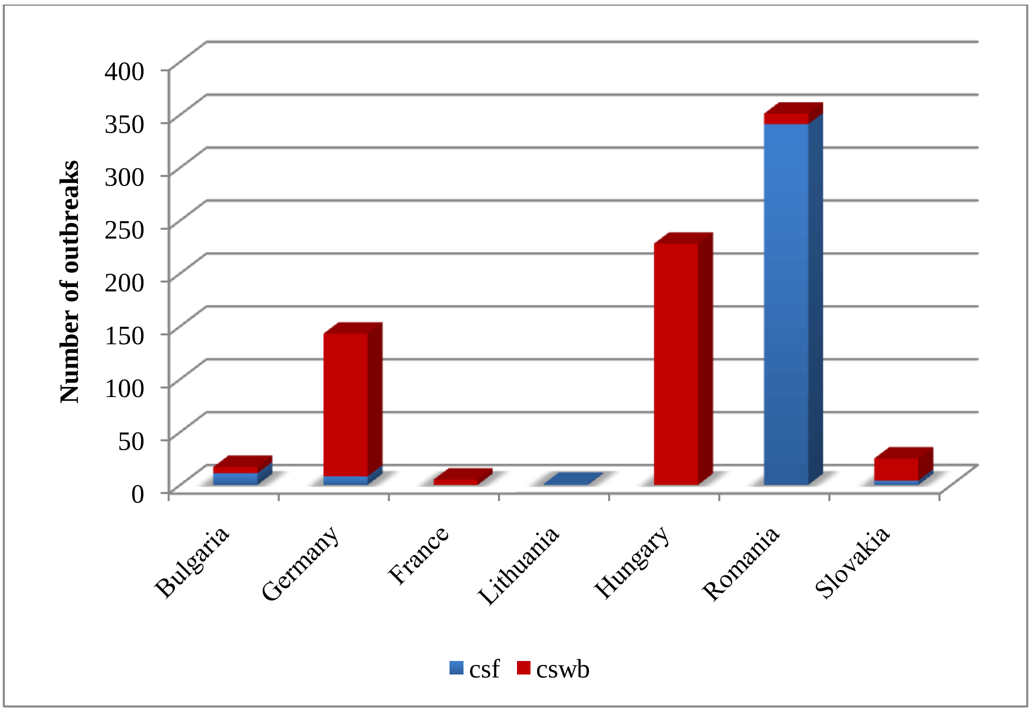
1992 **2009**



Source: WHO-Rabies Bulletin Europe 1992 and 2009

Classical swine fever (CSF) in **domestic pigs has been eradicated** all over Europe, with the sole exception of large outbreaks in domestic pigs (in 2007 and 2008) being in Romania. **African swine fever (ASF)** has been **completely eradicated from the EU territory**, except for Sardinia where there has, however, been a favourable decline in the number of ASF outbreaks since the 1990s. **CSF eradication programmes have focussed on the situation in wild boar**, as these are a **reservoir** for the disease in the EU. The implementation of wild boar vaccination has achieved a decline in cases both in wild boar and in spill over to domestic populations. While the CSF situation within the EU27 improves, the endemic situation in the central Balkan countries has become a threat to the neighbouring EU region. The EU is therefore providing ongoing support for the vaccination and eradication programmes in domestic pigs and wild boar in these countries in order to achieve full eradication of CSF from the EU territory in future (as has been the EU approach in the case of rabies).

Figure 4 Number of CSF outbreaks in MS with co-funded programmes, 2005 -2009



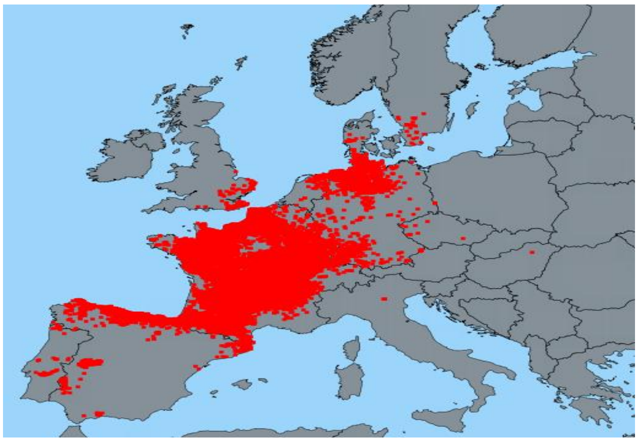
Source: Animal Disease Notification System (ADNS)[7]

In the EU27 during the last decade **swine vesicular disease** (SVD) has been reported in Italy only, for which surveillance and eradication activities are in place. Following the implementation of stringent measures, the central–northern parts of Italy have obtained SVD-free status, while in some southern regions positive cases are still reported mainly in Campania (356 cases) and Calabria (775 cases). There is the prospect of full eradication in future, although this may take several years to achieve.

The **bluetongue monitoring programmes** have played an important role in the control and eradication of this disease, especially for the control of the epidemics caused by serotypes BTV-8 and BTV-1 which appeared unexpectedly in 2006 and 2007. The EU mobilised significant financial resources, which allowed Member States to launch a coordinated vaccination campaign across all infected areas. This campaign has proven very **successful** as bluetongue has effectively been brought under control with BTV-1 and BTV-8 serotypes virtually eliminated from all over Europe. As **Maps 2-4** show, the spread of the disease was limited and a **sharp reduction** in the number of **outbreaks** was observed in **2009 and 2010**.

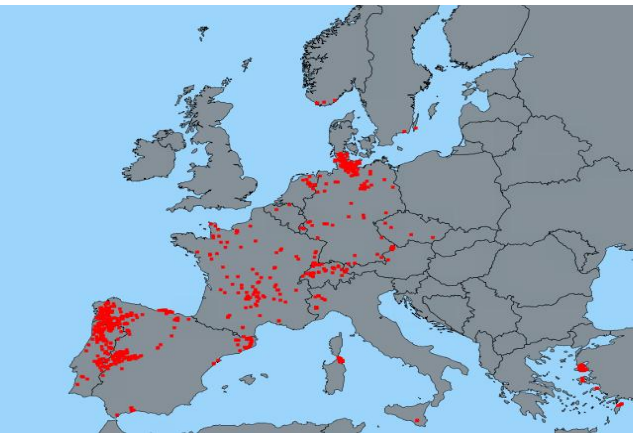
[7] The Animal Disease Notification System (ADNS) application is a notification system that has as its main purpose the registration and documentation of certain important infectious animal diseases. It automates animal disease outbreak notifications between Member States and is routed through the European Commission's Directorate General for Health and Consumer Protection. Council Directive 82/894/EEC (as last amended by Commission Decision 2008/650/EC) provides the legal basis for ADNS.

Map 2 Bluetongue outbreaks in the EU, 2008



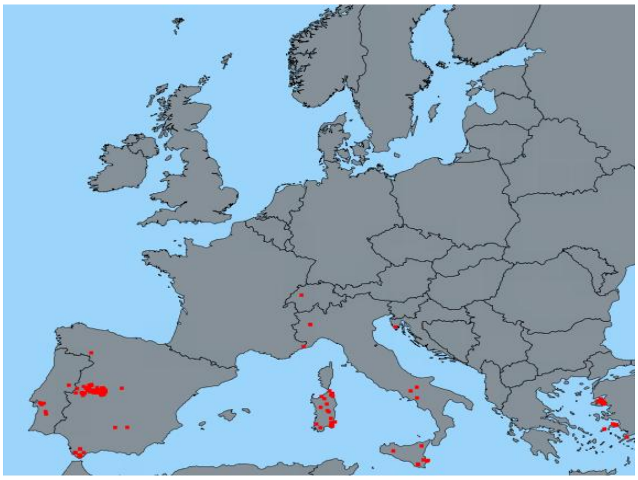
At the launch of vaccination campaign against BTV-1 and BTV-8

Map 3 Bluetongue outbreaks in the EU, 2009



After first year of vaccination campaign against BTV-1 and BTV-8

Map 4 Bluetongue outbreaks in the EU, 2010



After second year of vaccination campaign against BTV-1 and BTV-8

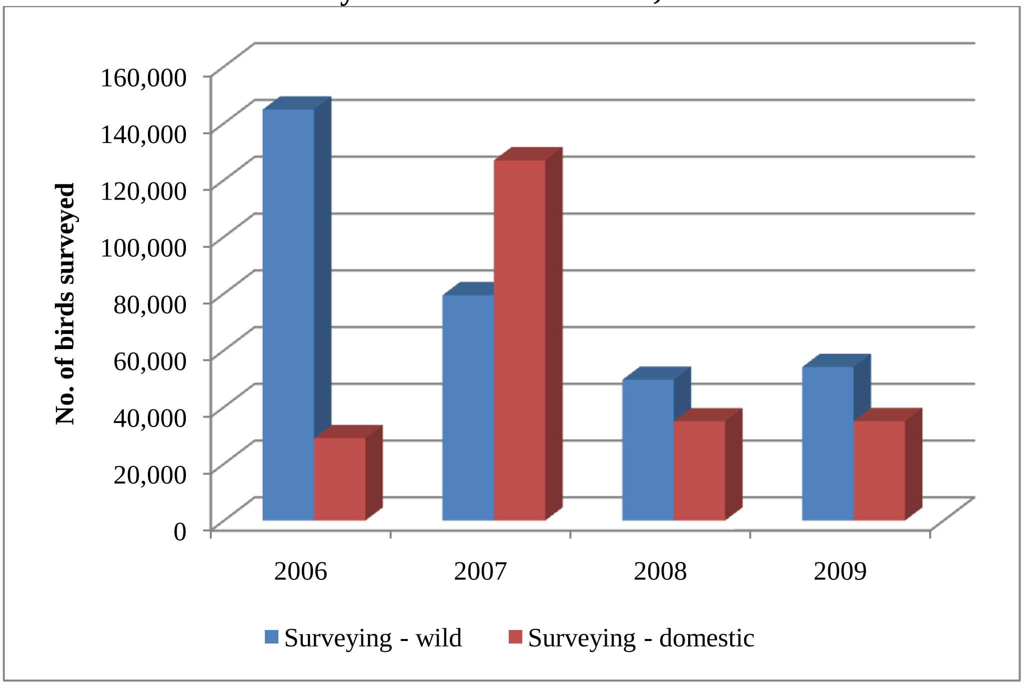
Source: DG SANCO -presentations at Standing Committee on the Food Chain and Animal Health (SCoFCAH)[8], 2008-2009-2010

[8] This committee was established following the adoption of Regulation (EC) 178/2002, which set out the general principles and requirements of food law in the EU.

The EU has co-financed **eradication** of **enzootic bovine leucosis** (EBL) since 1993 and **Aujeszky's disease** (AD) since 1996. The **successful implementation** of the programme has resulted in a significant decline of the incidence of EBL in those countries at risk. The eradication process in Portugal and the Baltic states is reaching its completion. There is also significant progress in Poland. In Italy gradually more regions are becoming EBL free. Similarly, the trend is positive for Aujeszky's disease, and an increasing number of Member States (currently 13) have become disease-free. Over the period 2005-2009 the key result of the eradication programmes is that the disease has been eradicated from Germany, Slovakia, and regions of the UK. Meanwhile, progress has also been made in Ireland, Spain, Hungary, and Poland, United Kingdom (region of Northern Ireland).Following the success of implementation of these programmes and a re-prioritisation of the programmes by Council in 2006, EU co-financing has been stopped since 2010.

The implementation of **avian influenza** (AI) surveillance programmes has been another success. Surveillance programmes for the disease have proven **effective** in providing **early warning** for the timely detection of outbreaks of both high and low pathogenic strains. Following crises, these were also extremely useful in allowing **early detection of HPAI** in **wild birds**, therefore preventing further spread in commercial flocks and risk of exposure to humans. In 2008 and 2009 the number of both wild birds and domestic birds surveyed went down. The decrease in the number of surveyed birds has to be seen in relation to the positive trend in the number of outbreaks occurring which has shown a significant decline since 2007 both for domestic and wild birds (see section of avian influenza in Annex 2).

Figure 5 Number of birds surveyed for avian influenza, 2006-2009



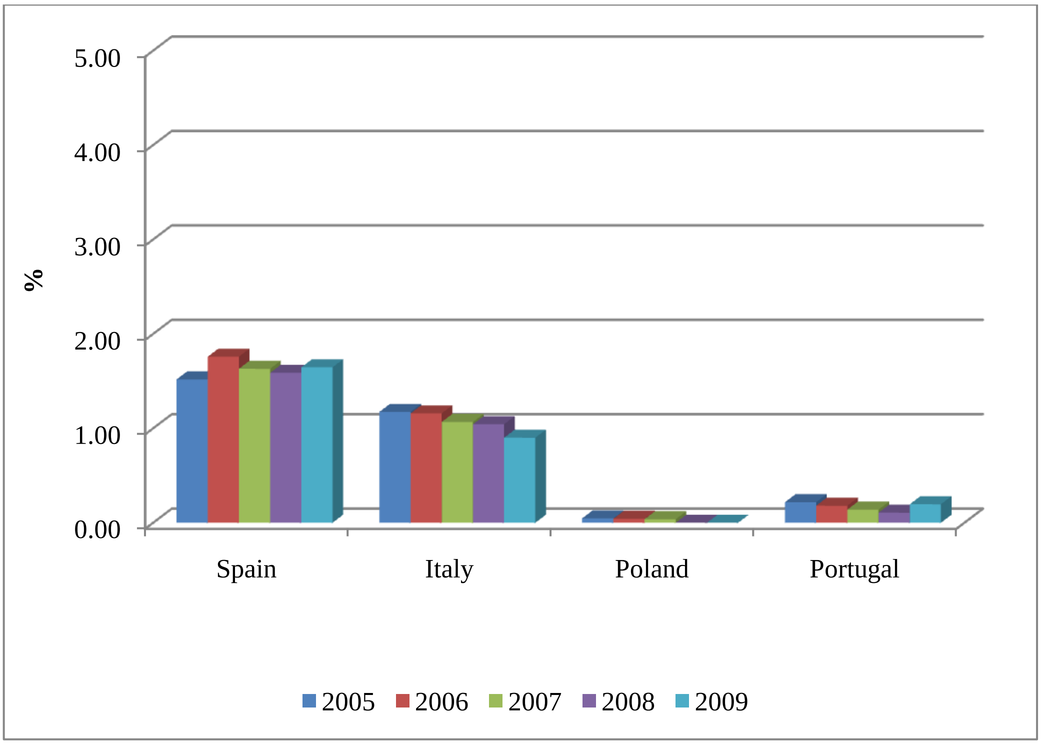
Source: DG SANCO- Annual report on surveillance for avian influenza in poultry and wild birds in the EU in 2005-2010

The implementation of **salmonellosis** programmes has led to a **notable improvement** of the situation both in poultry and in the number of reported human cases, as discussed under the improvement of public health section below.

For the remaining co-funded programmes under review, good progress has been made overall in terms of an expansion in the disease-free zones with several Member States obtaining officially disease-free status during the period (e.g. for bovine brucellosis and bovine tuberculosis), and in the reduction and effective control of the incidence or presence of the disease.

In the case of **bovine tuberculosis (TB)**, epidemiological data for co-funded Member States indicate that between 2005 and 2009 **progress has been made in the eradication** of the disease (**see Figure 6**). In Italy, Portugal and Poland, there was a clear decrease in the cases of bovine tuberculosis. Following the successful implementation of the eradication programme, **Poland** obtained "**officially tuberculosis free" (OTF)** status in 2009 as did **several regions of Italy** in the last few years.

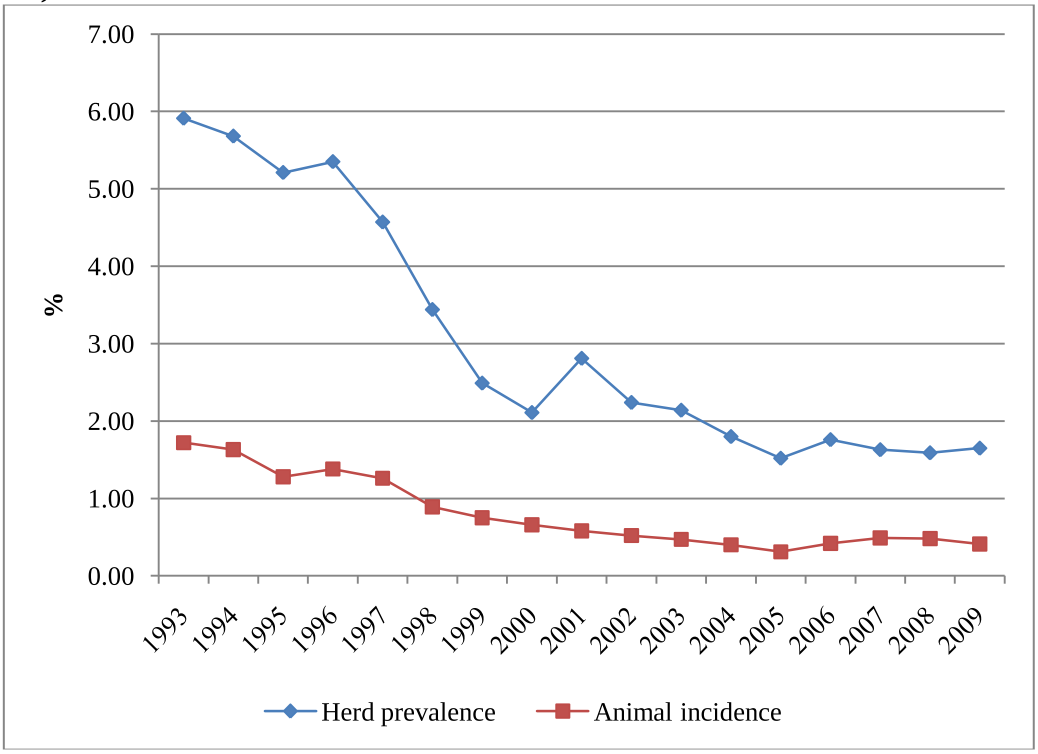
Figure 6 Evolution of bovine tuberculosis, herd prevalence in Member States* with co-funded programmes, 2005-2009



**Note: Cyprus and Estonia have been excluded*
Source: DG SANCO- bovine tuberculosis eradication programmes 2005-2010-Spain, Italy, Poland, Portugal,

While **Spain** does not yet hold OTF status, the country **is a positive example** of how programmes for the eradication of bovine tuberculosis have been successfully implemented. **Figure 7** presents the prevalence and incidence of bovine tuberculosis for the period 1993-2009 in the country. It clearly shows a downward trend, with the levels of prevalence and incidence levelling off around 2004. With regard to incidence in animals specifically, there was a clear downward trend up until 2005, at which point incidence increased slightly. The increases in 2006 and 2007 can be partly attributed to the large number of additional gamma-interferon tests[9] carried out and, the strict interpretation of the IDTB test[10]. As of 2009, Spain had roughly some 6.3 million cattle, of which 4.8 million were covered by the eradication programme and 4.7 million were tested during the year 2009.

Figure 7 Evolution of bovine tuberculosis in Spain, herd prevalence and animal incidence, 1993-2009



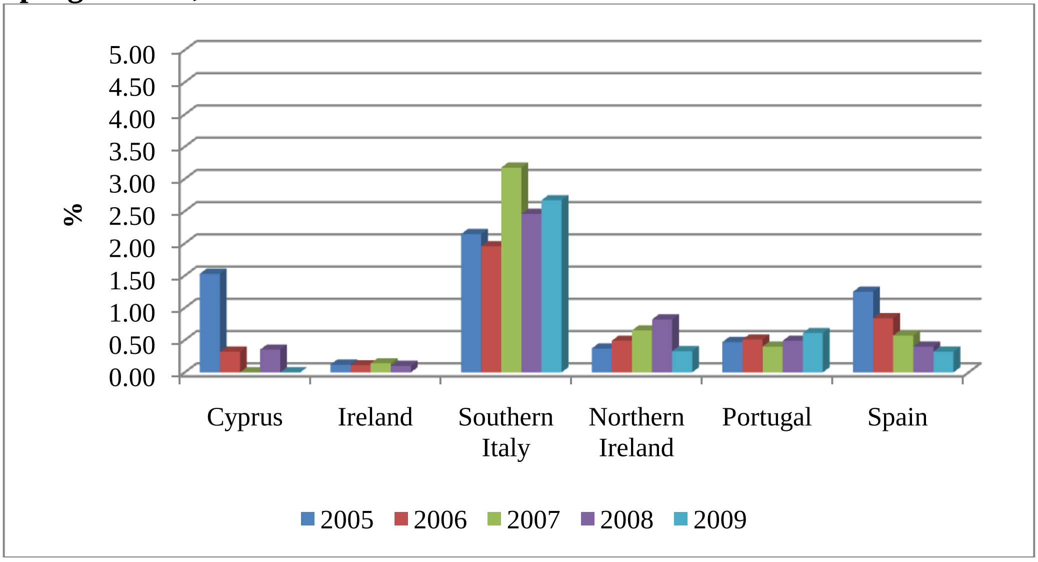
DG SANCO-bovine tuberculosis eradication programme 2010-Spain

On the whole, **significant progress** has also been made in eradicating both **bovine brucellosis and ovine and caprine brucellosis**, with only some parts of the EU still affected by this disease.

Since 2005, the prevalence of **bovine brucellosis in cattle** tested in those Member States with co-funded programmes **decreased or remained at a low level in most countries** (Cyprus, Ireland, and Spain). In Northern Ireland, an increase was observed after 2005, albeit starting from a very low base, with a decline in the level of incidence in 2009. The successful implementation of the programmes has resulted in the granting of '**officially brucellosis free' (OBF**) status for the **Republic of Ireland** as a whole in 2009, as well as **several regions** and provinces **in Italy**, and the **Spanish Canary Islands**. Furthermore, in the majority of Member States the proportion of infected herds in the total number of herds has been decreasing during the period.

[9] Gamma-interferon test is used in addition to the skin tests to increase sensitivity of the animal testing
[10] The intradermal tuberculin *(IDTB)* test.

Figure 8 Evolution of bovine brucellosis, herd prevalence in Member States with co-funded programmes, 2005-2009

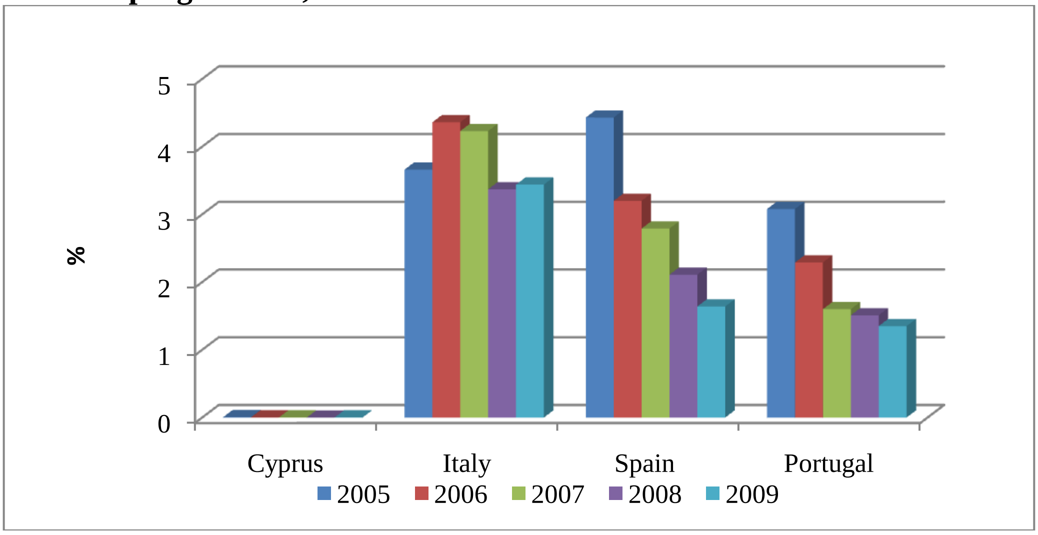


Source: DG SANCO- bovine brucellosis eradication programmes 2005-2010- Cyprus, Ireland, Italy, Northern Ireland, Portugal, and Spain

In the case of **ovine and caprine brucellosis**, the implementation of the eradication programmes in **Portugal, Spain and Cyprus** made **excellent progress** in eradicating the disease.

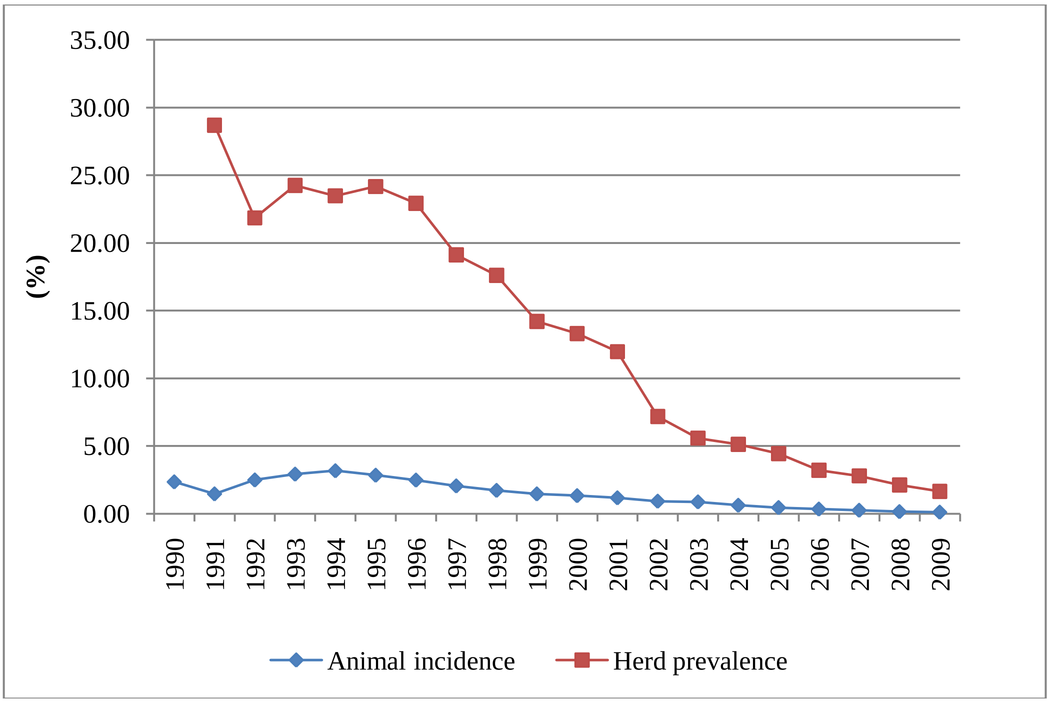
This is clearly indicated by **Figure 9**, showing the herd prevalence **considerably declining** in all these Member States between 2005 and 2009. When extending the time frame of the epidemiological analysis, the success in Spain is even more notable. As **Figure 10** shows, the country reported a considerable decrease in herd prevalence, which declined from some 30% in 1999 to 1.6% in 2009.

Figure 9 Evolution of ovine and caprine brucellosis, herd prevalence in Member States with co-funded programmes, 2005-2009



Source: DG SANCO-ovine and caprine eradication programmes 2005-2010- Cyprus, Italy, Spain, and Portugal

Figure 10 Evolution of ovine and caprine brucellosis in Spain, herd prevalence and incidence, 1990-2009



Source: DG SANCO – ovine and caprine eradication programme 2010-Spain

4. Conclusions: impacts of the programmes

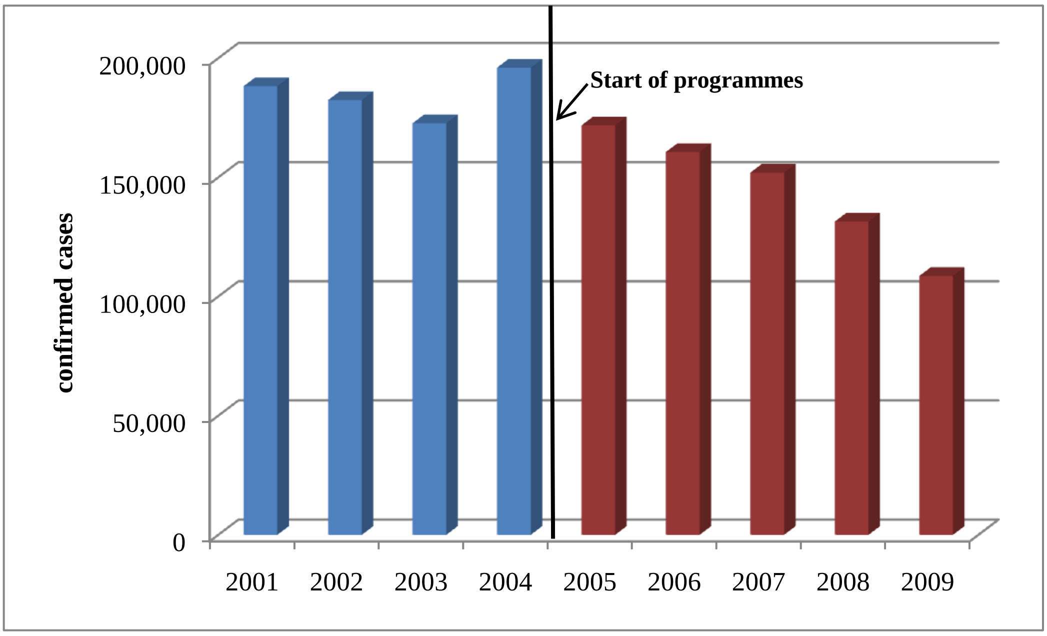
Over the period under review, the EU co-funded programmes have demonstrated their catalytic effect in achieving the improvement of public health and benefits in economic terms for the EU as whole. These key positive impacts are discussed below.

4.1. Improvement of public health

In the case of animal diseases of high relevance for public health, the **availability of better quality, safer animal products**, and more generally ensuring a **higher protection of human health** from the potential negative impact of these zoonoses, has been a key objective of the programmes. This objective has by and large been achieved during the period. Significant improvements in this respect have been made for the most serious zoonoses in the EU territory during the last five years, as has been demonstrated in the cases of salmonellosis, brucellosis, tuberculosis and TSEs.

In the case of **salmonellosis** control programmes, a notable improvement in the **reduction of prevalence of *salmonella* serovars of public health relevance** has been made through the effective and coordinated implementation of national salmonellosis control programmes in specified poultry populations targeting serovars most responsible for human infections (S. *Enteriditis*). Consequently, there has been a **substantial and steady decline in the reported cases in humans since 2004**, from 196,000 cases to 108,000 cases in 2009 (**Figure 11**). The latest EFSA report concludes that the main reason for the reduction in the number of human cases are the reduction targets set by the European Commission to reduce the spread of salmonella in poultry, eggs and chicken meat.

Figure 11 Number of reported confirmed cases of salmonella in humans in the EU*



**Note: From 2001-2004 data refer to total cases rather than confirmed cases*
Source: EFSA and ECDC -Union Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2009

In the case of **brucellosis**, the **significant reduction of animal cases** with a **solid decreasing trend** in the last decades has been reflected in a **significant reduction in human cases**. Data from EFSA (EFSA-ECDC, 2011[11]) indicate the consistently decreasing trend in the number of confirmed human cases during the last five years in the EU as a whole and in particular in six co-funded Member States[12]. In total, 401 confirmed cases were reported in the EU in 2009, representing a 35 % decrease when compared to 2008. This is a major impact in terms of a reduction of the risk of infection for humans pointing to the catalytic role and success of the programme.

In the case of **bovine tuberculosis**, data for the period 2005-07 shows a fall in the number of human cases and continuing low levels in 2008 and 2009, and this is an indicator of the 2009 **progress made in the eradication** of the disease in **animals** as noted above.

In the case of **TSEs**, the length of the incubation period of vCJD in humans[13] does not allow confirmation of the positive effects of the BSE programmes on disease prevalence in humans. However, the **spectacular drop in BSE cases in cattle** and preventive SRM[14] removal,

[11]European Food Safety Authority, European Centre for Disease Prevention and Control; The European Union Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2009; EFSA Journal 2011; 9(3):2090.
[12]Cyprus, Ireland, Italy, Northern Ireland, Portugal, Spain
[13] BSE is considered as transmissible to humans (human variant CJD), which was first identified in 1995/96.
[14] SRM-specific risk material

supplemented by the monitoring tests under the programmes, are expected to have **long term positive effects on the cases of vCJD in humans**, as these factors have for a number of years brought under control the risk of meat from BSE infected animals entering the food chain.

4.2. Economic relevance

The study has identified clear net economic benefits for the EU livestock sector resulting from the implementation of the EU co-funded control and eradication programmes. These can be grouped into five main areas:

- **Protecting the value of the sector:** The livestock sector is a major player of the EU27 agricultural economy, accounting for some 40% of the total agricultural output value in 2009 (Eurostat, Economic Accounts for Agriculture). **The successful implementation of the programmes** resulting in **improvement of animal health and welfare** has benefits in terms of safeguarding and improving producer incomes, by **minimising the potential direct losses** from reduced productivity and output incurred in the case of animal morbidity and mortality;

- **Contributing to market stability**: Eradication and control measures have been a key contributing factor on stabilising prices and markets. The **TSE monitoring programme** managed to safeguard the EU market in international trade by providing transparency to consumers and competent authorities. The **avian influenza surveillance programmes** have played a key role, in conjunction with other measures taken (e.g. exceptional market measures), in restoring market confidence and stability;

- **Achieving substantial cost savings in programme implementation**: The improvement of animal health status has been a determinant factor in reducing the number and frequency of sampling (e.g. for bovine brucellosis programme in Ireland) as well as in the number of animals slaughtered and consequently the total amount paid in compensation (e.g. for the TSE eradication programmes); in the case of bluetongue the improved epidemiological situation has allowed several Member States (the Netherlands in 2009; Belgium and France in 2011) to stop compulsory vaccination against the responsible serotypes;

- **Ensuring free trade**: As **Table 1** shows, the livestock sector generates significant income in terms of meat exports to third countries (ca. €4.5 billion in 2009). The expansion in **disease free zones** (e.g. **CSF, brucellosis, and tuberculosis**) in Europe has had **positive trade implications**. As the number of disease-free Member States and regions has increased, the movement of animals and animal products has been facilitated and the very significant potential losses from trade restrictions (both inside and outside the EU) have been avoided. A good example is the **successful implementation of the bluetongue vaccination campaigns** which have made it possible in recent years (after 2007) to move vaccinated animals for a specific serotype from a restricted area to a free area. One of the main benefits of vaccination has therefore been to have contributed to the avoidance of the potential losses of farmers caused by movement restrictions;

- **Reducing human health costs**: Some studies have provided estimates of the reduction in costs related to the incidence of zoonoses in humans. Wider economic losses include not only the immediate costs of medical treatment and hospitalization and the direct losses in the economy from the resulting disruption, but the output predicted to be liable to suffer sizeable losses due to the reduction in productivity. At the peak of the **avian flu** world pandemic, the World Bank estimated a severe pandemic among humans could cost the global economy about 3.1% of world gross domestic product[15]. **Salmonellosis** constitutes a **major public health burden** and represents a significant cost to society in many countries. A study for DG SANCO estimated the total human health losses due to salmonella in pigs at ca. €90 million per year, including productivity losses and healthcare costs (FCC, 2010)[16]. In the US, the total cost associated with salmonella is estimated at US$ 3 billion annually (WHO, 2005[17]).

Existing studies[18] tend to agree that the economic benefits of disease control and eradication outweigh by far the costs of measures taken, although benefits are generally difficult to estimate in monetary terms[19].

Indeed, animal diseases can have a significant impact on the EU economy[20]. As an indicator of the potential costs, the total economic loss for the UK resulting from BSE in the year after the 1996/7 crisis was estimated at between £740 million and £980 million (Atkinson, 2000). The 2003 outbreak of another **highly pathogenic avian flu** (H7N7 virus) in the Netherlands led to the destruction of some 30 million birds, with direct economic costs estimated at more than €150 million (European Commission, 2006). In Belgium, **bluetongue** outbreaks were estimated to have resulted in the loss of one-sixth of the national sheep flock and an overall economic impact of between €35.3 and €104.8 million in 2006-2007 (Mounaix B., et al 2008)[21]. In Denmark, it is estimated that the industry run national control program for salmonella (cost: US$9.8 million/year) saves US$17.7 million annually of Danish public expenditure (Wagener et al. 2003)[22]; similar conclusions were reached by the cost benefit

[15] Around US$1.25 trillion on a world GDP of $40 trillion; the severe case scenario was based on a 1% mortality rate – or about 70 million people.
[16] FCC Consortium Analysis of the costs and benefits of setting a target for the reduction of salmonella in slaughter pigs, Final Report
[17] WHO. 2005 Drug-resistant Salmonella. Fact sheet N.139. Revised April 2005
[18] Some examples: "Prevention and control of animal diseases worldwide Economic analysis –Prevention versus outbreak costs" (Agra CEAS, 2007); "The Economy-Wide effects of FMD in the UK Economy. " (Blake et al, 2001); "Risk assessment and cost-effectiveness analysis of Aujeszky's disease virus introduction through breeding and fattening pig movements into Spain" (Martin Lopez at al, 2009) There are also numerous studies which analyse the economic benefits of disease control and eradication in developing countries (e.g. rinderpest control in Africa, control of highly pathogenic avian influenza in Southeast Asia)
[19] Existing studies tend to use different models and parameters to estimate the potential impact (costs and benefits) of infectious animal diseases on the economy.
[20] There is some evidence from available studies on the monetary impact of animal disease outbreaks. Such studies have estimated the cost and impacts of infectious diseases focusing on specific countries, commodities and outbreaks, by capturing a range of cost parameters.
[21] There is further evidence of significant economic impacts from available studies, but relating to animal diseases that are not covered by this Report (e.g. on the UK FMD outbreaks in 2000).
[22] Wegener et al: Salmonella Control Programs in Denmark (Emerging Infectious Diseases • Vol. 9, No. 7, July 2003).

analysis of the Finnish salmonella control programme in broiler production[23]. Impacts from trade restrictions implemented in emergency cases can amount from € hundreds of millions to € billions; and although time limited in theory, such disruptions may cause long term market dislocation[24].

The potential scale of the impacts of animal diseases demonstrates the benefit of implementing programmes that aim to promote the early detection and rapid reaction for animal disease outbreaks through monitoring and control. As outlined in the above analysis, the reviewed EU co-funded programmes have demonstrated their value in achieving these objectives at EU level.

4.3. Added value: coordinating action to fight EU priority diseases

Freedom from disease and a high level of public health are **public goods that benefit the entire EU society**. The accrued benefits are distributed across not only the livestock sector, but also upstream and downstream sectors, the wider economy and EU citizens. On the other hand, inadequate disease protection of a herd on an individual farm can put the health of animals on other farms at risk which can extend to national or continental levels. Safeguarding such "pure" public goods justifies EU oversight and budgetary support.

In this context, **EU co-financing has proved to be the appropriate way to fund control and eradication programmes for animal diseases of high relevance both to the EU economy and the EU society**. Such co-funding has played a key role in incentivizing and sustaining Member State commitment, and maximizing the efficiency of national and regional action and expenditure on animal health. The setting of common objectives and targets at **EU level**, coupled with the exchange of experience and best practices in the context of the **Task Forces and sub-Groups**, has pooled together services, resources and expertise to benefit from the better targeting of diseases towards **achieving common EU goals**.

In line with subsidiarity, the Commission's role is to coordinate and steer the programmes in the right direction to ensure a harmonised EU approach for fulfilling EU-wide policy objectives and maximizing programme results at EU level. Numerous examples of the effective coordination of the programmes outlined in the previous sections illustrate this point. The aforementioned launch of a coordinated vaccination campaign for bluetongue has been extremely effective in containing and sharply reducing the spread of this disease across the EU. **The value of investing in prevention and coordination of measures on health threats and communicable diseases at EU level was clearly demonstrated** in the rapid and coordinated EU action during the H1N1 outbreak in 2006. The reduction targets set by the European Commission to reduce the spread of salmonella in poultry, eggs and chicken meat have been effective in bringing down the number of human cases across the EU. In the case of rabies it has been also possible to quantify the European added value of coordinated vaccination programmes: a €75 million investment at EU level has allowed 500 million EU

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[23] Kangas et al, University of Helsinki, 2004 (published 2007).

[24] Kimball A.M, *2011 Trade Impact of Food Crises: Knowable but unknown.* Conference on Crisis Management in the Food Chain. Brussels, May 19,2011

citizens to travel freely with their pets. A cost borne by each **citizen** of 15 euro cents has been invested to allow for the safe free movement of pet animals across the EU.

The **EU financial contribution** to these programmes has been also designed in a way **to avoid potential negative side-effects**. The general EU system of funding at the rate of 50% prevents the duplication of national expenditure and action. While the responsibility for programme design, implementation and delivery lies with Member States, the oversight by the Commission ensures continuity and the avoidance of any potential overlaps or distortions. The design of the EU co-funded eradication programmes has improved significantly over the last decades, with an increasing emphasis on a regional approach. This has improved the effectiveness of the programmes, by avoiding fragmentation and allowing the **achievement of regional objectives within the EU**. This aspect has very important positive implications for the functioning and sustainability of the single market.

The shift in focus to developing **coordinated action at cross-border level with neighbouring third countries to target problems at source** aims to respond to persisting regional variations in effectiveness for several diseases. Even for largely eradicated diseases at EU level (e.g. rabies, ASF and CSF), the threat persists in some regions, notably in Member State areas bordering with non EU countries in northern-eastern Europe and the western Balkans. For this reason, the Commission is extending cooperation programmes with these border regions in an effort to effectively address the eradication of these diseases and to safeguard the progress achieved in the EU territory during the last two decades.

At programme management level, the overall monitoring and scientific support through the involvement of the **Task Forces and sub-Groups** in place has been a **useful and effective tool** in the implementation of the programmes, by identifying factors and local/regional parameters (e.g. the presence of a wildlife reservoir, and poor management or weak veterinary services) explaining variability in the performance of a programme (e.g. brucellosis, bovine tuberculosis), while positively assisting the Commission in its role. This is also found to have enabled the sharing of knowledge, complementary skills, experience and best practices among Member States leading to better technical and financial implementation of the programmes.

At world level, the "One World - One Health"[25] concept necessitates coordinated action across world regions. The EU co-funded programmes and the Commission's oversight fit within this objective very well, in that they ensure the coordination, coherence, effective guidance and sustainability of actions taken at national, regional and local level for **effective EU representation at world level** initiatives.

[25] The One World One Health supports and legitimates improved cooperation between animal, public and environmental health across the world.

Table 2 SWOT analysis

Strengths	Weaknesses
▪ Co-funded **programmes** have contributed to **reducing disease prevalence/incidence**, therefore safeguarding the economic value of the sector and public health (in the case of zoonoses), and fulfilling their role as a key disease prevention/management tool in the context of the EU Animal Health (AH) Strategy; ▪ Programmes are **designed** at national MS/local level, therefore ensuring a **bottom up approach** in identifying and addressing AH issues; ▪ At the same time, **process** of programme **approval** ensures respect of EU rules and **criteria** (top-down approach), through programme scrutiny by relevant Task Force and disease sub-Groups; ▪ Top-down approach guarantees a **harmonised approach** for addressing AH issues at EU level with **clear trade gains** for the livestock sector; ▪ **Programmes** have helped to **enhance the disease management** role of the Commission and Member States; ▪ The current **system** of co-financing, including penalties for non-implementation, and programme approval **ensures cost-effectiveness**; ▪ Cost-effectiveness is enhanced by **annual adjustments**, e.g. of sampling and testing and other measures used, according to epidemiological situation, which ensures **flexibility and optimisation in resource use**; ▪ Effective **application of penalties** allows Commission to take **corrective action**, when programmes are not appropriately or adequately implemented; ▪ Programmes provide **valuable assistance** to **new Member States**, which are still in the process of strengthening their veterinary control systems; ▪ New (since 2007) **regional cooperation approach** (i.e. rabies) provides valuable assistance to candidate countries and to third countries bordering the EU, ensuring **sustainability of results** achieved to date within EU territory (this approach is also cost-effective as addressing AH problems at source); ▪ EU co-financing provides the appropriate instrument in respect of the **solidarity** and **subsidiarity principles**; ▪ **Sharing of knowledge, experience** and **best practices** among Member States with regard to the technical implementation of programmes in the context of the **Task Forces** and **sub-Groups**	▪ Process of programme design and adoption provides **limited direct contact with stakeholders,** therefore missing opportunity for insight of stakeholders needs and interests to ensure active stakeholder involvement (stakeholders are, however, crucial in implementation) and to ensure wider programme visibility; ▪ As programmes deal with **transboundary diseases**, variable Member State implementation, and in some cases continuing **lack of commitment** to effective implementation, **may jeopardise results** achieved at EU level. ▪ Variability in **Member State** veterinary systems and livestock structures inevitably leads to **variability in programme implementation**. ▪ **Legal framework** too **rigid** in terms of rules and deadlines for MS requests, and this may cause difficulty in some situations

Opportunities	Challenges/Threats
▪ The threat of **emerging animal and human diseases**, together with the **EU** '**Prevention is better than cure'** policy principle, requires **sustained** and even **increased role for monitoring and eradication programmes**; ▪ Explore **regional approach** and **synergies** could provide economies whilst improving effectiveness, especially for wildlife diseases (e.g. CSF and rabies programmes); ▪ The Commission could further **strengthen** the valuable role of the **Task Force and sub-Groups**, for example, by involving Member States that do not currently have co-funded programmes to improve implementation of their activities; ▪ **More communication** may be needed between the Commission and Member State Competent Authorities to address underperformance and to **ensure continued commitment** to programme implementation; ▪ There may be opportunity for the Commission to improve programme **visibility to stakeholders;** ▪ There is scope for the Commission to build upon **a more harmonised programme** submission procedures, reporting and data collection and indicators of programme implementation and performance, and a standardised reporting of programme implementation by Member States; ▪ A systematic evaluation of all programmes on the basis of **harmonised indicators** is an opportunity to benefit from inter-programme/MS collaboration and best practices; ▪ **Improvement** of the existing **electronic databas**e and in the use of **standardised format** and harmonised indicators **in Member State reporting**, would increase the ability to compare between programme implementation so as to draw potentially valuable analysis and conclusions at EU level.	▪ **Increased risks** from a larger EU with **greater trade links**, but also the possible effects of **climate change** in terms of altering animal disease emergence and spread patterns; ▪ Continuous need for ensuring **adaptation** of measures to **latest research findings** and **technological advances**; ▪ All of the above challenges **require significant resources**, both at Member State and at EU level, for programme design, implementation and management; ▪ **Current financial austerity context**, both at Member State and at EU level, may put **pressure** on programme **continuity** at the appropriate level required by future needs; ▪ Programme continuity over a long period of time has proved crucial to achieving desired outcomes and sustaining programme effects/impact longer term, therefore **potential budget cuts** can be **detrimental to results** and **impacts achieved to date**. ▪ **Results and impacts** of the programmes **need to be assessed** in the **medium-long term** to evaluate the full performance of the programmes (drawing **conclusions** by comparing results on a **short term basis** can be **misleading** as results in the field of animal health can only be demonstrated over a certain period of time, depending on the epidemiology of the disease).

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Annex 1. Overview of the sector and economic weight of the food and animal industry in the EU

1.1 Bovine sector

The bovine sector accounts for about 8% (meat) and 22% (milk) of the overall value of EU agricultural output. The EU output value of milk and meat production amounted in 2009 to some €45 billion and €27 billion, respectively. In 2008, the EU held a 13.2% share of the global beef market. In 2009, six Member States — Germany, France, the United Kingdom, the Netherlands, Italy and Poland — together contributed more than 70 % of the cows' milk collected in the EU.

In terms of the share of the bovine sector in total agricultural output value in the individual MS this varies more significantly for meat than for milk. The share of meat production ranges from a low of 1.3% and 1.9% of overall agricultural output in Cyprus and Hungary respectively, to a high of 27.9%, 14.8%, 14.6%, and 13.6% in Ireland, Belgium, Austria and the United Kingdom respectively. In Ireland in particular, the beef and dairy industries account for more than half of gross agricultural output; approximately all farmers in Ireland are involved in the production of beef and milk.

Table 3 Beef and veal production by key MS ('000 tonnes)

Country/year	2005	2006	2007	2008	2009
France	1,554	1,509	1,532	1,518	1,467
Germany	1,167	1,193	1,185	1,210	1,178
Italy	1,114	1,111	1,127	1,059	1,055
United Kingdom	762	847	882	862	850
Spain	715	670	643	658	598
Ireland	546	572	581	537	514
The Netherlands	396	384	386	378	402
EU	**8,082.6**	**8,132**	**8,204**	**8,077.3**	**7,720**

Source: EUROSTAT

Table 4 Milk production by key MS (collection of cow's milk) ('000 tonnes)

Country/year	2005	2006	2007	2008	2009
Germany	27,38	26,876	27,321	27,466	27,461
France	23,388	22,896	22,97	23,793	22,898
United Kingdom	14,038	13,92	13,647	13,35	13,237
Netherlands	10,479	10,657	10,799	11,295	11,469
Italy	10,216	10,193	10,265	10,489	10,5
Poland	8,825	8,826	8,744	8,893	9,14
Spain	5,899	5,824	5,729	5,834	5,742
Ireland	5,061	5,234	5,241	5,106	4,944
EU 27	**133,5**	**132,641**	**132,856**	**134,362**	**:**

Source: EUROSTAT- Economic Accounts for Agriculture

Table 5 Value of cattle production, at basic price (2005-2009), million €, % on total agricultural output (2009)

Country/year	2005	2006	2007	2008	2009	value /value agricultural output (2009)
EU27	**29,561**	**28,427**	**29,849**	**28,734**	**26,998**	**8.3%**
France	8,581	8,508	8,57	8,395	8,011	12.8%
Italy	3,327	3,359	3,501	3,402	3,325	8.1%
United Kingdom	2,96	2,831	2,898	2,98	2,736	13.8%
Germany	2,997	2,997	2,997	2,95	2,353	6.0%
Spain	2,352	2,208	3,055	2,335	2,112	5.0%
Netherlands	1,522	1,419	1,514	1,505	1,536	7.0%
Ireland	1,844	1,376	1,415	1,399	1,348	27.9%
Belgium	977	935	1,031	1,064	970	14.8%
Poland	790	797	887	946	898	5.4%
Austria	765	784	801	792	796	14.6%
Portugal	640	515	481	487	469	7.0%

Source: EUROSTAT, Economic Accounts for Agriculture

1.2 Poultry sector

The poultry sector is very significant in EU agriculture: in 2009 poultrymeat and egg production represents 11% and 4% of the total animal output respectively, altogether, poultrymeat and eggs production accounts for 6% of the total EU agricultural output[26]. Total EU poultrymeat production is currently 8.5 million tonnes (AVEC, 2009[27]), mostly coming from France (1.7 million tonnes, 15.8%), the UK (1.4 million tonnes, 13.2%), Germany (1.3

[26] Source: EUROSTAT, Economic Accounts for Agriculture, value at constant prices, 2009.
[27] AVEC *2009 Annual Report*. Association of Poultry Processors and Poultry Trade in the EU Countries

million tonnes, 12%), Spain and Italy. It is important to note that the EU-15 accounts for 78% of total EU poultry production.

Total EU egg production currently amounts to 6.8 million tonnes. The largest egg producers in the EU are France, Spain, Italy, Germany, the Netherlands and the UK and as a result of this over three quarters of the EU's total egg production comes from the EU-15. The accession of the EU 10 in 2004, added over 1 million tonnes to overall EU egg production and in 2006, even with the discovery of avian influenza in wild birds and some domestic flocks and a loss of consumer confidence, aggregate EU production stayed virtually constant dropping by less than 1% in the EU-25. In 2007, production grew by 5.9% and demand rose by 6.4%.

In terms of trade, most trade of poultrymeat (92.7% of all EU imports in 2009) and eggs occurs within the EU. The main exporting countries are the Netherlands, Germany and France (mainly eggs with a 21.5% of market share). Other important intra EU players for exports are Belgium, Czech Republic, France, Poland, Spain and the UK. The proportion of poultrymeat imports from third countries varied between a low of 7.8% of total trade (in 2000 and 2009) to a high of 16.9% (in 2005), while imports of eggs and egg products from third countries account for a relatively small proportion. The main origin of third country poultry are Brazil (accounts for more than 75% of the total), Thailand and Chile (16.1% and 4.5% market share, respectively). The EU exported a total of 857,000 tonnes of poultrymeat to countries outside the EU in 2008 with an export value of some €1,136 million. The main export markets are Russia (21.3%), Saudi Arabia (11%), Ukraine (10.5%) and Benin (9.6%).

1.3 Sheep and goat sector

Sheep and goat output accounts for a relatively small share of overall EU agricultural output value -1.4 % of EU 25 and 1.6% of EU 15 in 2009 (Eurostat-Economic Accounts for Agriculture). However, the EU is a major world player in the production and trade of sheep meat with an EU-27 output value in 2009 of some €5.2 billion and export value of some €41 million. Indeed, for many years the EU has been the largest producer of sheep and goat meat in the world.

The most significant producers of sheep and goat meat in the EU-27 are now, in order of importance, the UK, Spain, France, Greece, Italy, Romania, and Ireland (Tables below). Currently, the UK, Spain and Greece account for nearly 60% of the sheep and goat population and of the total EU production of sheep and goat meat of just over 1 million tonnes, with the UK responsible for nearly a third of the total output. The above 7 MS account for nearly 90% of the total population of sheep and goats and their meat production in the EU.

Similarly, there is wide variation between Member States in the economic importance of the sector in terms of its share of the total national agricultural output, which ranges from a low of 0.1% in Denmark and Poland to a high of 5.2%, 6.1% and 7.5 % in Cyprus, the United Kingdom and Greece respectively. Furthermore, the economic importance of the sector varies greatly between MS regions with some regions having a very high level of dependence on the sector (e.g. in the UK in West Wales and the Valleys the sector accounts for over 20% of regional agricultural GDP, in Voreio Aigaio in Greece for 18%, in the Midi-Pyrenees in France for 5%).

Table 6 Sheep and goat meat production by key MS, 2001-2008 ('000 tonnes)

County/year	2005	2006	2007	2008
United Kingdom	332	330	325	326
Spain	238	226	207	166
Greece	118	114	111	110
France	129	129	127	118
Italy	62	62	61	60
Ireland	73	70	66	59
Romania	61	64	73	65
7MS	*1,013*	*996*	*970*	*904*
EU 27	**1,143**	**1,114**	**1,09**	**1,023**

Source: European Commission (Eurostat)

Table 7 Value of sheep and goat meat production, by key MS, 2000-2009 million of €

Country/year	2005	2006	2007	2008	2009
United Kingdom	1,166	1,254	1,159	1,157	1,305
Spain	1,798	1,455	1,47	1,198	1,081
Greece	949	826	772	755	785
France	863	769	719	733	704
Ireland	202	190	181	171	161
Italy	247	229	233	225	231
Romania	112	107	197	147	254
7 MS	*5,338*	*4,829*	*4,732*	*4,385*	*4,521*
EU 27	**6,18**	**5,602**	**5,502**	**5,177**	**5,253**

**Note: value at basic price*

Source: EUROSTAT, Economic Accounts for Agriculture

The sheep sector is essential to the economic and environmental well-being of rural Europe. In some regions, sheep farming is often the only agricultural activity and therefore makes a crucial contribution to the economy in such rural areas.

1.4 Pig sector

The pig sector accounts for about 9% of the overall value of EU agricultural output. The EU output value of pig meat production amounted in 2009 to some €32 billion. In 2009, eight Member States together contributed more than 80 % of the total EU pig meat production.

In terms of the share of the pig sector in total agricultural output value in the individual MS this varies significantly for meat. The share of pig meat production ranges from a low percentage in several Member States (France and the UK 4.7% and 4.6% respectively), to a relevant share in the Netherlands, Spain and Germany (10.9%, 11% and 13% respectively) to a quite high proportion of the overall agricultural output in Belgium (20.8%) and Denmark (27.9%).

Table 8 Pig meat production by key MS, 2005-2009 ('000 tonnes)

country/year	2005	2006	2007	2008	2009
Germany	4,5	4,662	4,985	5,114	5,254
Spain	3,168	3,235	3,439	3,484	3,291
France	2,274	2,263	2,281	2,277	2,004
Poland	1,926	2,071	2,091	1,888	1,608
Italy	1,515	1,556	1,603	1,606	1,588
Denmark	1,793	1,749	1,802	1,707	1,583
Netherlands	1,297	1,265	1,29	1,318	1,275
Belgium	1,013	1,006	1,063	1,056	1,082
EU 27	**21,645**	**21,948**	**22,819**	**22,599**	**21,292**

Source: EUROSTAT- Economic Accounts for Agriculture

Table 9 Value of pig meat production, by key MS, 2005-2009 million of €

country/year	2005	2006	2007	2008	2009	value /value agricultural output (2009)
EU 27	**28,894**	**30,219**	**32,105**	**29,305**	**32,605**	**8.9%**
Germany	5,491	5,416	5,502	5,501	6,495	13.3%
Spain	4,169	4,439	5,05	4,572	4,445	11.0%
France	2,865	2,95	3,154	2,835	3,108	4.7%
Netherlands	2,003	2,156	2,385	2,196	2,646	10.9%
Italy	2,291	2,254	2,522	2,426	2,645	5.9%
Denmark	2,349	2,335	2,646	2,288	2,631	27.9%
Poland	2,428	2,757	2,502	2,117	2,507	11.0%
Belgium	1,4	1,372	1,532	1,349	1,572	20.8%

**Note: value at basic price*
Source: EUROSTAT, Economic Accounts for Agriculture

Annex 2. Programme assessment

2.1 Transmissible Spongiform Encephalopathies (TSEs)

Main results – TSE eradication and monitoring programmes:

- During the period 2005-09, the EU co-financed TSE monitoring and eradication programmes across the EU-27. For the years 2005-2008, the majority (over 80%) of funding was provided for TSE monitoring. The total amount of the EU co-financing was €413m;
- In the case of BSE, there has been a dramatic drop in the number of positive cases since the 1990s. This trend has continued for the period 2002-2009, with an average 35% year-on-year drop for the period; by 2009 only 67 positive cases were found from over 7 million performed tests, implying the disease has almost disappeared. In the case of scrapie, the number of positive cases remains volatile, but there has been a downwards trend in the number of cases since 2006;
- The number of performed tests for BSE shows a slight downwards trend for the period 2004-09. This reflects the favourable epidemiological situation that has allowed the gradual relaxation of the monitoring requirements;
- The losses from BSE can be significant, and the disease can cause a considerable threat to the market, as shown in the case of the UK in the mid-1990s. The combination of the fall in positive cases, and the transparency and assurance provided by the monitoring programme have reduced the perceived risk of BSE, provided the basis for the safe relaxation in the rules, and hence avoided significant economic impacts;
- BSE can be transmitted to humans through the disease vCJD. The number of cases so far in the EU has been low (152 between 2000 and 2010);
- Scrapie in small ruminants remains present in the EU and its presence, while low tends to fluctuate. EFSA has not made a connection between Scrapie and impacts on human health.

2.1.1 Disease characteristics and distribution in the EU

Transmissible Spongiform Encephalopathies (TSEs) are a family of diseases occurring in man and animals and are characterised by a degeneration of brain tissue giving a sponge-like appearance, ultimately leading to death. The family includes diseases such as *Creutzfeldt Jakob's Disease* (CJD) in humans, *Bovine Spongiform Encephalopathy* (BSE) in cattle, scrapie in small ruminants (sheep and goats), and *Chronic Wasting Disease* (CWD) in cervids (deer). The commonly accepted cause of the TSE disease is a transmissible agent called prion (PrPres), which is an abnormal form of a protein.

BSE is a TSE disease of cattle. The average incubation period of BSE in cattle is 4-6 years, but it can be considerably longer. BSE was first diagnosed in the UK in 1986, and reached epidemic proportions due to cattle being fed with processed animal protein, produced from ruminant carcasses, some of which were infected. The number of cases has dropped sharply since its peak in the early 1990s (see Figure 27). BSE is considered to be transmissible to humans (Variant CJD: vCJD).

Scrapie is a TSE in small ruminants (sheep and goats) and it can be divided into classical (typical) scrapie and atypical scrapie. The disease has been known for centuries. It is assumed that scrapie can both be transmitted horizontally, from one animal to another or via environmental routes, and vertically, from ewe to lamb / from goat to kid. On the basis of the available scientific data scrapie is not considered to be transmissible to humans.

CWD is a TSE disease of cervids (deer, elk and moose). CWD has never been detected in Europe, but is quite common in North America (USA and Canada). Though CWD belongs to the same family as BSE and scrapie, there is no known relationship between CWD and other TSEs in animals or humans under natural conditions.

Variant CJD (vCJD) is a TSE disease in humans, first diagnosed in the EU in 1996. It is now generally assumed to be caused by the transmission of the BSE agent to humans by the oral route. Most cases have occurred in the UK, although there have been cases also in other MS.

Both BSE and scrapie are OIE listed diseases. The main body of legislation covering BSE in the EU is Regulation (EC) No 999/2001[28] (the TSE Regulation). This gathers together all BSE measures adopted over the years, since BSE was first detected in 1989, into a single, comprehensive framework, consolidating and updating them in line with scientific advice and international standards. The Regulation sets out the instruments to manage the risk of BSE and other similar diseases such as scrapie in all animal species and relevant products. Regulation 999/2001 has been amended many times over the years in response to the evolution of the BSE situation, new or updated scientific advice and/or technological developments. All EU measures are based on sound, independent scientific advice from leading experts; since May 2003, the European Food Safety Authority (EFSA) has taken over the role of providing scientific advice to the Commission in this area.

In addition, according to the EU hygiene legislation (Regulation (EC) No 854/2004[29]) all animals presented for slaughter must undergo a veterinary inspection to ensure that suspected cases do not enter the food and feed chain.

Other safety measures include: the removal of specified risk material (SRM), i.e. the tissues most likely to carry infectivity if TSE is present (SRM must be removed from cattle, sheep and goats before they enter the food and feed chain); a ban on the feeding of mammalian meat-and-bone meal (MBM) to cattle, sheep and goats to ensure that there is no cross-

[28] Regulation (EC) No 999/2001 of the European Parliament and of the Council of 22 May 2001 laying down rules for the prevention, control and eradication of certain TSEs. *OJ L 147, 31.5.2001, p. 1–40*

[29] Regulation (EC) No 854/2004 of the European Parliament and of the Council of 29 April 2004 laying down specific rules for the organisation of official controls on products of animal origin intended for human consumption. *OJ L 204, 4.8.2007, p. 26–26*

contamination between feed for other species containing MBM and the feed intended for ruminants; strict processing standards for the treatment of ruminant animal waste.

Since July 2001, any animals considered likely to have received the same potentially-infected feed as an animal infected with BSE must be culled and destroyed. Animals of the same age from the same herd are most likely to have received the same feed and therefore they may be culled. Depending on the epidemiological situation and the traceability of animals, it may also be necessary to cull other animals from the same herd. In addition, the most recent offspring of female BSE cases must be culled, due to potential maternal transmission.

The EU TSE legislation is in continuous evolution following the epidemiology of the disease, for which the monitoring and surveillance measures play a key role, and informed by the latest scientific advice and research. On 16 July 2010 the Commission adopted the **TSE Roadmap II**, a strategy paper on TSEs for 2010-2015[30], which outlines areas with future possible changes to the legislation.

The application of the stringent EU measures laid down against BSE has had a very significant impact on the incidence of the disease. Since 2001, the number of positive BSE cases has been declining steadily in the EU. There has been about a 35% per year reduction in positive cases since 2002, with figures falling from 2129 BSE cases in the EU-15 to 67 in the EU-25 in 2009. In the UK, the incidence has fallen sharply from over 37,056 cases in 1992 (at the peak of the epidemic) to 11 cases in 2009. The number of positive BSE cases has also dropped in most other Member States. As the average incubation period of BSE in cattle is 4-6 years (but in certain cases it can be much longer), sporadic BSE cases will probably continue to occur beyond 2010.

BSE is assumed to be linked with the human disease vCJD, which was first diagnosed in the EU in 1996[31]. Up to end 2008, there had been 198 confirmed or suspected (probable) cases in the EU, mostly in young people (ECDC, 2008[32]) Most cases had occurred in the UK (164), but cases were also diagnosed in France (22), Ireland (4), the Netherlands (2), Portugal (2), Italy (1), and Spain (3). Estimates of the future number of vCJD cases vary widely, as too little is known about the incubation period between exposure to the infective agent and the emergence of symptoms. However, it is assumed that any cases which may emerge in the future will be due to exposure to infected material before the current stringent control measures against BSE were implemented. The latest ECDC epidemiological report on this

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[30] Commission Communication to the European Parliament and the Council. The Commission published the first TSE Roadmap in July 2005. The map provided an outline of possible future changes to EU measures on BSE in the short and medium term (2005-2009) and in the long term (2009-2014). Most of these measures foreseen in the short and medium term have already been adopted by the Commission.

[31] The relation and transmission potential between TSEs in animals and humans has been extensively investigated by scientists. The latest EFSA-ECDC joint scientific opinion on this subject concludes that '*at present, the only TSE agent demonstrated to be zoonotic is the Classical BSE agent. With regard to human TSEs, detected cases of sporadic CJD are randomly distributed in time and geographical location. These observations have been interpreted as a supportive argument that sporadic CJD is not environmentally acquired. However, the epidemiological evidence in relation to sporadic CJD cannot be regarded as definitive, and the possibility that a small proportion of cases are zoonotic cannot be excluded'*(European Food Safety Authority (EFSA) and European Centre for Disease Prevention and Control (ECDC), 2011B)

[32] European Centre for Disease Prevention and Control (ECDC), 2008. *Annual Epidemiological Report on Communicable Diseases in Europe 2008* Stockholm, European Centre for Disease Prevention and Control

disease notes that human cases of vCJD are showing a declining trend and that the overall mortality rate remains very low at 0.01 per 1 000,000 population.

2.1.2 Description of measures funded

Monitoring and surveillance measures for the detection, control and eradication of BSE have been in place since 1 May 1998. The existing rules for the monitoring, control and eradication of TSEs were laid down in Regulation 999/2001/EC, modified several times since its introduction. These involve both passive monitoring by veterinarians/farmers (identification of clinical suspects) and active monitoring through testing.

In particular, the Union is co-funding programmes for the:

- Monitoring for BSE and for scrapie;
- Genotyping of sheep for scrapie; and
- Culling of infected animals.

Co-funding of these programmes was introduced in 2001 when monitoring of TSEs was made compulsory under Regulation 999/2001/EC. The programmes have evolved over the years in accordance with EU legislation (Regulation 999/2001/EC and the EU hygiene legislation).

The BSE monitoring programmes are in a sense a public health measure because they prevent the introduction to the market of meat from animals which are infected; even in this case, however, the main measure that protects human health is the removal of specific risk material (SRM). In addition the monitoring programmes have a consumer confidence aspect, chiefly through providing transparency.

There are monitoring requirements also for sheep and goats. Member States are obliged to test annually a sample from different categories of animals based on their respective animal populations (separately for sheep and for goats).

Genotyping tests in sheep, the determination of certain alleles of the prion protein genotype, are required for the positive cases in this species. In addition MS may use this method in the framework of breeding programmes, in order to increase the number of animals in their sheep population that are TSE resistant by selecting animals for breeding with the appropriate genotype. TSE resistant sheep from scrapie infected flocks may be excluded from certain eradication requirements. Breeding programmes are applied by MS on a voluntary basis. Cyprus, the Member States with the highest incidence of scrapie has applied extensively a breeding programme based on genotyping on its sheep population resulting in a significant drop in the detected cases in infected flocks.

Also, in application of legislation (Regulation (EC) No 999/2001), under the TSE monitoring in sheep and goats discriminatory testing is foreseen. A sample of TSE positive cases detected with a rapid test is sent for a test to verify that the infection is caused by scrapie and not by BSE.

A further part of the programme is the monitoring for chronic wasting disease (CWD) in cervids. Although the disease is not present in the EU, there was a decision to monitor wild and farmed deer in certain countries. This programme has run for a number of years and no positive results been detected.

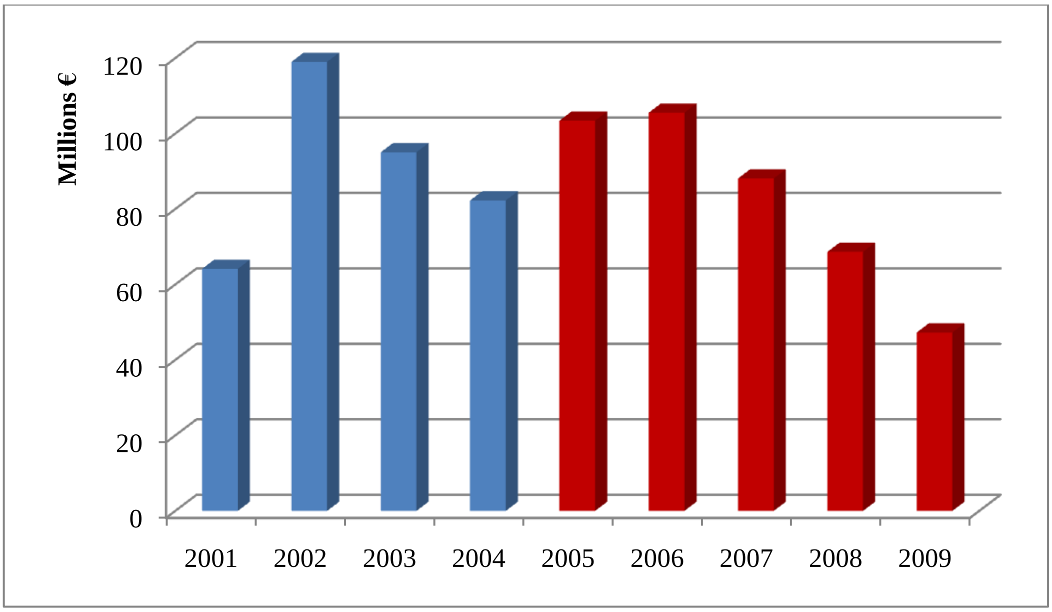
In terms of the Union co-financing, it can fund (in all cases up to maximum limits):

-The costs for testing under TSE monitoring, at a rate of 100%.
-The costs for the compensation to farmers for animals culled in accordance with the programmes, at a rate of 50%
-The cost of genotyping, at a rate of 50%.

2.1.3 Overall funding

The EU funding over the period 2005-2009 has amounted to €413 million.

Figure 12 TSEs (BSE and scrapie), EU co-funding (payments), 2001 - 2009

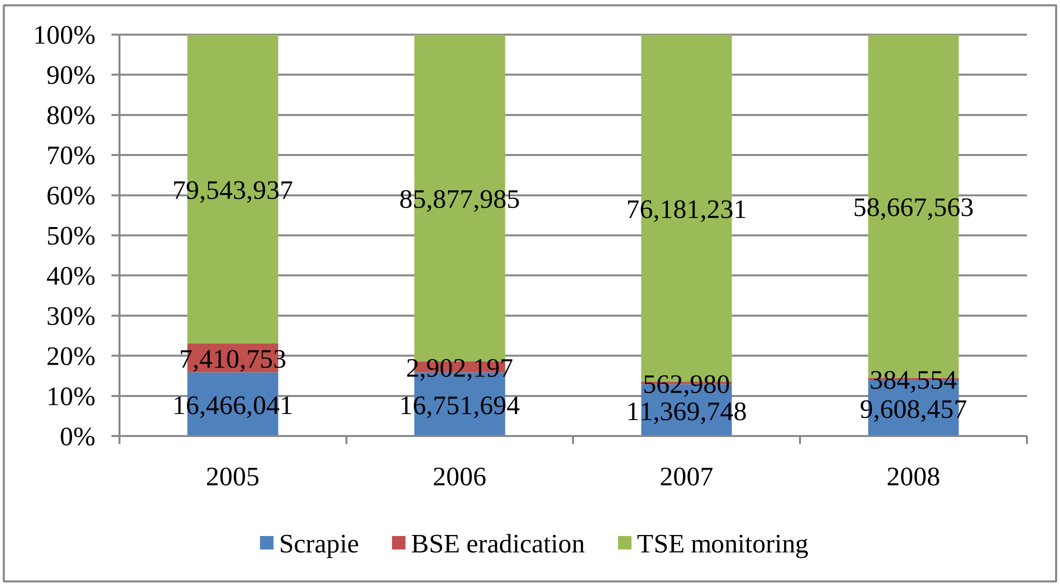


Source: DG SANCO based on financial decisions from 2001- 2009

Figure 12 shows the overall funding for co-financed programmes for TSEs for the period 2001-2009. There is no clear trend since the introduction of co-funding in 2001, though there appears to be a downward trend since 2006. This coincides with a fall in the number of animals actively surveyed (this is discussed further in section 2.1.4 below). The number of animals testing positive has also fallen during the period, though this fact would have had less impact on the expenditure.

Figure 13 shows the division of TSE funding by measure for the period 2005-08. First, the figure shows that the majority of money has been spent on TSE monitoring. Second, the proportion of funding being spent on TSE monitoring increased during the period, while the proportion spent on BSE eradication decreased. Similarly, the proportion spent on scrapie eradication has fallen during the period, albeit not as strongly. These trends can be explained by the fall in the number of positive cases detected over the period.

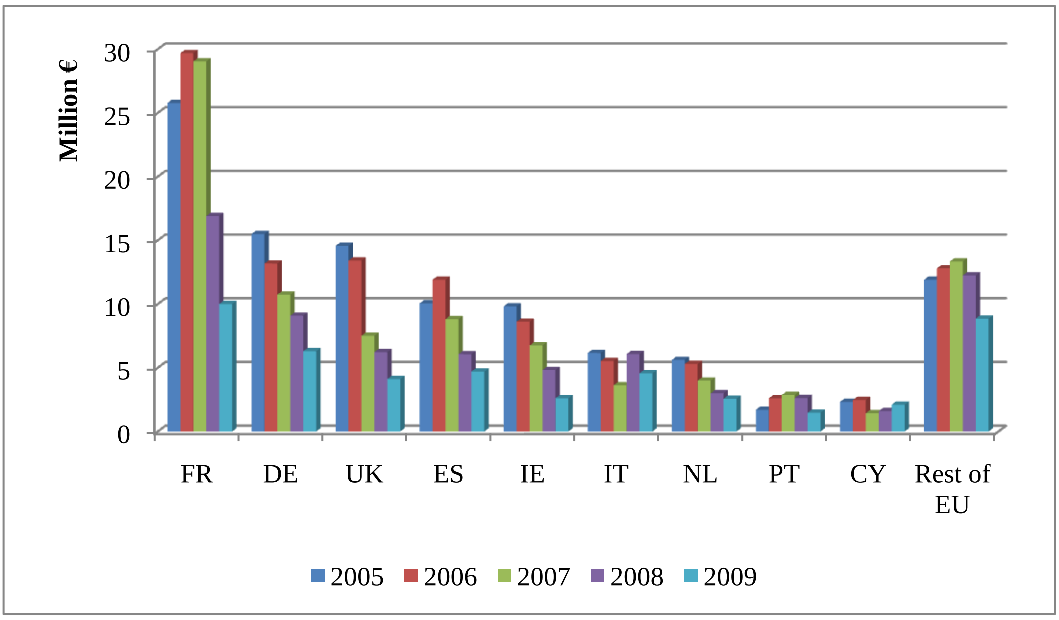
Figure 13 TSEs, EU co-funding (payments), by measure, 2005-2008



Source: DG SANCO based on financial decisions from 2001 2009

Figure 14 shows co-funding by Member States for the period 2005-2009. As can be expected, given that TSE programmes are compulsory, all 27 Member States have received funding. The chart shows the biggest recipients to be (in order): France, Germany, UK, Spain, Ireland and Italy. There is a clear trend of decline in funding for almost all Member States

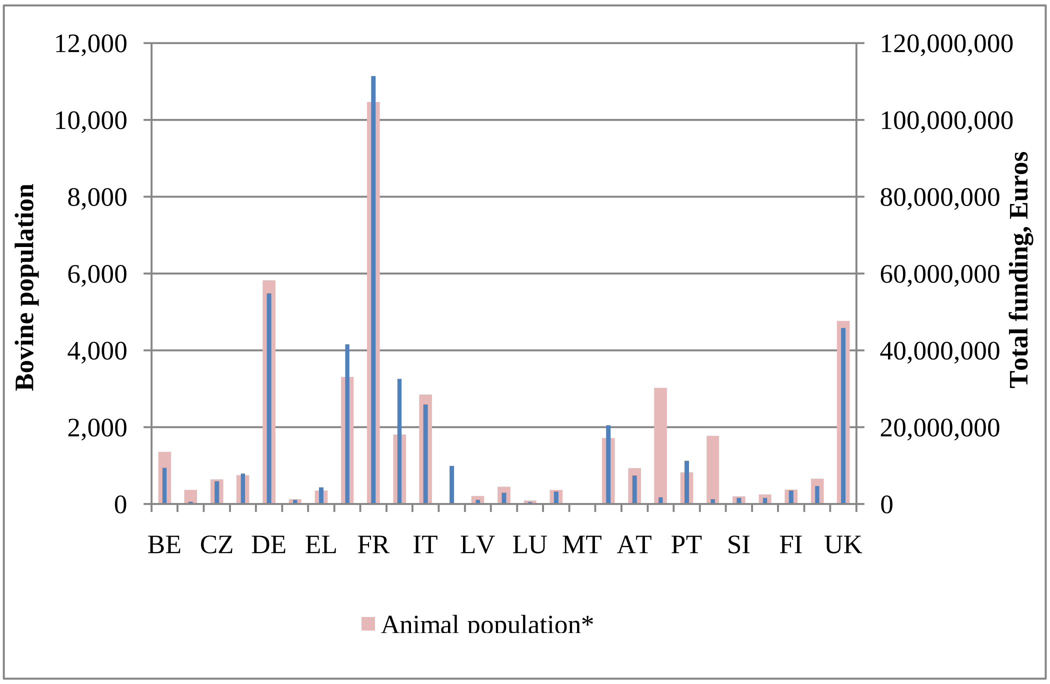
Figure 14 TSEs, EU co-funding (payments), by MS, 2005-2009



Source DG SANCO based on financial decisions from 2001- 2009

In **Figure 15,** the funding is compared against the adult bovine population for the period 2005-09. As the majority of funding is spent on compulsory monitoring funding is mainly driven by the number of animals which must be tested, which predominantly relates to the animal population of each MS rather than the number of outbreaks detected.

Figure 15 TSEs, EU co-funding (payments) per MS and bovine population, 2005-2009



*Note: Animal population includes the average annual population of adult bovines, ovines and caprines.
Source: DG SANCO based on financial decisions from 2005- 2009; DG SANCO- Draft report on the monitoring and testing of ruminants for the presence of TSEs in the EU in 2009

2.1.4 Analysis of key results of the programmes

The TSE programmes, along with the other measures taken to fight TSEs, have all aimed at reducing the prevalence and incidence of the disease. The evolution in the number of detected cases is therefore an indicator of the effectiveness not only of the TSE programmes as such but also of the wider measures taken and the complementarity between these measures. Thus, while the number of detections is an indicator of the effectiveness of the monitoring programmes, the role of other measures taken against TSEs must also be acknowledged.

In the case of BSE, the number of outbreaks has dropped very significantly over the period, in continuation of the positive trend since 2001. This is indeed shown through the number of detections in the surveillance programme **(Figure 16)**. However, a key factor behind the drop in the number of outbreaks is the MBM feed ban, rather than the monitoring programmes as such. This ban, first introduced in July 1994, was extended in January 2001 so that no farmed animals could be fed with processed animal protein[33] (to ensure that there would be no cross-

[33] Only certain animal proteins which are considered to be safe (such as fishmeal) can be used, and even then, it is under very strict conditions.

contamination between feed for other species containing MBM and the feed intended for ruminants).

In the case of scrapie, the observed improvement in the epidemiological situation is not as strong as for BSE. Contrary to BSE where the principal source of infection was MBM in animal feed, in scrapie the main method of transmission is between animals, a fact that together with the slow development of the disease and the absence of a test method that could be routinely applicable on live animals, complicate the eradication effort. However, there are signs of a downward trend in the number of scrapie cases detected.

As outlined above, the monitoring programmes are intended to be a means to establish whether the disease is present but they do not directly affect the decrease in outbreaks; the fall in findings following the MBM feed ban implies that this measure was very important for reducing outbreaks. These factors must be borne in mind in the analysis of data connected to the number of outbreaks which is presented below. The effect of the monitoring programme is therefore threefold: the detection of the infected herds and any deterioration of the situation that might require additional risk management measures; the prevention of spread; and the application of the regulation for eradication.

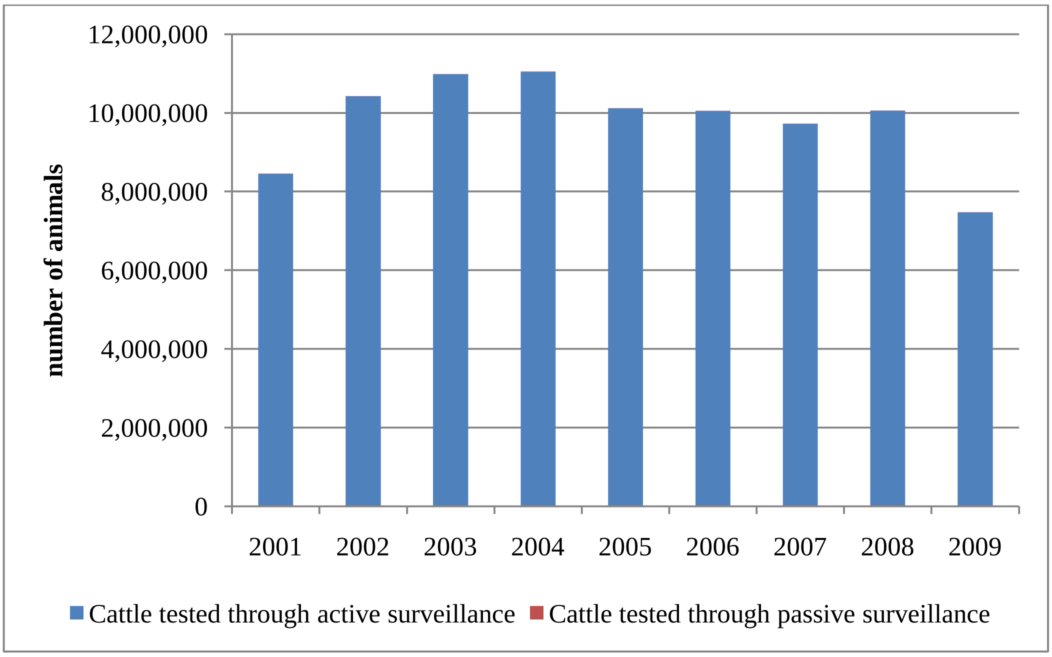
The number of detected cases, resulting from the implementation of the survey, indicates the relevance of the programme in maintaining a sound alert system for the disease. Figure 16 shows the number of cattle tested for the period 2001-09. The number of cattle tested peaked in 2004, and has been broadly declining since as the age limits above which the testing of bovines was compulsory have been gradually raised for a number of Member States based upon the improvement of the epidemiological situation.

Figure 17 shows the number of small ruminants tested for the period 2002-09. After peaking strongly in 2006, the number shows a steady decline. Once again, the decline can be explained by changes in the requirements and in the implementation of testing in MS. For example, Regulation (EC) No 727/2007[34] changed the TSE monitoring requirements for small ruminants, and as can be seen by the graph, the number of small ruminants tested in 2008 was significantly lower than the number tested in 2007.

Figure 18 to Figure 20 show the number of positive findings for each species through the surveys and passive surveillance undertaken. The BSE positive findings in cattle present a clear downward trend for the period 2002-09. This can be attributed to the effectiveness of the risk management measures introduced at European level and predominantly to the MBM feed ban. The number of positive cases in sheep and goats is more volatile, but in the case of sheep in particular, a clear downwards trend can be seen since 2006.

[34]Commission Regulation (EC) No 727/2007 of 26 June 2007 amending Annexes I, III, VII and X to Regulation (EC) No 999/2001 of the European Parliament and of the Council laying down rules for the prevention, control and eradication of certain transmissible spongiform encephalopathies. *OJ L 294, 13.11.2007, p. 23–24*

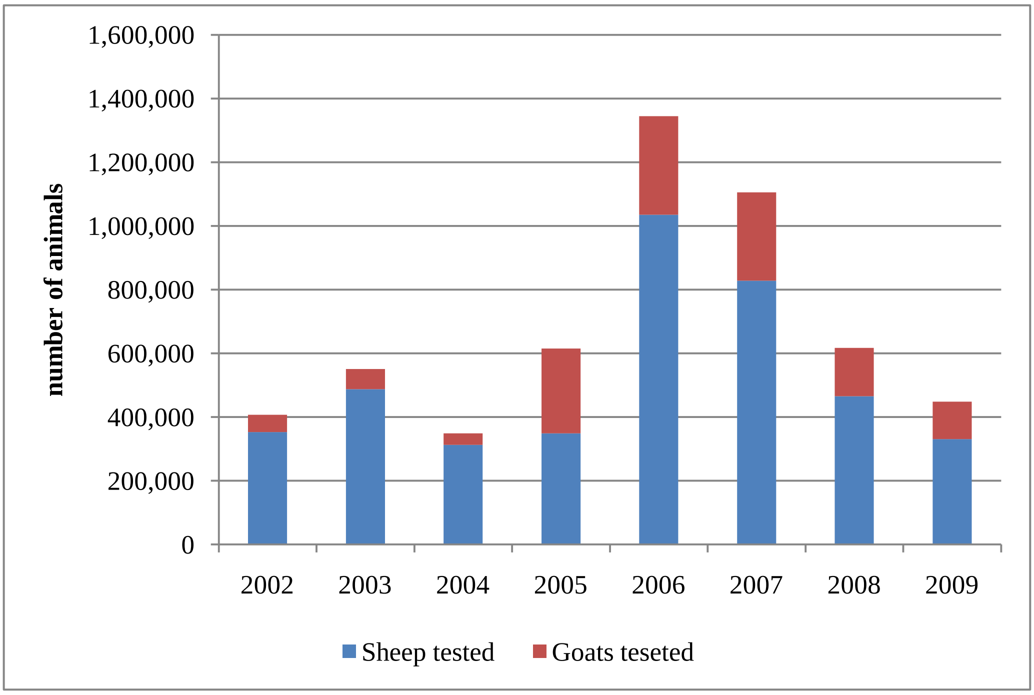
Figure 16 TSEs, number of cattle surveyed in the EU*, 2001-2009



**Note 2001-02 EU15; 2003-06 EU25; 2007-09 EU27 (depending on MS availability; data for RO is missing for some years)*

Source: DG SANCO- Draft report on the monitoring and testing of ruminants for the presence of TSEs in the EU in 2009

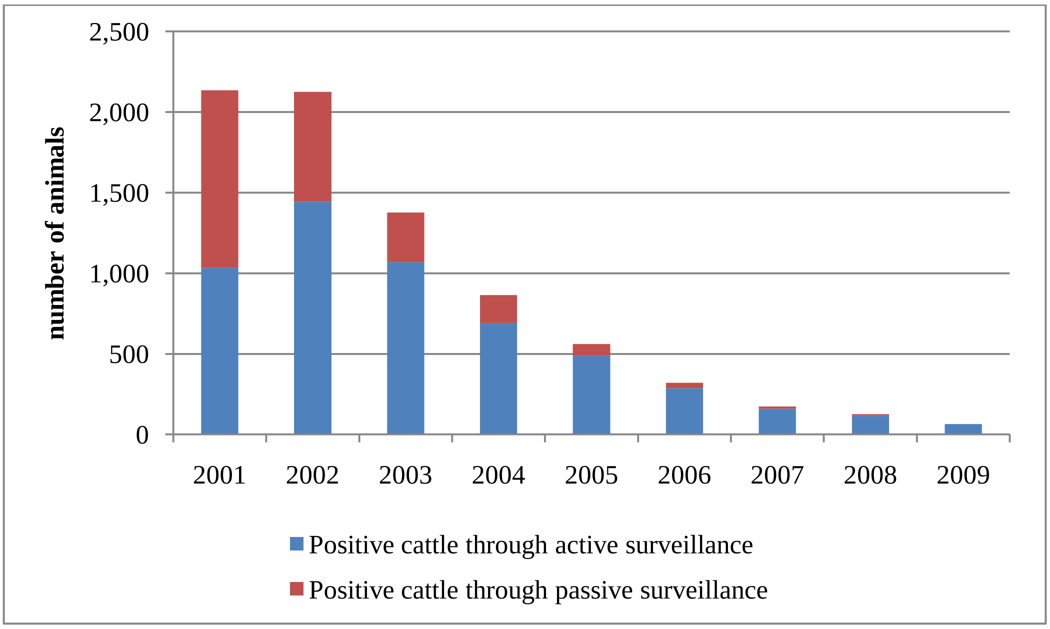
Figure 17 TSEs , number of small ruminants surveyed in the EU*, 2002-2009



** Note: 2002-03 EU15; 2004-06 EU25; 2007-09 EU27 (depending on MS availability; data for RO is missing for some years)*

Source: DG SANCO- Draft report on the monitoring and testing of ruminants for the presence of TSEs in the EU in 2009

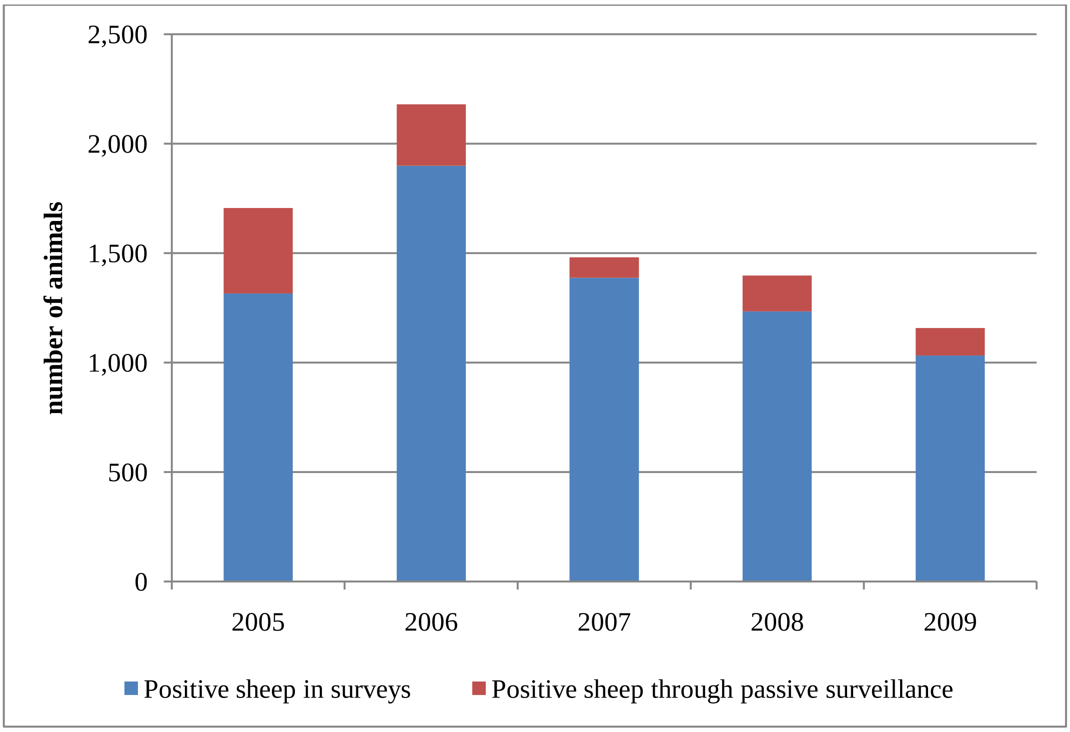
Figure 18 BSE, number of infected cattle in the EU*, 2001-2009



**Note: 2001-02 EU15; 2003-06 EU25; 2007-09 EU27 (depending on MS availability; data for RO is missing for some years)*

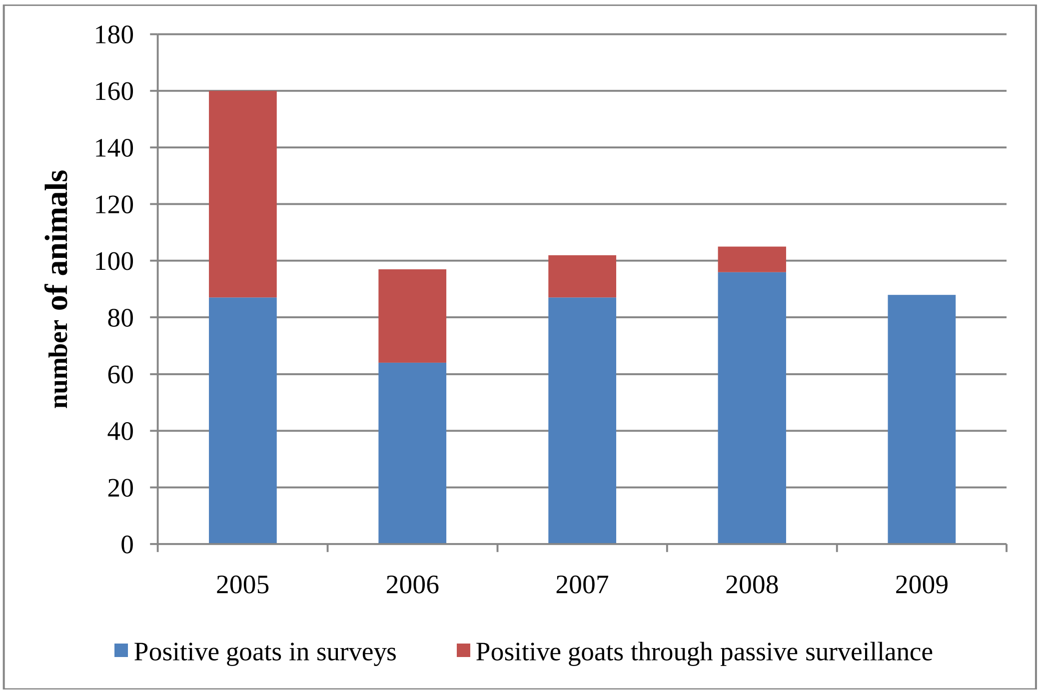
Source: DG SANCO- Draft report on the monitoring and testing of ruminants for the presence of TSEs in the EU in 2009

Figure 19 Scrapie, number of infected sheep, in the EU, 2005-2009



Source: DG SANCO- Draft report on the monitoring and testing of ruminants for the presence of TSEs in the EU in 2009

Figure 20 Scrapie, number of infected goats, in the EU, 2005-2009

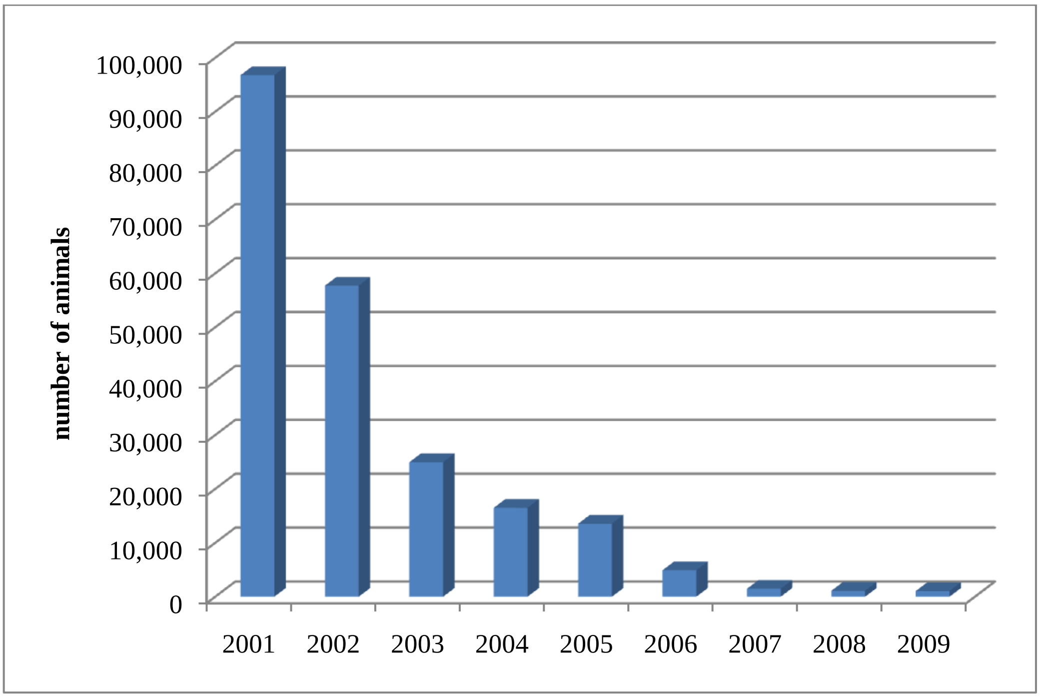


Source DG SANCO- Draft report on the monitoring and testing of ruminants for the presence of TSEs in the EU in 2009

It should be noted that, under the programme, tests are also performed on cervids for CWD. According to the annual reports, 10,843 cervids were tested between the 06 and 07 hunting seasons; 12,025 between the 06 and 08 hunting seasons; and 1 236 between the 08 and 09 hunting seasons. No positive results were found.

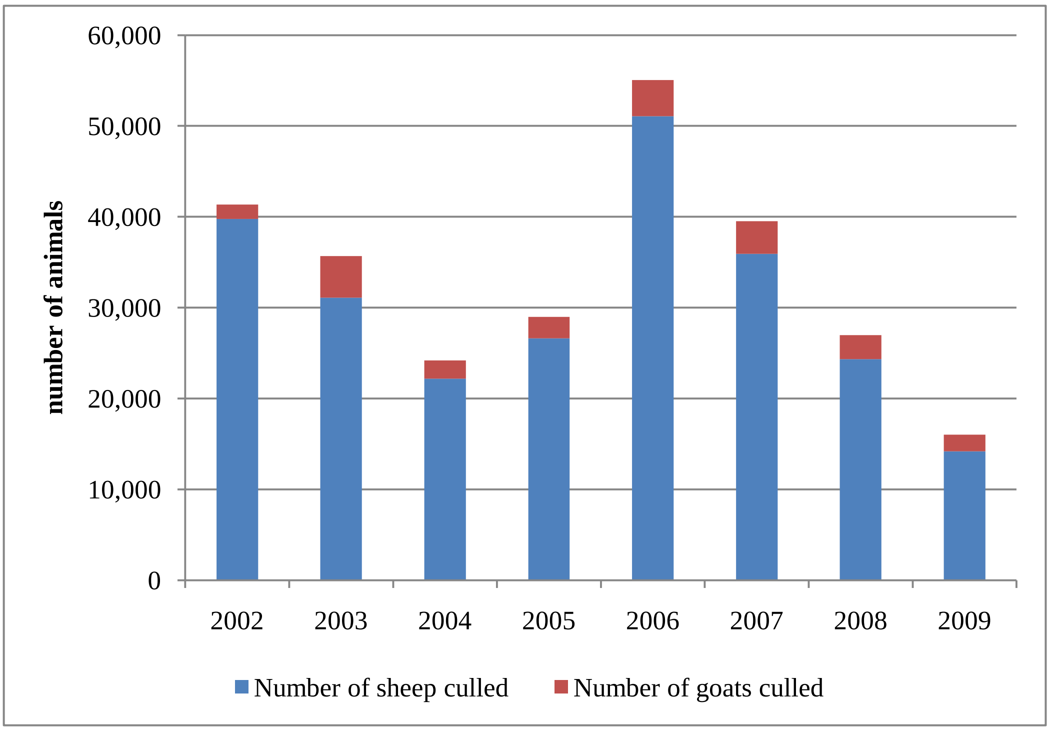
As already outlined, the TSE eradication programmes also extend to the culling of animals. **Figure 21** shows the number of cattle, and **Figure 22** the number of small ruminants culled under the programmes. The trend in animals culled is similar to that of positive animals found through testing. More specifically, the number of cattle culled has dropped constantly since 2002, while the number of sheep and goats has dropped steadily since 2007 (after a peak in 2006). It should be noted that since 2005, culling under eradication of scrapie far outweighs culling under the eradication of BSE. This is consistent with the proportions of the overall budget which have been spent on each measure (**Figure 13**), and reflects the strong reduction in the number of positive BSE cases.

Figure 21 Number of cattle culled (BSE eradication programmes), 2005-2009



Source: DG SANCO- Draft report on the monitoring and testing of ruminants for the presence of TSEs in the EU in 2009

Figure 22 Number of small ruminants culled (scrapie eradication programmes), 2002-2009



Source: DG SANCO- Draft report on the monitoring and testing of ruminants for the presence of TSEs in the EU in 2009

2.1.5 Analysis of effects of the programmes

Table 10 below shows the evolution in the number of BSE outbreaks reported by MS during the 2005-09 period through the Animal Disease Notification System (ADNS). When compared to earlier years, in 2009, both fewer MS reported outbreaks and fewer outbreaks were reported by those MS. In 2005, 15 MS reported outbreaks of BSE, and by 2009 this number had fallen to 10. Austria, Belgium, Luxembourg, Netherlands and Slovakia were the MS which reported outbreaks in 2005, but did not in 2009. Nonetheless, as has already been mentioned, care must be taken in attributing the fall in outbreaks only to the BSE eradication programme, as the other measures in place (most notably the MBM feed ban) have also played a crucial role. Outbreaks of scrapie are not reported within ADNS.

Table 10 MS reporting BSE outbreaks, 2005-2009

MS	2005	2006	2007	2008	2009
Austria	2	2	1		
Belgium	2	2			
Czech Republic	8	3	2		2
Germany	32	16	4	2	2
Denmark	1				1
Spain	98	67	37	23	20
France	31	7	7	7	11
UK	225	132	65	41	12
Ireland	69	41	25	23	9
Italy	8	7	2	1	2
Luxembourg	1				
Netherlands	3	2	2	1	
Poland	20	4	4	5	4
Portugal	51	33	11	18	8
Slovakia	2		2	1	
Sweden		1			

Source: Animal Disease Notification System (ADNS)

2.1.6 Analysis of impacts of the programmes

The economic impact of BSE outbreaks is complex and variable. The history of BSE in the UK provides an interesting example. The disease was first identified in cattle in 1986. Incidence of the disease peaked in 1992 (roughly 1% of UK cattle were infected), but the economic costs of the disease were limited at that stage; costs were connected to the loss of value of infected carcasses and the cost of disposal of specific risk material. However, once the disease was connected to CJD in 1996, there were significant economic impacts as domestic sales of beef products declined 26% year on year, the price of beef cattle fell, and export markets were lost. This inevitably had strong impacts on the beef industry and related industries, with many abattoirs having to close down or reduce staff. Ultimately, the disease posed a significant threat not just to the UK market, but indeed the whole EU market. The UK government responded with various measures such as disposal schemes, compensation and processing aid. In total £1.5 billion of public money was spent on these measures between 1996 and 1997. Total economic loss for the UK resulting from BSE in the year after the crisis itself was estimated at between £740 million and £980 million, with somewhere between half and two-thirds of the costs attributable to the fall in the added value of meat production(Atkinson, 2000).

The UK case therefore shows that there can be a significant economic impact, although the majority of the economic impact was caused by the crisis of consumer confidence (as in the case of AI). Outside the crisis of confidence, the main economic impacts were the loss of value of infected carcasses, and the cost of disposal of specific risk material. In this context, compensation measures for culling and destruction, that are included in the surveillance and eradication programmes, are followed to contain the spread of the disease and therefore to reduce potentially more severe economic impacts. Ultimately, at its peak BSE provided a notable threat to the EU market through both production losses and loss of sales caused by falls in consumer confidence. However, as already seen, cases of the disease have fallen greatly. Combined with the transparency and assurance provided by the monitoring programmes, the threat to the market has been neutralised.

Further to the purely economic impacts on the industry and production, there are very significant zoonotic impacts in this disease. BSE is considered as transmissible to humans (human variant CJD), which was first identified in 1995/96. During the period 2000-2010, a total of 152 cases are recorded in the EU according to EuroCJD, with the number of cases reported showing a downwards trend over the years. In earlier years (1995-1999), there were a further 58 cases of vCJD in the EU (56 in the UK, 1 in France and 1 in Ireland).

The latest EFSA-ECDC joint opinion (EFSA-ECDC, 2011) on the link between TSEs in humans and animals indicates that there is no epidemiological evidence to suggest that scrapie is zoonotic or has a zoonotic potential. Nonetheless, the value of TSE monitoring programmes in this respect is that they allow discriminatory testing to be carried out to exclude the possibility that detected cases of BSE are not scrapie, but indeed BSE, thus allowing a more efficient monitoring of BSE which is a serious zoonotic disease as discussed above.

2.2 Salmonellosis

Main results – *Salmonella* control programmes:

- The co-financing allocated for the monitoring and control of zoonotic salmonellosis has gradually increased between 1994 and 2009, more noticeably between 2008 and 2009 when programmes were intensified, in order to achieve the EU targets. Between 2007 and 2009, 23 Member States have benefitted from the co-funding. The total amount of the EU co-financing was €30 million over the period;

- The *salmonella* control programmes are targeted at the most frequent causes of human infections, notably *salmonella Enteriditis* and *salmonella Thyphimurium*, which are responsible for about 75% of human infections (2009 data);

- Epidemiological data for the 27 EU MS indicate that since 2004, the starting year of the implementation of the mandatory control programmes, there has been a substantial and steady decline of 12% on average per year in the reported cases in humans. The drop is approximately 45% since 2004 from 196,000 cases to 108,000 cases in 2009;

- Since the introduction of control programmes to meet the target of 1% prevalence in *salmonella* breeding flocks in 2009, the prevalence has reduced from 1.4% in 2007 to 1.2% in 2009;

- Since the introduction of control programmes to meet reduction targets of prevalence of *salmonella* in laying flocks in 2008, 21 Member States in 2008 and 17 Member States in 2009 achieved their national targets. The overall prevalence of laying flocks for *S. Enteriditis* and/or *S. Typhimurium* was 3.2% in 2009;

- Since the introduction of control programmes to meet a target of prevalence in *salmonella* in broiler flocks in 2008, 18 Member States had met the target of 1% or less already in 2008.

2.2.1 Context

Salmonellosis is an important zoonosis. In 2009, it was the second most commonly reported zoonosis in humans in the EU, with 108,614 confirmed cases reported or 23.7 cases per 100,000 individuals (Lahuerta et al, 2011[35]). The main *salmonella* subtypes (named 'serovars') causing human infection are *salmonella* serovar *Enteriditis* and *Typhimurium*, and to a lesser extent *Infantis*, *Virchow*. *S. Enteritidis* cases are most commonly associated with the consumption of contaminated eggs and poultry meat, while *S. Typhimurium* cases are mostly associated with the consumption of contaminated pigmeat, poultrymeat and beef.

[35] Lahuerta A., Westrell T, Takkinen J, Boelaert F, Rizzi V, Helwigh B, Borck B, Korsgaard H, Ammon A, Mäkelä P. 2011. *Zoonoses in the European Union: origin, distribution and dynamics - the EFSA-ECDC summary report 2009*;

The prevalence of the various *salmonella* serovars requires adequate surveillance, in order to detect changes in serovars, hence to be able to take targeted measures against the attributed sources of infection. Salmonellosis incidence in humans shows a seasonal pattern, with most cases occurring in the summer between June and October and peak incidence between August and September, mostly attributable to *S. Enteriditis*.

Salmonellosis is caused by various *salmonella* species that mostly do not result in clinical disease in infected animals. However, it remains a serious health concern for the human population as it can cause regular outbreaks with significant morbidity and mortality.

The common reservoir of *salmonella* is the intestinal tract of a wide range of animals, which result in a variety of foodstuffs covering both food of animal and plant origin as sources of infections. It is a foodborne disease, transmitted mostly by contaminated poultry products, such as poultry meat and eggs, and other recognised sources such as pig meat, milk and dairy products, and also fish and fish products; fruit and vegetables can also be contaminated, usually through the use of contaminated fertilising or irrigation processes. Transmission usually occurs when organisms are introduced in food preparation areas and are able to multiply in food, e.g. due to inadequate storage temperatures, inadequate cooking or cross contamination of food. The organism may also be transmitted through direct contact with infected animals or humans or faecally contaminated environment. So far, eggs and poultry meat have been most associated with human infection.

Human salmonellosis is usually characterised by the acute onset of fever, abdominal pain, nausea, and sometimes vomiting. Symptoms are often mild and most infections are self-limiting, lasting a few days. However, there are also occasionally fatal cases when the infection reaches the bloodstream and the associated dehydration can be life threatening.

2.2.2 Background

The EU general policy for salmonellosis is to reduce the prevalence in animals through the implementation of harmonised measures. Council Directive 92/117/EEC[36] specified minimum levels for salmonellosis control in poultry for EU Member States mainly focusing on the monitoring and control of *S. Enteritidis* and *S. Typhimurium* in breeding flocks. These measures were in place between 1993 and 2004, after which specific *salmonella* reduction targets were set in accordance with Regulation (EC) No 2160/2003[37].

2.2.3 Current measures

Adoption of Regulation (EC) No 2160/2003 of the European Parliament and the Council on the control of *salmonella* and other specified zoonotic agents was the start of the implementation of EU wide control programmes on zoonoses, **considering *salmonella* as a priority**. Gradually targets for reduction, national control programmes were introduced for:

[36] Council Directive 92/117/EEC of 17 December 1992 concerning measures for protection against specified zoonoses and specified zoonotic agents in animals and products of animal origin in order to prevent outbreaks of food-borne infections and intoxications *OJ L 62, 15.3.1993, p. 38–48*

[37] Regulation (EC) No 2160/2003 of the European Parliament and of the Council of 17 November 2003 on the control of salmonella and other specified food-borne zoonotic agents *OJ L 325, 12.12.2003, p.1*.

- Breeding hens
- Laying hens
- Broilers
- Turkeys

All data on the *salmonella* monitoring of animals, food and humans are forwarded by the Member States to ECDC and EFSA. Yearly summary report confirms a clear favourable decreasing trend in occurrence in humans and decreasing prevalence in poultry flocks.

In 2003, specific *salmonella* reduction targets were set in accordance with Regulation (EC) No 2160/2003. These control programmes aimed to meet the *salmonella* reduction target in breeding flocks of poultry set by Regulation (EC) No 1003/2005[38], where the *salmonella* reduction target in breeding flocks covers the following serovars: S. *Enteritidis*, S. *Typhimurium*, S. *Infantis*, S. *Virchow* and S. *Hadar*. The target was to reduce the maximum percentage of flocks remaining positive to 1% or less.

In Commission Regulation (EC) No 1168/2006[39], the EU target in laying hens was defined as an annual minimum percentage of reduction of positive flocks of adult laying hens equal to at least:

- 10% if the prevalence in the preceding year was less than 10%;
- 20% if the prevalence in the preceding year was between 10% and 19%;
- 30% if the prevalence in the preceding year was between 20% and 39%;
- 40% if the prevalence in the preceding year was 40% or more;

or a reduction of the maximum percentage to 2% or less.

To reduce the salmonella prevalence in broilers, Commission Regulation (EC) No 646/2007[40] of 12 June 2007 established an EU target for the reduction of the maximum percentage of flocks of broilers remaining positive for S. *Enteritidis* and S. *Typhimurium* to 1% or less by 31 December 2011.

To reduce or maintain a low prevalence of *salmonella* of public health significance in fattening and adult breeding turkey flocks, Regulation (EC) No 584/2008[41] sets out target levels of *salmonella* prevalence, in which the maximum percentage of fattening and adult breeding turkey flocks remaining positive for *salmonella Enteritidis* and *salmonella Typhimurium* is 1% or less by 31 December 2012.

[38] Commission Regulation (EC) No 1003/2005 of 30 June 2005 implementing Regulation (EC) No 2160/2003 as regards a Union target for the reduction of the prevalence of certain salmonella serotypes in breeding flocks of Gallus gallus and amending Regulation (EC) No 2160/2003. *OJ L 170, 1.7.2005, p. 12–17*
[39] Commission Regulation (EC) No 1168/2006 of 31 July 2006 implementing Regulation (EC) No 2160/2003 as regards a Union target for the reduction of the prevalence of certain salmonella serotypes in laying hens of Gallus gallus and amending Regulation (EC) No 1003/2005 *OJ L 211, 1.8.2006, p. 4–8*
[40] Commission Regulation (EC) No 646/2007 of 12 June 2007. *OJ L 151, 13.6.2007, p. 21–25*
[41] Commission Regulation (EC) No 584/2008 of 20 June 2008 implementing Regulation (EC) No 2160/2003 of the European Parliament and of the Council as regards a Union target for the reduction of the prevalence of Salmonella enteritidis and Salmonella typhimurium in turkeys *OJ L 162, 21.6.2008, p. 3–8*

Vaccination

Vaccination against salmonellosis was also used as an additional tool, laid down in Commission Regulation (EC) No 1177/2006[42]. This was preceded by a scientific opinion published by EFSA (2004[43]) in 2004 that stated that if a salmonellosis control programme is targeting for serovars *S. Enteritidis* and *S. Typhimurium* in breeders of layers/broilers or laying hens and the flock prevalence is high, vaccination may be useful in reducing shedding and egg contamination. Both the use of inactivated and the use of certain live vaccines under specific conditions were considered safe to be used throughout the life of the birds, except during the withdrawal period before slaughter and, with regard to live vaccines, in laying hens during production, provided that detection methods are available and can differentiate the vaccine strains from wild strains. Live or inactivated vaccines against *salmonella Enteritidis* were implemented in Member States with a high prevalence in order to protect public health. The prevalence of *salmonella Enteritidis* demonstrated during a baseline survey carried out in lying hens and in the frame of the testing schemes in accordance with Article 4(2)(d) of Regulation (EC) No 2160/2003, were used as a threshold for mandatory vaccination.

2.2.4 Description of funded bio-security measures

As already indicated, the EU policy to combat *salmonella* has evolved significantly over the years, with increasingly stringent and targeted measures following new scientific insights in the epidemiology of the disease and risks for transmission to humans.

Member States should implement control programmes in breeding flocks for S. *Enteritidis* and S. *Typhimurium* by Council Directive 92/117/EEC. The monitoring became more specific by Council Directive 2003/99/EEC[44], and Commission Regulation 2160/2003. In the poultry sector, Member States should establish national salmonellosis control programmes (NSCP) for breeding flocks, laying hens, broilers and turkeys.

During the last five years, the salmonellosis control programme has included more measures. The EU financial contribution is at the rate of 50% of the cost incurred by Member States to implement the following measures up to a maximum amount:

- the cost of carrying out bacteriological and serotyping tests in the framework of official sampling;
- the compensation to owners for their losses due to the culling of birds and destruction of eggs;
- the purchase of vaccine doses;
- the cost of carrying out laboratory tests to verify the efficiency of disinfection;
- the cost of carrying out tests for the detection of antimicrobials or bacterial growth inhibitory effect in tissues from birds from flocks tested for Salmonella.

[42] Commission Regulation (EC) No 1177/2006 of 1 August 2006 implementing Regulation (EC) No 2160/2003 of the European Parliament and of the Council as regards requirements for the use of specific control methods in the framework of the national programmes for the control of salmonella in poultry**.** *OJ L 212, 2.8.2006, p. 3–5*

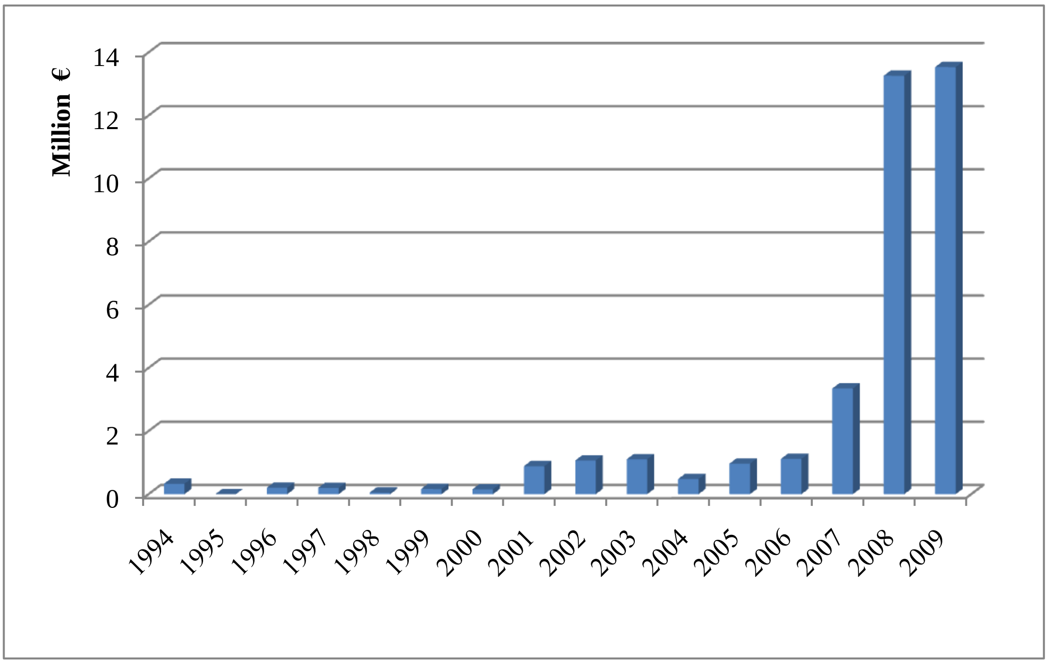
[43] European Food Safety Authority (EFSA). 2004. *Opinion of the Scientific Panel on Biological Hazards on the requests from the Commission related to the use of vaccines for the control of Salmonella in poultry.*

[44] Council Directive 2003/99/EEC of 17 November 2003 on the monitoring of zoonoses and zoonotic agents, amending Council Directive 90/424/EC and repealing Council Directive 92/117/EEC *OJ L 325, 12.12.2003, p. 31–40*

2.2.5 Overall funding

The co-financing for salmonellosis control has gradually increased between 1994 and 2009, more noticeably between 2008 and 2009 when programmes were intensified, in order to achieve the EU targets. Between 2007 and 2009, 23 Member States have benefited from the co-funding. The total amount of EU co-financing was €30 million over the period (**Figure 23**).

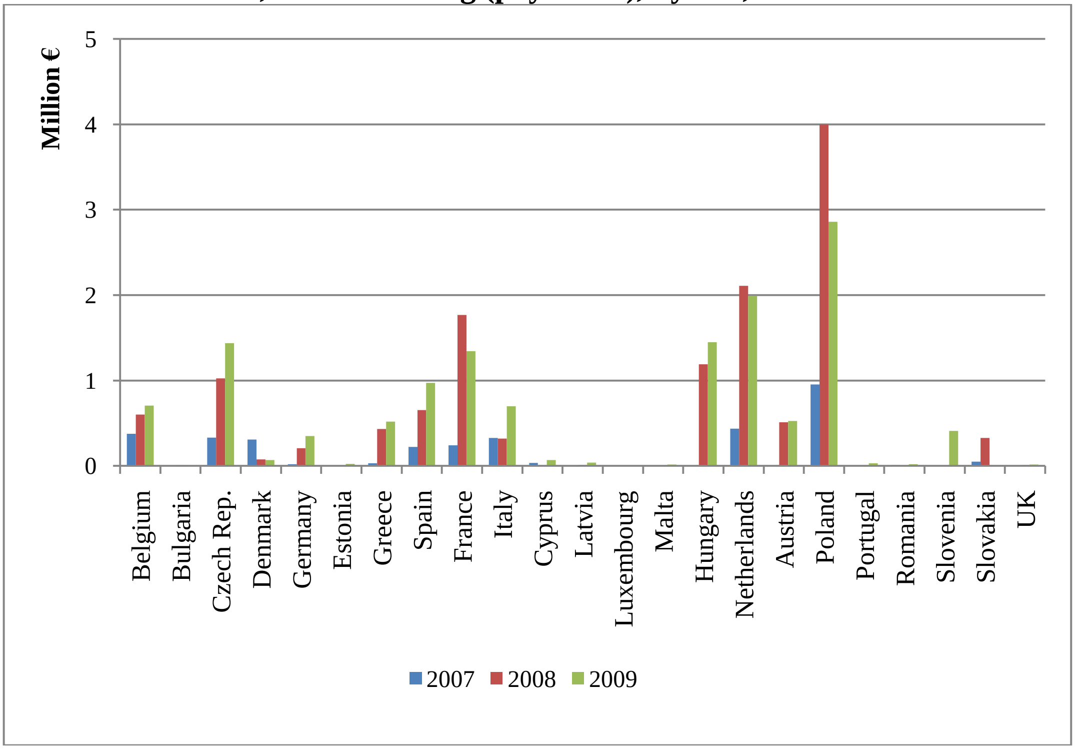
Figure 23 Salmonellosis, EU co-funding (payments), 1994 – 2009



Source: DG SANCO based on financial decisions from 1994- 2009

When comparing funding between EU Member States, there are significant differences. As can be expected, Member States with an intensive poultry industry have generally more programmes for *salmonella* control. **Figure 24** presents the Member States that have received co-financing in 2007-2009.

Figure 24 Salmonellosis, EU co-funding (payments), by MS, 2007-2009



Source: DG SANCO based on financial decisions from 2007-2009

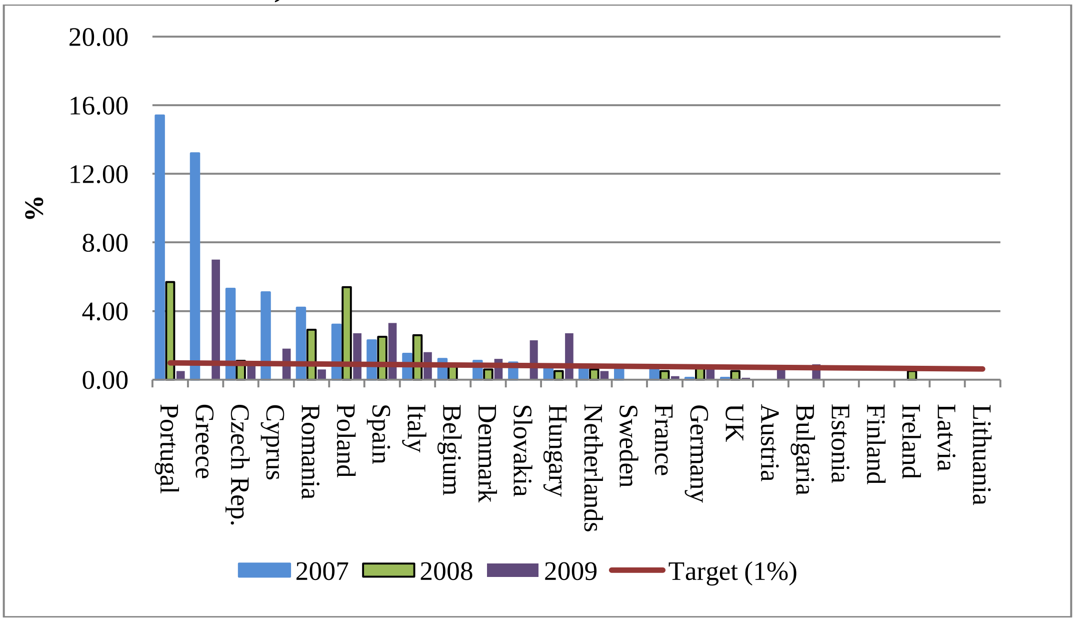
2.2.6 Analysis of key results of the programmes

In breeders, since 2007, Member States have been obliged to implement the *salmonella* control programmes in accordance with Commission Regulation (EC) No 2160/2003. The programmes aim to meet the *salmonella* reduction target set by Commission Regulation (EC) No 1003/2005 and cover the following serovars: S. *Enteritidis*, S. *Typhimurium*, S. *Infantis*, S. *Virchow* and S. *Hadar*. The target is set for adult breeding flocks in a production phase comprising at least 250 birds and the target date was set at end 2009. The sampling required by the above Regulation is more intensive than the requirements set out in the former Directive 92/117/EC that obliged Member States to implement control programmes in breeding flocks for S. *Enteritidis* and S. *Typhimurium*, only.

Data from EFSA indicate that, in 2009, 18 Member States met the maximum 1% level of the targeted serovars (*S. Enteritidis*, *S. Typhimurium*, S. *Infantis*, S. *Virchow* and S. *Hadar*) while 7 Member States (Greece, Hungary, Italy, Denmark, Poland, Spain, and Slovakia) reported a prevalence of more than 1% of the five targeted serovars (EFSA-ECDC, 2011a[45]).

[45] European Food Safety Authority (EFSA), European Centre for Disease Prevention and Control (ECDC) 2011a. *The European Union Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2009*. EFSA Journal 2011; 9(3):2090, 378

Figure 25 Prevalence of five targeted serovars in breeding flocks during the production period in Member States, 2007-2009

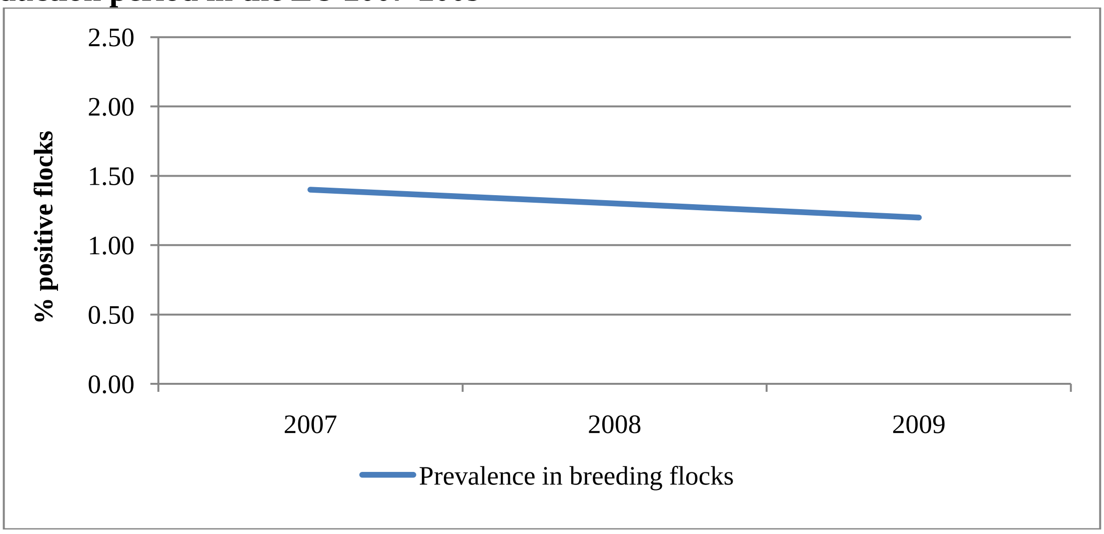


**Note: all types of breeding flocks (elite, grandparent, and parent); Cyprus met the target as there are less than 100 adult breeding flocks in the MS and only one flock was found positive with the targeted serovars.*

Source: EFSA-ECDC.The EU Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2009

Although occasional increases in prevalence are observed, the overall evolution of declining *salmonella* prevalence in breeding flocks is remarkable. During 2009, *salmonella* was found in 2.7 % of breeding flocks in the EU at some stage during the production period, i.e. at the same proportion as in 2008. The average percentage of positive breeding flocks has moved towards 1% (**Figure 26**).

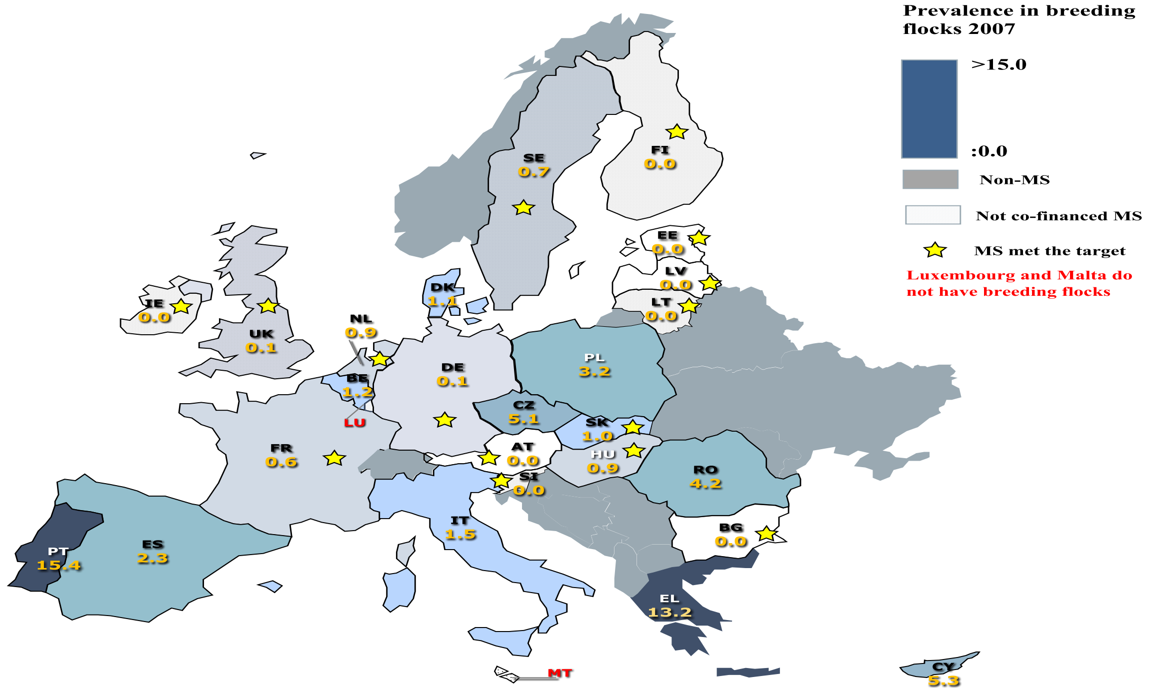
Figure 26 Evolution of prevalence of five targeted serovars in breeding flocks during the production period in the EU 2007-2009



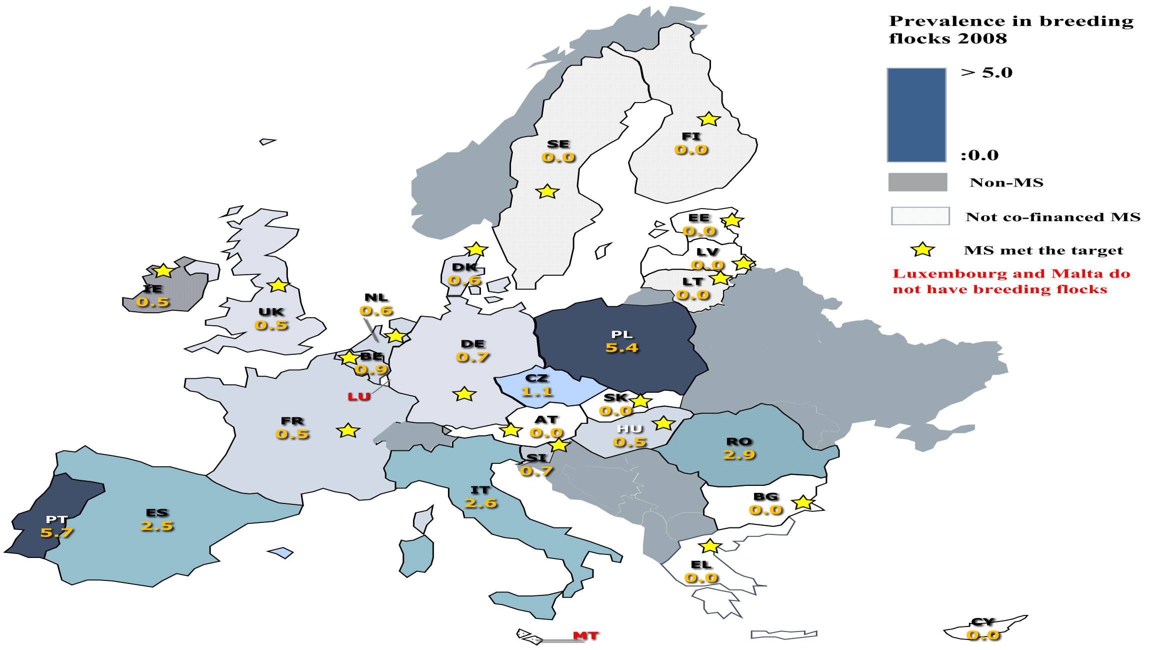
Source: EFSA and ECDC -The EU Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2009

In **Map 5**, **Map 6** and **Map 7,** the prevalence of the five targeted serovars in breeding flocks during the production period and target is represented in 2007, 2008 and 2009 in each Member State.

Map 5 Prevalence of the five targeted serovars in breeding flocks during the production period and target (1%) in the EU, 2007

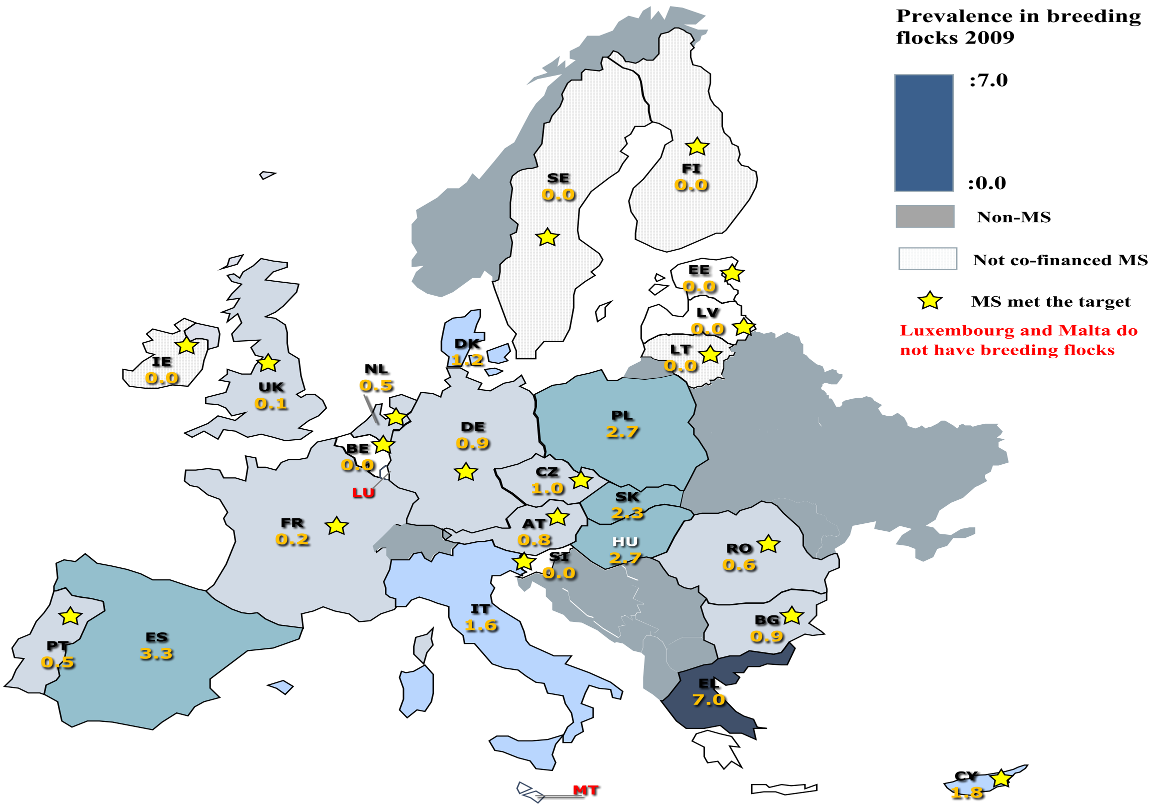


Map 6 Prevalence of the five targeted Serovars in breeding flocks during the production period and target (1%) in the EU, 2008



Source: Source: EFSA and ECDC -The Community Summary Report on Trends and Sources of Zoonoses and Zoonotic Agents in the European Union in 2007 and 2008

Map 7 Prevalence of the five targeted serovars in breeding flocks during the production period and target 1%) in the EU, 2009



Source: EFSA and ECDC. The EU Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2009

Map 7 reports the results for 2009. In total, 18 Member States (and 2 third countries) met the target in breeding flocks in 2009, compared to 20 Member States in 2008. Amongst these, 17 Member States reported prevalence of the five target Serovars in breeding flocks that were lower than or equal to EU reduction target limit of 1%, and 1 Member State (Cyprus) also met the target as there were less than 100 adult breeding flocks in the Member State and only one flock was found positive with the targeted Serovars (2 Member States, Luxemburg and Malta, do not have breeding flocks) (EFSA-ECDC, 2011a).

In laying hen flocks, since 2008, Member States implemented new *salmonell*a control programmes providing eggs intended for human consumption in accordance with Commission Regulation (EC) No 2160/2003. The control programmes consist of proper and effective measures of prevention, detection, and control of *salmonella* at all relevant stages of the egg production line, particularly at the level of primary production, in order to reduce *salmonella* prevalence and the risk to public health.

The legislation foresaw that an EU target for the reduction of the prevalence of *S. Enteritidis* and *S. Typhimurium* in laying hens was established for a three-year period commencing in 2008. The progress in achieving these targets could only be correctly evaluated by assessing the prevalence of the two targeted serovars at the starting point, by means of an EU-wide baseline survey in the EU (Decision2004/665/EC[46]). The Member State prevalence assessed in this EU-wide baseline survey in laying hens 2004-2005 was the reference prevalence for the 2008 targets. In total, 24 Member States participated in the survey and the baseline prevalence of *salmonella* was assessed in participating countries (EFSA, 2007[47]).

In Commission Regulation (EC) No 1168/2006[48], the EU target in laying hens is defined as an annual minimum percentage of reduction in the number of adult laying hen flocks (i.e. in the production period) remaining positive by the end of the previous year. Annual targets are based on the prevalence in the preceding year. For the most advanced Member States, the EU target is defined as a maximum percentage of flock remaining positive of 2%. The first annual targets should have been achieved in 2008 based on the monitoring starting at the beginning of that year. The verification of the achievement of the target is based on the results of required testing in adult laying flocks. Based on Regulation (EC) No 1168/2006, the Union and EFSA recommended that the results of the 2008 *salmonella* testing programmes in adult laying hens, used for checking the target achievement, are to be reported in accordance with the following four categories:

- Results from all samples taken under the testing programme (both by food business operators and competent authorities);
- Results from the census sampling performed by the food business operators;
- Results from the objective sampling performed by the competent authority ("in one flock per year per holding comprising at least 1,000 birds";
- Results from the sampling carried out by the competent authority in case of positivity suspicion (*salmonella* found earlier in the same building, suspicion in connection with foodborne outbreaks;
- *Salmonell*a detected in other flocks in the holding, where the competent authority considers it appropriate).

A flock was reported as positive if one or more samples were positive at any time during the lifespan of the flock. However, only flocks tested positive for S. *Typhimurium* and/or S. *Enteritidis* during the production period are taken into consideration when assessing whether Member States meet the target.

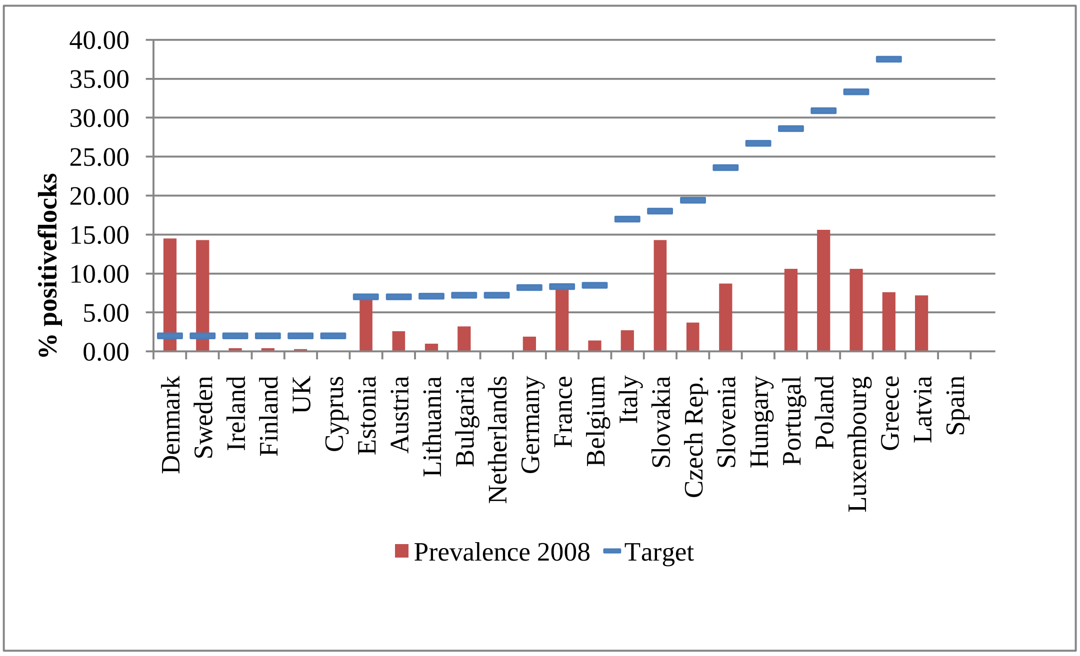
Prevalence of *salmonella* spp. and of the two serovars (S. *Enteritidis* and S. *Typhimurium*) targeted in the control programmes for adult laying hen flocks during the rearing period were as follows: 13 Member States reported data on flocks during rearing; 5 Member States reported no *salmonella* spp. and of the 8 Member States with salmonella-positive flocks, for S. *Typhimurium* and/or S. *Enteritidis.*

Data from EFSA indicate that the *S. Enteritidis* and *S. Typhimurium* prevalence had declined in most Member States between 2008 and 2009 with the exception of 8 Member States

[46] Commission Decision of 22 September 2004 concerning a baseline study on the prevalence of salmonella in laying flocks of Gallus gallus. *OJ L 303, 30.9.2004, p. 30–34*
[47] European Food Safety Authority (EFSA). 2007.*Report of the Task Force on Zoonoses Data Collection on the Analysis of the baseline study on the prevalence of Salmonella in holdings of laying hen flocks of Gallus gallus.*
[48] Commission Regulation (EC) No 1168/2006 of 31 July 2006 implementing Regulation (EC) No 2160/2003 as regards a Union target for the reduction of the prevalence of certain Salmonella serotypes in laying hens of Gallus gallus and amending Regulation (EC) No 1003/2005, *OJ L 211, 1.8.2006, p. 4–8.*

(Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Germany and Lithuania), which reported an increase in prevalence (higher than 0.1%). This indicated that continuous progress is being made in combating these salmonella serovars, and the control of these serovars in laying hen flocks is not easy and takes time (**Figure 27** and **Figure 28**).

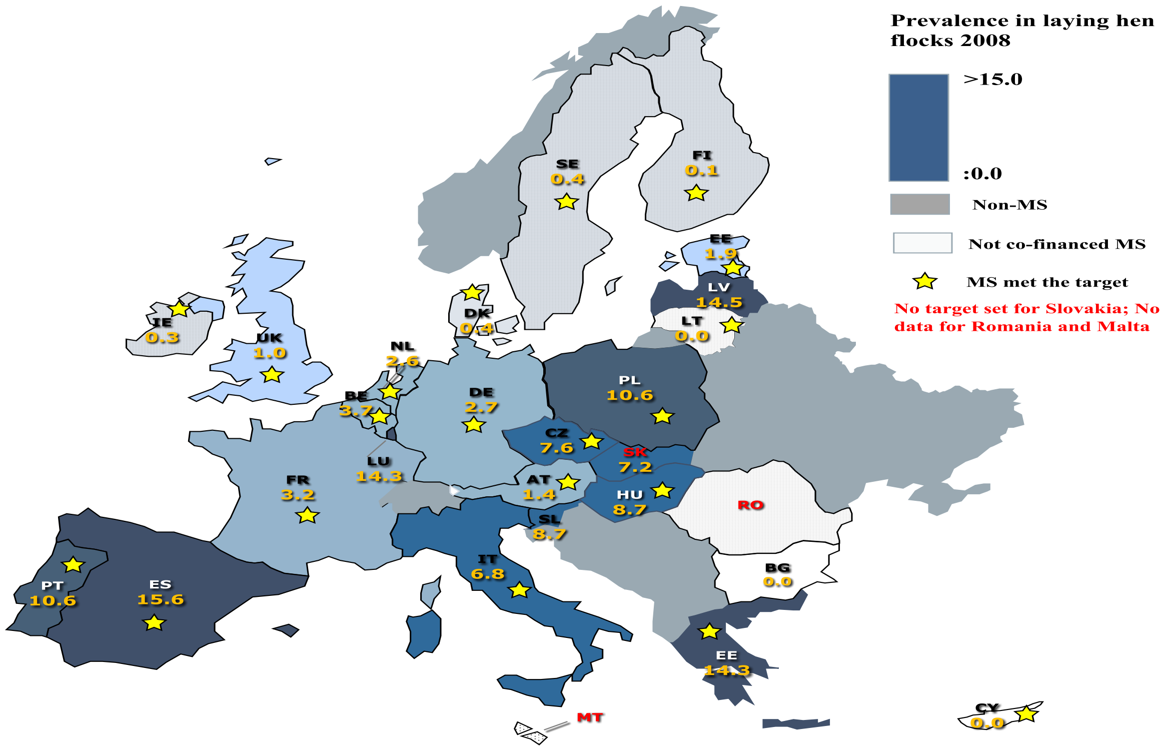
Figure 27 Prevalence of the two targeted serovars in laying hen flocks during the production period (flock-based data) and targets for MS, 2008



Source: EFSA and ECDC -The EU Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2009

The prevalence of the two targeted serovars in laying hen flocks in 2009 is represented in **Map 8**. In total, 21 Member States met the targets in 2008.

Map 8 Prevalence of the two targeted serovars in laying hen flocks during the production period and targets, 2008

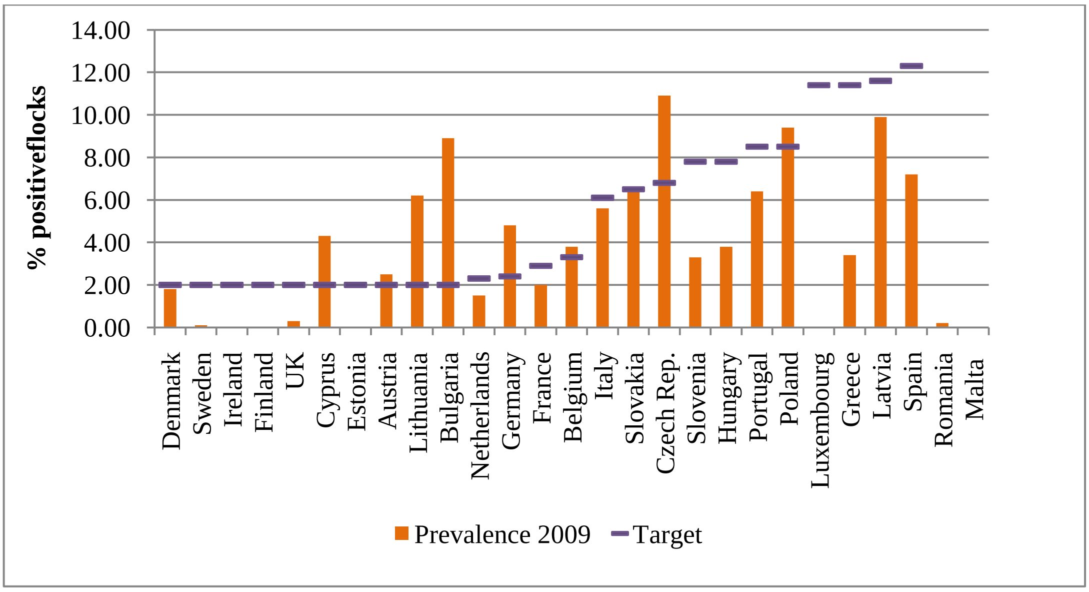


Source: EFSA and ECDC-The Community Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in the European Union in 2008

The prevalence of the two targeted serovars in laying hen flocks in 2009 is represented in **Figure 28** and **Map 9**. In total 17 Member States (and 2 third countries) met their 2009 targets. On the other hand, 8 Member States had not achieved the reduction in *salmonella* prevalence required to meet the 2009 target. In 2009, no targets have been set for Malta and Romania, but their S. *Enteritidis* and S. *Typhimurium* prevalence was below the 2% target set for the other Member States. For these Member States, 2010 targets will be based on the 2009 findings.

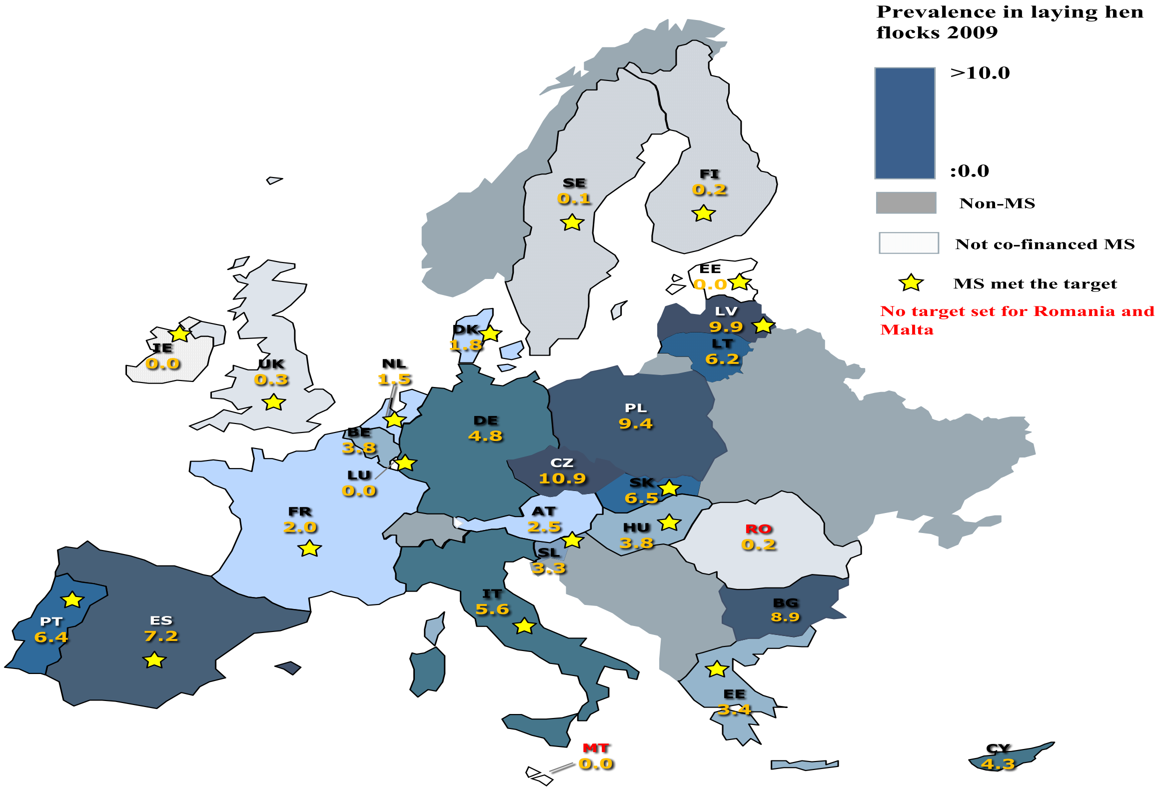
There is gradually a decline in the prevalence of the two targeted serovars S. *Enteritidis* and S. *Typhimurium* in laying hen flocks in 2008 and 2009, because prevalence had declined in most Member States. However, in 7 Member States, an increase in prevalence was observed. This indicates that combating these *salmonella* serovars in commercial laying hen flocks requires co-ordinated actions and commitments from the sector. This is illustrated in **Figure 29**. Clearly, continued surveillance is necessary to maintain progress.

Figure 28 Prevalence of two targeted serovars in laying hen flocks during the production period and targets for MS, 2009



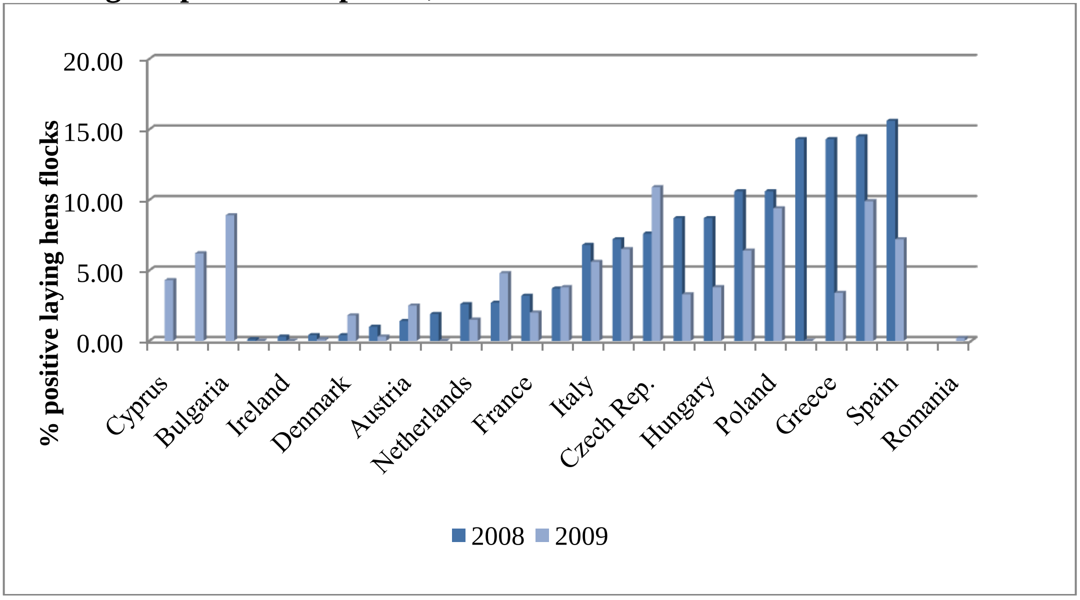
Source: EFSA and ECDC -The EU Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2009

Map 9 Prevalence of the two targeted serovars in laying hen flocks during the production period and targets, 2009



Source: EFSA and ECDC -The EU Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2009

Figure 29 Evolution of the prevalence of the two targeted serovars in laying hen flocks in MS during the production period, 2008-2009

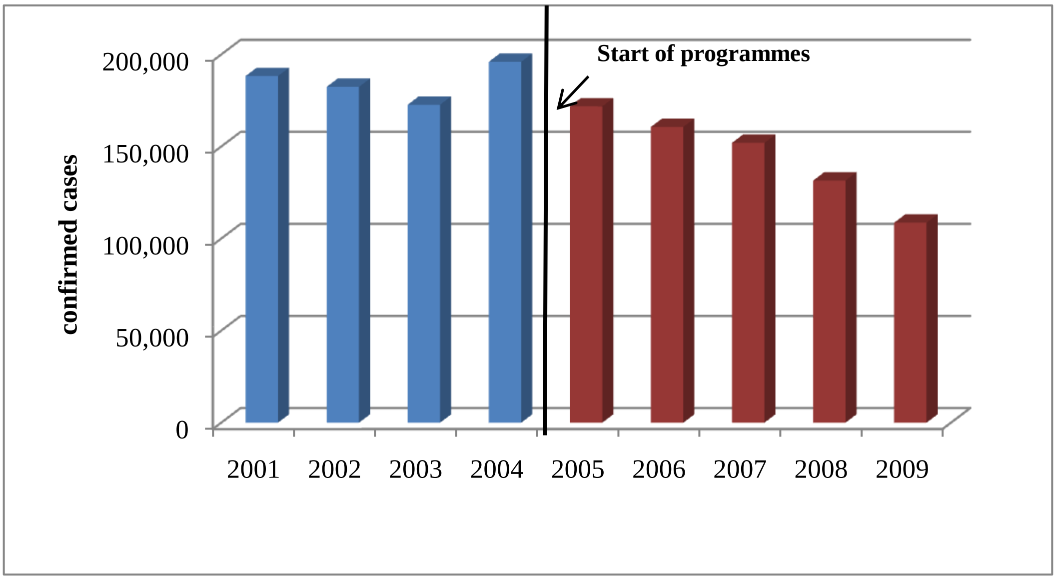


Source: EFSA and ECDC -The EU Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2009; The Community Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in the European Union in 2008

2.2.7 Analysis of effects of the programmes on humans

In **humans**, the incidence of *salmonella* has decreased annually since 2004 from about 195,947 cases in 2004 to 133,258 cases in 2008, and further down to 108,614 cases in 2009 (a decrease of 17% compared to the previous year). At the EU level, the decreasing trend between 2005 and 2009 was statistically significant, with a mean annual reduction of 12%. The decreasing trend, which is reassuring, is illustrated in **Figure 30.** The decrease has been particularly evident for S. *Enteritidis*, with a reduction of reported cases of 24% from 2008 to 2009; the second most common serovar, S. *Typhimurium*, showed a reduction of reported cases of 10% in the same period.

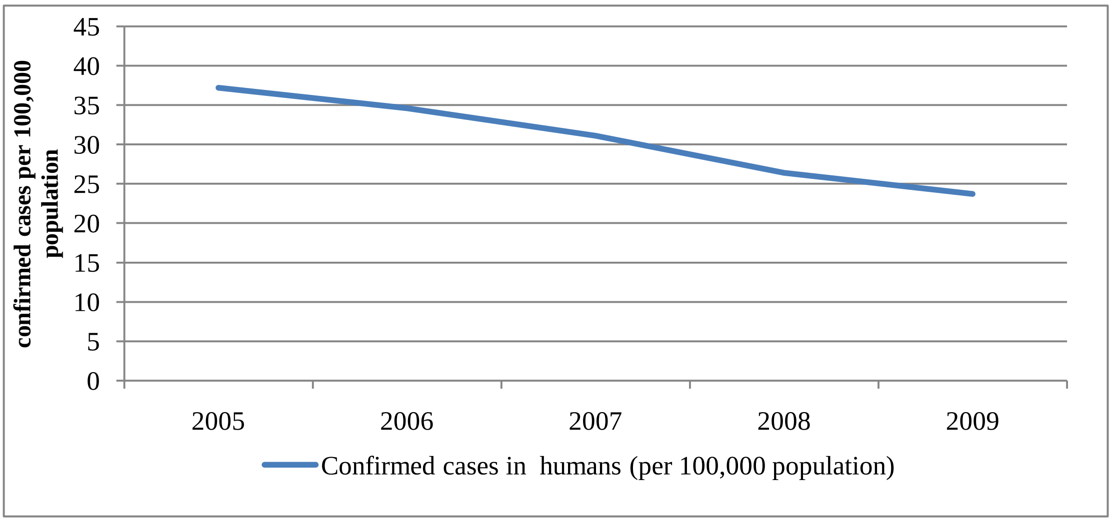
Figure 30 Salmonellosis, number of reported confirmed cases of human in the EU*



**Note: 2001-2004 data refer to total cases rather than confirmed cases*
Source: EFSA and ECDC – The EU Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2009

The notification rate of reported confirmed cases of human salmonellosis in the EU (highest in young children of 0-4 years of age) has decreased from above 35 cases per 100,000 population in 2005, to less than 25 in 2009. The intensified and largely co-funded control programmes of *salmonella*, along with better hygiene practices particularly in the poultry production chain, implementing bio-security measures on farms, appear to have had a significant impact (**Figure 31**).

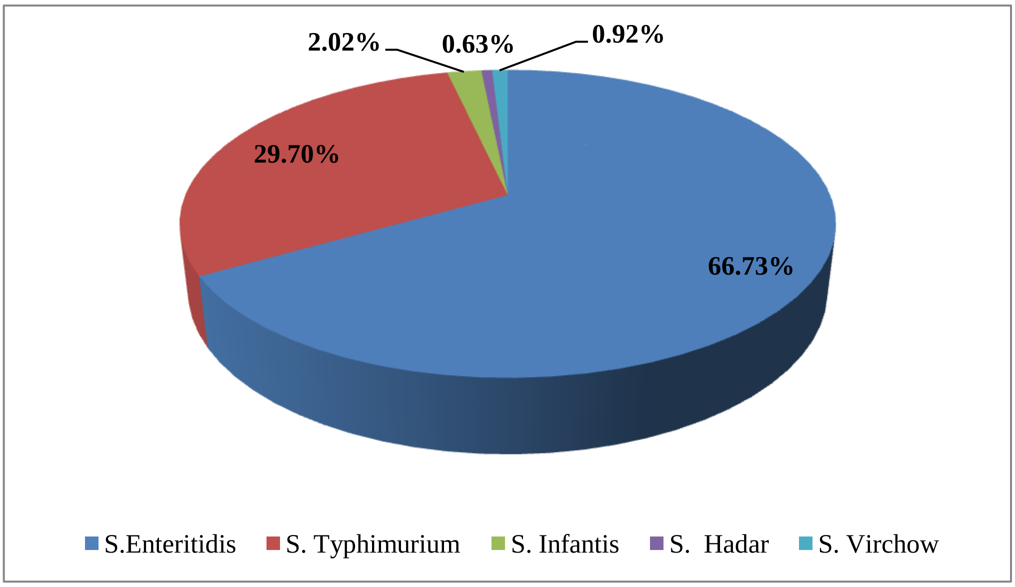
Figure 31 Notification rate of reported confirmed cases of human salmonellosis in the EU*



**Note : For years 2005 and 2006 EU-25 (excluded Bulgaria and Romania) population were extracted from EUROSTAT database*
Source: EFSA and ECDC – The EU Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2009

Although more than 2,500 serovars of zoonotic *salmonella* exist, the overall majority of cases of *salmonella* in humans are caused by the serovars S. *Enteritidis* and *S. Typhimurium.* These two serovars account for more than 95% of the reported cases. Other main serovars are *S. Infantis, S. Hadar*, and *S. Virchow* (**Figure 32**).

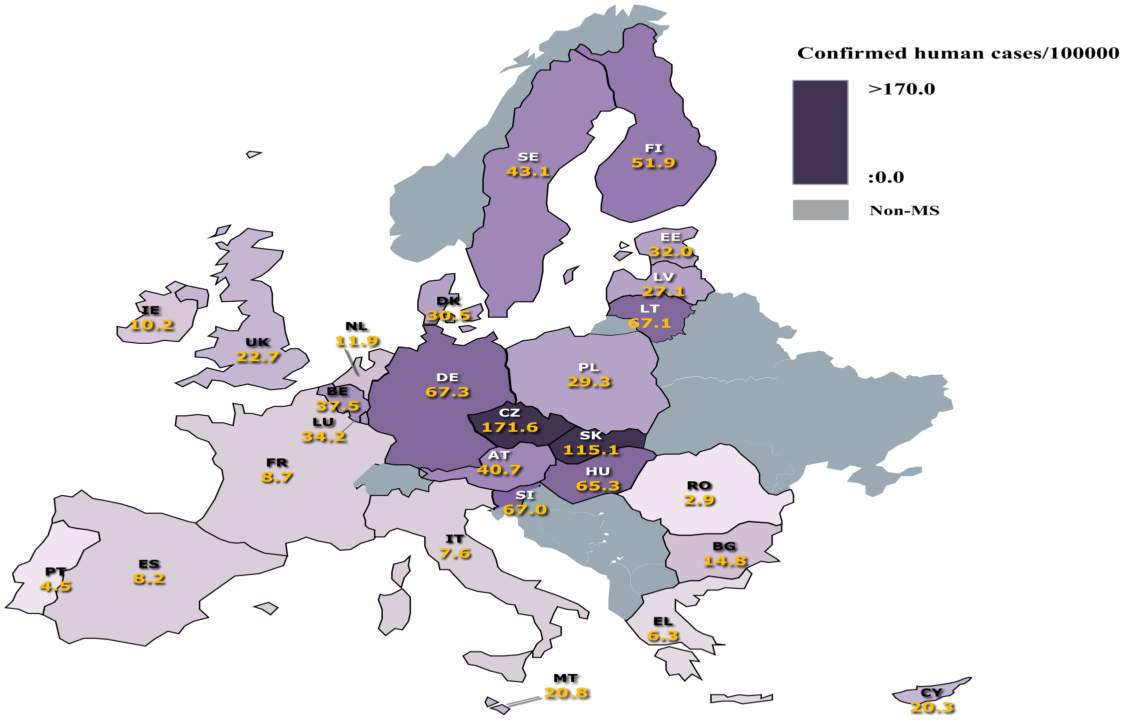
Figure 32 Distribution of the five *salmonella* serovars (S.*Enteritidis*, S. *Typhimurium*, S. *Infantis*, S. *Hadar*, S. *Virchow*) in humans in 26 Member States, 2009



Source: EFSA and ECDC -The EU Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2009

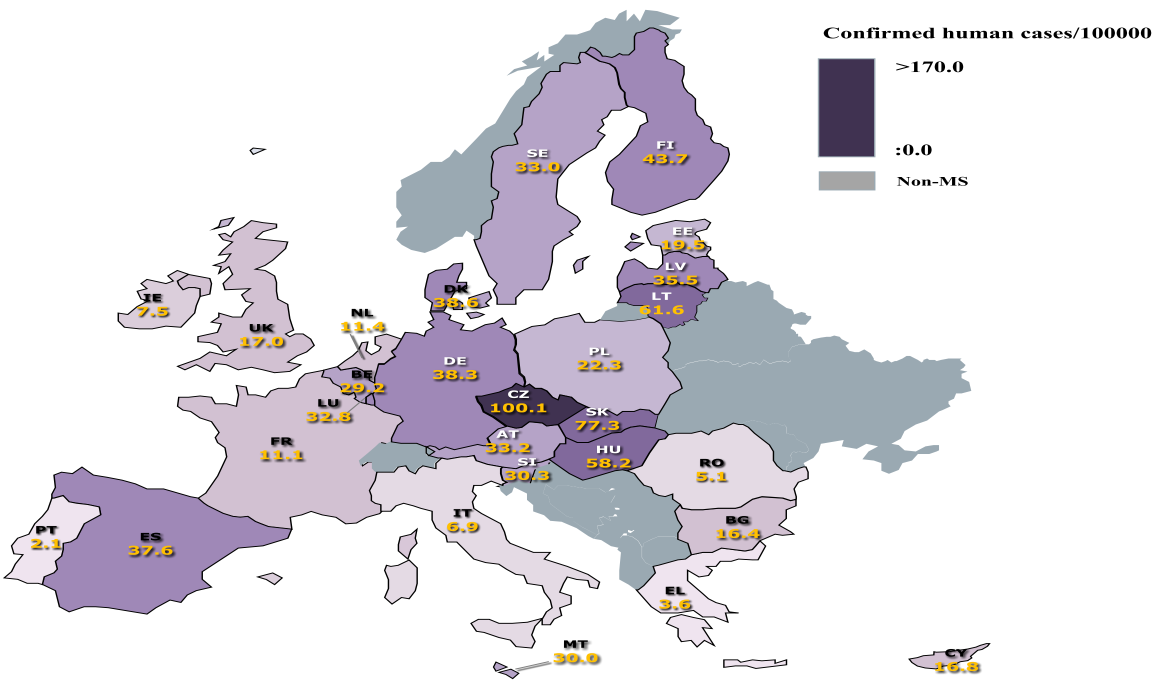
Although the EU trend shows a gradual decrease of salmonella cases, there are considerable differences between Member States. **Map 6** and **Map 7** present data on confirmed cases per 100,000 population in 2007 and in 2009 respectively.

Map 10 Confirmed cases of salmonellosis in humans in the EU 27, 2007



Source: EFSA and ECDC - The Community Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in the European Union in 2008

Map 11 Confirmed cases of salmonellosis in humans in the EU 27, 2009



Source: EFSA and ECDC -The EU Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2009

2.2.8 Analysis of impacts of the programmes

The impact of the salmonellosis programmes is evident in terms of the achievement of the various targets.

It is expected that the occurrence of human infections with the targeted serovars will be reduced when the prevalence of *salmonella* in animals is reduced. In 2009, the number of salmonellosis cases in humans decreased by 17.4 % compared to 2008 (109,844 cases were reported from 27 EU Member States, equal to 23.7 cases per 100,000 population); in particular, human cases caused by S. *Enteritidis* decreased markedly. The statistically significant decreasing trend in the EU continued for the fifth consecutive year. The observed reduction of salmonellosis cases is mainly attributed to the successful implementation of national *salmonella* control programmes in poultry populations, including turkey; also, other control measures along the food chain have contributed to the observed reduction. EFSA confirms that the EU measures helped reduce human cases almost by half over a five-year period, from 196,000 cases in 2004 to 108,000 cases in 2009 (EFSA-ECDC, 2011a).

The success story, as documented by the EFSA report, dates back to 2003 when the European Parliament and the Council adopted a Regulation[49] which signalled the start of the implementation of enhanced *salmonella* control programmes in all Member States. In flocks of poultry (e.g. laying hens, broilers, turkeys) targets for reduction of *salmonella* were set, Member States introduced control programmes, and restrictions on the trade of products from infected flocks were also imposed.

This study confirms that the EU has made great strides in its battle against *salmonella* and the consistent fall in the number of cases is testament to the strong, comprehensive measures put in place by the Member States to tackle this disease. The Commission has continued monitoring and reacting to the challenge of *salmonella* and the current EFSA/ECDC report clearly illustrates the improved situation and positive developments.

In economic terms, the programmes have made a significant impact too. In terms of the improvement in human health, it is noted that EFSA (2010[50]) estimated the overall burden of human salmonellosis in the EU to between €0.2 billion and €3 billion per year. Clearly an improvement in the human health situation is expected to result in savings to these costs.

Trade of poultry meat within the internal market accounts for more than 20% of the 11.5 million tonnes of poultry meat produced within the EU27. *Salmonella* prevalence differs between EU Member States. The implementation of harmonised measures and achieving uniform *salmonella* prevalence among EU Member States poses less risk for trade restrictions occurring between EU Member States, and thus enhances the movement of goods within the internal market. Furthermore, achieving low prevalence through the control (and eventually eradication) of *salmonella* within the EU is expected to facilitate export to third countries that are currently key poultry meat importers from the EU27.

[49] Regulation (EC) No 2160/2003, see note 38

[50] European Food Safety Authority (EFSA), European Centre for Disease Prevention and Control (ECDC) 2010. *The Community Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in the European Union in 2008*, EFSA Journal; 2010 8(1),1496

2.3 Avian influenza (AI)

Main results – Avian influenza surveillance programmes:

- During the period 2006-09, the EU co-financed avian influenza surveillance programmes in all Member States. The total EU funding over the period amounted to € 12,024,02 million. These monitoring programmes were designed to detect AI in both wild and domestic birds;

- These surveillance measures aim to identify and prevent the risk of introduction of AI viruses in poultry flocks and wild birds at the early stage. The number of detected cases, resulting from the implementation of the survey, indicates the relevance of the programme in maintaining a sound alert system for the disease. The number domestic holdings testing positive shows an overall downward trend for the period, while the number of wild birds testing positive is more constant;

- The surveillance programmes have played an important role in the fight against avian influenza by contributing to the early detection of the disease, and hence allowing a suitable response. The situation in 2006, where AI was rampant in neighbouring countries but the number of outbreaks in the EU was kept relatively low following first detections, demonstrates this;

- The surveillance programmes also allow the monitoring of low pathogenic strains which can mutate. For the period 2006-09, the number of wild birds testing positive for LPAI and other strains of AI has remained relatively steady, while the number of wild birds testing positive for HPAI has dropped significantly;

- Avian influenza can have significant economic impacts. Outbreaks themselves can be very costly, as demonstrated by the outbreaks in 2003 in Netherlands. Outbreaks may also lead to trade restrictions. The disease can affect consumer confidence, and hence market stability of the poultry and eggs sectors, as demonstrated by the 2005/06 loss of consumer confidence. The monitoring programmes can help avoid these negative economic impacts through early detection which can reduce the risk of large outbreaks, and by providing assurance to trading partners and consumers;

- Surveillance and subsequent measures can also have positive effects on animal health and welfare by reducing the number of infected birds, and on human disease by reducing the risk of transmission to humans.

2.3.1 Disease characteristics and distribution in the EU

Avian influenza is an infectious viral disease in birds, domestic and wild. Infections with avian influenza viruses in domestic poultry cause two main forms of that disease that are distinguished by their virulence. The low pathogenic form (caused by avian influenza viruses of the H5 and H7 subtypes (LPAI)), generally only causes mild symptoms, while the highly pathogenic form (caused by H5N1-HPAI) results in very high mortality rates in most poultry species. That disease may have a severe impact on the profitability of poultry farming. All known viruses which cause influenza in birds belong to the influenza A virus.

Wild birds, especially migratory water birds, tend to act as reservoirs for avian influenza. They can often carry avian influenza viruses without showing any symptoms. When wild birds arrive in a new area they can then transmit the disease either through direct contact with local birds, or indirectly through their faeces, which can contaminate the soil and water. It is therefore unsurprising that evidence increasing shows that wild migratory birds contribute to the spread of avian influenza over long distances.

There have been outbreaks of different strains of avian influenza across the world for several years. In recent years, there have been many outbreaks of the highly pathogenic (A) H5N1 strain[51]. This strain can spread very quickly, causes serious disease and generates a high mortality rate among affected birds and occasionally as well in humans and other animals. The first outbreaks of the HPAI H5N1 strains were detected in South East Asia in 2003. Outbreaks spread across South East Asia and in 2005 reached countries bordering the EU; firstly Russia, and then Turkey, Romania, Croatia and the Ukraine. In February 2006 outbreaks were detected in the EU, and during the course of the year, 14 MS reported outbreaks (including five MS with outbreaks in domestic poultry). Outbreaks of H5N1 have been detected in some MS in subsequent years.

While avian influenza is primarily a bird disease, it can cross from birds to humans. This generally occurs from handling dead or infected birds or contact with infected fluids. There is no evidence to suggest that avian influenza can be passed to humans through the consumption of poultry or eggs. Also, transmission between humans is considered to be extremely unlikely. Furthermore, thorough cooking ensures that the poultry meat or eggs are free of any virus. In the particular case of HPAI H5N1, while human cases are relatively rare[52], data from the WHO indicates the mortality rate in humans can be high (60% of cases).

2.3.2 Description of measures funded

Currently, Council Directive 2005/94/EC[53] requires that Member States carry out surveillance programmes for avian influenza according to harmonised guidelines. These harmonised guidelines were set out in Commission Decision 2007/268/EC[54]. The surveillance programmes must be approved annually by the Commission. The programmes are co-financed by the Commission at a rate of 50% of eligible costs up to a maximum amount. In the last three years, AI surveillance is compulsory. Those surveillance programmes that act mainly as early warning strategy aim at identifying:

[51] Note that there is also a low pathogenic H5N1 strain, which causes minor sickness in birds and is not known to affect humans.

[52] For example there were 250 human cases reported between January 2003 and September 2006.

[53] Council Directive of 20 December 2005 on Community measures for the control of avian influenza and repealing Directive 92/40/EEC. *OJ L 10, 14.1.2006, p. 16–65*

[54] Commission Decision 2007/268/EC of 13 April 2007 on the implementation of surveillance programmes for avian influenza in poultry and wild birds to be carried out in the MS and amending Decision 2004/450/EC (notified under document number C(2007) 1554) *OJ L 115, 3.5.2007, p. 3–17*

- the circulation of LPAI viruses in poultry, in particular in waterfowl poultry species, before they become widespread in the poultry population, so that control measures can be taken to possibly prevent a mutation into a HPAI virus which might have devastating consequences.
- the circulation of LPAI of subtypes H5 and H7 and highly pathogenic avian influenza (HPAI) in domestic waterfowl (namely ducks, geese and mallards for re-stocking supplies of game);
- the circulation in wild birds for the timely detection of HPAI of the subtype H5N1 in order to protect poultry in poultry holdings and safeguard veterinary public health.

The introduction, in 2007, of the guidelines on the implementation of survey programmes for avian influenza in poultry and wild birds, has provided to Member States guidance on the surveillance plans and has had an impact on the number of birds surveyed (**Figure 35**) in 2007, particularly with regard to domestic birds. In 2008 and 2009 the number of both wild and domestic birds surveyed decreased. The decrease in the number of surveyed birds has to be put in relation to the positive trend in the number of occurred outbreaks (**Figure 37** and **Figure 39**) which has shown a decline in those years both for domestic and wild birds.

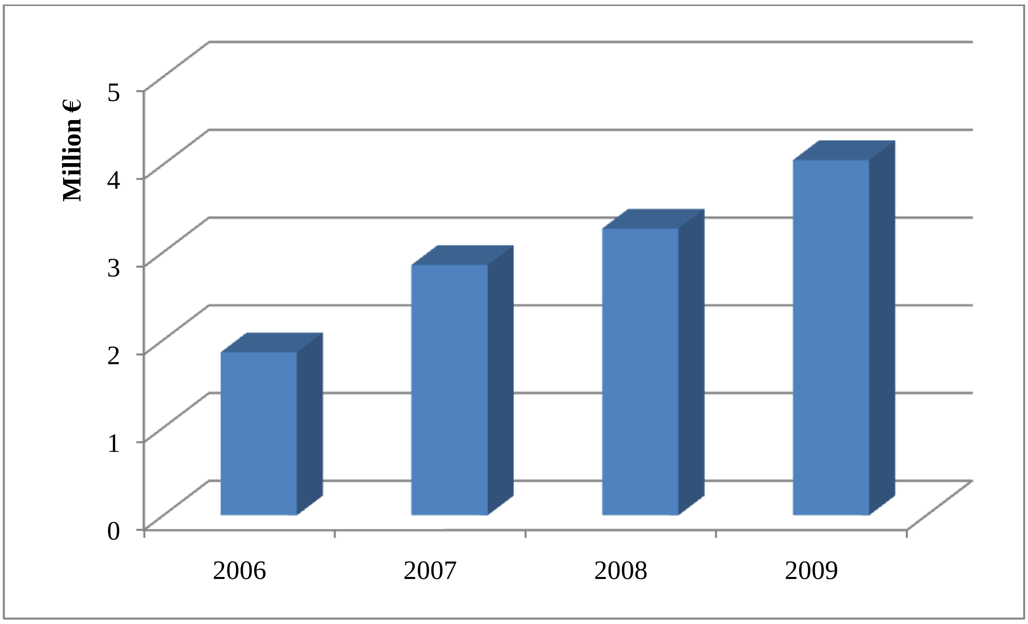
2.3.3 Overall funding

The funding shows a consistent upwards trend since 2006. During the period 2006-2009, all 27 Member States have benefited from funding. The total amount of funding during the period varies greatly between Member States, from Malta, which received € 7,842, to Italy, which received €3,327,058. The recipients of the largest amounts of funding were: Italy (€3,327,058), Germany (€1,258,000), the Netherlands (€1,121,762), Spain (€826,100), the UK (€768,920) and France (€671,356). The high figure of funding for Italy is related to the specific programme the country has been implementing for LPAI.

It is noted that whereas the number of surveyed birds has decreased (**Figure 35**), the trend of funding has been increasing. One factor explaining such divergent trends may be the change in the modalities of funding of surveys of wild birds: in order to address the high costs involved in the sampling, the European Commission has introduced since 2007[55] a lump sum for each wild bird sampled, which amounts to €20/bird. This is likely to have impacted on the overall funds granted to MS.

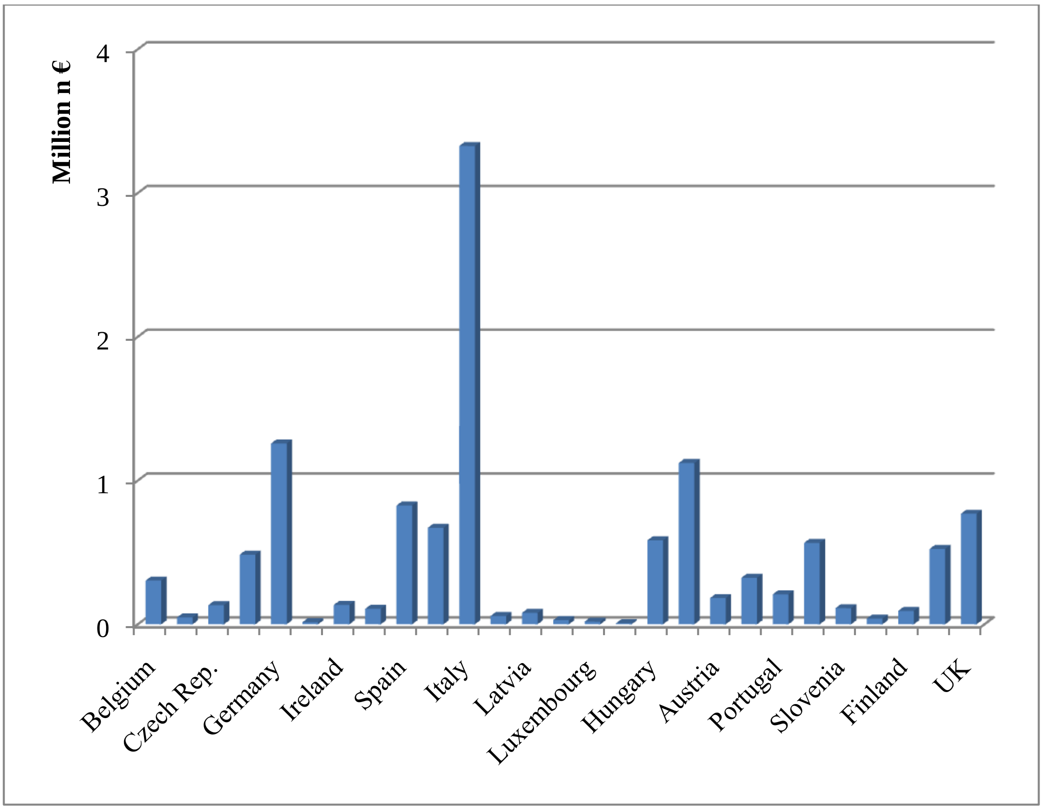
[55] Commission Decision 2007/782/EC of 30 November 2007 approving annual and multi-annual national programmes and the financial contribution from the Community for the eradication, control and monitoring of certain animal diseases and zoonoses, presented by the MS for 2008 and following years. *OJ L 314, 1.12.2007, p. 29–39*

Figure 33 Avian influenza, EU co-funding (payments), 2006-2009



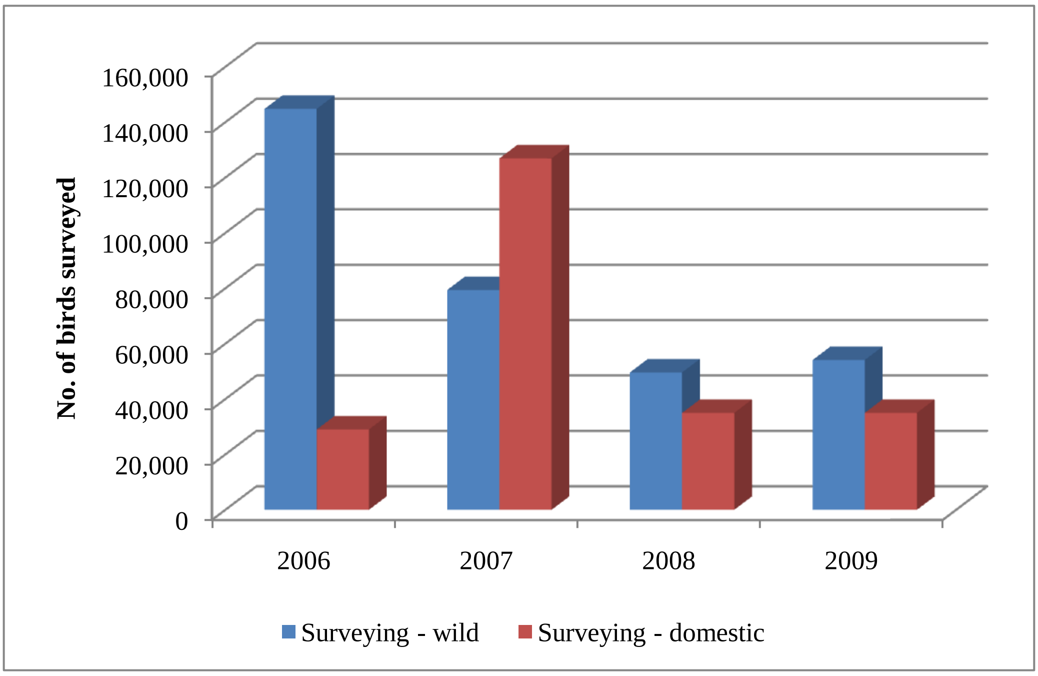
Source: DG SANCO based on financial decisions from 2006- 2009

Figure 34 Avian influenza, EU co-funding (payments), by MS, 2006-2009



Source: DG SANCO based on financial decisions from 2006- 2009

Figure 35 Number of birds surveyed for avian influenza, 2006-2009



Source: DG SANCO- Annual Report on surveillance for avian influenza in poultry and wild birds in the EU in 2006-2010

2.3.4 Analysis of key results and effects of the programmes

The number of detections does not represent an indicator of the effectiveness of the programme itself. However, the number of detected cases, resulting from the implementation of the survey, indicates the relevance of the programme in maintaining a sound alert system for the disease. This has proven an effective mechanism, when the trend of outbreaks of AI in the EU and the results of the survey are analysed together.

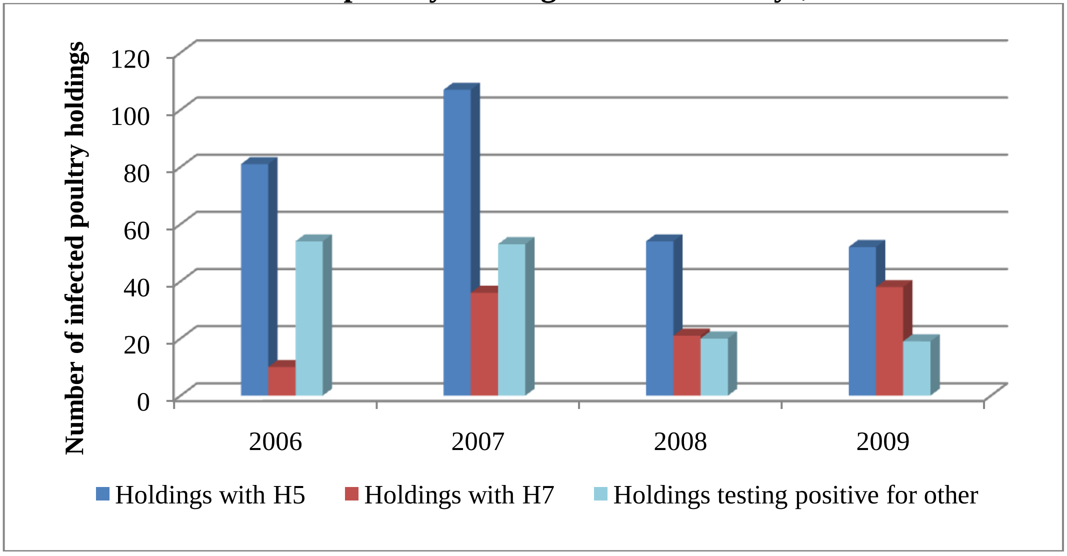
Figure 36 shows the number of infected poultry holdings found each year during the survey for the period 2006 and 2009[56]. The chart describes a decreasing trend in the number of infected birds found, despite a peak in 2007, which compares to the positive trend in the number of outbreaks in domestic birds. The number of HPAI outbreaks in the EU drastically fell over the period 2000-2009 (while LPAI outbreaks have remained fairly steady in the years 2006-2009). The chart reports the situation in the EU, including the outbreaks of 2000 and 2003, which affected severely Italy and the Netherlands respectively, and shows that the EU has not experienced as severe outbreaks since then in domestic birds.

While there were many further outbreaks of avian influenza in 2006, these outbreaks were almost entirely in wild birds (458), with only 33 outbreaks in domestic birds. In particular,

[56] It should be noted that the figures here are the findings resulting directly from the survey, and not the number of outbreaks reported in ADNS.

the outbreaks that occurred in the EU in the period 2006-2009 were highly localised: in the case of Germany, over 200 outbreaks occurred in 2006 and 2007 in Rügen Island, in the Baltic Sea, among wild birds. In Romania a high number of outbreaks occurred in 2005 and 2006 in the area of Brasov[57] in commercial farms, and outbreaks among wild birds occurred in 2006 in the Danube Delta. Accordingly, the number of countries reporting HPAI outbreaks during the period 2006-2009 has fallen (**Table** 11), while the number of countries reporting LPAI outbreaks does not show a clear trend.

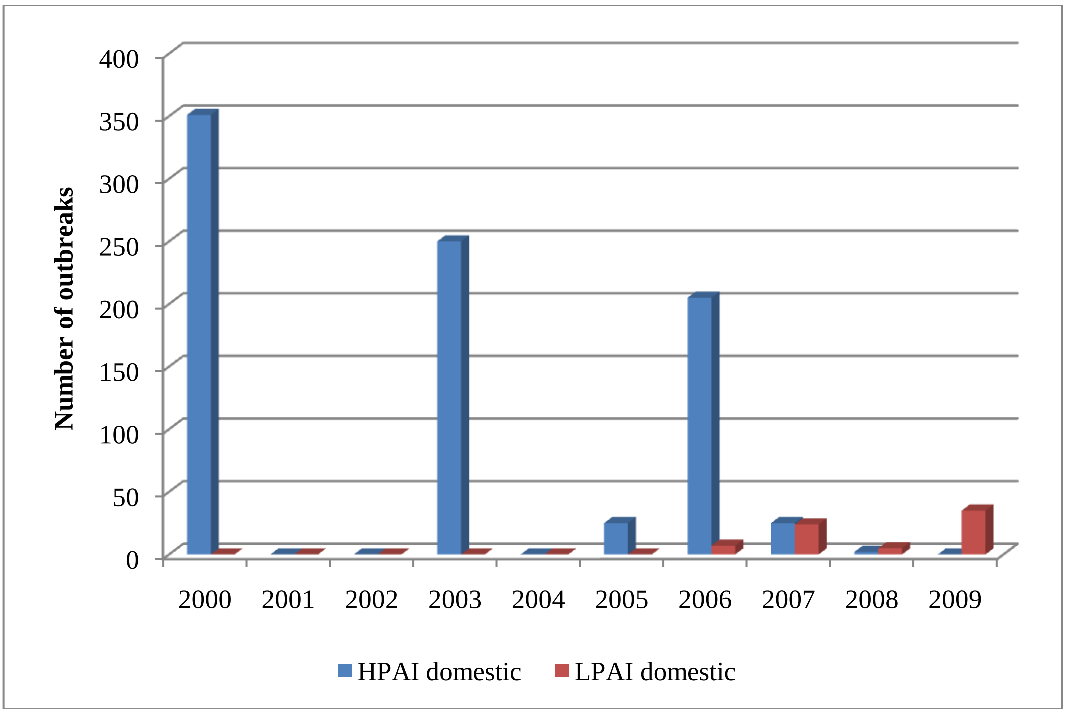
Figure 36 Number of infected poultry holdings found in surveys, 2006-2009



Source: DG SANCO- Annual Report on surveillance for avian influenza in poultry and wild birds in the EU in 2006-2010

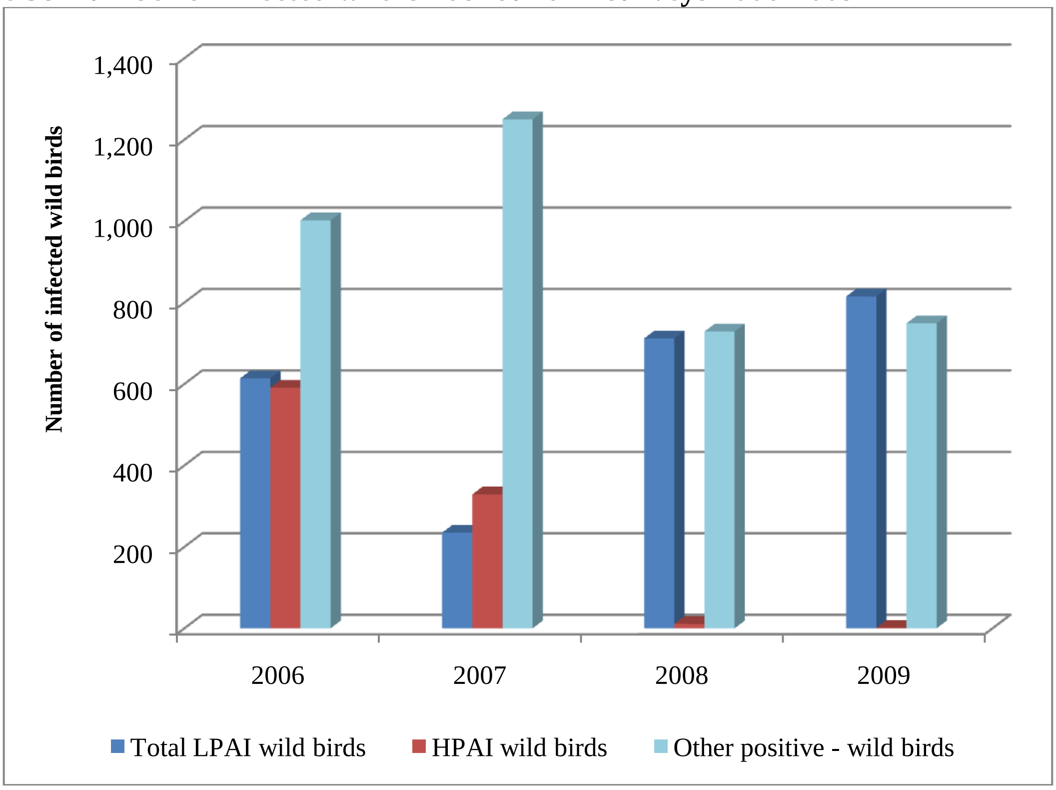
[57] Although Romania was not an EU MS prior to 2007, the country was already reporting AI outbreaks to the EU through ADNS.

Figure 37 Avian influenza, outbreaks in domestic birds, 2000–2009



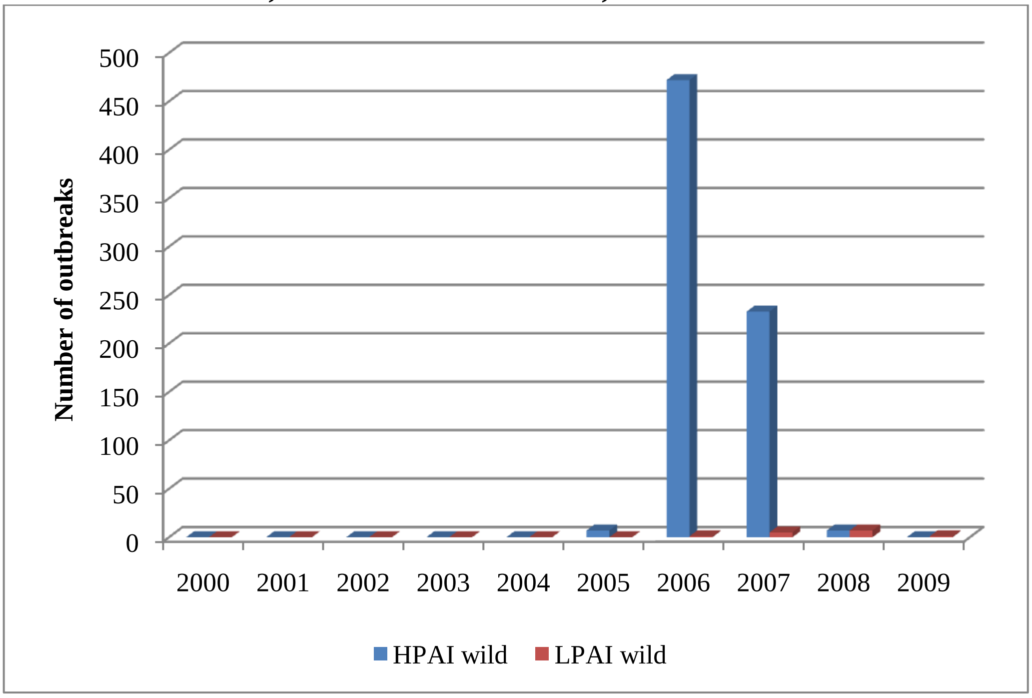
Source: Animal Disease Notification System (ADNS), DG SANCO

Figure 38 Number of infected wild birds found in surveys 2006-2009



Source: DG SANCO- Annual Report on surveillance for avian influenza in poultry and wild birds in the EU in 2006-2010

Figure 39 Avian influenza, outbreaks in wild birds, 2000-2009



Source: Animal Disease Notification System (ADNS)

Table 11 Number of MS reporting AI outbreaks, 2006-2009

	2006	2007	2008	2009
HPAI domestic	6	6	2	0
LPAI domestic	3	3	3	6
HPAI wild	16	5	1	0
LPAI wild	1	4	4	1

Source: Animal Disease Notification System (ADNS)

2.3.5 Analysis of impacts of the programmes

The surveillance programmes have played an important role in the fight against avian influenza by contributing to the early detection of the disease. Early detection allows rapid reaction and effective response by enabling the timely adoption emergency measures to prevent the further spread of the disease. In particular, protection zones can be established around the finding, and control measures can be strengthened. These actions in turn ensure that one incident of avian influenza does not develop into a large scale outbreak which may eventually affect humans. The outbreaks of avian influenza in early 2006 demonstrate this; following findings of dead birds, disease prevention measures were strengthened. While there were many further outbreaks of avian influenza in 2006, these outbreaks almost entirely occurred in wild birds (458), with only 33 outbreaks in domestic birds.

There are various benefits of these overall actions which reduce the incidents of avian influenza. The benefits are particularly strong in relation to domestic birds, due to their economic importance and proximity to humans, and pertain not only to farmers, but to the entire food chain and the wider public.

First, reducing the incidents of avian influenza improves overall animal health and welfare. In general LPAI infections do not cause significant mortality and morbidity and may run subclinical disease course (some HPAI strains can also pass subclinical in various wild bird species). However, HPAI outbreaks do lead to dramatic mortality in poultry flocks, and the prevention of infection in poultry holdings - with subsequent mass culling strategies of infected holdings, and holdings in the protection zone - directly improves animal health and welfare.

Second, fewer incidents of avian influenza in birds reduces the risk of the disease in humans, both amongst farmers and the overall population. This is particularly the case with regards to avian influenza in domestic birds. During the 2003 H7N7 crisis, which strongly affected domestic poultry in the Netherlands, 89 cases of avian influenza in humans were detected, and one human death (a veterinarian who had visited infected poultry holdings), was attributed to the disease. By contrast, during the H5N1 outbreaks of 2006 which were predominantly in wild birds, no cases of H5N1 were detected in humans within the EU.

Thirdly, there are strong economic benefits, again particularly from avoiding incidents of avian influenza in domestic birds. In 2003 there was an outbreak of the HPAI H7N7 strain in the Netherlands. This outbreak resulted in the destruction of 30 million birds and direct economic costs of €150m (European Commission, 2006[58]). Similarly, the spread of H5N1 among domestic and wild birds in Romania during 2005 and 2006, i.e. prior to EU accession, has been estimated to have caused losses of around €200m according to Romanian authorities (USDA, 2006). In addition, 325 tonnes of poultry meat is believed to have been destroyed, and 900,000 backyard birds culled.

Fourth, the control of avian influenza can have beneficial effects on trade. This is best demonstrated during the 2006 outbreaks of H5N1. Following outbreaks in the EU during 2006, until February 2007, some 73 Third Countries imposed bans on poultry and egg products from the EU. While most of these bans applied to specific MS with outbreaks, 13 Third Countries[59] imposed bans on all poultry meat and egg exports from the EU (independent of whether the Member States had reported an outbreak or not). In 2006 these bans caused significant business disruption for the EU exporting producers. Export value of poultry meat has decreased from €927 in 2005 to €806 in 2006. Such bans would continue to affect a sector which accounts for an export value of some €1,136 million (poultry-meat in 2008). The control of avian influenza clearly helps avoid such bans, while the surveillance programme itself can help improve the confidence of trading partners in EU poultry and egg products.

[58] European Commission 2006. Avian Influenza. *Special Eurobarometer 257 – Wave 65.2 –TNS Opinion and Social.* June 2006.

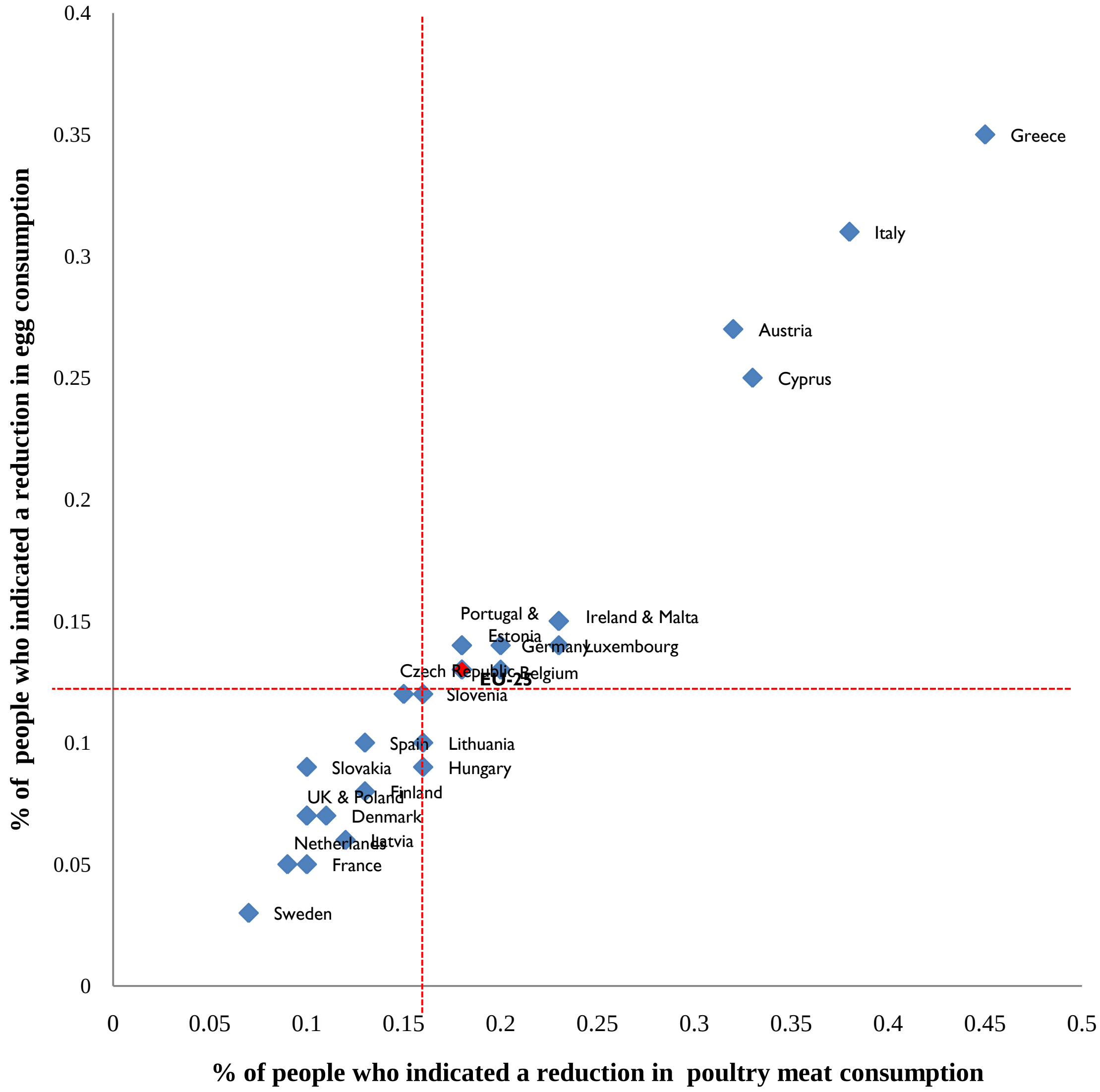
[59] Angola, Azerbaijan, Cameroon, Chile, Egypt, India, Panama, Papua New Guinea, Senegal, Sierra Leone, Syria, Togo, and United Arab Emirates.

Fifth, the surveillance programme provides an additional assurance for the public that the disease is being monitored, which has an impact on market stability in this sector. In this sense, the surveillance programme can complement other measures taken, particularly any control measures, plus exceptional measures for restoring market confidence. The 2006 outbreaks show that consumer confidence can be significantly and adversely affected by avian influenza. Looking at the **impact on demand**, research has identified that consumer attitudes towards poultry meat and eggs were closely related to the development of the avian influenza epidemic (see European Commission, 2006; and Magdelaine et al., 2008[60]). A survey commissioned by the European Commission established the extent of the consumption shocks during the outbreak (European Commission, 2006). Although the majority of consumers had not changed their consumption habits, the survey found that demand for poultry meat was affected (more than the demand for eggs). Specifically, 18% of respondents had reduced consumption of poultry meat, compared to 13% of respondents having reduced their egg consumption (**Figure 40)**. However, the consumption response varied considerably between MS, with reductions in poultry meat and egg demand ranging from 25% to 45% in Greece, Italy, Austria and Cyprus. Producers in Italy and Greece in particular were reporting heavy falls in consumption of poultry meat, up to 80% at one point. This in turn led to oversupply and lower prices, ultimately causing both short and medium term market disruption (first as consumption and prices fell, and then when demand recovered but producers were not adjusting their supply in all cases). In contrast, demand was less affected in Sweden, France, the Netherlands, UK, Latvia, Poland, Slovakia, Denmark, Finland and Spain.

The survey also found that more than three quarters (76%) of the above group (14% of all EU-25 citizens) perceived this change as temporary, while 13% (3% of all EU25 citizens) declared they had reduced their consumption of poultry meat forever. Magdelaine et al (2008) reported that, generally speaking, EU demand had returned to pre-outbreak levels by the summer of 2006. Annual per capita consumption of poultry-meat decreased by 1.7% (2004-2005) and by 0.7% (2005-2006), before consumption returned to the level experienced in 2001 and 2002. Per capita consumption of eggs fell by 4.4% in 2005 and then increased by 1.1% in 2006.The surveillance programmes therefore appear to have a key role to play in improving and maintaining market confidence and stability.

[60] Magdelaine, P., Spess, M.P. and Valceschini, E. 2008 Poultry meat consumption trends in Europe. World's Poultry Science Journal. Volume 64, March 2008

Figure 40: Immediate impact of avian influenza on EU poultry meat and egg consumption



Source: EU Commission (2006)

2.4 Bovine tuberculosis (BT)

Main results – Bovine tuberculosis eradication programmes:

- During the period 2005-09, the EU co-financed bovine tuberculosis (TB) eradication programmes mainly in Italy, Spain, Portugal, and Poland while Cyprus and Estonia have also been minor beneficiaries and Ireland received funding in 2009 only. The total amount of the EU co-financing was €62.4m;

- Epidemiological data for these Member States indicate that between 2005 and 2009 progress has been made in the eradication of the disease. In Italy and Poland, there was a clear decrease in the cases of bovine TB. In the case of Spain, and Portugal the trends are less clear, although even in these Member States there have been some clear successes, with falling epidemiological indicators in the majority of regions.

- Following the successful implementation of the eradication programme, **Poland** obtained “**officially tuberculosis free” (OTF)** status in 2009 as did **several regions of Italy** in the last few years. While Spain and Portugal do not yet hold OTF status, epidemiological data suggest that some regions in these MS have succeeded in eradicating the disease;

- Bovine tuberculosis can have a significant negative economic impact on farmers, ranging from the more direct impacts of testing and culling costs, to broader impacts including movement restrictions, restocking costs and cash-flow impacts. The reduction and eradication of bovine TB can help avoid or reduce these costs;

- It is difficult to judge the implications of the eradication of bovine TB for human health, due to inconsistencies in the data. However, data for the period 2005-07 shows a fall in the number of human cases and continuing low level in 2008 and 2009;

- Bovine TB remains a problem for some MS and some specific regions within MS. Continued monitoring and surveillance is therefore required.

2.4.1 Disease characteristics

Tuberculosis is a serious disease of humans and animals caused by the bacterial species of the family *Mycobacteriaceae*, more specifically by species in the *Mycobacterium tuberculosis* complex. This groupincludes *Mycobacterium bovis* responsible for bovine tuberculosis (EFSA-ECDC, 2011)

Cattle, buffalo and bison, are the natural host of *Mycobacterium bovis*, however nearly all warm-blooded animals are susceptible to the infection. Some wildlife animals act as maintenance hosts (i.e. the species can act as a reservoir for the disease) while others act as

spill-over hosts (the species can be infected but will not act as a reservoir). The fact that some wildlife species (deer, wild boar, badgers and the European bison) can act as reservoir complicates the control of bovine tuberculosis.
Bovine tuberculosis is a chronic disease and it can take years to develop. *Mycobacterium bovis* grows very slowly. Furthermore, infections can remain latent for years and become reactive due to stress or old age.

Early infections of bovine TB are often without symptoms; symptoms aggravate as the disease progresses[61]. In the terminal stages, animals generally suffer extreme weight loss and demonstrate acute problems with their respiratory system. As the primary treatment of bovine TB is the slaughtering of the infected animal, and the disease has the potential to spread quickly among domesticated animals, the disease can have a significant economic impact on the beef and dairy industry.

Mycobacterium bovis can infect humans. The main transmission routes of M. *bovis* to humans are through contaminated food (especially raw milk and raw milk products) or through direct contact with infected animals Person to person transmission of the disease is rare. Tuberculosis in humans due to *Mycobacterium bovis* has become very rare in countries with pasteurised milk and eradication programmes, and occurrences in humans are more likely among those who work with cattle (e.g. farmers and abattoir workers). Some infections are without symptoms, while in other cases the disease can develop shortly after infection, and in some cases it may develop several years later. The disease can be effectively treated, but if untreated can become fatal for humans.

Within the EU, 14 Member States have “officially tuberculosis free” (OTF) status. Regions of two further Member States (UK and Italy) also have OTF status. While more concentrated in Southern and Eastern Europe, the disease is also present in Ireland and the UK (England, Wales and Northern Ireland). The southern and eastern Member States which are not OTF are: Buglaria, Cyprus, Greece, Hungary, Latvia, Lithuania, Malta, Portugal, Romania, Spain and regions of Italy.

2.4.2 Description of the measures funded

Since 1977[62] , the EU started to support financially Member States in their efforts to eradicate bovine- tuberculosis. Each year Member States shall submit to the Commission the annual eradication programme for which they wish to receive an EU financial contribution. The Commission asses the submitted programmes from both the veterinary and financial point of view and approves those that comply with the relevant Union veterinary legislation and with the criteria set out in Decision 2008/341/EC[63], taking into account that the epidemiological situation differs amongst Member States (a tailor-made eradication programme). The financial contribution by the Union is at the rate of 50% within a ceiling, per country and per

[61] The lymph nodes in the animal’s head usually show signs of infection first. Lesions can then begin to develop on the surface of the lungs and chest cavity as the disease progresses. In the latter stages, common symptoms include: progressive weight loss; a mild, fluctuating fever; weakness; and lack of hunger.
[62] Council Directive of 17 May 1977 introducing Community measures for the eradication of brucellosis, tuberculosis and leucosis in cattle (77/391/EEC) *OJ L 145, 13.6.1977, p. 44–4*
[63] Commission Decision of 25 April 2008 laying down Community criteria for national programmes for the eradication, control and monitoring of certain animal diseases and zoonoses *OJ L 115, 29.4.2008, p. 44–46*

year, as specified in the annual Commission's Decision approving the co-financing for each Member States for:

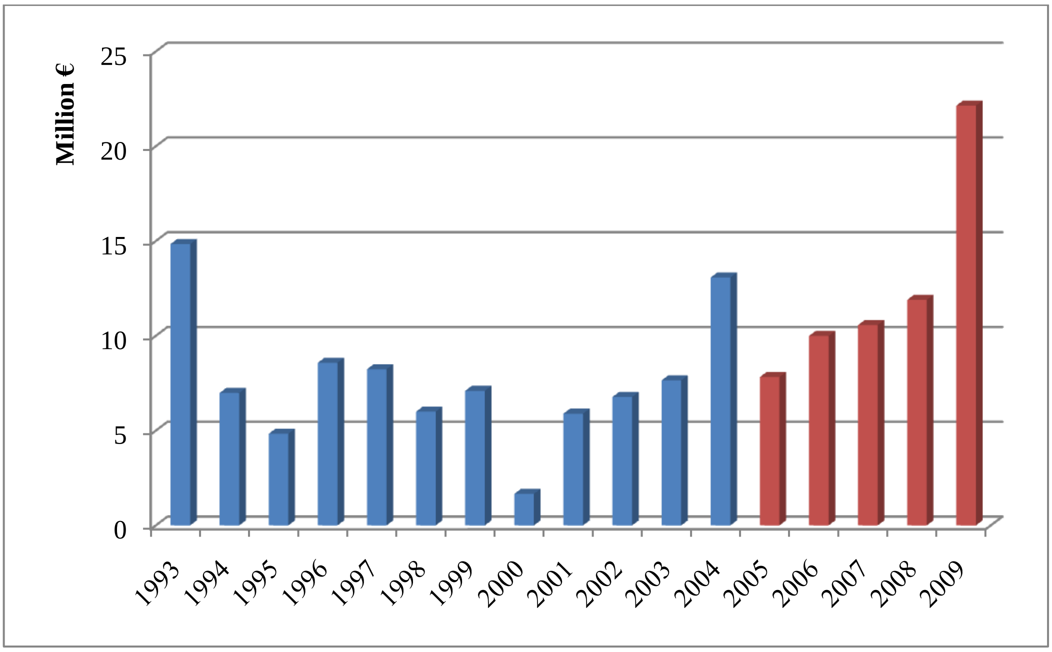
- the cost of carrying out tuberculin and gamma-interferon tests, and;
- the compensation to owners for the value of animals slaughtered subject to the eradication programmes.

Each year, maximum amounts are set for the maximum costs per test and per animal slaughtered. As with eradication programmes for the other diseases, EU funds address only part of larger programmes implemented at MS level, and organisational costs and all the expenditures related to the setting up and management of the programme are borne by the Member States. These components work in synergy and are crucial for their implementation and the success of the programmes.

2.4.3 Overall funding

Figure 41 shows overall funding for co-financed programmes for bovine tuberculosis for the period 1993-2009.

Figure 41 Bovine tuberculosis, EU co-funding (payments), 1993-2009*

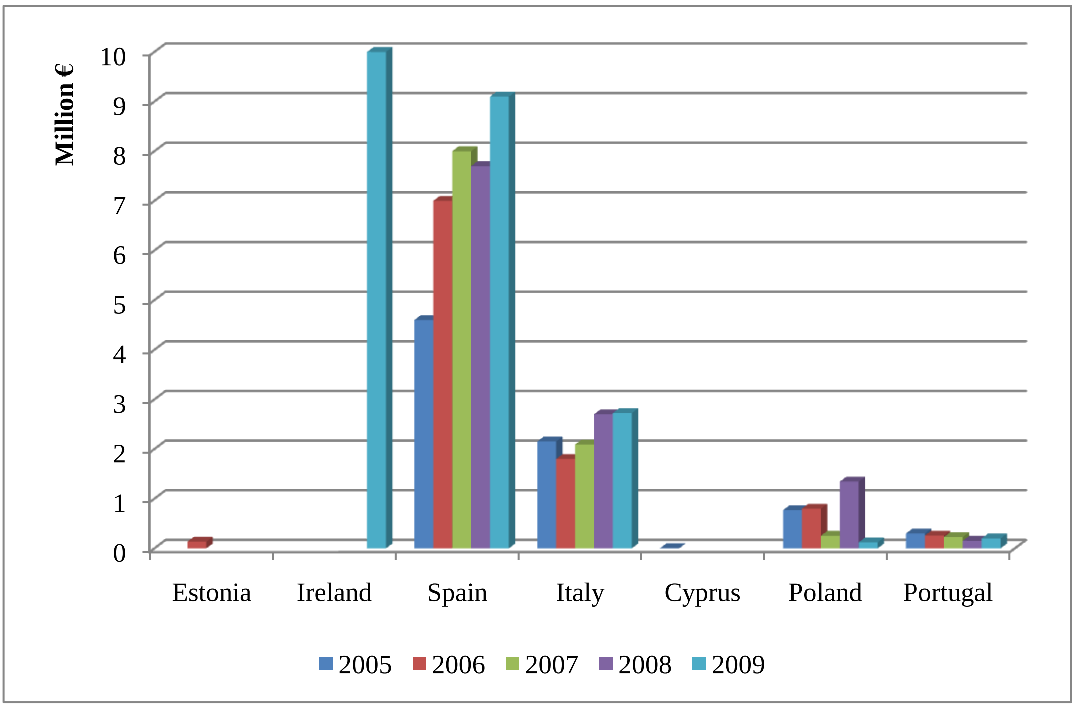


** Note: Ireland started receiving funding from 2009 .*
Source: DG SANCO based on financial decisions from 1993- 2009

The total EU funding shows a clear upward trend since 2005, with a big jump between 2008 and 2009. Indeed, except for 2004, the funding shows a continuous upward trend from the low point of 2000. One might expect the high level of expenditure in 2004 to be explained by the accession of the EU-10; however in reality only a small proportion of funds (around €230,000) were attributed to EU-10 countries in 2004. A large part of expenditure in 2004 can be attributed to two Member States: Spain and Ireland, with €3.75million and €4.5million respectively. Between 2005 and 2008, Ireland submitted programmes that did not meet the EU criteria and legislation and were not approved. This fact explains why funding dipped in

2005 before returning to an upward trend. In 2009, Ireland submitted an eradication programme that was approved by the Commission and then received funding of €10million, which partly explains the large increase between 2008 and 2009.

Figure 42 Bovine tuberculosis, EU co-funding (payments), by MS, 2005-2009



Source: DG SANCO based on financial decisions from 2005- 2009

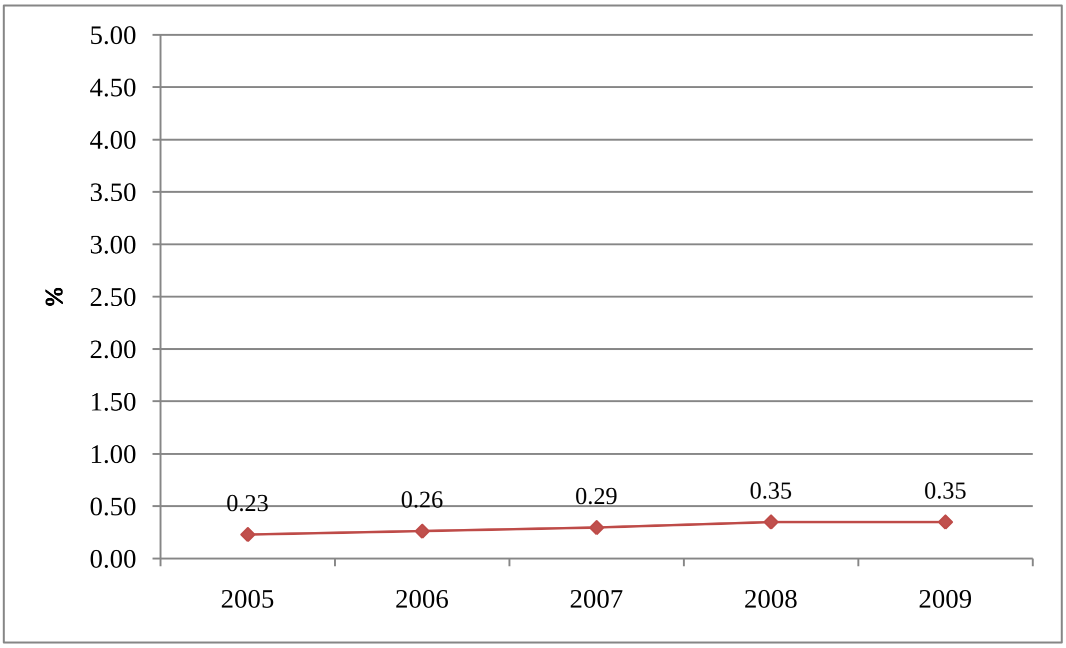
Figure 42 shows co-funding by MS for the period 2005-2009. Spain has been the biggest beneficiary, and has received funding each year since 2005 (indeed it has received funding every year since 1993 with only two exceptions). Italy, which has received funding in every year since 1999, is the next largest beneficiary. Poland and Portugal are further significant beneficiaries. Estonia and Cyprus only submitted programmes for one year of the period under review, and for small amounts.

Ireland received funding between 2000 and 2004, and, as already mentioned did not receive funding between 2005 and 2008. Then a programme has been submitted and approved in 2009. Due to the fact that the country received funding only for 2009, the BT eradication programme in Ireland has not been assessed in this study.

Figure 43 shows the animal prevalence of bovine tuberculosis across the EU for MS benefiting from funding between 2005 and 2009. The increase in animal prevalence is mainly due to problems related to the presence of wildlife reservoir in Ireland (see **2.4.4**)

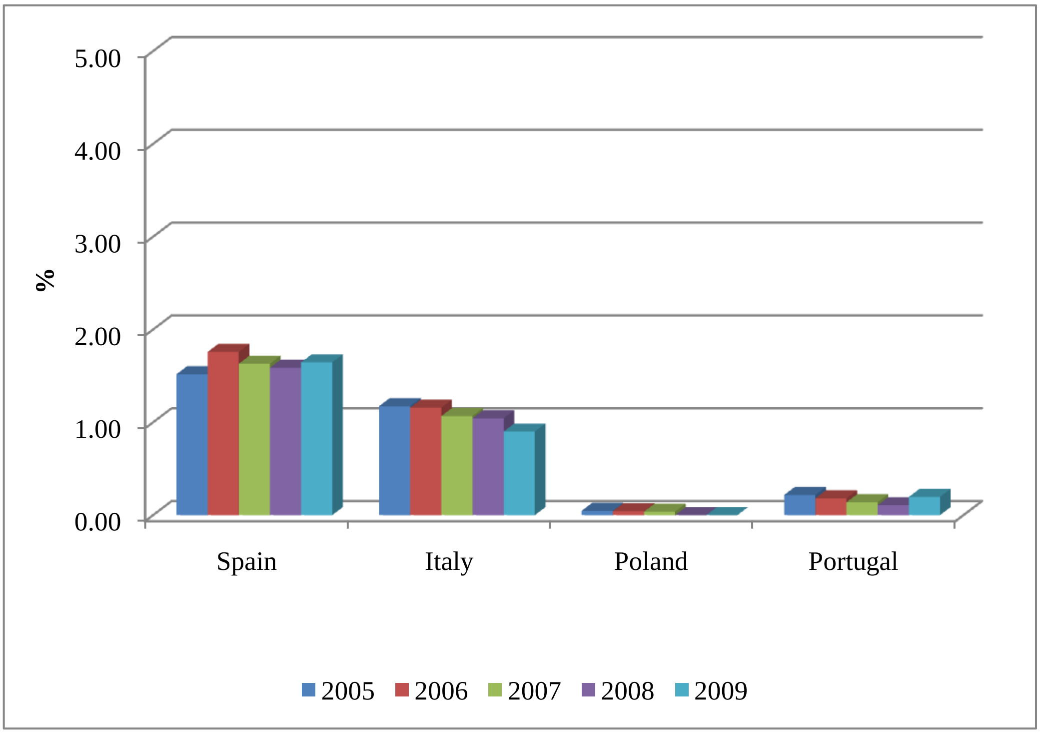
Figure 44 shows the herd prevalence of bovine tuberculosis in individual MS benefiting from funding between 2005 and 2009.

Figure 43 Bovine tuberculosis animal prevalence in the EU (funding beneficiary MS)* 2005-2009



**Note: this includes: Spain, Portugal, Ireland (2009 only), Italy, Poland (until 2007).*
Source: FCEF based on bovine tuberculosis eradication programmes 2005-2010-Spain, Italy, Poland, Portugal

Figure 44 Bovine tuberculosis, herd prevalence in MS with co-funded programmes*, 2005-2009



**Note: Cyprus and Estonia have been excluded*
Source: DG SANCO- bovine tuberculosis eradication programmes 2005-2010-Spain, Italy, Poland, Portugal,

2.4.4 Analysis of key results of the programmes

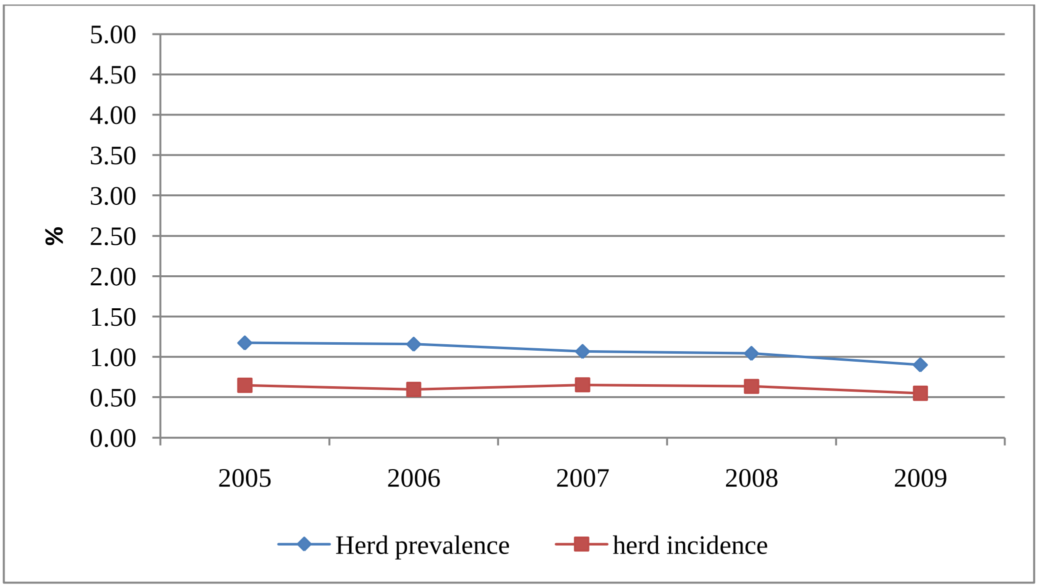
Italy

Italy has a cattle population of roughly 4million animals (2008 figures), concentrated mostly in the north of the country, the south-west and Sicily. It also has a buffalo population of around 320,000 animals, and these are in the more southern regions of Lazio and Campania.

The Italian eradication programme is currently regionalised. The testing interval of cattle currently depends on the regional TB prevalence, plus regional policies. According to a ministry ordinance of 2006, in the four regions were the eradication of bovine TB (Calabria, Campania, Puglia and Sicilia) is still difficult, all animals must be identified with electric boluses or special ear tags. The same ordinance also specifies that animals responding positively to the tuberculin test must be slaughtered within 15 days. The Italian ministry intends to change the legislation on bovine TB to cover the entire country with one plan in order to avoid regional differences in legislation.

Nationally, there is a trend of decreasing prevalence, and the gap between the figures for prevalence and incidence is gradually decreasing, indicating that infected herds are clearing more quickly. In non-OTF regions, prevalence was 1.03% in 2008 and 0.89% in 2009. Incidence was 0.64% in 2008 and 0.55% in 2009. **Figure 45** shows herd incidence and prevalence for cattle herds for the period 2005-08 in non OTF MS.

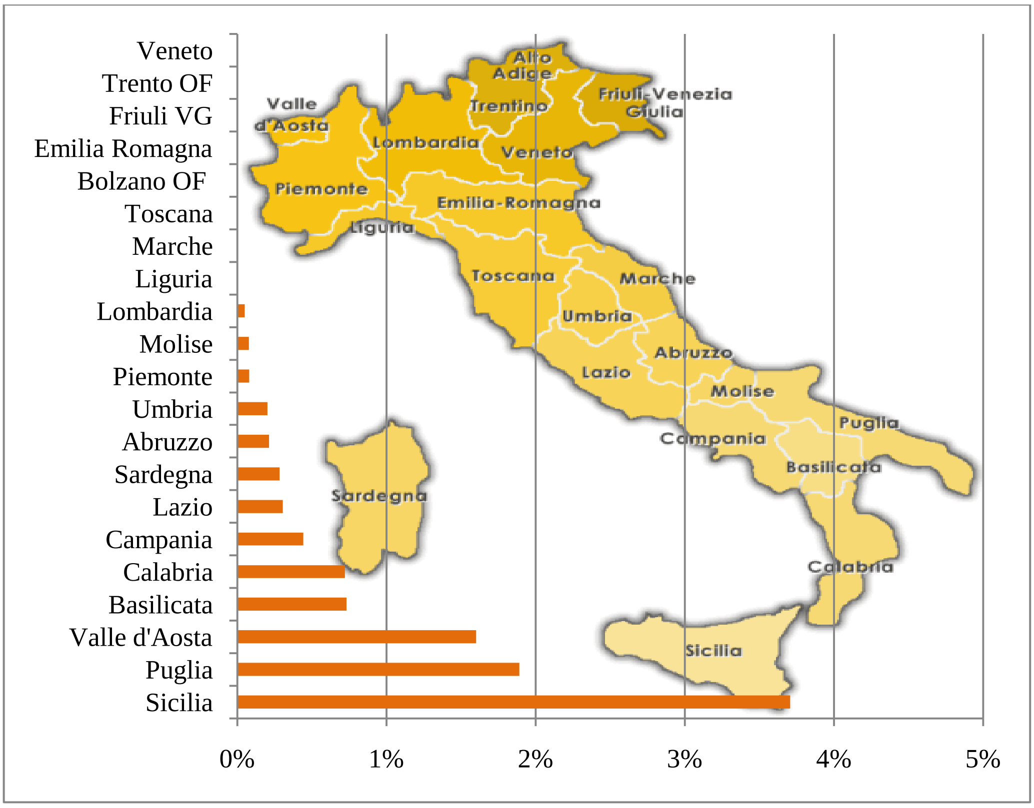
Figure 45 Herd prevalence and herd incidence of bovine TB among cattle herds in Italy, 2005-2009



Source: DG SANCO- bovine TB eradication programme 2011, Italy

As already mentioned, rates of prevalence and incidence differ greatly between regions. **Figure 46** shows herd prevalence among cattle by region in 2008. In seven regions (Bolzano, Emilia Romagna, Friuli Venezia Giulia, Trento, Umbria and Veneto) bovine TB was not present in any herds[64]. In a further 12 regions, the rate of prevalence was under 1%. The regions which stand out as having high rates of prevalence are Sicily and Valle d'Aosta. Since 2005, the rate of prevalence has declined in Sicily, but increased in Valle d'Aosta.

Figure 46 Herd prevalence of bovine TB in cattle herds in Italy by region, 2009



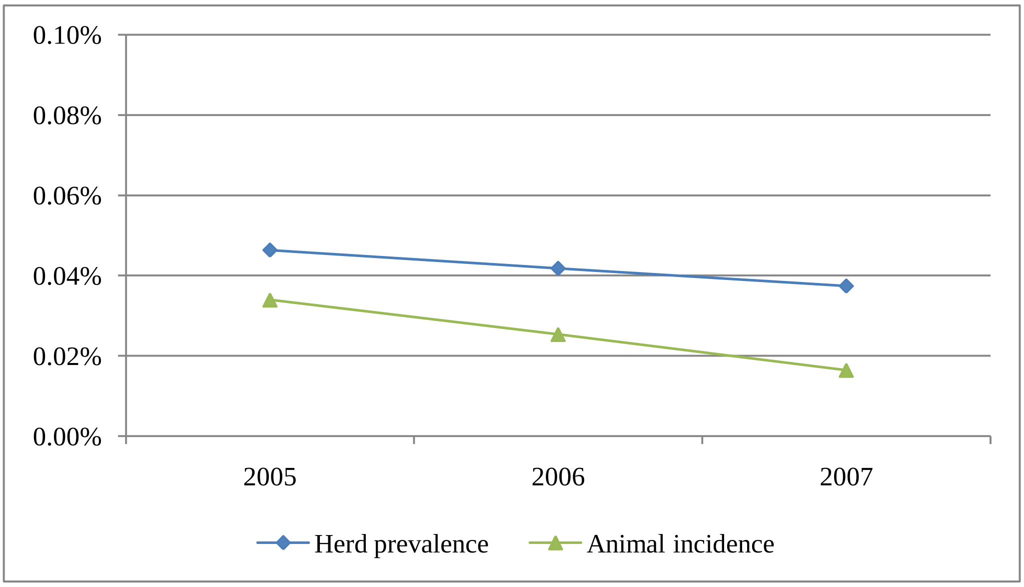
Source: DG SANCO- bovine TB eradication programme 2010, Italy

Poland

Measures were taken for the first time to tackle bovine TB in Poland in 1927. After 1945 the measures were stepped up. In 1976 the country was deemed to be free of the disease but monitoring continued with 1/3 of the bovine population of each territory (entity defined for disease monitoring purposes) monitored each year. During 2009, the last year for which Poland entered a programme, eradication was regulated by the Decree of the Minister of Agriculture and Rural Development of 17 December 2004 on defining disease entities, the procedure for conducting inspections and the scope of tests checking for animal infections. According to this Decree, 1/3 of bovine herds located on a territory must be checked each year. According to 2009 figures, Poland has 5.8m cattle; these are mainly dairy cattle. Poland obtained OTF status in January 2009, which explains why expenditure for 2009 was low and why no programme has been submitted since then.

[64] There were gaps in the data for the following regions: Bolzano, Emilia Romagna, Friuli VG, Trento and Veneto. However, all of these regions hold OTF status.

Figure 47 Herd prevalence and animal incidence in Poland, 2005-2007



Source: DG SANCO bovine TB eradication programme 2008, Poland

Figure 47 shows the rate of herd prevalence and animal incidence of bovine TB in Poland for the years 2005-07. The figure clearly shows that the rate of both herd prevalence and herd incidence is very low (under 0.1%) and falling, with animal incidence falling below 0.02% in 2007. According to the Report of bovine tuberculosis Task Force sub-group (DG SANCO, 2009f)[65], the successful implementation of bovine tuberculosis in Poland is the result of long-standing efforts, experience and skill. This has resulted in the favourable situation of today and granting of OTF status of the country.

Spain

First actions to eradicate bovine TB were taken in Spain in the 1950s. In 1965 the government adopted a national plan to combat the disease. Since accession to the EU (1986), programmes for eradication have been accelerated.

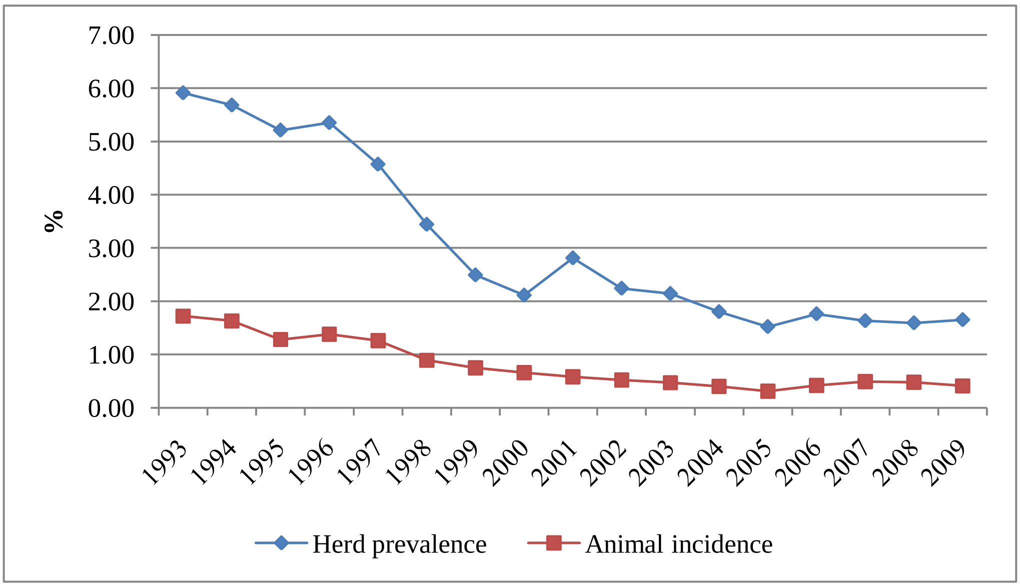
The national eradication programmes for the period 2006-10 have involved changes in the methods of setting objectives by the adoption of a multi annual approach. This makes it possible to establish a number of measures that remain constant over the years (though obviously annual programmes may need to be adapted based on developments). A key feature of the programmes for the period 2006-10 was an increase in diagnostic sensitivity, for example through increased frequency and standardised protocols for performing tests.

Figure 48 shows the prevalence and incidence of bovine TB for the period 1993-2009. This clearly shows a downward trend, with the levels of prevalence and incidence levelling off around 2004. With regards specifically to animal incidence, there was a clear downward trend up until 2005, at which point incidence increased slightly. The increases in 2006 and 2007 can be partly attributed to the large number of additional gamma-interferon tests carried

[65] DG SANCO 2009f. *Report on the Task Force Meeting of the "Rabies" Sub-Group*. Vilnius, Lithuania, 27-28 October 2009

out, and, the strict interpretation of the IDTB test. As of 2009, Spain had roughly 6.3 million cattle, 4.8 million of which were covered by the eradication programme, and 4.7 million of which were tested during the year 2009.

Figure 48 Bovine TB in Spain, herd prevalence and animal incidence 1993-2009

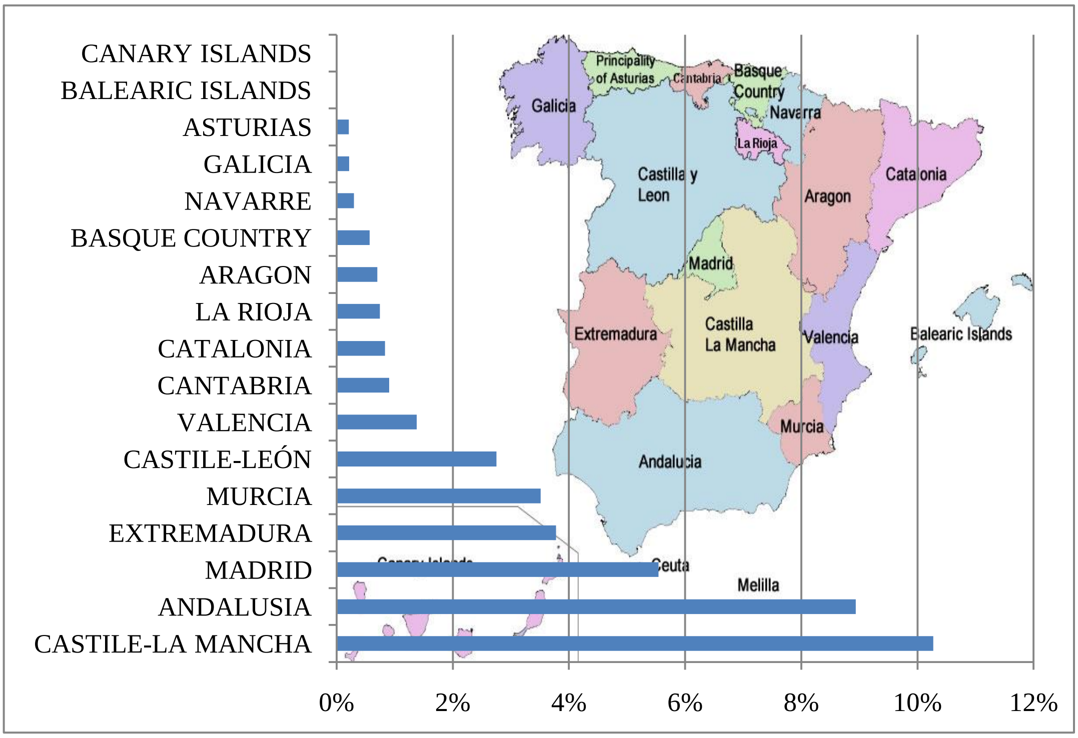


Source: DG SANCO – bovine TB eradication programme 2011, Spain

While no regions within Spain hold OTF status, the prevalence and incidence of bovine TB do vary greatly between regions, as shown by **Figure 49** and Figure **50**. **Figure 49** shows that as of 2009, there were two regions (the Balearic and Canary Islands) where no bovine TB was detected. It also shows that in eight regions (Aragon, Asturias, Cantabria, Catalonia, Galicia, Navarre, the Basque Country and La Rioja) herd prevalence is less than 1%, and indeed in some of these regions (Asturias, Galicia and Navarre) it is under 0.5%. It should be noted that this has not always been the case; in 2005, all regions contained infected herds, and only five regions had herd prevalence rates below 1%. Based on 2009 figures, Andalusia and Castilla-la-Mancha stand out as having particularly large levels of herd prevalence, though they contain a relatively low share of all herds in Spain (6% and 2% respectively).

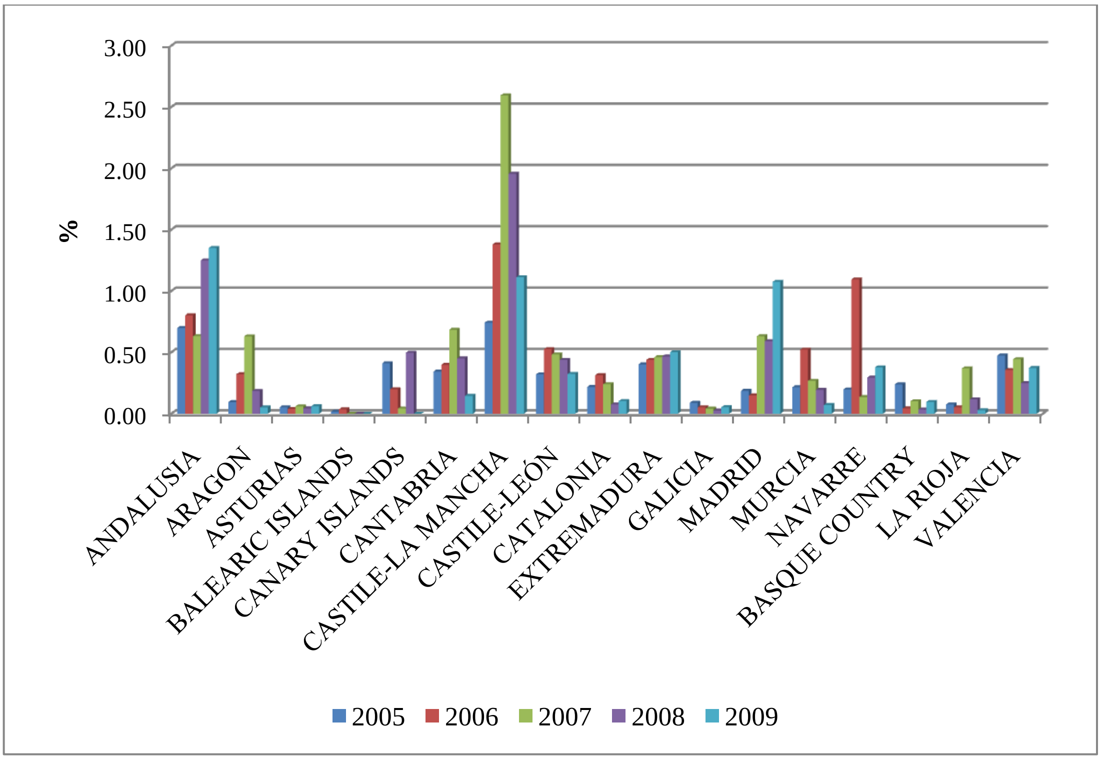
Figure 50 more specifically shows how animal incidence evolved over the period 2005-09. While it is difficult to identify clear trends, animal incidence does appear to have fallen in several regions (such as Galicia, Murcia, the Basque country and the island regions). Animal incidence has clearly risen in only three regions; Andalusia, Madrid and Extremadura.

Figure 49 Bovine TB in Spain, herd prevalence by region (2009)



Source: DG SANCO- bovine TB eradication programme 2010, Spain

Figure 50 Bovine TB in Spain, animal incidence by region, 2005-2009



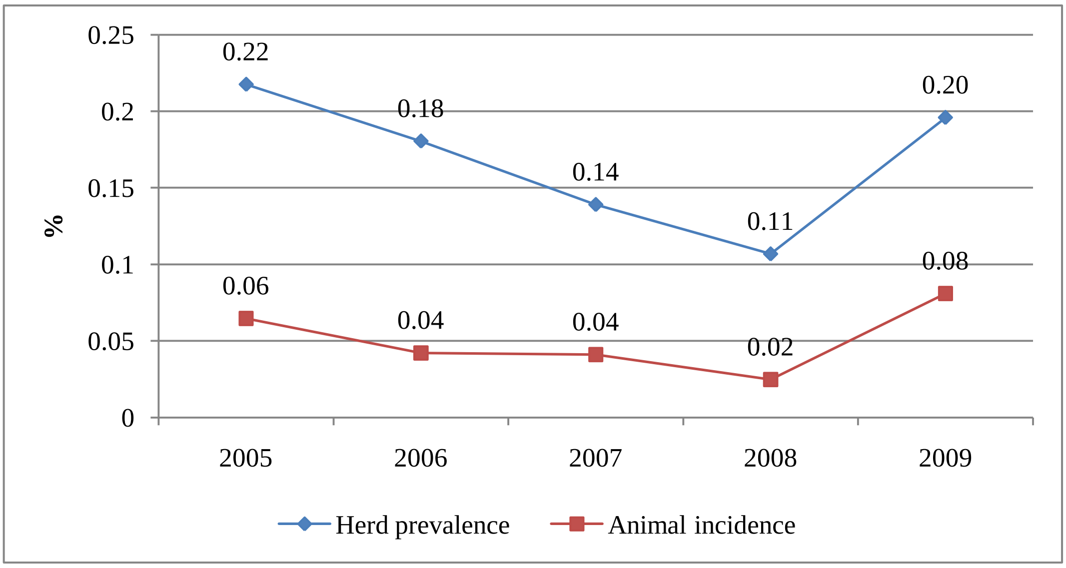
Source: DG SANCO- bovine TB eradication programme 2010, Spain

Portugal

In 1992, the EC approved a three-year eradication plan for bovine TB submitted by Portugal. While Portugal did not benefit from EU funding between 1995 and 2000, the country continued the fight against bovine TB. Since 2001, Portugal has received funding every year for the eradication of the disease. The country now considers itself to be in the final difficult phase of eradication, and this is backed up by the low levels of herd prevalence and animal incidence.

Sampling in Portugal includes both non-OTF and OTF herds. The latter are tested in order to maintain their officially free status. Animals which test positive are slaughtered on health grounds, and animals in infected herds which present inconclusive results are also slaughtered. The most recent plan also includes further measures such as quarantine measures, re-stocking measures following depopulation of a herd, as well as cleaning and disinfection measures for holdings and transport.

Figure 51 Herd prevalence and animal incidence of bovine TB in Portugal, 2005-2009



Source: DG SANCO Bovine TB eradication programme 2010, Portugal

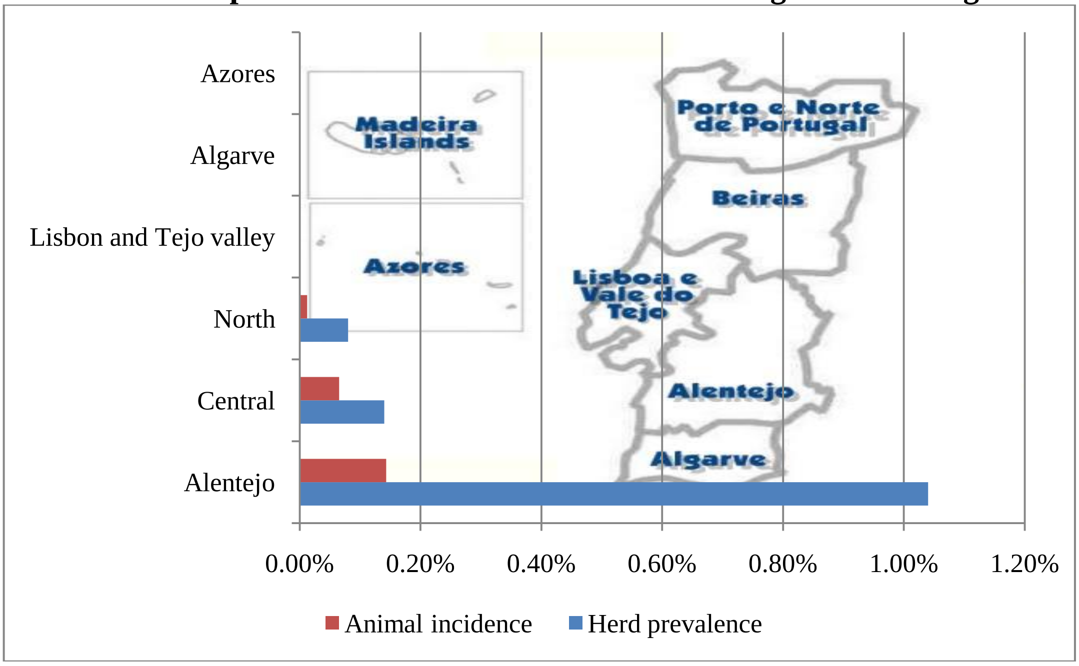
As shown by **Figure 51,** animal incidence and herd prevalence in Portugal show a general downward trend over the period 2005-09, but both increased significantly in 2009 due to problems in the Central and Alejento regions, where the largest farms are situated

However, national level statistics do not tell the whole story; there are significant regional differences [66](**Figure 52**). Prevalence and incidence have been highest in the Alentejo region in recent years, and it is also the only region where herd prevalence was higher in 2009 than 2005 (1.04% compared to 0.76%), though it did dip in-between. Indeed, the 2009 increase in animal incidence and prevalence can be mainly explained by the increase in Alentejo. In contrast, the Algarve has had no incidence of bovine TB for several years, and according to

[66] It should be noted that regional divisions in Portugal were redefined in 2007, making it therefore difficult to make comprehensive comparisons.

the 2009 survey, no incidence of bovine TB was found in the Lisbon and Azores regions either (in previous years, bovine TB had always been detected in both of these regions).

Figure 52 Bovine TB prevalence and incidence in different regions of Portugal in 2009



Source: DG SANCO-Bovine TB eradication programme 2010, Portugal

Ireland

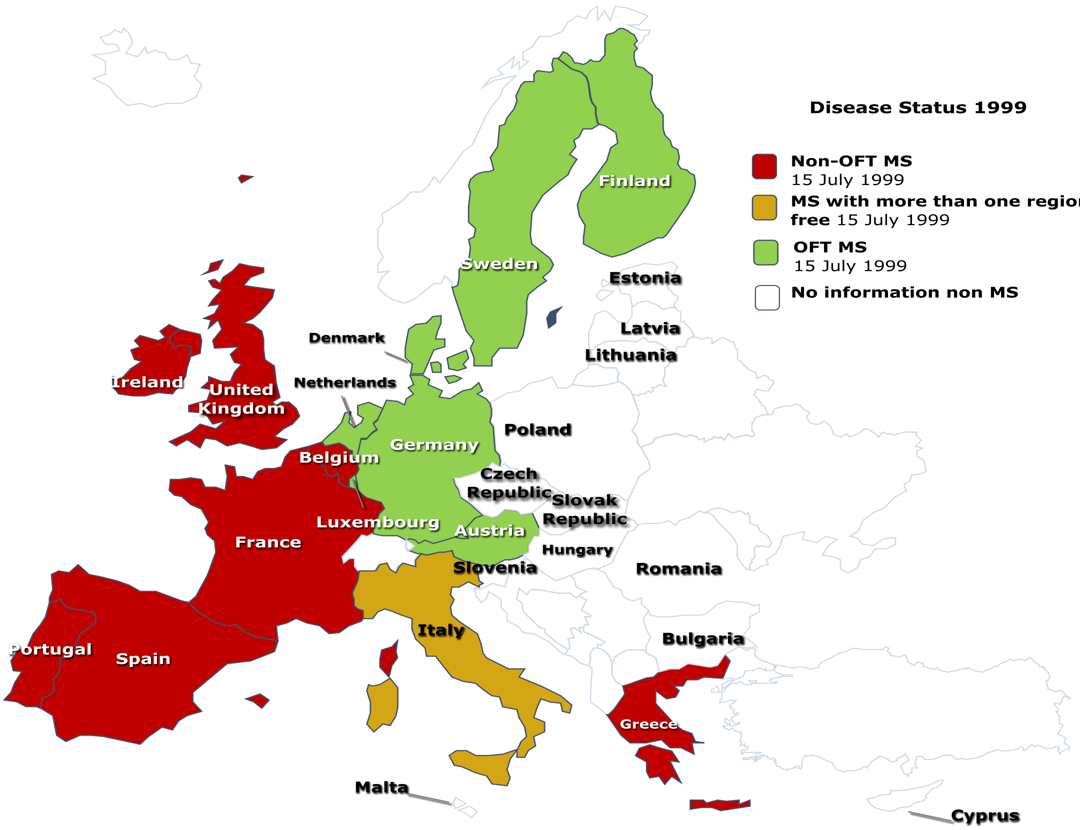
A programme for the eradication of bovine TB in Ireland was started in 1954. Between 1954 and 1965, the programme had strong results, reducing animal incidence of the disease from 17% to under 0.5%. Since 1965, animal incidence has fluctuated between 0.3% and 0.6%. In the late 1980s, badgers were identified as a wild reservoir for bovine TB, and as a result measures have been taken to target bovine TB in badgers since the early 1990s. In 2009, animal incidence was 0.4%, having peaked at 0.59 in 1999.

As already mention between 2005 and 2008, Ireland submitted programmes that did not meet the EU criteria and legislation and were not approve. In 2009, the European Commission approved again the eradication programme submitted by Ireland which met the requirements. Due to the fact that Ireland received funding for 2009 only, the Irish TB eradication programme is not analysed in this study.

2.4.5 Analysis of effects of the programmes

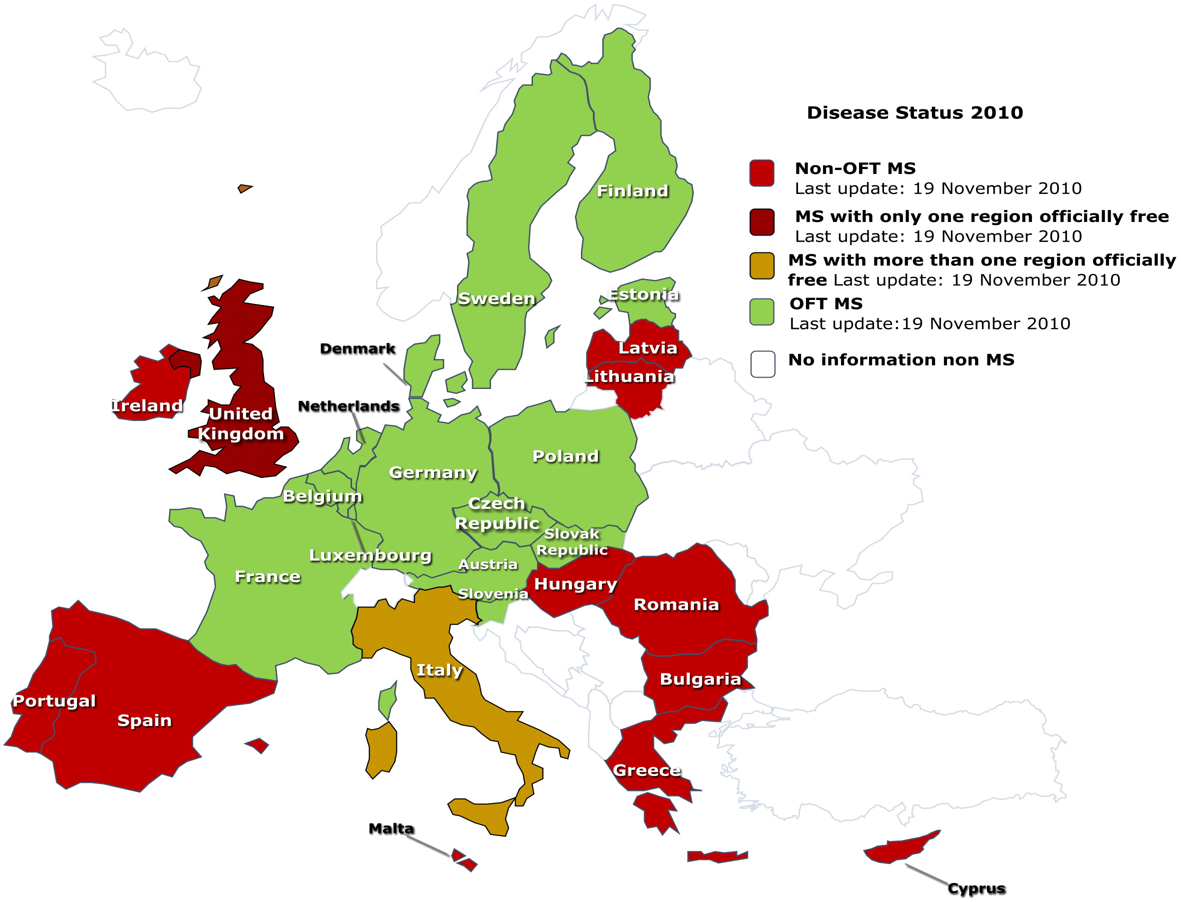
Map 12 and **Map 13** compare the OTF (officially free from bovine TB) status of MS the 1999 and 2010. As discussed in the key results section, there have been positive developments during the last 10 years. Some Member States and regions of Member States have been recognised as OTF following the successful implementation of the programmes. At the same time, countries which were free of the disease have managed to maintain their OTF status. More specifically for the period under review, Member States which have obtained OTF status since 2004 (i.e. MS obtaining OTF status during the period under review) are: Slovakia, Slovenia, Estonia and Poland. In addition, various provinces of Italy have obtained OTF status, as has Scotland in the UK. It should also be noted that as of 2009, regions of some Member States were effectively free of TB, although they did not hold OTF status. These included: Canary and Balearic Islands (Spain), and Algarve, Lisbon and Azores (Portugal).

Map 12 MS holding OTF status in 1999



Source: FCEC elaboration based on relevant Commission Decisions

Map 13 MS holding OTF status in 2010



Source: FCEC elaboration based on relevant Commission Decisions

2.4.6 Analysis of impacts of the programmes

Human health effects

It is difficult to judge the impact of the bovine TB eradication programmes on human health due to gaps in the available data; not all MS collect data, and the method of reporting differs between Member States. In addition, there is not enough testing to separate bovine TB from human TB when tuberculosis is found in humans. It is generally believed that between 1 and 10% of cases of tuberculosis in humans is caused by bovine TB.

Data from EFSA indicates that there has been an overall fall in the number of cases of bovine TB in humans during the period 2005-08 (though the number of cases reported in 2008 was higher than that in 2007). According to EFSA data, in 2008, the majority of cases (60%) were in the UK and Germany. While, the total number of cases in the UK was lower than in the previous year, in Germany it was higher. As in other years, the majority of cases in 2008 were in people over 65 years old.

In summary, the eradication of bovine TB in cattle undoubtedly had positive knock on effects on human health by reducing the chance that the disease would be transmitted to humans.

The data available, despite their limitations, suggest that on aggregate the number of cases of bovine TB in humans fell over the period 2005-08.

Economic effects

The eradication of bovine TB has clear economic benefits for farmers.

First, the eradication of bovine TB allows farmers to avoid direct losses connected to the disease. The University of Exeter in the UK (Bulter et al 2005[67]) looked into the issue of economic impacts of TB on farmers in south-west England. The study found that for most farmers, the cost of a bovine TB outbreak in a bovine herd was under £20,000 (the average cost was around £10,000). The cost in dairy herds was found to be greater than the cost in beef herds. The majority of the costs of an outbreak could be attributed to the value of the cattle slaughtered (65% in the case of dairy farms, and 66% in the case of beef farms). This evidence both supports the importance of the eradication of bovine TB, and the importance of the compensation measures which are available in the EU's eradication programmes.

Second, as regions obtain bovine TB free status, the frequency of testing in the region may be reduced, hence causing a reduction in the overall cost of testing.

Third- with the eradication of bovine TB, herds are released from animal movement restrictions and hence farmers can both trade with trading partners (both inside and outside the EU) and increase the value (quality) of their product.

Fourth, the Exeter University study also identified additional, often long-term economic impacts on farmers from both one-off and persistent TB outbreaks. General impacts included: movement restrictions, subsequent overstocking, pressure on facilities, and the need to purchase inputs which were normally home-produced. Specifically in the case of persistent outbreaks, farmers commented that in addition to considerable uncertainty about their business in the future, it was sometimes necessary to take out loans in order to avoid cash-flow difficulties. The reduction of bovine TB therefore helps reduce the number of farmers suffering such impacts.

[67] Butler A., Lobley M., Potter C., 2005 *The wider social impacts of changes in the structure of agricultural businesses.* The University of Exeter, Centre for Rural Research, Exeter

2.5 Brucellosis

2.5.1 Disease characteristics and distribution in the EU

Brucellosis is an infectious and contagious disease caused by bacterial species of the genus *brucella (except B. ovis).* It is a major zoonosis with an important social and economic impact (direct and indirect losses).

There are six species known to potentially cause human disease and each of these has preferred animal hosts: *B. melitensis* in goats and sheep, *B. abortus* in cattle and buffalo, *B. suis* in pigs, *B. canis* in dogs and *B. ceti* and *B. pinnipedialis* in marine animals. *B. microti* and *B. neotomae* occur in wild rodents but have not been implicated in human infection.

The main economical damage in livestock is caused by fertility problems, in both female and male animals (cattle, sheep and goats). Clinical signs in female animals are abortion, retained placenta, reduced milk yield and reduced fertility, and in males infertility due to unilateral orchitis and epididymitis. The bacterium is transmitted easily among susceptible animals, especially after abortion when large amounts of infectious bacteria are released into the environment.

Brucellosis in humans is mostly caused by *brucella melitensis*, originating from sheep and goats, and *brucella abortus*, originating from cattle. The first isolation was performed by Bruce in 1887 in soldiers in Malta, giving the disease its first name of ‘’Malta fever”’, but it took two decades to identify goats on the island as the source of infection for the soldiers. Other *brucella* species, such as *brucella suis* in swine, can infect humans, but generally pose less risk. in humans the disease is mostly an occupational or food-born infection, notably for veterinarians, butchers, slaughterers, and people in rural areas. It is also a laboratory-acquired infection. Transmission of the infectious bacteria to humans can occur after exposure to infectious materials such as aborted foetuses, uterine excreta, retained placenta, and by consumption of unpasteurised milk or fresh cheese. Airborne infection is also possible. There are no licensed vaccines for humans.

Brucellosis in cattle (*B. abortus*) in sheep and goats (B. *melitensis*) and in swine (B. *suis*) are diseases listed in the OIE Terrestrial Animal Health Code and must be reported to the OIE.

In Europe, the disease is geographically concentrated in southern European Member States. In the case of bovine brucellosis, the disease is present in Greece, the Southern Regions of Italy, in Spain, in Portugal and Cyprus (at very low level). In 2010, 15 MS were ‘**officially brucellosis free**’ (OBF) for cattle and 19 Member States were “**officially *brucella. melitensis* free”(ObmF)**; in Ireland bovine brucellosis has been fully eradicated and the country has achieved the OBF status in 2009, whereas in Northern Ireland the disease is present at very low prevalence levels; additionally some regions and provinces were also officially free from brucellosis: in Italy 8 regions and 13 provinces were OBF and 10 regions and 7 provinces were ObmF; in Spain AC of the Balearic Islands was ObmF and two provinces in the Autonomous Regions of the Canary Islands in Spain were both ObmF and OBF; In Portugal the majority of the Azores islands were both Obmf and OBT; and Great Britain in the United Kingdom are OBF, while the whole country is ObmF (see **Map 16** and **Map 20**).

In order to assess and advise Member States and Commission in the design and improvement of brucellosis eradication programmes, two brucellosis subgroups were created in 2000 in line with action foreseen in the Commission White Paper on Food Safety: the bovine brucellosis (BB) and sheep & goat brucellosis (S&GB) subgroups. Task Force Meetings (DG SANCO,2006d[68]), including central and local veterinary authorities, laboratories, veterinary practitioners and stakeholders, take place in those Member States where programmes are implemented. As a result, a working document including conclusions and recommendations is provided to the Member States and published online, in order to improve both the effectiveness and the cost-benefit of co-financed eradication programmes. Since their establishment, the BB TF subgroup has met 13 times and the S&GB TF subgroup met 11 times.

Along with TF reports, the final technical assessment of the programme is also based on findings by FVO missions in Member States where programmes are in place. The outcomes of the missions are included in a FVO final report which evaluates the effectiveness of the measures implemented for a certain year.

Bovine brucellosis is one of the main target diseases of Council Directive 64/432/EEC[69], which establishes rules for intra-EU bovine trade, including requirements for cattle herds and country qualification as officially free, while rules for intra-EU trade of ovine and caprine animals and country qualification as officially free from ovine and caprine brucellosis caused by *B. melitensis* (ObmF) are laid down in Council Directive 91/68/EC[70].

[68] DG SANCO 2006d. *Working Document on eradication of Bovine Tuberculosis in the EU accepted by the Bovine tuberculosis subgroup of the Task Force on monitoring animal disease eradication*.
[69] Council Directive 64/432/EEC of 26 June 1964 on animal health problems affecting intra-Community trade in bovine animals and swine, as last amended by Commission Decision 2007/729/EC. OJ L 121, 29.7.1964, p. 1977
[70] Council Directive of 28 January 1991 on animal health conditions governing intra-Community trade in ovine and caprine animals *OJ L 46, 19.2.1991, p. 19–36*

2.5.2 Bovine brucellosis

Main results – Bovine brucellosis eradication programmes:

- Over the period 2005-2009, the EU has co-funded bovine brucellosis eradication programmes in six Member States (Cyprus, Ireland, Italy, Northern Ireland, Portugal and Spain), for a total amount of € 56.6 million; The major beneficiaries of funds have been those countries, where the disease is most prevalent, and where the population of cattle and the economic weight of cattle production are highest, namely Spain, Ireland, and Portugal. The decrease in funding over the years 2005-2009 reflects the decrease in funding granted to Spain, given the successful results of the programme;

- Only some parts of the EU are still affected by the disease and on the whole good progress has been made over the last five years. Epidemiological data for these countries indicate that, since 2005, the incidence of brucellosis in cattle tested in the Member States having co-funded programmes has either decreased or remained at a low level in most of the Member States receiving such co-financing (Cyprus, Ireland, Northern Ireland and Spain). In Portugal and Italy, due to particular and exceptional circumstances related to implementation in certain regions greater variations at regional level apply, but still improving;

- The successful implementation of the programmes has resulted in the granting of 'Officially Brucellosis Free' (OBF) status for the Republic of Ireland (2009) as a whole, several regions and provinces in Italy, and the Canary Islands in Spain. Furthermore, in the majority of MS the proportion of infected herds in the total number of herds has been decreasing during the period;

- From an economic perspective, the successful implementation of the programmes has yielded benefits resulting from the avoidance of direct losses for farmers from the cost of morbidity and the cost of reduced production. In terms of the costs of the programme, the improved health status of the herd has determined a reduction in number and the frequency of sampling as well as in the number of slaughtered animals. One of the main positive impacts of the eradication programmes has also been the removal of barriers to trade, and therefore, the avoidance of indirect losses for operators. As the percentage of accredited holdings increases, the commercial potential of the products increases, and the movement of animals and animal products is facilitated. This is particularly relevant as regards the movement of animals for the purposes of intra-EU trade;

- The success of the implementation of the eradication programmes in bovine/buffalo has lead to a very significant reduction of bovine/buffalo brucellosis in the EU, and, as a consequence, also a significant reduction in human brucellosis cases with a solid decreasing trend in the last decades: that is a major impact in terms of reduction of risk of infections for humans and gives an idea of the success of the programme;

- The persistence of pockets of this zoonotic disease in some Member States linked to a specific situation (some regions of southern Italy) still require continued monitoring and surveillance, as well as eradication efforts.

2.5.2.1 Description of measures funded

Since 1977[71], the EU started to support financially Member States in their efforts to eradicate bovine- tuberculosis. Each year Member State shall submit to the Commission the annual eradication programme for which they wish to receive a EU financial contribution. The Commission asses the submitted programmes from both the veterinary and financial point of view and approves those that comply with the relevant Union veterinary legislation and with the criteria set out in Decision 2008/341/EC[72], taking into account that the epidemiological situation differs amongst Member States (a tailor-made eradication programme). The financial contribution by the Union is at the rate of 50% within a ceiling, per country and per year, as specified in the annual Commission's Decision approving the co-financing for each Member States[73] for:

- the laboratory tests;
- the purchase of vaccines (where applicable); and
- the compensation to owners for their losses due to slaughter of animals subject to those programmes[74].

It is noted that the EU funding addresses only part of larger programmes implemented at MS level; organisational costs and all the expenditures related to the setting up and management of the programmes are borne by the MS. These components work in synergy for the success of the programmes and are crucial for their implementation and success.

Protection of humans from infection can be achieved by prevention of exposure to animal sources (transmission of the disease between humans is very rare). This can be achieved by better public awareness, including on basic food safety measures such as heating milk before consumption and avoiding the consumption of unpasteurised dairy products, but above all by the reduction (and ultimately eradication) of the prevalence of the disease in cattle, sheep and goats.

In regions where the disease prevalence is high, eradication policy by testing and culling of the infected animals is not feasible, due to the high costs of compensation, and the difficulties of finding brucellosis-free replacement animals. In such cases, the first stage of control is to vaccinate the cattle. When the prevalence is greatly reduced to a level of < 5% of the infected animals in a region, an eradication strategy based on testing and slaughtering can be pursued, combined with stringent bio-security measures. In this case, cattle are tested serologically for infection, and when found positive, they are slaughtered. The farmers obtain compensation for the slaughtered animals; compensation is an important incentive promoting fuller farmer cooperation for participation in the programme.

[71] Council Directive of 17 May 1977 introducing Community measures for the eradication of brucellosis, tuberculosis and leucosis in cattle (77/391/EEC) *OJ L 145, 13.6.1977, p. 44–47*

[72] Commission Decision of 25 April 2008 laying down Community criteria for national programmes for the eradication, control and monitoring of certain animal diseases and zoonoses *OJ L 115, 29.4.2008, p. 44–46*

[73] Commission Decision 2010/712/EU of 23 November 2010 approving annual and multiannual programmes and the financial contribution from the Union for the eradication, control and monitoring of certain animal diseases and zoonoses presented by the MS for 2011 and following years (*OJ L 309, 25.11.2010, p. 18–3).*

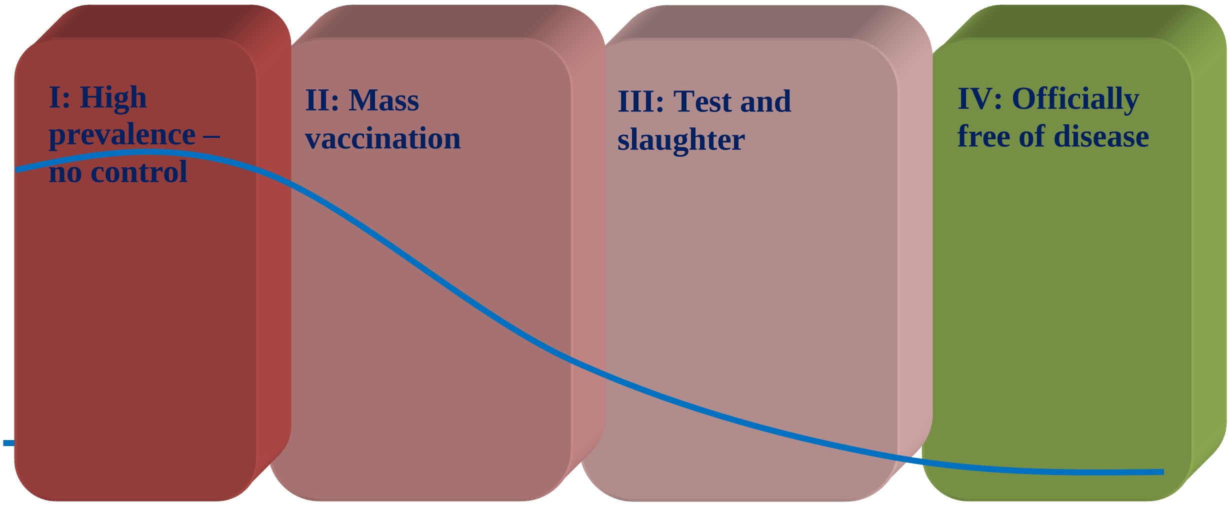
[74] The maximum cost reimbursed per test/animal slaughtered is specified in the relevant Commission Decision.

Vaccines are available for cattle, sheep and goats. In cattle, the live B. a*bortus* Strain 19 vaccine is widely used in endemic areas and in sheep and goats the live B. *melitensis* Rev 1 vaccine. Eradication of brucellosis is possible by elimination of infected animals, and the implementation of biosecurity measures to prevent re-introduction. Vaccination is currently applied as part of an eradication strategy in few Member States and in particular:

- in Italy, in Sicily (partially) and Campania (on buffaloes, in the province of Caserta);
- in Portugal;
- in Spain.

The following graph represents the different phases in brucellosis eradication.

Figure 53 Phases for brucellosis eradication in animal

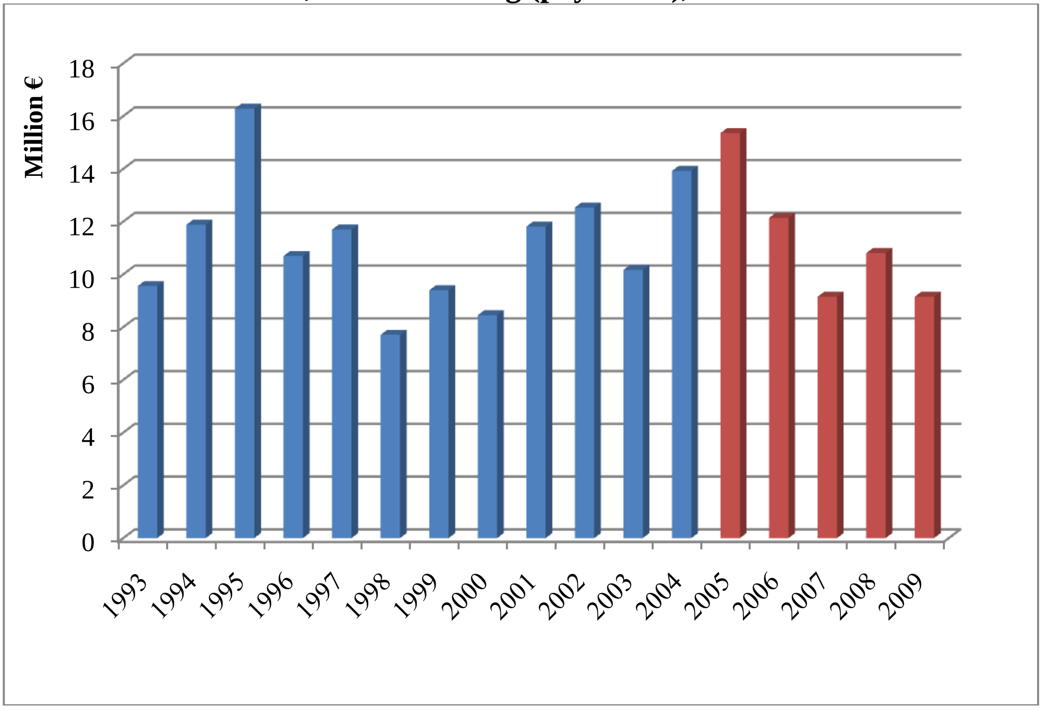


I: Phase when disease occurs at high prevalence, no control measures in place
II: Phase when mass vaccination reduces disease prevalence
III: Phase when test and slaughter policy with compensation measures leads to eradication
IV: Phase when country or region is officially free of diseases, surveillance and biosecurity measures in force

2.5.2.2 Overall funding

The EU co-financed programmes for the eradication of bovine brucellosis since 1977. The figure below shows the overall funding in the period 1993-2009.

Figure 54 Bovine brucellosis, EU co-funding (payments), 1993-2009



Source: DG SANCO based on financial decisions from 1993- 2009

The trend in funding shows an overall decrease since 2005, except in 2008 which most likely was due to the increase in funds granted to Northern Ireland (in total the UK received approximately €2.3 million in 2008). The decrease in funding over the years 2005-2009 reflects the decrease in funding granted to Spain, given the successful results of the programme. The increase in the years 2004 – 2005 is due to the enlargement of the EU and the consequent access to funds from some new MS, in particular Cyprus, Lithuania, Poland, and Slovenia. The enlargement of the EU in 2005 and 2007 has however limitedly impacted on the funding, as he above countries – with the exception of Cyprus - have benefited for only one year (or two years in the case of Poland) of the funding, and the disease is not present in most of the new accessing countries.

Over the period under review, a broad range of countries have benefited from the funding, namely:

- Ireland, Portugal, Spain from 1993 onwards;
- France, in the period 1994 - 2002;
- Greece, in 1997 and in 2000-2004;
- Italy since 1998;
- the UK (Northern Ireland) since 2000 (with a gap in 2003, when the country did not submit a request for EU co-funding);
- Cyprus, since 2004;
- Poland, 2004-2006;
- Lithuania and Slovenia in 2004.

The major beneficiaries of funds have been those countries, where the disease is most prevalent, and where the population of cattle and the economic weight of cattle production are highest. Thus, Spain, Ireland and Portugal are the largest recipients of funding for bovine brucellosis programmes over time.

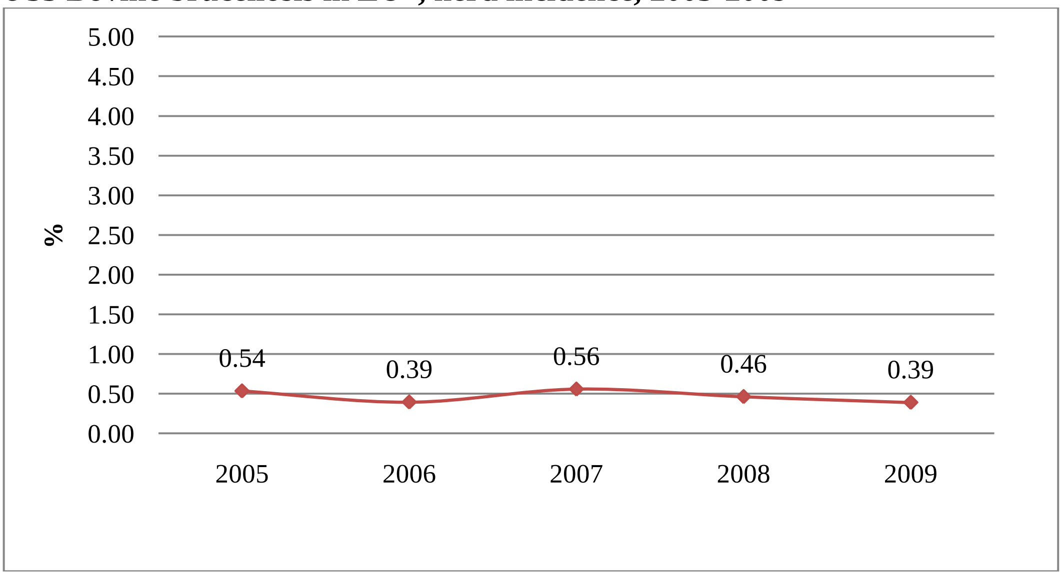
Looking at the EU expenditure on the programmes per head of cattle (DG SANCO data for 2008), this is the highest in Northern Ireland and Italy (€2.38 and €2.31 per animal respectively), whereas in Spain, Ireland and Cyprus it is relatively low (€0.67, €0.24 and €0.08 per animal respectively). The cost in Portugal is €1.83 per animal. These differences are due to the fact that the costs include the expenditure both for slaughtering and testing. Therefore, in countries where both these measures are applied (e.g. Northern Ireland) and the value of animals is quite high, the expenditure per animal is relatively high, when compared to countries that slaughter less (e.g. Portugal and Ireland) and apply mainly testing (e.g. Ireland and Cyprus).

Generally, variations in the overall levels of co-financing may be due to several factors:

- variations in the costs of the programmes, and therefore ultimately the costs of individual components, i.e. the costs of testing and the costs of compensation for slaughtered animals (value of animals);
- changes in the available funds at EU level;
- changes in the prevalence and incidence of the disease.

When analysing those factors, it is noted that the costs of testing are not decreasing, neither is the value of animals culled to be compensated. The reduction in funding needs therefore to be considered mainly in conjunction with the trend of the disease at EU level. Aggregated data for the incidence at EU level in the last five years indicate that the trend of the disease is indeed decreasing or it is stabilising around very low levels:

Figure 55 Bovine brucellosis in EU*, herd incidence, 2005-2009



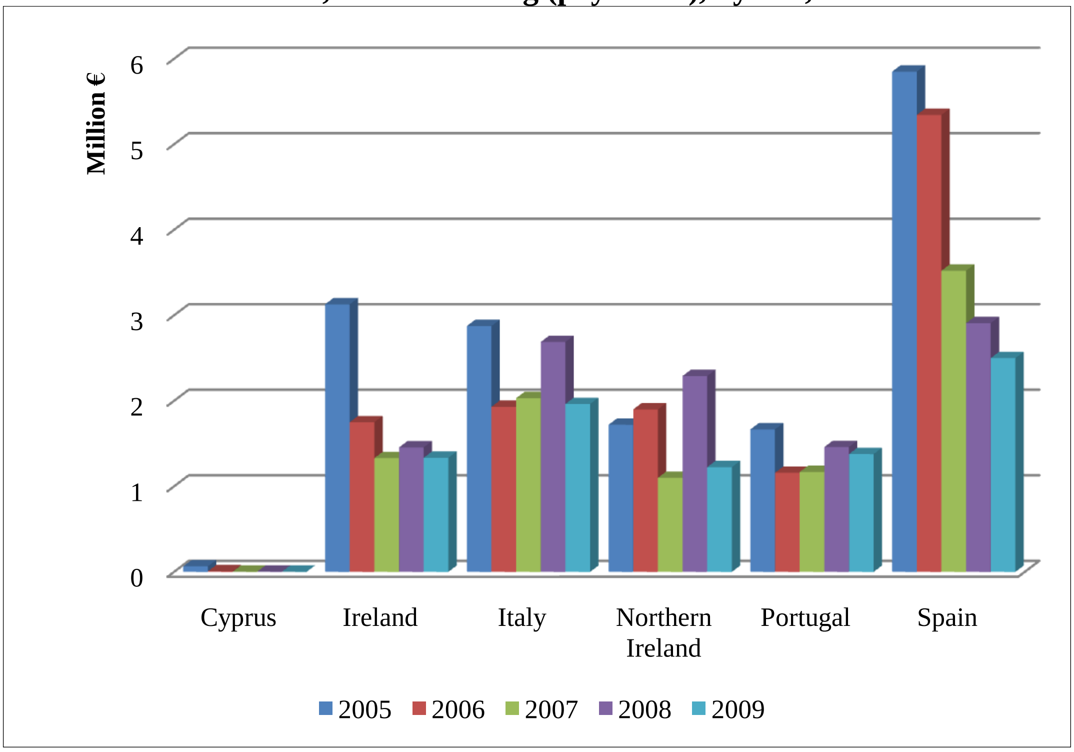
**Note: It considers incidence in Northern Ireland, Ireland, Cyprus, Portugal, Italy and Spain.*
Source: FCEF based on DG SANCO-bovine brucellosis programme 2005-2010- Northern Ireland, Ireland, Cyprus, Portugal, Italy and Spain

Figure 56 and **Figure 57** compare the trends in prevalence of the disease in the countries receiving funds from the EU with the trends in funding. It is noted that since 2005, the incidence of brucellosis in cattle tested in those Member States with co-funded programmes decreased or remained at a low level in most countries (Cyprus, Ireland, Portugal and Spain).

There are few exceptions. In Northern Ireland, an increase was observed after 2005, albeit starting from a very low base, with a decline in the level of incidence in 2009. In Italy, a considerable increase of the prevalence was observed from 2006 to 2007, but it decreased again in 2008 and 2009 (although to levels higher than in 2006). However, it should also be noted that in Italy, several provinces were declared OBF in the period 2004-2009, and in some other provinces the occurrence was so low that these provinces did not receive co-financing for eradication programmes. Therefore, the Italian data reflect the results of those regions having the highest prevalence instead of the situation across the whole country.

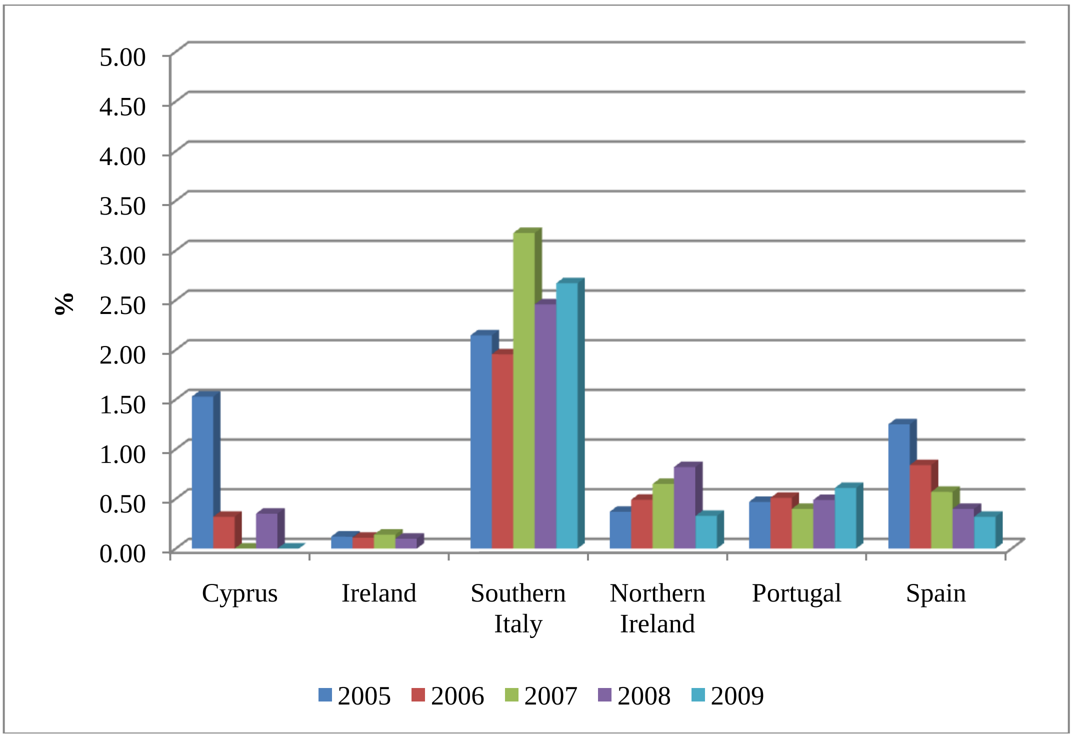
In Portugal, Spain and Italy, a highly differentiated situation occurs at regional level, with some regions being free or officially free, and others reporting a high level in the disease prevalence and incidence (see country sections).

Figure 56 Bovine brucellosis, EU co-funding (payments), by MS, 2005-2009



Source: DG SANCO based on financial decisions from 2005- 2009

Figure 57 Bovine brucellosis, herd prevalence in MS with co-funded programmes, 2005-2009



Source: DG SANCO based on financial decisions from 2005- 2009

2.5.2.3 Analysis of key results of the programmes

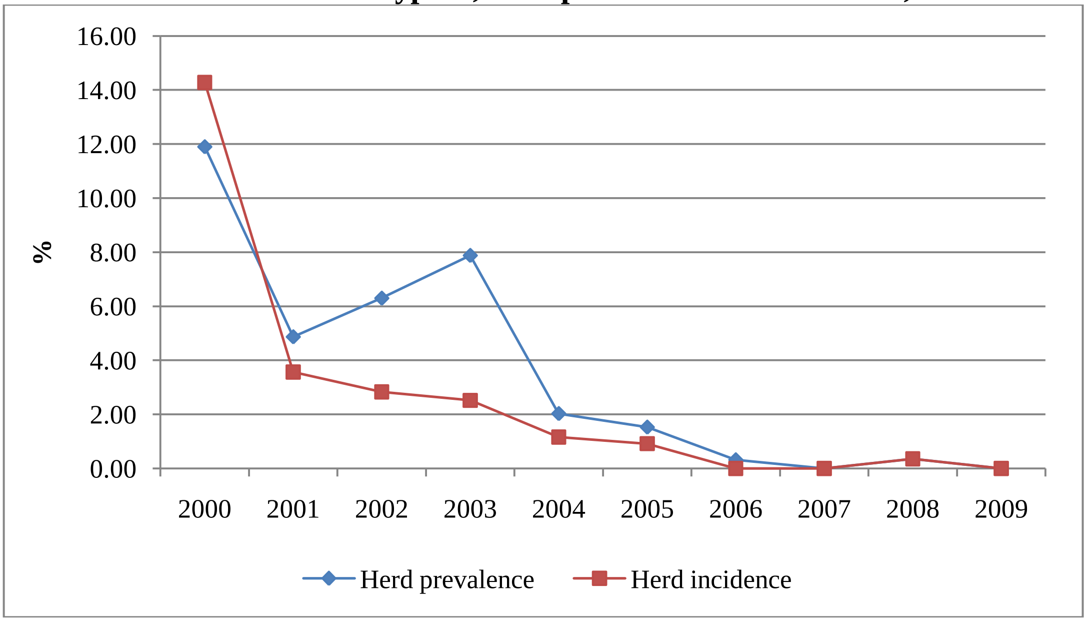
Cyprus

The bovine brucellosis eradication programme started in 2001, after reappearance of the disease in 1998; the programme has been co-funded by the EU since the country's accession in 2004. The programme is based on testing and extended slaughter of positive animals. The programme is implemented in the area controlled by the veterinary services of the Republic of Cyprus, and covers all bovine animals over 12 months old. The areas of Kerynia and Ammochostos, in the Turkish - occupied northern part of the island, are not under the programme. Additionally, there is a programme for declaring farms to be OBF. The treatment of animals infected with brucellosis and the use of vaccines are prohibited.

Cyprus has a bovine population of 55,035 animals, distributed among 346 herds; 322 herds were covered by the programme in 2009. The analysis of prevalence and incidence shows a positive trend of the disease in the last five years and good progress in terms of eradication, which has almost been achieved. Following a peak between 2001 and 2003 and following an intensification of the programme, a significant reduction in prevalence and incidence was reported after 2005. The higher herd incidence data for 2008 refers to one new positive case found in that year. The majority of bovine herds (254) have been declared Officially Brucellosis Free (OBF) [(90.4%)], and the rest of the herds are in the process of being granted the officially free status, the country is therefore close to eradication.

However, the report of the sheep and goat and bovine brucellosis Task Force sub-groups, (DG SANCO, 2009h[75]) points out that there is a major risk arising from the northern part of the island, as there is very little information about the animal health status in this area and there is no apparent brucellosis eradication programme in place. This therefore represents a significant threat of the reintroduction of the disease.

Figure 58 Bovine brucellosis in Cyprus, herd prevalence and incidence, 2000-2009



Source: DG SANCO – bovine brucellosis eradication programme 2010, Cyprus

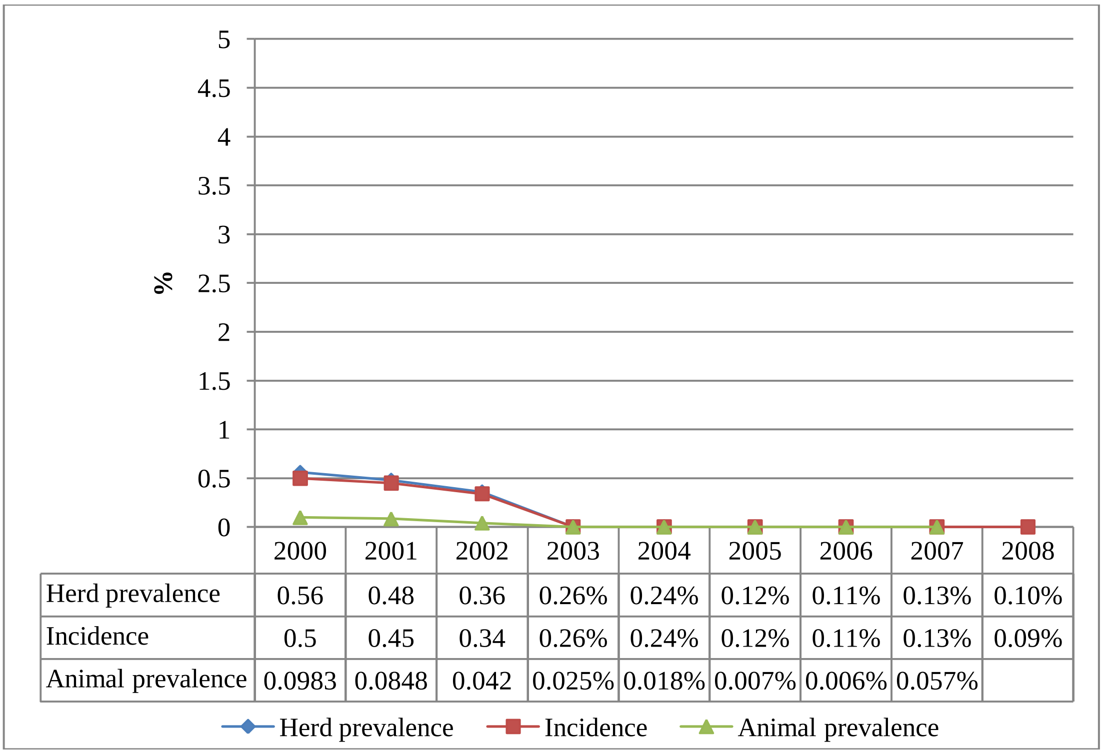
Ireland

A national brucellosis scheme has been implemented in Ireland since 1966. At the beginning a clearance area was designated, which included the areas of lowest incidence, and a compulsory blood testing programme was introduced, accompanied by a system of ring testing of milk.

Over the years the clearance area was extended at various stages until it covered the whole country and a general disease-free status was achieved throughout the country by 1986. Measures aimed at achieving eradication of the disease have been maintained since then and the incidence has declined below 0.2% in the period. In the mid 1990's an increase of the disease incidence was observed, with this being attributed to a temporary accelerated movement pattern of cows, which was prompted by keepers changing the profile of their suckler herds in following the 1992 reform of the CAP. An intensified eradication programme was therefore introduced in the country to deal with this increase in brucellosis levels and this has been improved and continued since then. Since 1998, brucellosis levels have continued to fall and the country has eradicated brucellosis as in 2009 it achieved OBF status, following three years with no cases.

[75] DG SANCO 2009h. *Report of the "Sheep and Goat and Bovine Brucellosis" Task Force Sub-Groups.* Nicosia, Cyprus, 2-3 December 2009

Figure 59 Bovine brucellosis in Ireland, herd and animal prevalence and incidence, 2000-2008



	2000	2001	2002	2003	2004	2005	2006	2007	2008
Herd prevalence	0.56	0.48	0.36	0.26%	0.24%	0.12%	0.11%	0.13%	0.10%
Incidence	0.5	0.45	0.34	0.26%	0.24%	0.12%	0.11%	0.13%	0.09%
Animal prevalence	0.0983	0.0848	0.042	0.025%	0.018%	0.007%	0.006%	0.057%	

Source: DG SANCO – bovine brucellosis eradication programme 2010, Ireland

Italy

In Italy the presence of bovine brucellosis differs significantly by region. In Northern and Central Italy several regions and provinces are officially free, whereas in the Southern regions the prevalence and the incidence of the disease are still high (**Figure 60**, **Figure 61**, and **Figure 62**). Between 2005 and 2009, the incidence of brucellosis in herds at national level has remained at a constant low level and varied between 1.3 % and 3.2%. In 2009, 360 herds were found to be positive, representing 16,590 animals. In Italy the disease also affects buffaloes; mainly in the region of Campania where there is the highest concentration of buffalo herds (the disease is also present in the region of Lazio, but at very low herd and animal prevalence levels). Eradication in this region has proven difficult mainly to implementation issues. Data on the situation in Campania for brucellosis in buffalos are reported in **Figure 63**, showing the very high prevalence of the disease in herds.

Brucellosis in buffalo and cattle has been a problem for many years in several regions of Italy, particularly in those where bovine brucellosis has proven difficult to eradicate, especially in buffaloes, with a prevalence of almost 30% for the Campania holdings, and over 9% incidence in 2008 (**Figure 63**). As for brucellosis in cattle, Calabria and Sicily have the highest prevalence of bovine brucellosis in holdings (about 6% in both regions), with a level of herd incidence of 3.1% in Calabria and 4.7% in Sicily. Sicily remains the most problematic region and accounts for more than 60% of infected holdings nationwide.

In the period between 1997 and 2009, the number of tested herds decreased from 203,705 to 47,143, representing 980,444 bovines and buffaloes tested. The decrease in the number of herds and animals covered by the programme is due to the fact that several regions and provinces have achieved OBF status: a large area covering all the northern regions and a significant number in Central Italy are progressively achieving the objectives of the programme.

The European Commission has approved the bovine brucellosis eradication programme submitted by Italy from 1993 to the present. Since 2007 the programme includes a special eradication programme for buffalo brucellosis in the province of Caserta[76], the area in the Campania region with the highest concentration of buffalo herds and the highest incidence of the disease. Additional surveillance measures are laid down in national legislation to address the persistence of the disease in some regions of Southern Italy.

The implementation of the special eradication programme for buffaloes in Campania in the last years (2007-2009) resulted in positive progress and led to a reduction of the prevalence and incidence of the disease in buffaloes. As shown in **Figure 63** and **Figure 64**, although in absolute terms prevalence and incidence rates are still high (20.3% and 4.7% respectively), the decrease has been dramatic, from rates of 42.4% and 33.1% respectively in 2007).

The implementation of the eradication programme in the Northern-Central regions is considered highly satisfactory, as indicated by the positive evolution of the epidemiological data and by the number of Provinces and regions which over time acquired the status of OBF in the years 1999-2010. On the contrary, in the past years several shortcomings had been identified in the implementation of the eradication programmes in the Southern regions, as reported in the outcomes of several FVO inspections carried out in the years 2004-2009, and of the meetings of the Task Force subgroup of bovine brucellosis in 2005 (DG SANCO 2006a). In particular, it was pointed out the lower number of vaccinated animals against those planned. These were mainly reported to be due to the difficulties experienced by the veterinary services at local level. Due to unsatisfactory implementation of the programme, a financial sanction was applied for payments to Calabria region in 2004, for the amount of €169,000, representing the full part of co-funded programme for the region, and to Sicily in 2009, of €53,765 representing 10% of the granted funds.

[76] The plan was approved by Commission Decision of 2 August 2007 approving the amendment to the programme for the eradication of bovine brucellosis in Italy for the year 2007, approved by Decision 2006/875/EC, as regards buffalo brucellosis in Caserta, Region Campania. The plan involves identification of the entire buffalo herd by means of rumen boluses and RB51 vaccination.

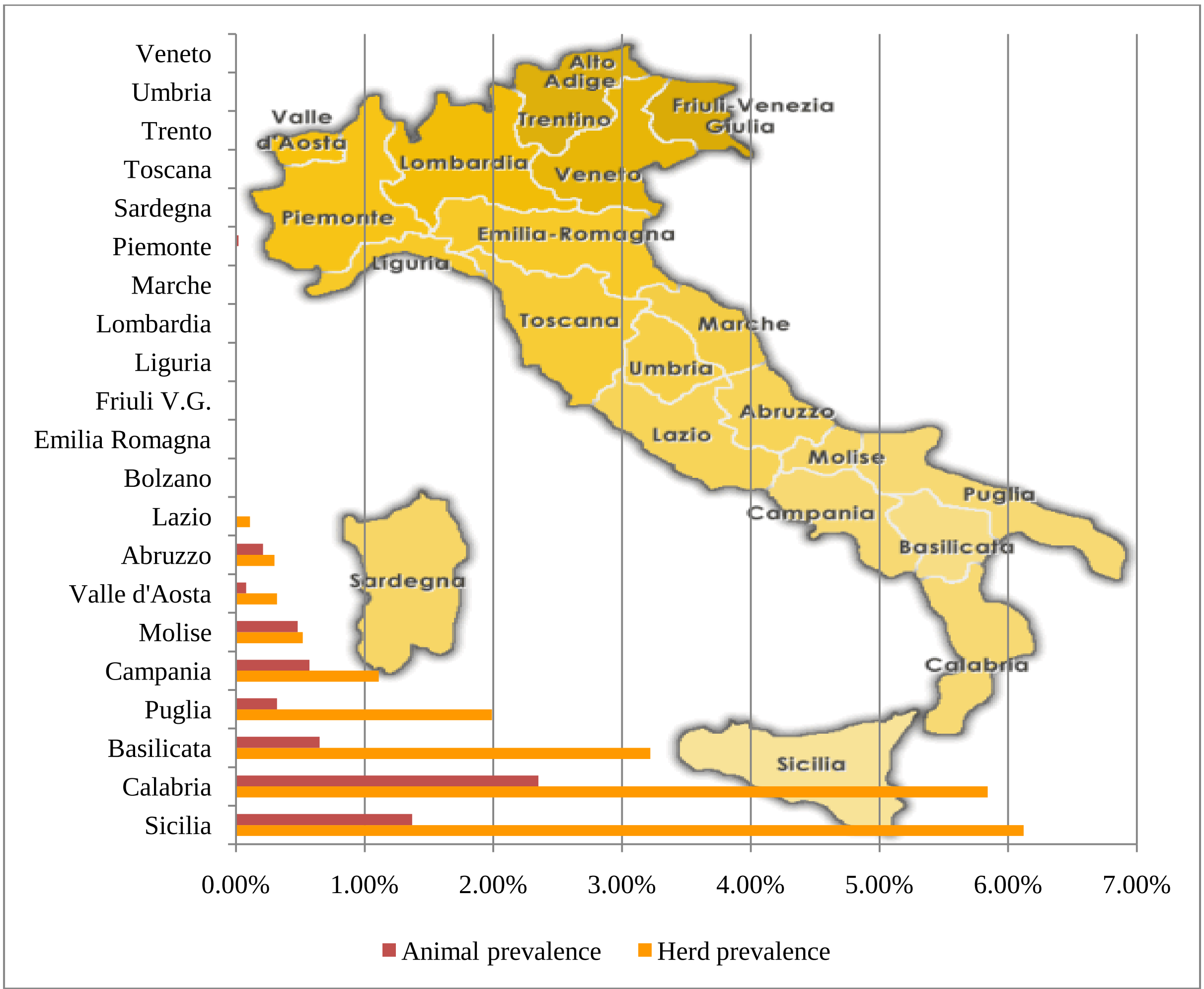
Map 14 OBF regions in Italy, 1999

Source: FCEF based on relevant Commission Decisions

Map 15 OBF Regions in Italy, 2010

Source: FCEF based on relevant Commission Decisions

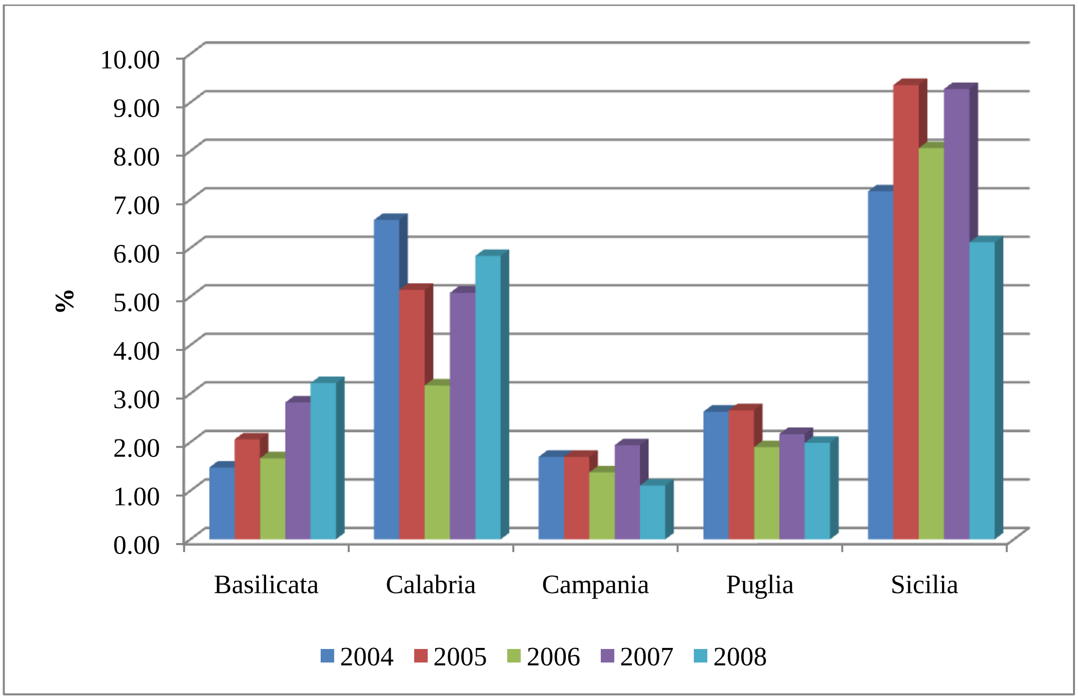
Figure 60 Bovine brucellosis in Italy, herd and animal prevalence by region, 2009



Source: DG SANCO -eradication programme of bovine brucellosis 2010-Italy

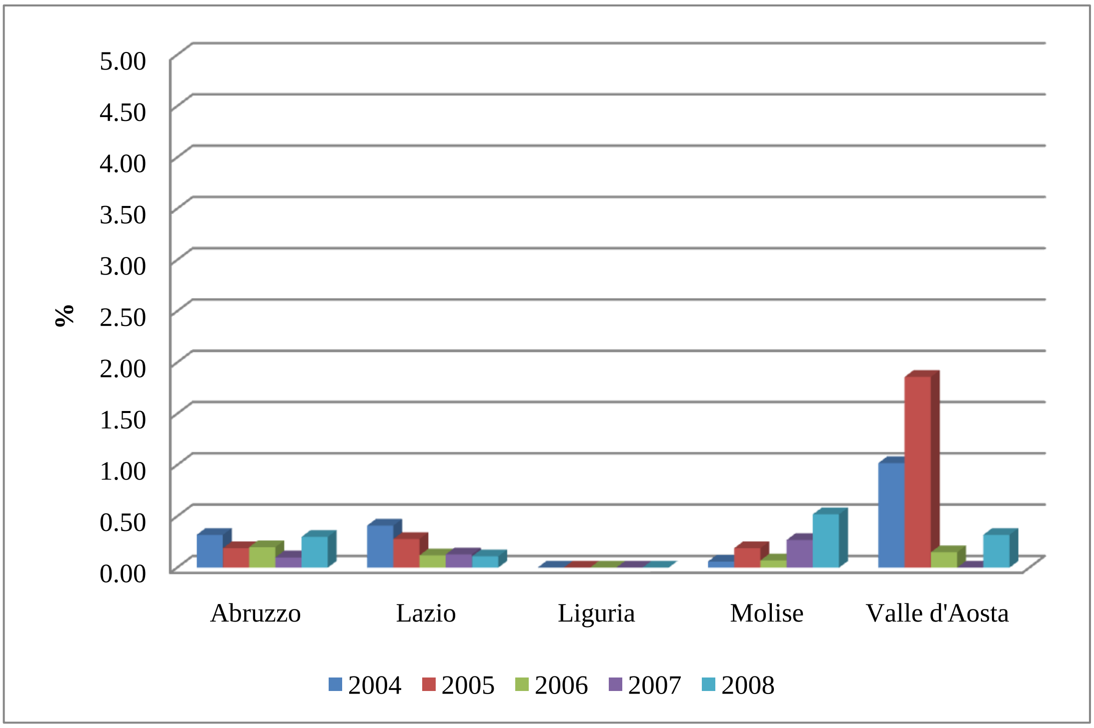
The last mission of the FVO however reported that significant progress has been made in Italy regarding the control and eradication of brucellosis in cattle and buffalo: as a consequence, the incidence of newly infected herds found in the most affected regions so far in 2009 has fallen in comparison with 2007 and 2008 (**Figure 61**).

Figure 61 Bovine brucellosis, herd prevalence in Southern regions of Italy, 2004-2008



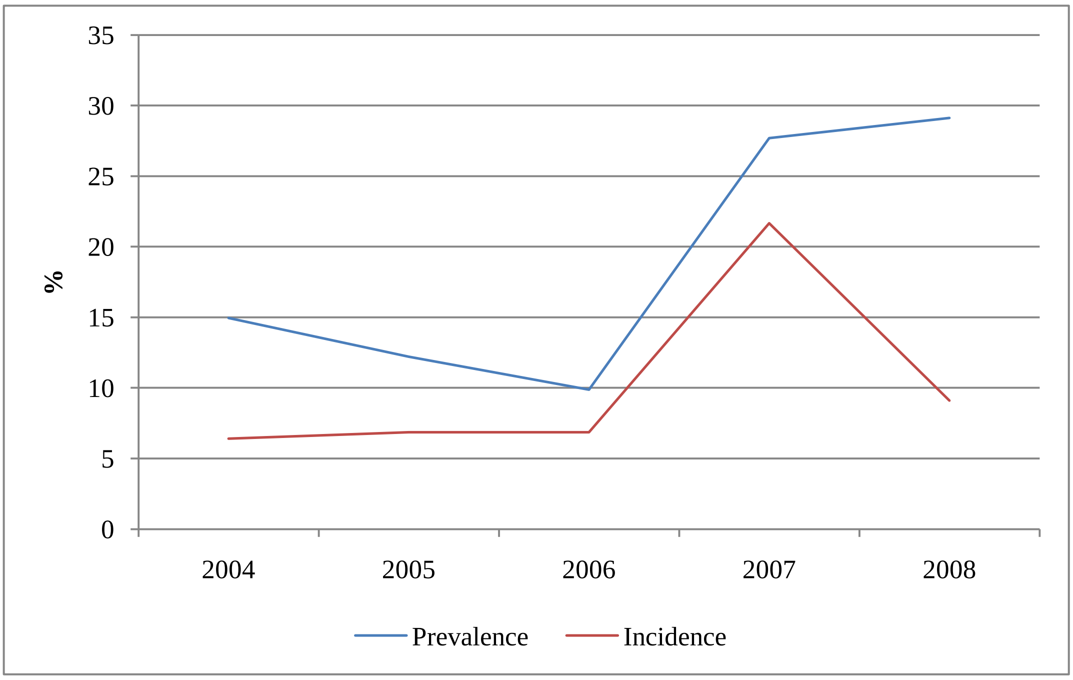
Source: DG SANCO-eradication programme of bovine brucellosis 2010-Italy

Figure 62 Bovine brucellosis, herd prevalence in Italy, regions with at least one OBF province* and Val d'Aosta



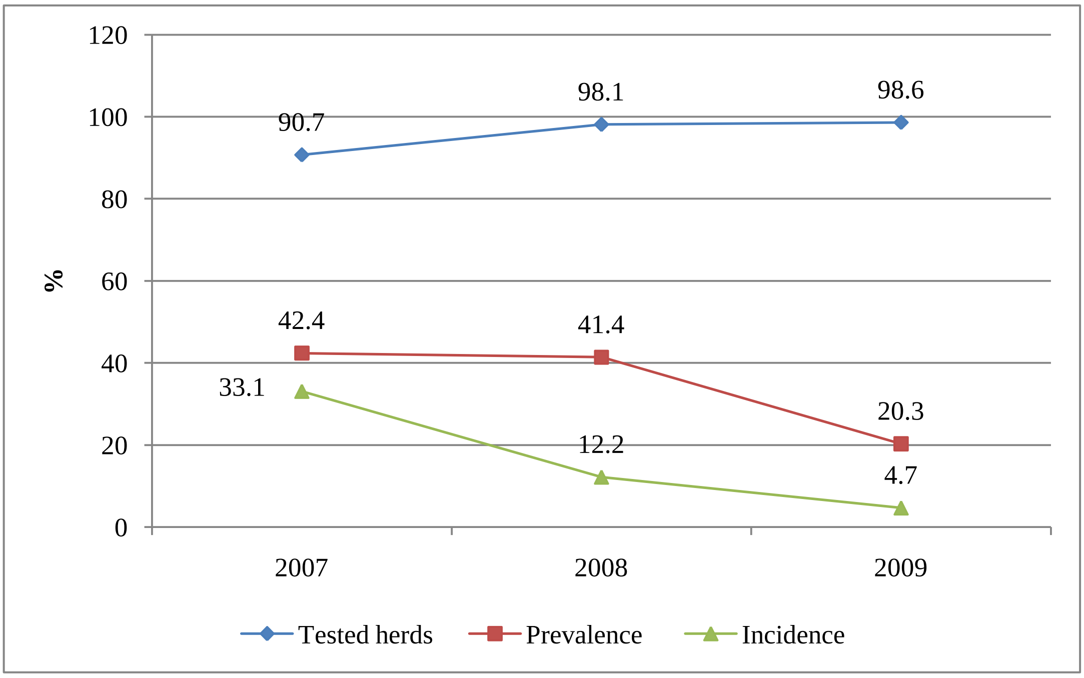
**Note : except Puglia*
Source: DG SANCO -eradication programme of bovine brucellosis 2010-Italy

Figure 63 Brucellosis in buffaloes, herd prevalence and incidence in Campania, 2004-2008



Source: DG SANCO-eradication programme of bovine brucellosis 2010-Italy

Figure 64 Bovine brucellosis in buffaloes, herds tested and prevalence, Caserta province, 2007-2009



Source: Presentation to the Standing Committee on Food Chain and Animal Health, 2010

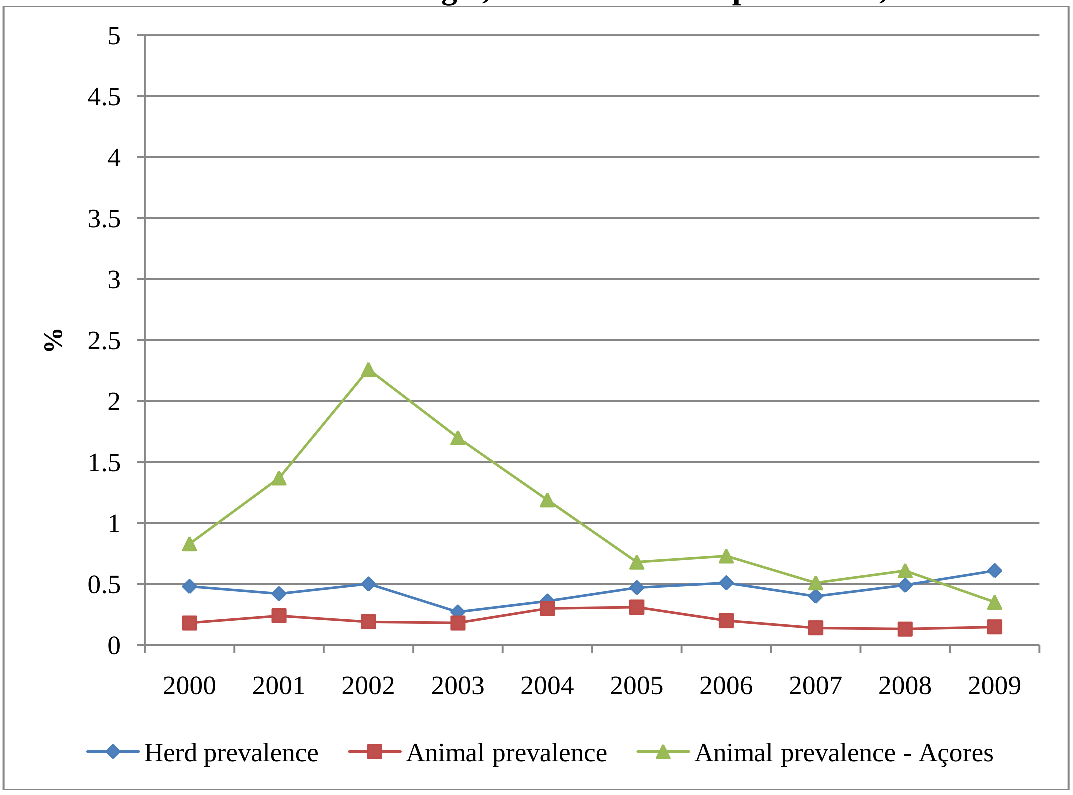
Portugal

The national eradication programme has the objective of reducing the prevalence and incidence of the disease, so as to eradicate it over the medium term. Specific vaccination programmes are submitted for the autonomous region of the Azores and certain epidemiological areas or units covered by the North and Alentejo Regional Veterinary Services Directorates. All herds have a health classification, which is maintained or changed in accordance with the results of serological tests and compliance with the programme.

With 42,321 farms and 799,337 cattle (2008), bovine brucellosis slightly decreased from average 0.54 % infected herds in 1999, to 0.49 % in 2008. The herd prevalence in the continental Portugal has been relatively stable over the last five year period at relatively low levels (around 0.5%). The situation is quite different with regard to the Azores islands, where the prevalence of the disease is higher (2.47% in 2005), although it has shown a decrease in the last years (1.20% in 2009).

Within the continental Portugal, there are also geographic variations in terms of the prevalence of the disease (**Figure 66**), with prevalence higher than in the rest of the country in the regions of Alentejo and Tràs-os-Montes (the highest incidence is in Alentejo with 1.2% infected herds compared to Algarve with 0.2% infected herds in 2009). It is noted, nonetheless, that even in the most affected region of Alentejo, the situation is significantly better than in the worst affected regions of southern Italy.

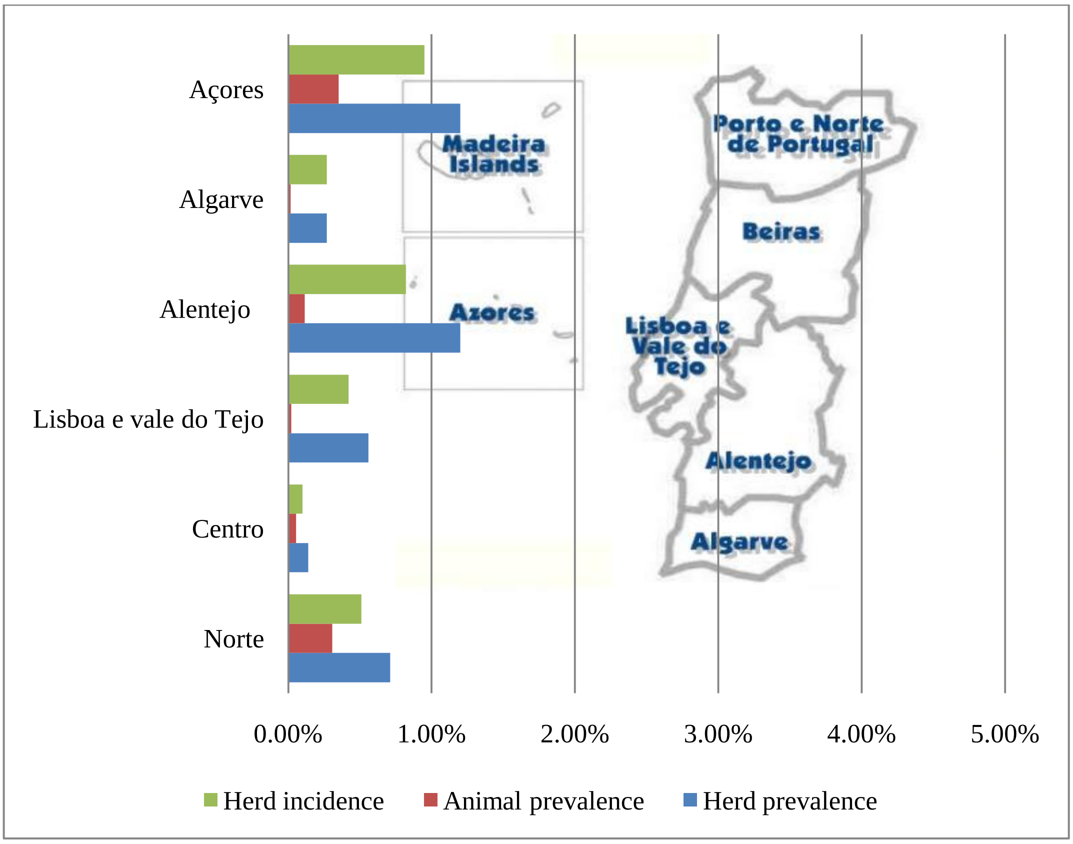
Figure 65 Bovine brucellosis in Portugal, herd animal and prevalence, 2000-2009



Source: DG SANCO – bovine brucellosis eradication programme 2005-2010 – Portugal

A special programme for eradication of brucellosis in the region of Alentejo was designed in 2007 and approved in order to increase the effectiveness of the programme and to speed up the eradication of the disease (DG SANCO, 2007b[77]). The programme started in 2008 and will be continued until 2013. The epidemiological data for the region indicate a decrease in animal prevalence in 2007-2008, with a slight increase in 2009, and a decrease in herd prevalence in 2008-2009.

Figure 66 Bovine brucellosis in Portugal, prevalence in herds and animals, by region, 2009



Source: DG SANCO – bovine brucellosis eradication programme 2010 – Portugal

In the Azores, the situation varies from one island to another. The islands of Pico, Graciosa, Flores and Corvo have been recognised officially free from brucellosis (Commission Decision 2002/588/EC)[78], while the others, like Terceira, S. Miguel and S. Jorge have a prevalence rate of about 1% in 2000. Due to the high prevalence rate, in 2001 it was decided to start a programme (using RB51 vaccine) in those islands.

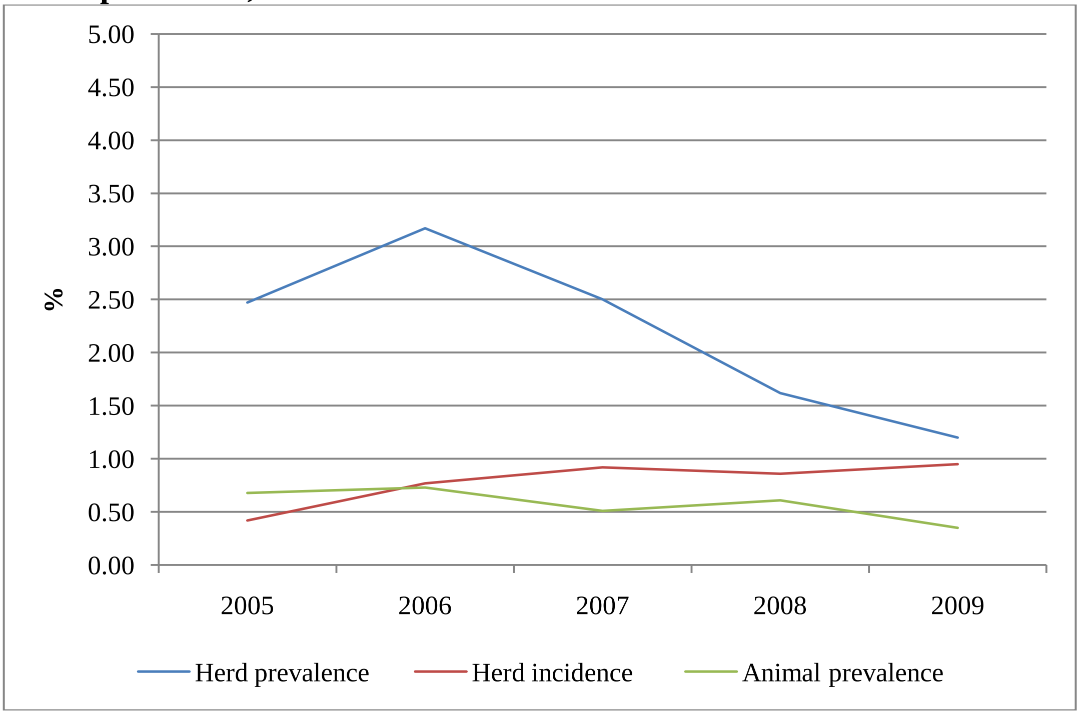
The implementation of the vaccination programme has yielded positive results in the islands, as also acknowledged by the bovine brucellosis subgroup of the Task Force (DG SANCO

[77] DG SANCO 2007b. *Report on the "Bovine Brucellosis" Task Force Sub-Group*. Ponta Delgada, Azores,Portugal, 12-13 June 2007

[78] Commission Decision of 11 July 2002 amending Decision 1999/466/EC establishing the officially brucellosis-free status of bovine herds of certain Member States or regions of Member States *OJ L 187, 16.7.2002, p. 52–53*

2007b) "*excellent results are obtained when vaccination is carried out quickly and the other epidemiological control actions are in place*". The analysis of the epidemiological data shows the reduction of prevalence, and in particular, vaccination led to rapid progress in the island of Terceira, where the animal prevalence rate decreased from 1.72% in 2001 to 0.008% in 2008 and 0% in 2009. Progress is also noticeable in the other islands, with rates of animal prevalence of 1.22% and 3.15% in 2001 for the islands of S. Miguel and S. Jorge respectively, which decreased to 0.76% and 0.03% in 2009.

Figure 67 Bovine brucellosis in the Açores (Portugal), herd prevalence and incidence and animal prevalence, 2005-2009



Source: DG SANCO – bovine brucellosis eradication programme 2010 – Portugal

Spain

Between 1986 -2008, the incidence of bovine brucellosis in Spain has gradually been substantially reduced. A national control programme on bovine brucellosis and tuberculosis has been in place in Spain since 1965; this was based on vaccination of females between 3 and 6 months of age in milk production herds and was focused on those regions where the disease was endemic, while establishing the technical veterinary resources in all regions in order to monitor and study the incidence of the disease.

Following the accession to the EEC, in 1986 Spain included bovine brucellosis among the diseases subject to obligatory eradication campaigns, and submitted an eradication plan to the EEC[79], which was approved by Decision 87/292/EEC[80]. Since this period the measures

[79] According to Directives 77/391/EEC, 78/52/EEC, and Decision 87/58/EEC
[80] Commission Decision of 15 May 1987 approving the accelerated plans for the eradication of brucellosis and tuberculosis in cattle presented by Spain *OJ L 146, 6.6.1987, p. 65–65*

foreseen in EU legislation (Council Directive 64/432/EEC)[81] have been implemented in the whole country, starting with individual identification of animals included in the programme with a metallic ear tag, test and slaughter of positive reactors in authorised slaughterhouses, compulsory vaccination of young females[82].

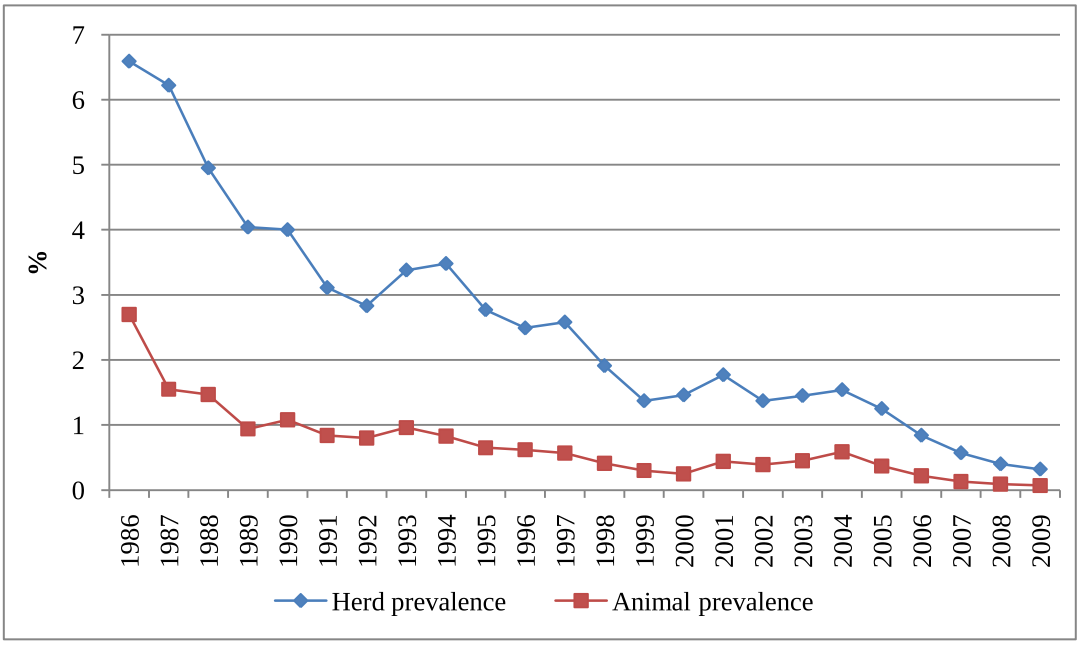
The herd prevalence decreased progressively from 6.5% to 2.6% between 1986 and 1997, and the trend of animal prevalence shows a similar pattern for the same period. This decrease resulted in a change of strategy: Royal Decree 2611/1996 prohibited the use of vaccination as part of the prevention and control strategy against the disease, in order to facilitate intra-EU trade in live animals. The evolution of the disease in the subsequent years (particularly from 2001 onwards) in some regions indicates that this decision was premature in some cases (DG SANCO 2011a[83])· In 2000 (Royal Decree 1328/2000), rates for compensation for obligatory slaughtering of bovines included in the eradication programme were established. In 2006, a national multiannual (five year) programme was adopted, based on the rationale of applying a set of measures homogenously over the time, which would favour the achievement of the objective of full eradication.

Currently, a decision on vaccination is taken at national level, taking into account the epidemiological situation of the disease in the herd and area, and the type of pastures. The eradication programme includes vaccination of female cattle in the areas of high incidence[84]

Between 2001 and 2009, average herd prevalence decreased from 1.8% to 0.3%, and animal prevalence was 0.07% in 2009. In 2009, 406 of the provincial sub-regions (comarcas[85]) were free of bovine brucellosis, 32 comarcas showed prevalence up to 0-1%, 31 comarcas showed a prevalence of 1-2.5% and 12 comarcas showed prevalence up to 2.5-15.28%. As a result, 94% of herds were classified as brucellosis free herds.

[81] Council Directive 64/432/EEC of 26 June 1964 on animal health problems affecting intra-Community trade in bovine animals and swine *OJ 121, 29.7.1964, p. 1977–2012*
[82] Vaccination with S-19 vaccine and the use of the RBT and CFT in parallel.
[83] DG SANCO 2011a. *Report of the "Bovine Brucellosis" Task Force Sub-Group*. Santander, Spain, 27-28 October 2010
[84] According to the definition the high incidence areas are areas where the herd prevalence exceeds by double or more the national mean prevalence the previous years. Depending on the percentage of municipalities included in the affected area, two different vaccination strategies are applied:
• If more than 20% of the municipalities are included in the affected comarca, all heifers between 3 and 6 months are vaccinated with either B 19 or RB 51 and this vaccination campaign is continued for at least 5 years.
• If less than 20 % of the municipalities are included in the affected comarca, all adult females in the affected municipalities are vaccinated with RB 51 and all replacement heifers and cows are vaccinated with either B19 or RB 51.
[85] A comarca is a traditional region or local administrative division found in parts of Spain, Portugal, Panama, Nicaragua, and Brazil. The term is derived from the term *marca*, meaning a march or mark.

Figure 68 Bovine brucellosis in Spain, herd and animal prevalence, 1986-2009



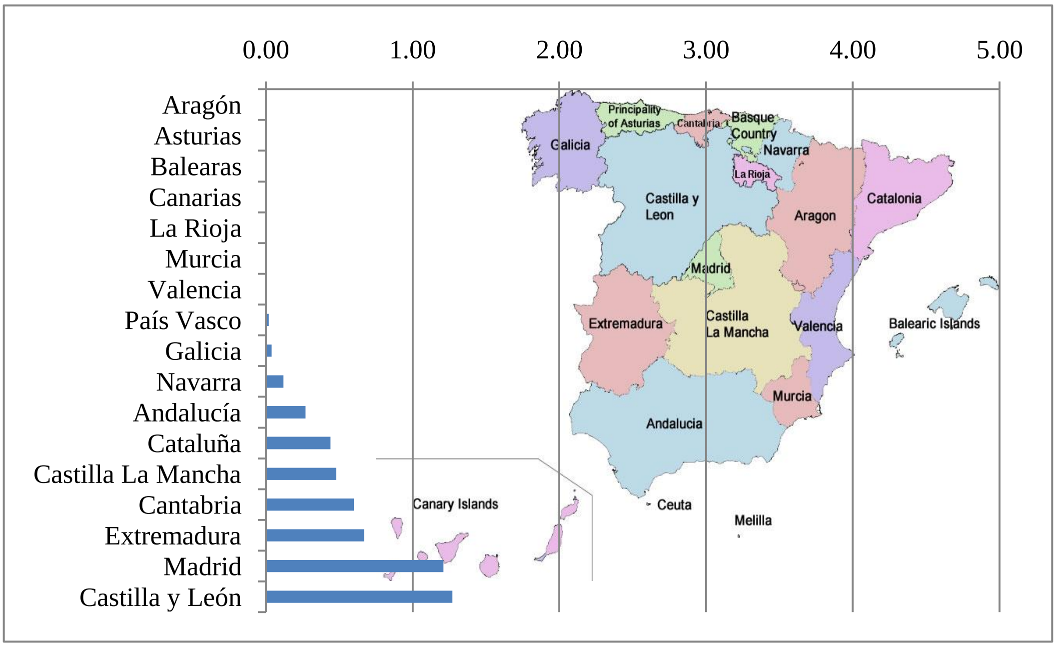
Source: DG SANCO – bovine brucellosis eradication programme 2010, Spain

Since the first year of application of the eradication programmes (1978), significant geographical variations emerged in the distribution of the disease: prevalence was higher in the regions of Aragon, Andalusia, Catalonia, Madrid and Cantabria, (higher than 6%), and lower in the Autonomous Community (AC) of Asturias, Baleares, Canarias, Galicia, Murcia and Navarra, where the rate was lower than 1%. Regional differences still apply in the level of prevalence (**Figure 69**), but an overall positive evolution is observed for all the AC (**Figure 70**) in the past years. In August 2009 the Canary Islands achieved full eradication and were granted the status of OBF regions (provinces: Santa Cruz de Tenerife, Las Palmas)[86]. In the same year, there were no positive herds detected in seven ACs (Aragon, Asturias, Baleares, Canary Islands, La Rioja, Murcia and Valencia) and only two positive herds were detected in the AC of Navarra.

The analysis of the epidemiological data by region indicates that the eradication programme is proving successful in the various regions: from 2005 to 2009 in the AC of Andalucia the herd prevalece decreased from 1.9%% to 0.3%. In 2004, herd prevalence in Castilla y León, Castilla La Mancha, Extremadura and Cantabria exceeded 3% and the regions started implementing vaccination programmes and stamping-out. Progress has been favourable in most of them: the herd prevalence in the AC of Extremadura decreased from 6.15% to 0.67%, in Cantabria from 3.8% to 0.6%, in Castilla La Mancha from 5.2% to 0.5. In Castilla y León, the evolution of the disease indicates a decrease from 3.3% in 2004 to just under 1% in 2008, whereas in 2009 the level increased to 1.3%, due to an outbreak in two districts in the province of Segovia.

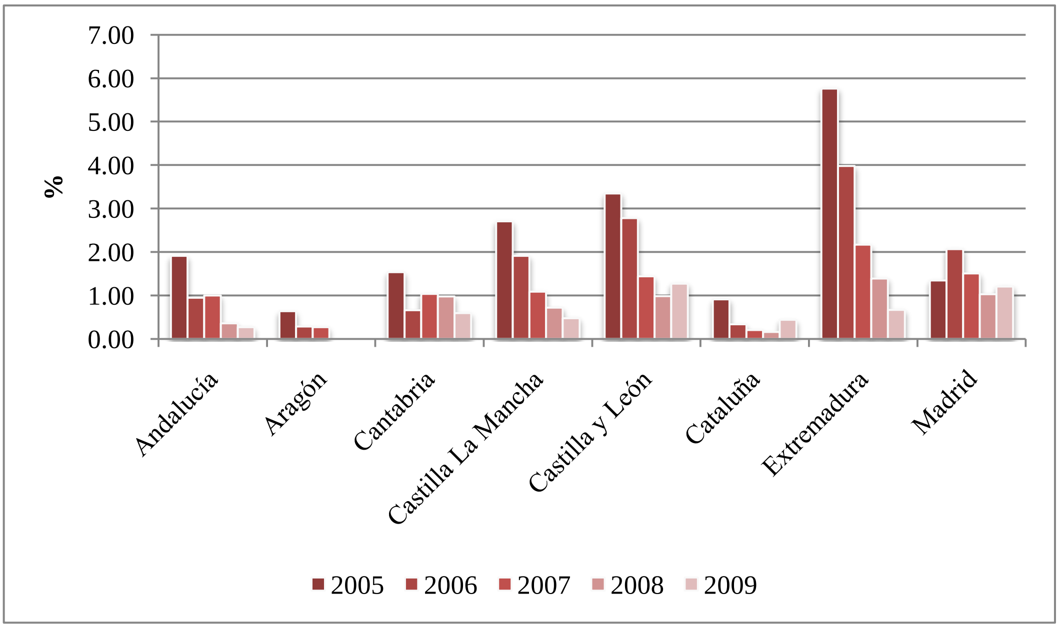
[86] Commission Decision of 5 August 2009 amending Decision 2003/467/EC as regards the declaration that certain Member States and regions thereof are officially free of bovine brucellosis (Notified under document C(2009) 6086) *OJ L 204, 6.8.2009, p. 39–42*

Figure 69 Bovine brucellosis in Spain, herd prevalence (%), by region, 2009



Source: DG SANCO – bovine brucellosis eradication programme 2010, Spain

Figure 70 Bovine brucellosis in Spain, herd prevalence, by region, 2005-2009



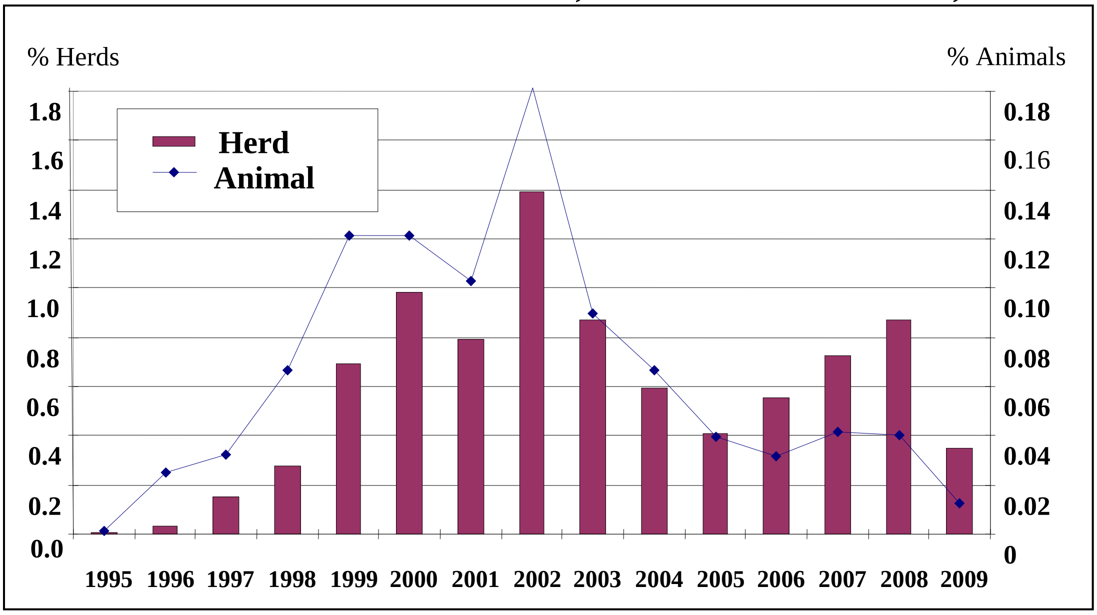
Source: DG SANCO – bovine brucellosis eradication programme 2010, Spain

The United Kingdom (Northern Ireland)

In Northern Ireland the brucellosis eradication scheme started in 1963 and resulted in near-eradication of the disease by the late 1980s. The programme is based on a test and slaughter policy, where routine testing includes an annual blood testing of all breeding animals over 12 months. Vaccination of animals is not allowed in the country.

In the late 1990s three primary outbreaks associated with cross-border activity resulted in a significant recrudescence of the disease. Between 1990 and 1996 the seropositive herd incidence was at levels lower than 0.1% with most outbreaks considered being false-positives (single, culture-negative reactors). The disease re-appeared in 1997 and annual herd incidence increased in the period to peak to the level of 1.32% in 2002. A decline was subsequently observed[87] to the level of 0.4% in 2005. In 2005 herd incidence increased, due to a significant cluster of cases associated with an outbreak in County Armagh, and to increased use of parallel testing and strict interpretations of serological tests.

Figure 71 Bovine brucellosis in Northern Ireland, herd and animal incidence, 1995-2009



Source:DG SANCO-bovine brucellosis eradication programme 2010-the UK

A number of new measures were introduced in this period, which included a 30 day pre-movement test[88], a rapid depopulation policy, treatment of infected slurry and testing of culled cows at slaughter. Following the introduction of these measures, the seropositive herd incidence increased over the following two years (0.56% in 2006 and 0.72% in 2007) but the incidence of confirmed outbreaks decreased (0.28% in 2006 and 0.25% in 2007). Herd incidence increased in 2008 to 0.75%, followed by a decline in 2009 to 0.3%. The introduction of monthly bulk milk testing and annual testing of herds that are not purely dairy herds led to an increase in the annual number of animals tested; the annual average number of animals tested in the years 2005-2009 was 900,000 (937,000 in 2009), which compared to an average for the period 1995-2001 of 568,000 animals.

Outbreaks in Northern Ireland were generally clustered in a limited number of areas, mainly in the south and in County Armagh; this is, accordingly to the report of the bovine brucellosis Task Force subgroups (Northern Ireland, 2008), an indicator of the efficiency of the detection strategy implemented. It is noted that herd and cattle density is highest in the south and west,

[87] In 2001 there was an apparent reduction in incidence in 2001, which instead resulted from significant reductions in testing that year, associated with a foot and mouth disease epidemic.

[88] Pre-movement testing of BR eligible cattle was introduced in December 2004. In 2009, there were 183,000 tests carried out under the pre-movement regulations, yielding 7 reactor animals.

with the highest concentration in County Armagh. The farming system, as found in epidemiological studies, appears to be one of the risk factors for the spread of brucellosis. As reported in the eradication plan submitted by Northern Ireland for the year 2011, the following are considered as the main risk factors for brucellosis in the country, according to a number of epidemiological studies carried out:

- The nature of farming, which is highly conducive to the spread of the disease. Cattle density is the highest in the United Kingdom and farm fragmentation is extensive, exacerbated by relatively small farm size (Robinson, 2006). The increase in herd size in the 1990s and the renting of pasture[89] increases the potential for widespread exposure to infected cows, particularly when many herds utilise outdoor or mixed calving systems. Concentration trends within the cattle farming industry, which were partly attributed to the available subsidies under the CAP, have further increased the risk - the cattle population increased by 50% in the forty years before 1989 and by approximately 6% thereafter[90]. These increases preceded a significant rise in the incidence of both bovine tuberculosis and bovine brucellosis, suggesting an association with high stocking density (Robinson, 2006[91]) Reduced sensitivity and negative predictive value of serological tests, due to the lengthy incubation period and latency associated with brucellosis. This allows latently infected cattle to potentially escape the multiple, short-interval test regime surrounding outbreaks and may lead to an underestimate of the role of between-herd movement (Stringer et al 2008).

- Four inter-related factors were assessed and identified as being crucial in determining the success of the eradication programme: management of exposed contiguous herds, the level of compensation paid, bio-security measures employed by farmers and the level of government investment in the programme.

2.5.2.4 Analysis of effects of the programmes

Map 16 and **Map 17** present the status of MS regarding freedom from bovine brucellosis, as it has evolved in the last twenty years in the EU. As indicated, the situation has progressed positively and during the period of implementation of the programmes, some new officially free areas were recognised, namely Ireland, some regions and provinces of Italy, and the Canary Islands in Spain. It should also be noted that generally those countries which were free of the disease have by and large remained free.

Considering the status of OBF MS provides, however, only a partial indication on the effects of the programmes and their achievements in terms of disease eradication. Another useful indicator to consider is the proportion of *brucella* infected/positive cattle herds in the MS that have implemented eradication programmes co-funded by the EU.

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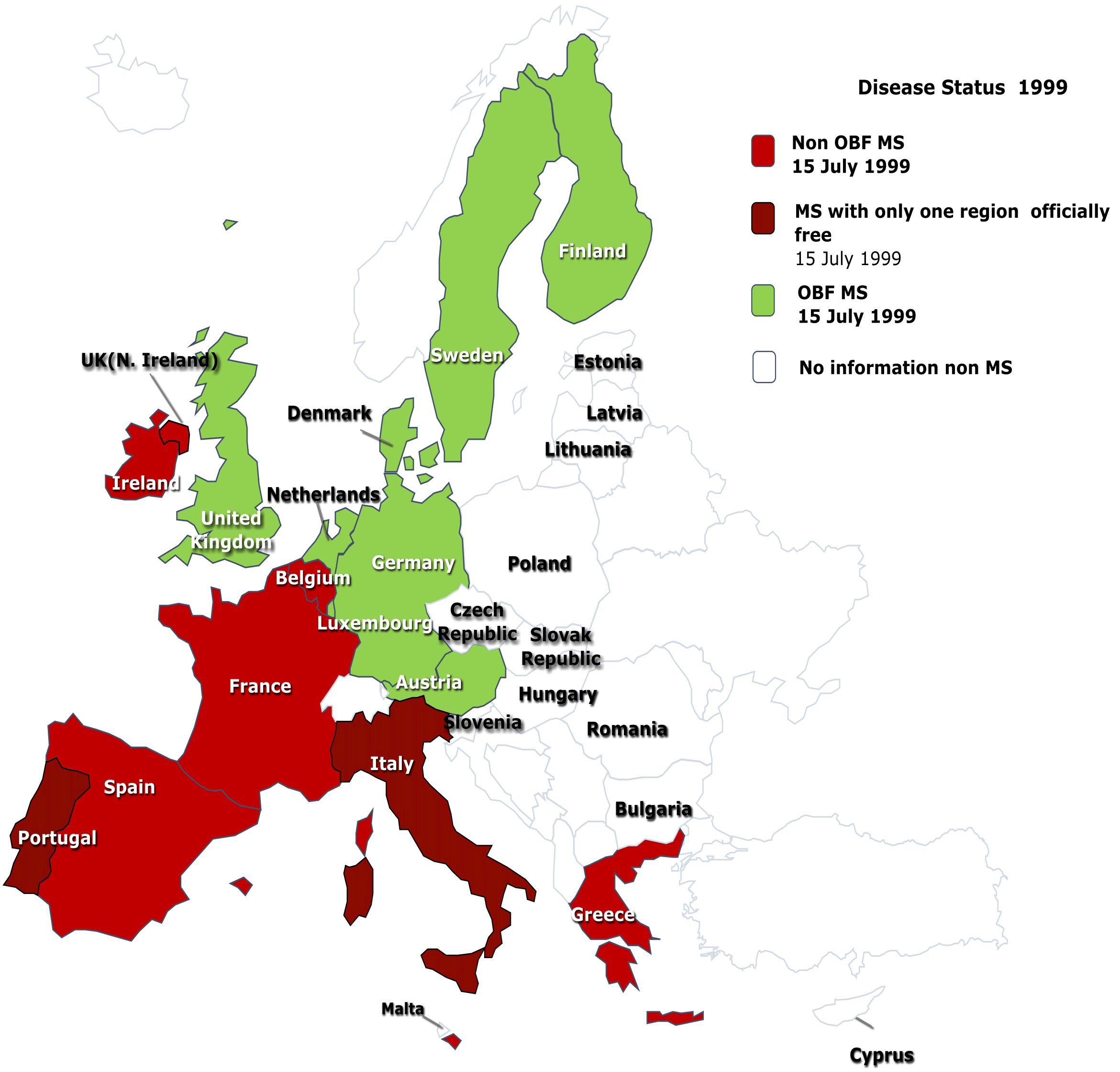
[89] Approximately 60% of herds use multiple premises, with a mean of 31 contiguous herds per breakdown, 13 of which directly neighbour each herd.
[90] The mean herd size has increased from 56 cattle in 1990 to 63 in 2009 (30% increase).
[91] Robinson P 2006. *Cattle Subsidies in Northern Ireland 1990 – 2005: Their Influence on Cattle Demography, and Consequent Significance for Bovine Tuberculosis and Brucellosis*

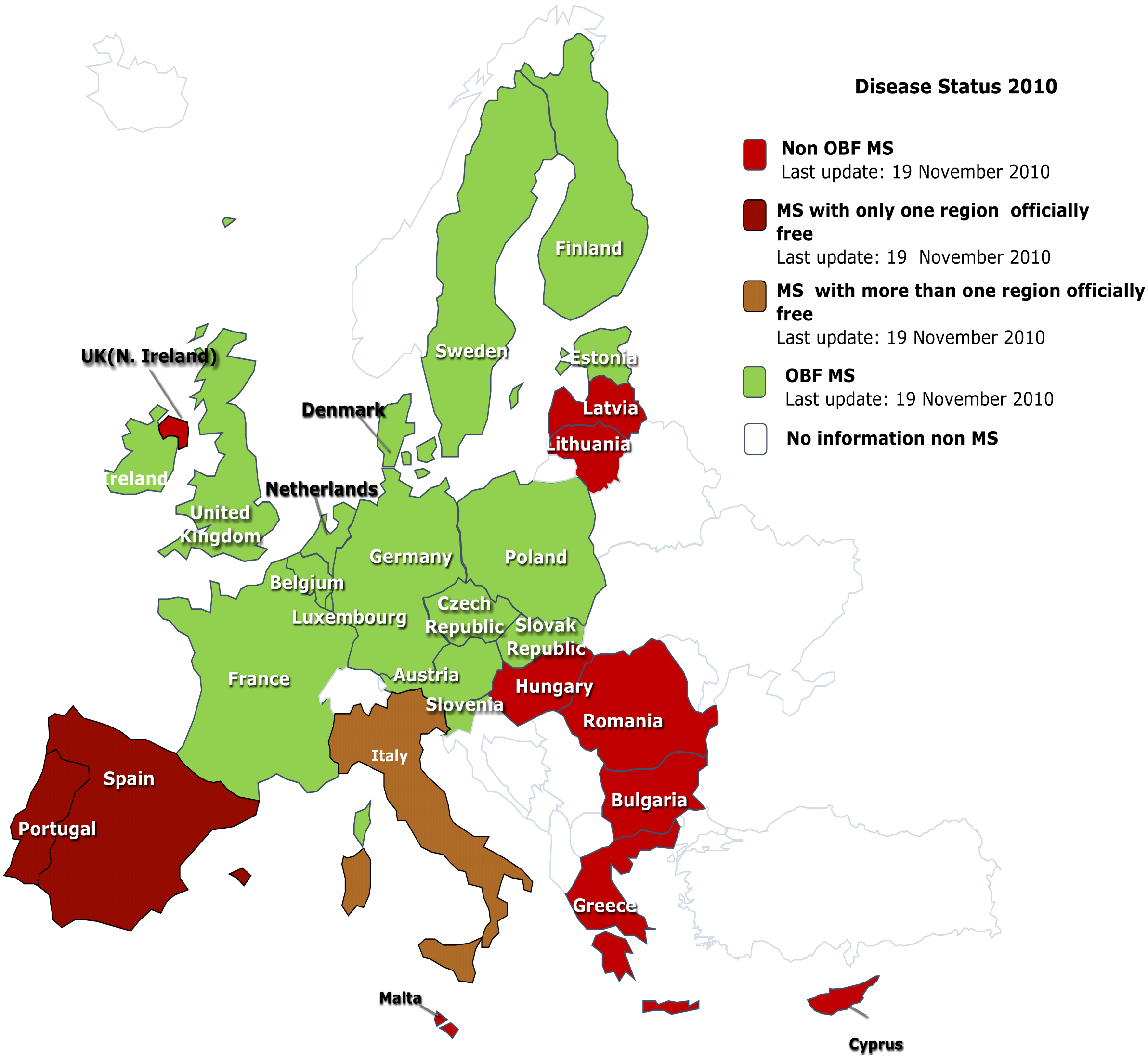
Map 18 and **Map 19** compare the situation in 2005 and in 2008, showing that this indicator has decreased over the period for the majority of MS, with the exception of Northern Ireland and Portugal. This reflects the specific situation that prevailed in these countries in 2008, as described in the previous sections (i.e. regional differences, high level of testing).

Map 16 Bovine OBF MS, 1999



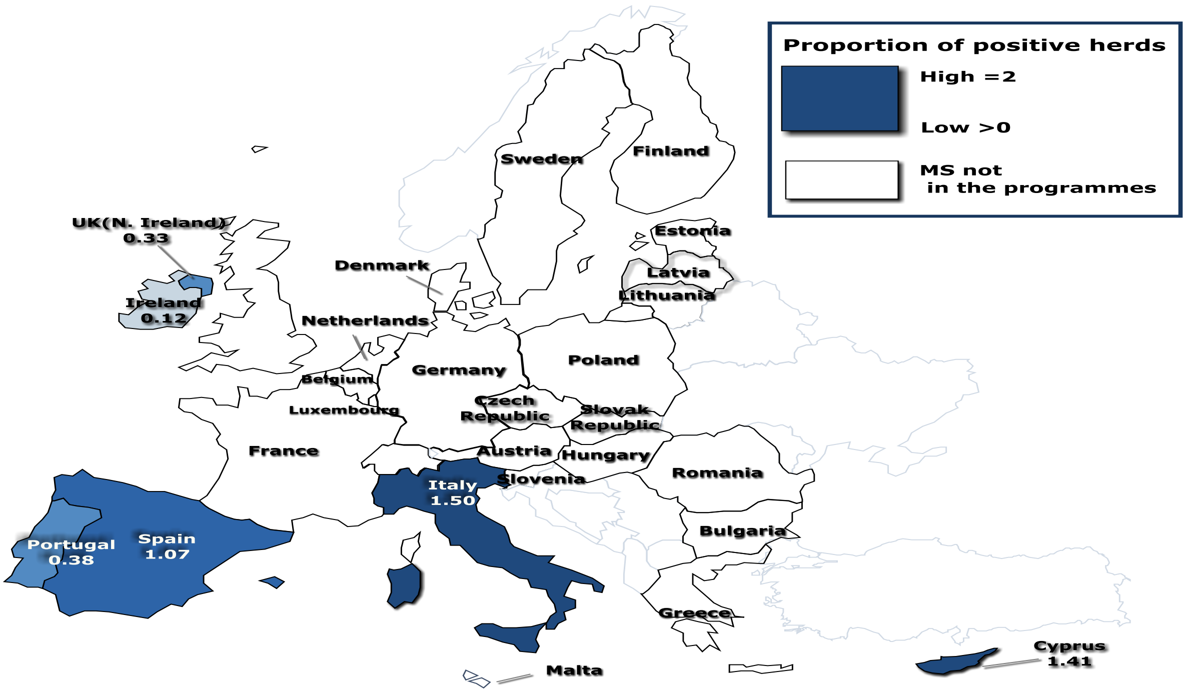
Source: FCEC elaboration based on relevant Commission Decisions

Map 17 Bovine OBF MS, 2010



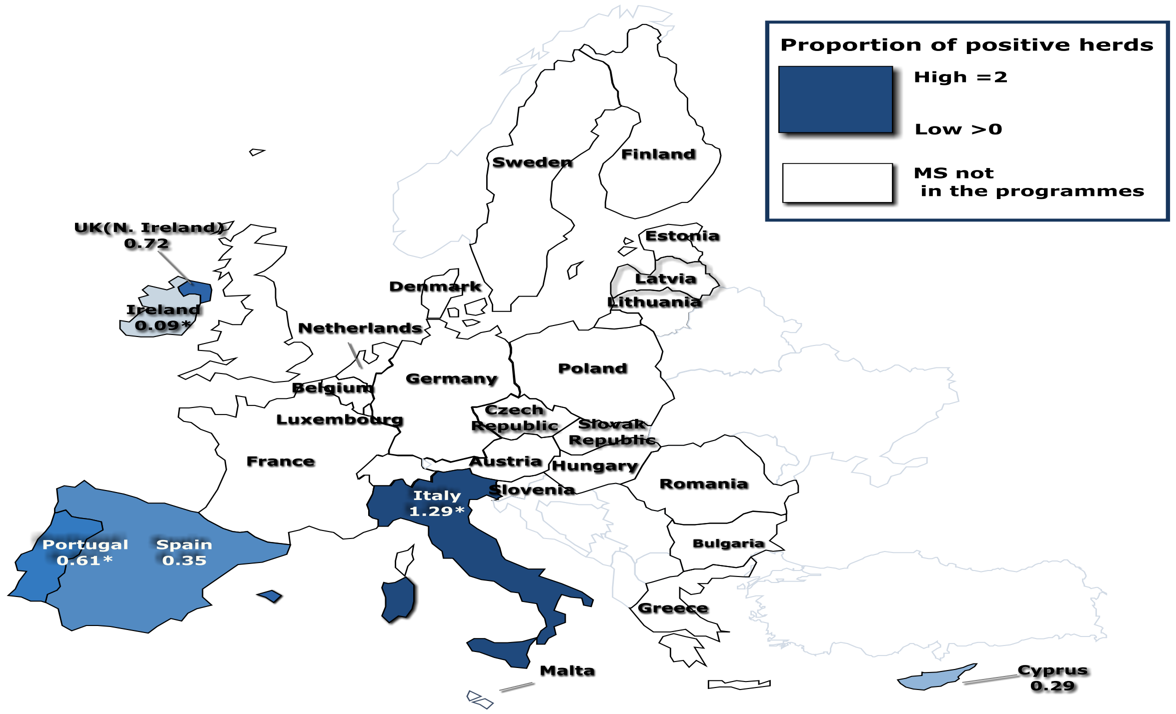
Source: FCEC elaboration based on relevant Commission Decisions

Map 18 Proportion of *brucella* in infected/positive cattle herds in non OBF MS with EU co-funded eradication programmes, 2005



FCEC based on DG SANCO data-bovine brucellosis eradication programme, 2010, co-funded Member States

Map 19 Proportion of *brucella* in infected/positive cattle herds in non OBF MS with EU co-funded eradication programmes, 2008



Source: FCEC based on DG SANCO data (for Italy, Portugal and Ireland data from EFSA (The European Union Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2009

2.5.3 Ovine and caprine brucellosis

Main findings – Ovine and caprine brucellosis programmes

- Between 2005 and 2009 the EU provided overall financial support of € 36.704.147 for the eradication of *brucella melitensis* in four Member States (Cyprus, Italy, Greece, Portugal and Spain). Spain (€19,594,999) has received the largest amount of funding, followed by Italy (€12,910,529), Portugal (€3,788,720), France (€592,027), and Cyprus. For Greece, the Commission approved programmes for the eradication of *brucella melitensis* during the period 2005-2007 and 2009 (Greece did not submit programme for 2008), but subsequently a 100% penalty has been applied and no payments were made due to the poor implementation of the programme;

- As a result of the implementation of the eradication programmes between 2005 and 2009 Portugal, Spain and Cyprus made excellent progress in eradication the disease: particularly, Spain reported a considerable decrease in the herd prevalence; in Cyprus the disease has been almost eradicated; Greece and the southern regions of Italy, where penalties have been applied due to particular issues related to the implementation of the programmes, represent the main problem area for *brucella melitensis*. Italy experienced an increase in new positive herds between 2005 and 2009. However, this increase is attributed to the fact that some regions and provinces had reached OBmF status and therefore they were no longer included in the programmes;

- Overall four main benefits result from the implementation of the eradication programmes: protection of animal and public health and food security; avoidance of direct losses including the cost of morbidity and the cost of reduced production; removal of trade barriers resulting in an amplification of commercial opportunities for operators as well as a better negotiating position; reduction of the cost of implementation due to a reduction of the number of reactor animals, animals slaughtered and consequently a decrease in the value paid in compensation;

- The significant reduction of brucellosis cases in animals with a solid decreasing trend in has been reflected in a significant reduction in human brucellosis cases with a solid decreasing trend in the last decades: that is a major impact in terms of reduction of risk of infections for humans and gives an idea of the success of the programme;

- The persistence of pockets of this zoonotic disease in some MS linked to a specific situation (as Greece and some regions of southern Italy) still require continued monitoring and surveillance, as well as eradication efforts.

2.5.3.1 Description of measures funded

Measures co-funded for eradication of ovine and caprine brucellosis are based on financial support for vaccination, testing and compensation of culled infected animals. When *brucella* is endemic and prevalence of the disease is high, testing and culling is not feasible, and mass vaccination is more commonly applied. When the disease prevalence falls to below 2%, an eradication strategy based on testing and culling is implemented. The culling of infected animals is combined with compensation for the farmers, and is accompanied by stringent biosecurity measures to prevent re-introduction, and by the replacement with *brucella*-free animals.

Vaccines are available for sheep and goats. In sheep and goats the live *brucella melitensis* Rev 1 vaccine is the most widely used. In sheep and goats, both subcutaneous and intra conjunctival vaccination have been used, depending on the epidemiological situation and control strategy.

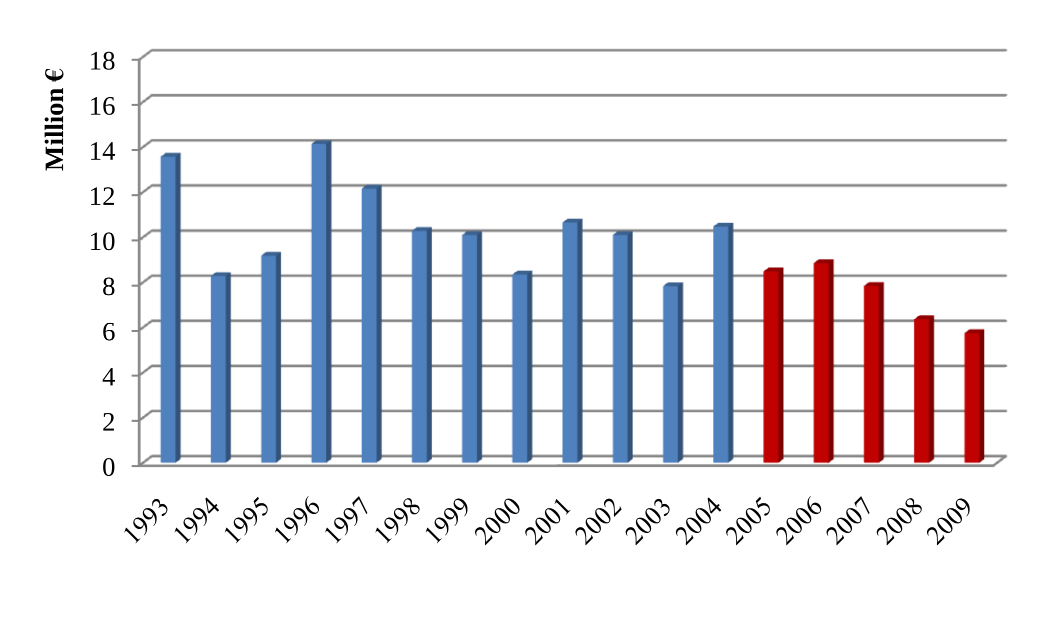
It is noted that the EU funding addresses only part of larger programmes implemented at MS level; organisational costs and all the expenditures related to the setting up and management of the programme are borne by the Member States. These components work in synergy for the success of the programmes and are crucial for their implementation and success. The report is focusing exclusively on the measures targeted by the EU co financing. For this reason the analysis is based on the measures approved by the Commission Decisions.

2.5.3.2 Overall funding

In 1990, Council Decision 90/242/EEC[92] introduced EU co-funding for the eradication of brucellosis in sheep and goats. During the 1993 – 2009 period, the EU has provided financial support of €162,419,835 in those Member States affected by the disease. **Figure 72** presents the distribution of the EU funding for the whole period.

[92] Council Decision of 21 May 1990 introducing a Community financial measure for the eradication of brucellosis in sheep and goats OJ L 140, 1.6.1990, p. 123–127

Figure 72 Ovine and caprine brucellosis, EU co-financing (payments), 1993-2009



Source DG SANCO based on financial decisions from 1993-2009

The total EU expenditure on the programmes (EU co-financing) has generally followed a downward trend since its introduction in 1993 (€13,571,840), with a more noticeable reduction in recent years (2008: €6,365,764; 2009: €5,749,065).

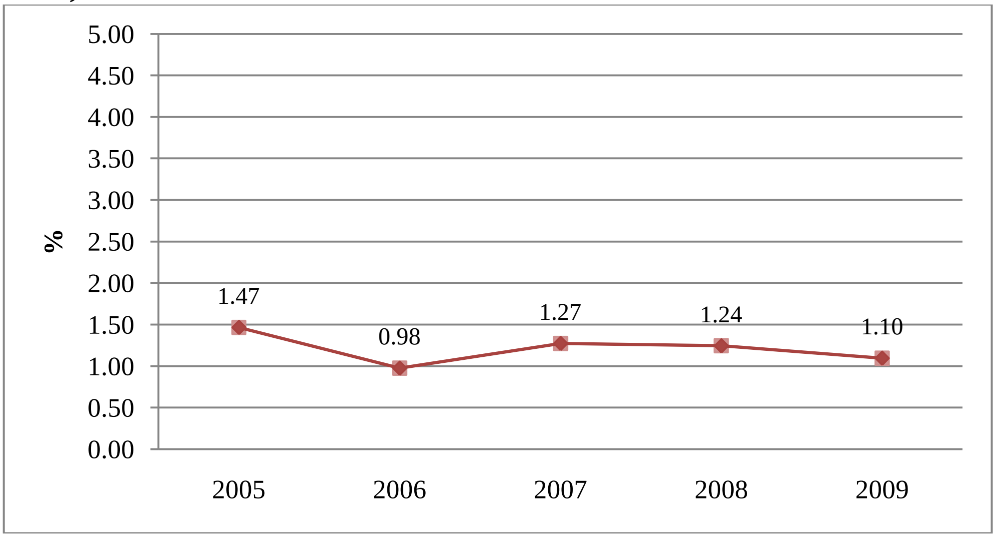
One reason for the decrease in funding is in that some MS the disease is close to the eradication (Cyprus) or has been eradication such as in France, where co-financed programmes ended as a consequence of the success achieved in eradicating *brucella melitensis*.

In addition, the reduction of funding appears to be attributable to the fact that the disease has been declining over the last couple of years within the MS that are still receiving the EU co-funding[93]. **Figure 73** presents the overall incidence of the group of MS reporting co-financed non-ObmF between 2005 and 2009. The incidence has been steadily decreasing to very low levels, and in 2009 there was a significant decline (1.10%) compared to 2005 (1.47%). In the period between 2005 and 2009 Portugal, Spain and Cyprus reported a decrease in the prevalence and incidence of positive cases in herds for *brucella melitensis.* Italy experienced an increase in new positive herds between 2005 and 2009. However, such an increase is attributed to the fact that several regions and provinces had reached ObmF status and therefore they are no longer included in the programmes. Finally, financial sanctions, applied in MS with inefficient implementation of programmes, partially explain the decrease of overall EU co-funding for the eradication of *brucella melitensis.* In Greece, a 100% penalty has been applied and no payments were made due to the poor implementation of the programme. For the same reason, the Commission imposed penalties of 70% of the approved

[93] Other factors may also lead to a variations in expenditure such as variations in the cost of the programme therefore ultimately of the costs of its individual components, i.e. the costs of testing and the costs of compensation for slaughtered animal (value of animals) and the annual availability of the funding at the EU level.

budget for the region of Sicily for the years 2007, 2008, 2009 and sanctions of between 10 and 15% for Spain between 2005 and 2009.

Figure 73 Ovine and caprine brucellosis, herd incidence in MS with co-funded programmes, 2005-2009



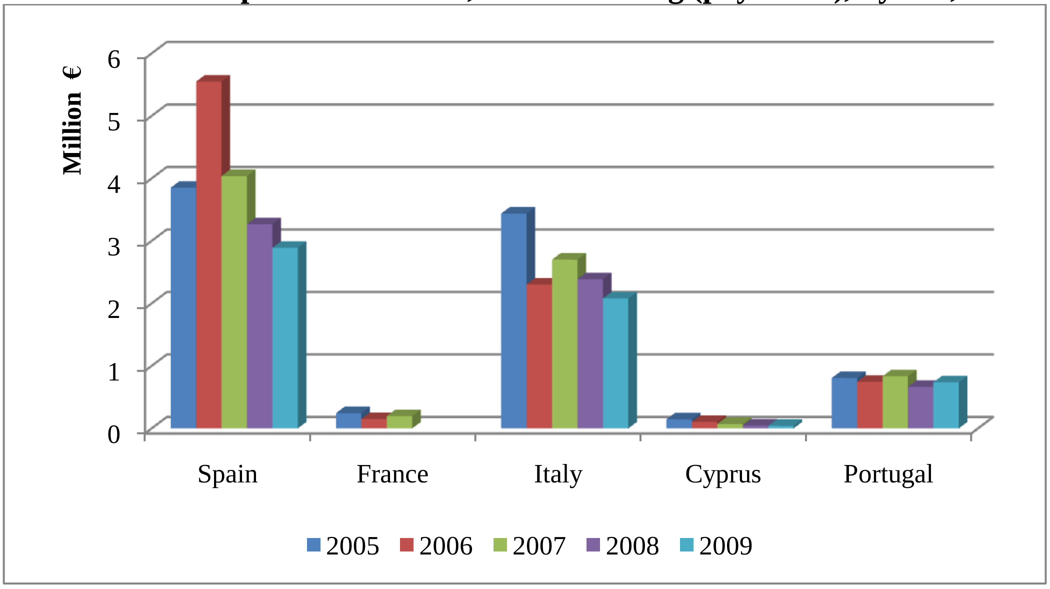
Source: FCEF based on DG SANCO ovine and caprine brucellosis programme 2005-2010-Spain, France, Italy, Portugal, Cyprus.

The main recipients of EU co-financing are those MS in Mediterranean areas, where the disease has traditionally been mostly present. Over the period under review, the amount of financial support to the MS ranges broadly, from € 409,900 for Cyprus to €19,594,999 for Spain. Spain has received the largest amount of funding, followed by Italy (€12,910,529), Portugal (€3,788,720), France (€592,027), and Cyprus. Italy, Spain and Portugal have received funding from 1993 onwards, while Cyprus has benefited from co-funding since 2004, the year of its accession to the EU. France benefited from the funding periodically until 2004 and 2007 respectively[94]. In the case for Greece, the Commission approved a programme for the eradication of *brucella* melitensis from 2005 to 2007 and for 2009 (Greece did not submitted an eradication programme in 2008[95]). However, the funds initially approved and allocated by the Commission were not paid to Greece due to poor implementation of the eradication programmes.

A final Report of FVO mission carried out in Greece in 2008 (DG SANCO, 2008c[96]), indicate that the inadequate classification of holdings and testing applied and the lack of data to evaluate the efficiency of the vaccination made impossible to provide a reliable assessment of the implementation of the eradication programmes in this country.

[94]France received funding from 1993 to 2002 and from 2004 to 2007 when eradication programme ended.
[95] Greece benefitted from EU funding in 1993, 1995, and 1997 and from 1999 to 2004.
[96] DG SANCO 2008c. *Final Report of a Mission carried out in Greece from 19 May to 30 May 2008*. Food and Veterinary Office

Figure 74 Ovine and caprine brucellosis, EU co-funding (payments), by MS, 2005-2009



Source: DG SANCO based on financial decisions from 2005- 2009

It is important to clarify that Spain and Italy have been the largest recipients of the EU funding given the larger population of sheep and goats within their territory[97]. Expenditure on the ovine and caprine brucellosis eradication programmes per animal in Spain is in line with programme costs of other Member States such as Cyprus and Portugal (€0.18, €0.28 and €0.10 per animal, respectively). In contrast, this figure is higher for Italy (€0.87 per animal). This could be attributed to a combination of factors. Regions at an intermediate phase in the implementation of an eradication campaign generally present a lower number of animals under the programme compared to those at the final stage of eradication. Also, the higher expenditure per animal is partly associated with issues related to poor implementation in some regions of the country (see section on Member States with co-funded programmes)[98].

2.5.3.3 Analysis of key results of the programmes

Cyprus

In 2009 Cyprus had a sheep and goat population of 560,374 animals distributed in 3,269 holdings. Around 50% of the population was concentrated between Nicosia and Larnaca, the south-eastern area of the island.

Between 1973 and 1985 Cyprus successfully implemented a national eradication scheme. After the reoccurrence of the disease in 1998, a new national eradication programme started in 2001. This programme is based on testing and slaughter of positive animals under the control of the Veterinary Service. The programme concerns all small ruminants over 6

[97] In 2009 Spain and Italy accounted for nearly 60% of the population of the EU population of sheep and almost 36% of EU population of goats (data from Eurostat).

[98] In Italy some regions are well progressing in the implementation of the eradication programmes (e.g. Lazio) and present very low level of prevalence and incidence in herds. Measures are mostly based on keeping these indicators low. In contrast, Southern Regions still present a very high prevalence and incidence, suggesting that their stage of implementation is still intermediate. In Sicily for example vaccination scheme is implemented in order to reduce the presence of the disease significantly.

months of age in farms for breeding and production. Serological examinations are carried out on animals in not officially free herds every six months while those in officially free herds are examined once a year. In case of infected flocks the examination is carried out monthly and the positive animals[99] are removed and slaughtered. Vaccination is prohibited in Cyprus according to the L.O.725/2003. The programme includes 100% compensation of the full reproductive value for all animals removed, including seropositive or infected animals.

From 1999 to October 2004, the United Nations funded the sheep and goats brucellosis eradication programme. Following accession to the EU in 2004, programmes for the eradication of ovine and caprine brucellosis have been submitted to, and approved, by the EU every year[100].

Since the intensification of the programme in 2005, Cyprus has made excellent progress, and the disease has almost been eradicated. **Figure 75** shows that between 2000 and 2009 the prevalence and incidence in sheep and goat brucellosis have significantly decreased, and remained at a very low level. Between 2001 and 2009, the herd prevalence and for ovine and caprine brucellosis in Cyrus has decreased from 5.02 % to 0.11% and from 1.30% to 0.11% respectively. The aim of Cyprus is to attain ObmF status in a few years time.

Between 2006 and 2009 the percentage of herds under the programme that have been declared officially free, according to the requirements of Council Directive 91/68/EEC,[101] has remained stable, around 60%-70%. The rest of herds are under the procedure of being granted the official free status. As already mentioned in the case of bovine brucellosis, the report of the sheep and goat and bovine brucellosis Task Force sub-groups[102] points out that the main problem area is still concentrated from the northern part of the island, where veterinary control remain unknown and there is no apparent brucellosis eradication programme in place. This therefore represents a significant threat of the reintroduction of the disease.

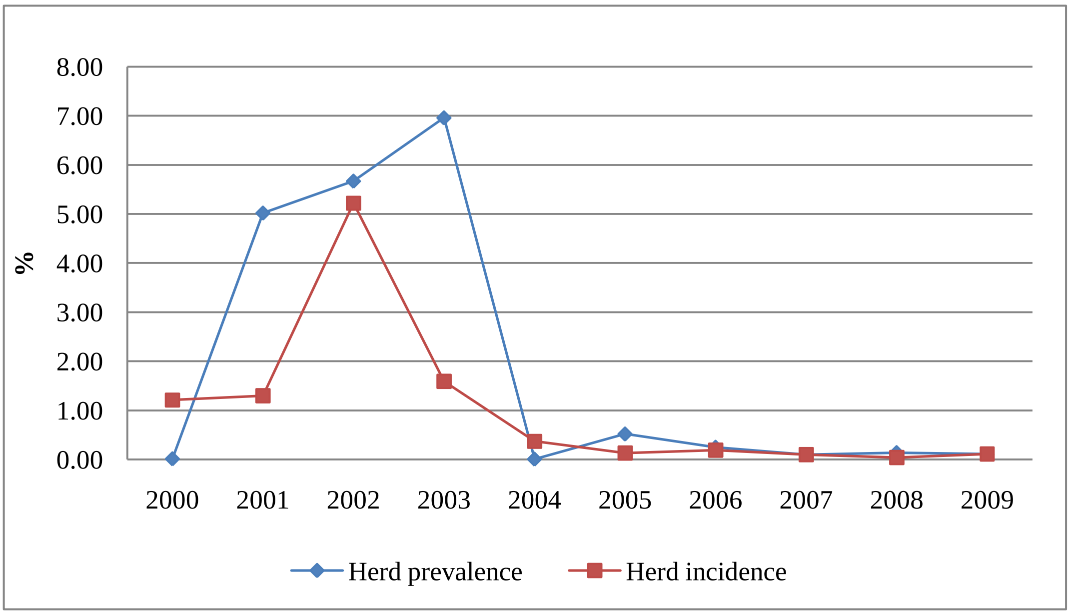
[99] A positive case is defined by Council Directive 91/68 as one where an animal reacts positively at Rose Bengal test and CFT test (> 20 ICFTU)

[100] Commission Decision 2004/804/EC, Commission Decision 2005/873/EC, Commission Decision 2006/878/EC, Commission Decision 2007/782/EC, Commission Decision 2008/897/EC.

[101] The requirements are: absence of clinical signs of brucellosis for at least 12 moths, no ovine or caprine animals which have been vaccinated against brucellosis in the last two years, negative results of two test separated by an interval of six months on all ovine and caprine animals on the holding over six months of age

[102] See note 75

Figure 75 Ovine and caprine brucellosis in Cyprus, herd and animal prevalence and incidence, 2005-2009



Source: DG SANCO-ovine and caprine eradication programmes 2011, Cyprus

Spain

The sheep and goat sector is traditionally very important in Spain both in terms of the size of the ovine and caprine population, and its meat and milk output . The country is one of the most important producers of sheep and goat meat within the EU (see **Table 6** and **Table 7**).

In 1976 control programmes on brucellosis in sheep and goats were adopted in Spain with preventive measures based on the vaccination of replacement female animals. In the 1980s programmes targeted the most affected Autonomous Communities (ACs) with extensive vaccination plans, progressing towards eradication schemes.

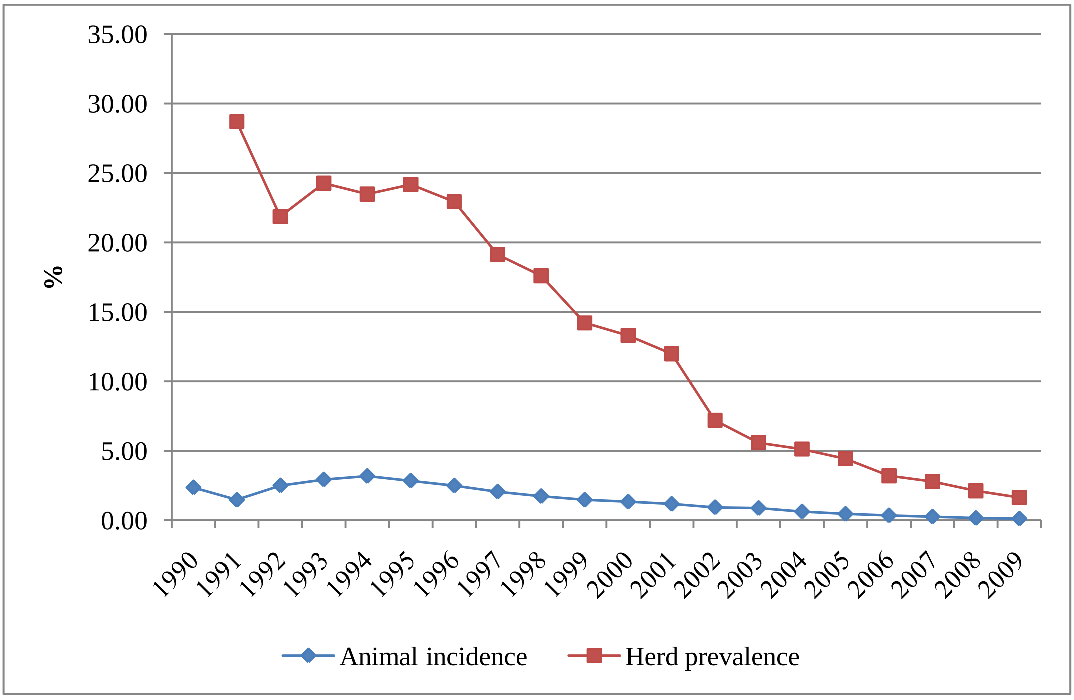
Since the beginning of the 1990s, following the accession to the EEC, control and eradication programmes for ovine and caprine brucellosis were implemented according to Decision 90/638/EEC, establishing criteria for the eradication and monitoring of certain animal diseases in order to participate in the financial contributions available by the EU. During the 1990s Spain made significant progress in fighting the disease and the herd prevalence was halved from 28.7% in 1990 to 14.2% in 2000.

In 2000 compensation measures for the mandatory slaughter of animals under the national eradication programme were introduced according to Royal Decree 1328/2000[103]. In 2006 a national multi-annual programme of 5 years was launched in order to achieve the final objective of full eradication more efficiently and effectively. The programme is based on testing and slaughtering of positive animals, compensation of farmers, and stamping out in almost free areas. Vaccination of animals is determined at regional level according to the epidemiological risk.

[103] This Royal Decree is currently being amended and a new compensation is foreseen to come into effect in 2011.

During 2005 and 2009 the positive trend in reducing prevalence and incidence of the disease in Spain was maintained. Epidemiological data show that herd prevalence considerably declined from 4.4% in 2005 to 1.6% in 2009; over the same period animal prevalence steadily declined from 0.4% to 0.1%. Herd incidence presented no significant trend, even if the decrease in 2009 was significant compared with 2005. In 2008 the percentage of herds categorised as disease-free or officially free of ovine and caprine brucellosis[104] was 92.6%, which is a significant progress when compared to the 88.7% in 2005.

Figure 76 Ovine and caprine brucellosis in Spain, herd prevalence and animal incidence, 1990-2009



Source: DG SANCO – Ovine and caprine eradication programme 2011, Spain

Spain historically shows a distribution of this disease which differs significantly among regions (**Figure 77**) [105] and the national eradication strategy has therefore been tailored to address these regional differences:

- Canary Islands are ObmF and an epidemiological surveillance programme has been in place to maintain this status;
- In Balearic Islands, Asturias, Navarra and Galicia with zero herd incidence the main strategy is based on the stamping out measures and vaccination is used only in emergency situations;

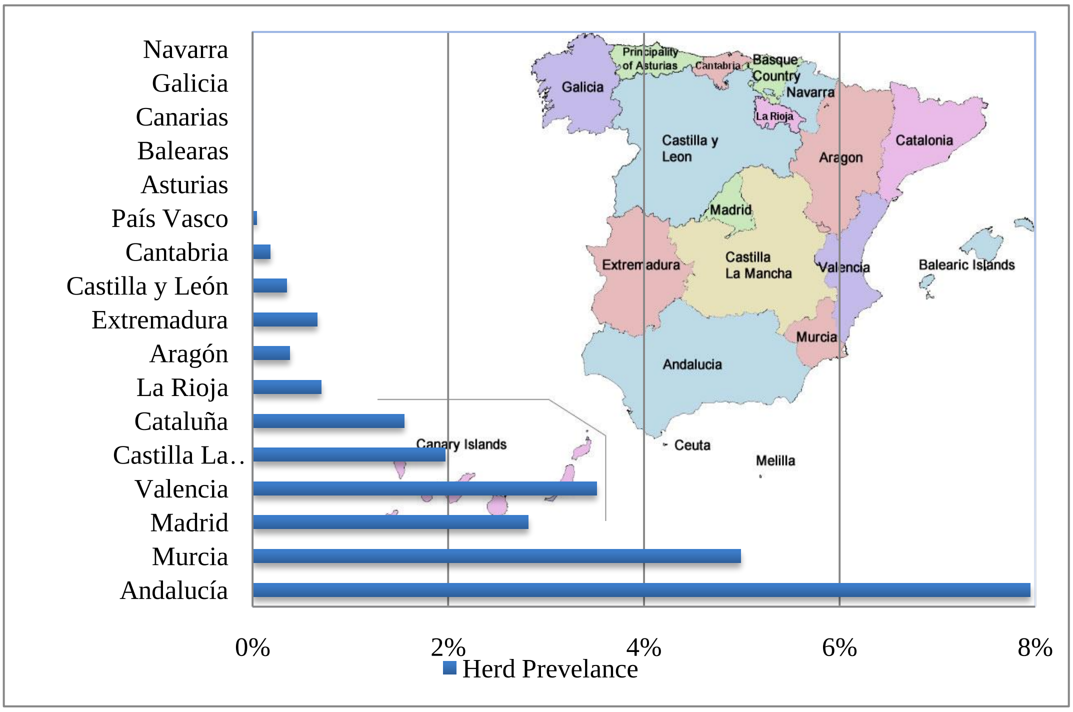
[104] Ratings of animals and herds at provincial , regional and national level are laid down in Royal Decree 2611/1996 and amendments and Royal Decree 1941/2004 of 27 September, transposing Directive 91/68/EEC and amendments

[105] The uneven distribution of the disease is attributable to the great geographical diversity among the different regions. Spain, indeed, could be divided into four types of geographical areas: Dry Spain (Centre and South), Humid Spain (North), a Mediterranean Spain and the Islands (DG SANCO, 2009d)

- In Aragón, Cantabria, Castillia-La Manca, Castilla Leon, Catalunya, Extremadura, Basque Country and la Rioja and Valencia with a herd incidence below 2% the strategy is based on testing and slaughter, qualification of the holdings and stamping out measures. Vaccination is allowed only in certain areas;
- In Andalusia, Madrid and Murcia with herd prevalence above 2%, the objective is to reach a reduction of herd incidence below 1% by applying control measures in the infected areas with massive vaccination. The strategy is based also on testing and slaughter and qualification of the holdings.

It is noted that some regions with still high prevalence did not fully implement the vaccination programme as planned in the submitted programmes; as a consequence, a penalty was applied in the years 2005-2009, representing 10% of the amount annually allocated.

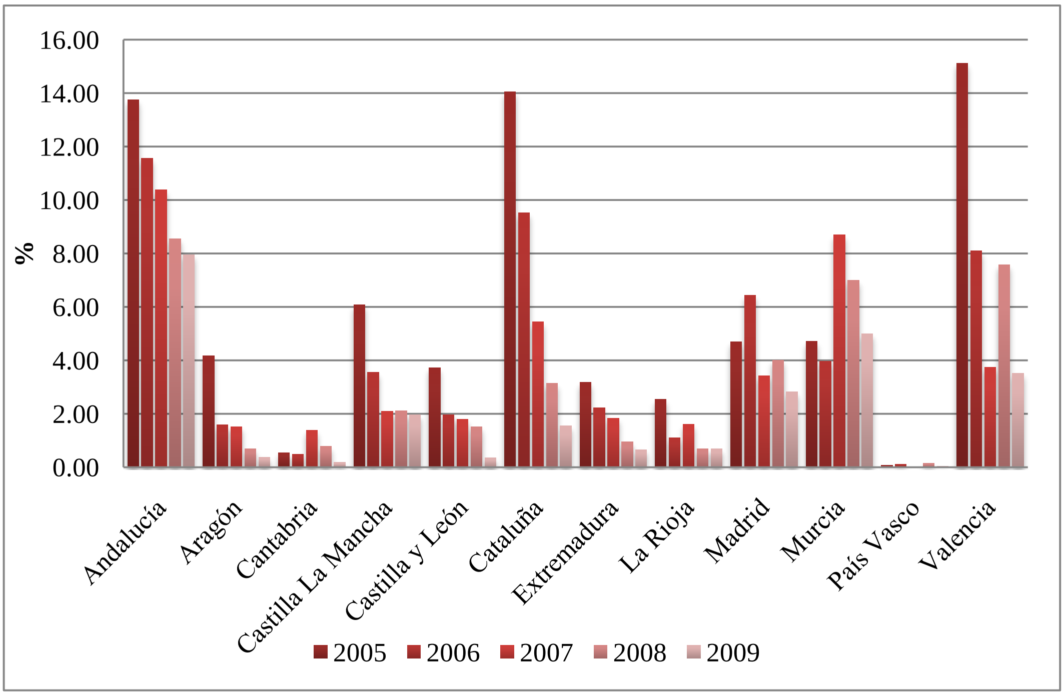
Figure 77 Ovine and caprine brucellosis in Spain, herd prevalence, by region, 2009



Source: DG SANCO – ovine and caprine brucellosis eradication programme 2011, Spain

Figure 78 presents the evolution of the herd prevalence between 2005 and 2009 in the regions where the disease is still present. The analysis of the epidemiological indicators suggests that Spain successfully implemented its targeted eradication strategy. In all the ACs herd prevalence declined over the last five years. Between 2005 and 2009 significant advances have been made especially in those ACs with a historically high number of positive cases: in Andalusia herd prevalence declined from 13.8 % to 7.95%; in Catalonia from 14% to 1.6%; in Valencia from 15.1 to 3.5% and in Basque country herd prevalence steadily declined to a very low level.

Figure 78 Ovine and caprine brucellosis in Spain, herd prevalence (%), by selected regions, 2005-2009



Source: DG SANCO – Ovine and caprine brucellosis eradication programme 2010, Spain

Italy

In 1992 a national programme for the eradication of ovine and caprine brucellosis was introduced. The programme included testing procedures for all animals over six months of age once a year and the slaughter of positive animals within thirty days. In the same year Council Directive 91/68 was transposed into national legislation by Presidential Decree 556 of December 1992 which laid down animal health requirements for the trade of ovine and caprine animals within the EU.

During the last five years, the programme has been mainly focused in the Southern regions of Italy where the disease is still endemic. In 2006 compensation measures for the slaughter of animals targeted by national programmes were introduced. A vaccination scheme is applied to pre-pubescent female replacement sheep and goats aged between 4 and 6 months in the southern regions (mainly in Sicily and Calabira[106]). Due to the poor implementation of the programme and, consequently, the negative results in eradicating the disease in the southern regions a new Ministerial Order with more stringent rules for Calabria, Sicily, Campania and Puglia was issued in November 2006. The new Order included the following measures: the establishment of a task force composed of the central and regional competent authorities and the National Reference Laboratory; the slaughter of infected animals within fifteen days, and the possibility to exclude farmers from EU funding and the use of penalties for non compliance to the rules of the Order.

[106] A 2007 FVO reports indicates that vaccination of young female animals had also been carried out in Calabria (20 holdings with 300 animals) in 2006 (DG SANCO 2007c).

Since the beginning of the 1990s Italy has benefited from the Union financial contributions for the eradication of ovine and caprine brucellosis. Between 2005 and 2009 Italian eradication programmes were submitted and subsequently approved by the Commission[107]. The overall EU co-financing has amounted to €12,910,529. **Figure74** presents the distribution of co-funding for the whole period.

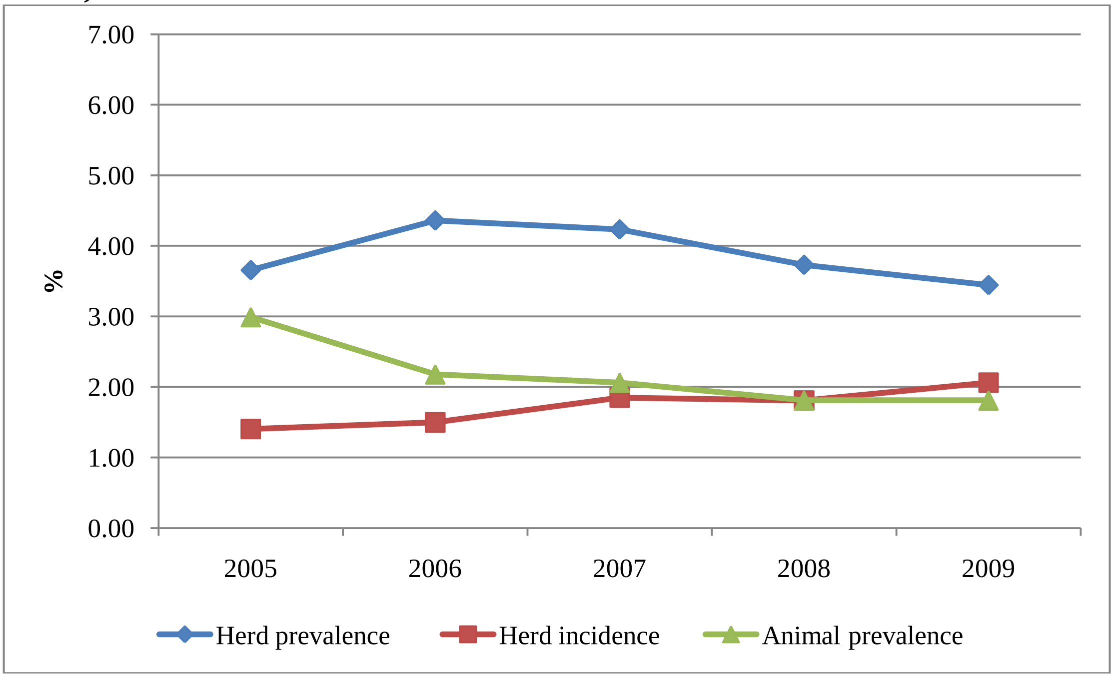
At national level, herd incidence increased from 1.4% in 2005 to 2% in 2009, while animal prevalence decreased from 3% to 1.8% over the same period. An increase in herd prevalence has also been reported from 3.7% in 2005 to 4.2% in 2007, followed by a small decrease in 2008, and a more significant one in 2009 (3.4%). However, the analysis of the epidemiological indicators should take into account the fact that Italian data reflects the results of regions having the highest prevalence instead of the situation in the whole country.

The number of herds under the programme has been reducing over the period due to the fact that several regions/provinces have reached ObmF status and are not longer included in co-financed programmes, therefore when quantifying the prevalence it should be taken into account that the denominator has decreased.

The results of the eradication and monitoring programmes have differed significantly between regions. The northern and central regions of Italy and Sardinia Island have successfully implemented their programmes. In 2010, ten regions and seven provinces reached the ObmF. In 2008 the Sheep & Goats Brucellosis Task Force sub-group ("DG SANCO, 2008b[108]) reports a great improvement in the implementation of the eradication programmes in Lazio and Sardinia. In the Region of Lazio four out of five provinces reached the ObmF status[109] between 2004 and 2007 while Sardinia was declared officially free in 2010[110]. In 2009, in the non-officially free regions, available epidemiological data show that the prevalence in both herd and animal ranges from a very low level - 0.05% and %0 respectively - in Abruzzo to a relatively high percentage of 13.19% and 8.11% respectively in Sicily (see figure below).

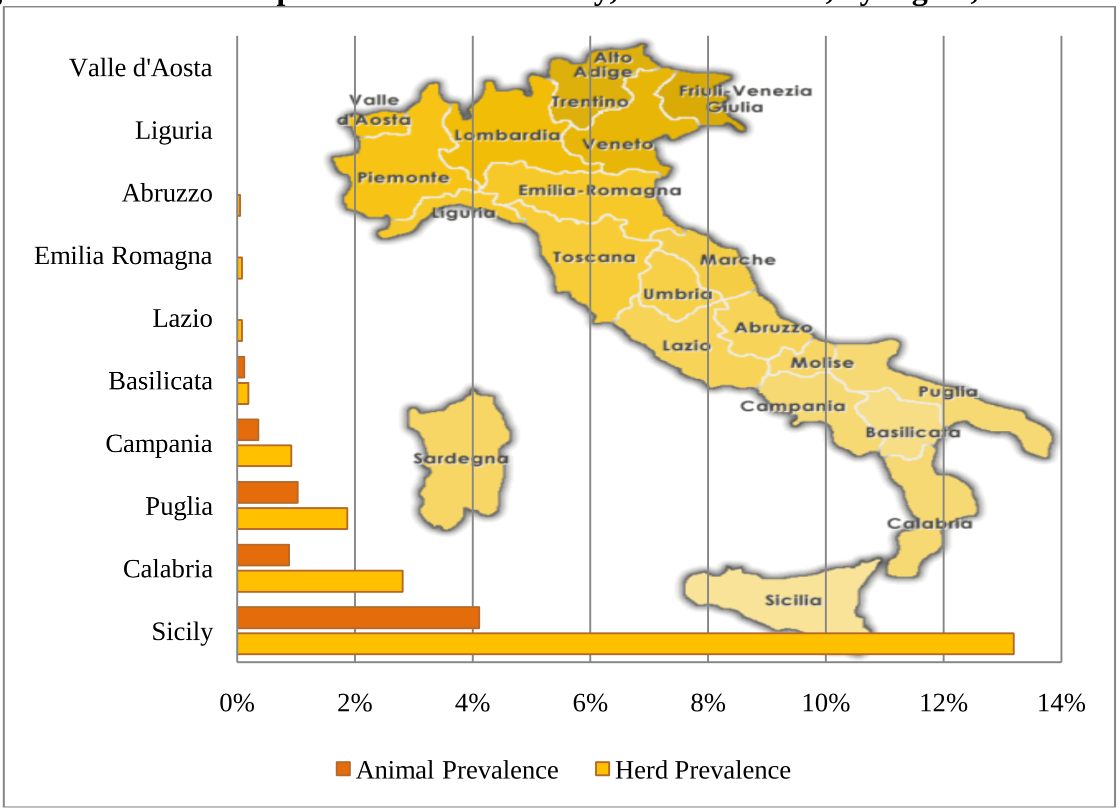
[107] The programmes in 2005, 2006, 2007, 2008, 2009 were approved by Commission Decision 2004/804/EC, Commission Decision 2005/873/EC, Commission Decision 2006/878/EC, Commission Decision 2007/782/EC, and Commission Decision 2008/897/EC, respectively.
[108] DG SANCO. Report of the "Sheep and Goats Brucellosis" Task Force Sub-Group. Rome, Italy 23-24 April 2008
[109] Commission Decision 2004/199/EC and Commission Decision 2008/97/EC
[110] Commission Decision 2010/391/EU of 8 July 2010

Figure 79 Ovine and caprine brucellosis in Italy, herd and animal prevalence and herd incidence, 2005-2009



Source: DG SANCO – ovine and caprine brucellosis eradication programme 2011, Italy

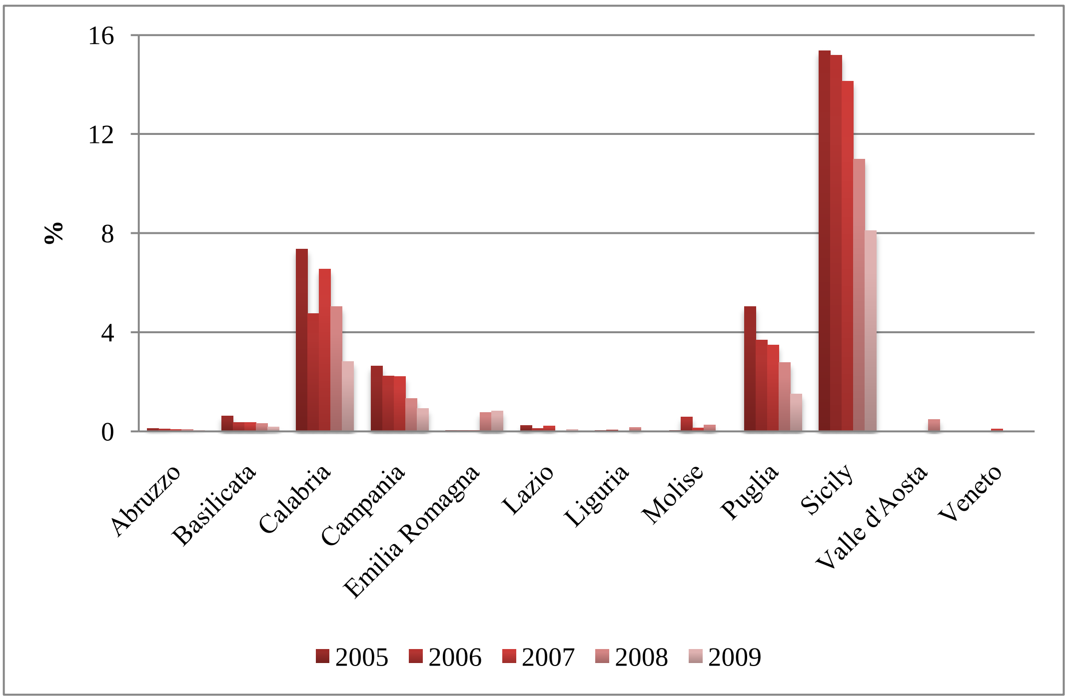
Figure 80 Ovine and caprine brucellosis in Italy, herd incidence, by region, 2009



Source: DG SANCO – ovine and caprine brucellosis eradication programme 2011, Italy

As **Figure 80** indicates, *B. melitensis* is now mainly concentrated in the southern regions of Italy. Despite the improvements following the introduction of 2006 Ministerial Order, herd prevalence continued to be very high in Calabria, Campania, Puglia and Sicily. In particular, in Sicily the negative epidemiological situation has been related to the poor implementation of the programmes. A 2007 FVO report (DG SANCO 2007c[111]) points out that in the region no clear criteria have been applied to vaccination of ObmF holdings. Therefore, it has been difficult to assess whether the vaccination scheme had been carried out as planned. The report also indicates that in Southern Italy "*the targets for regular testing of sheep and goat flocks were not reached in all regions, which has lead to the increased number of holdings with unknown health status. This [..] undermines the reliability of data. These shortcomings, (in turn), jeopardize the success of the eradication programme*" (DG SANCO, 2007c). Due to the poor implementation of the programmes for the financial contributions of 2007, 2008 and 2009 the European Commission proposed and applied a sanction of 70% to the region of Sicily.

Figure 81 Ovine and caprine brucellosis in Italy, herd prevalence (%), by region, 2005-2009



Source: DG SANCO – ovine and caprine brucellosis eradication programme 2011, Italy

Portugal

In Portugal control measures on ovine and caprine brucellosis have been implemented since 1953 when the notification of the disease became compulsory according to Decree Law n. 39209. Initially the plan was focused on the control of the disease in goats, but subsequently campaigns to control brucellosis in sheep were also included. A national eradication programme "*programme basis for organising action to combat animal brucellosis*" was

[111] DG SANCO 2007c. *Final Report of a Mission carried out in Italy from 10 to 14 September 2007*. Food and Veterinary Office

initiated in 1978. The programme was based on the health classification of herds and the gradual expansion of the areas classified as brucellosis free. In 1989 *Agrupamentos de Defasa Sanitaria* (health protection groups) were introduced to improve the organisation and the management of the eradication strategy.

In 1992, following the accession to the EEC (1986), Portugal submitted a plan for eradication of brucellosis in small ruminants for EU co-financing, which was approved by Decision 91/217/EEC[112], transposed into law by Order N.105/91. The Order lays down rules on the vaccination of young replacement females between 3 and 6 months and the health classification of holdings for the identification of officially free regions, area and districts.

Specific vaccination programmes were also submitted for certain areas in the Norte and Algarve Directorates for Regional Veterinary Services. During the 1990s epidemiology indicators have been favourable. Between 1989 and 1999 both herd and animal prevalence declined from 13.2% to 7.4% and from 4.3 %to 2.3%, respectively. **Figure 80** shows the distribution of payments granted by the EU between 2005 and 2009. On average, Portugal received an annual contribution of some €750.000 over the period.

Between 1999 and 2000 new legislation was established at national level (Decree 338/99 and 244/2000), establishing new measures for brucellosis eradication, which allowed for better control and regulation of the responsibility associated with the possession and the movement of the small ruminants within the national borders. The main prophylactic and animal measures of the programme included compulsory serological testing of all caprine and ovine animals over 6 months of age, or 18 months if vaccinated; vaccination of young animal between 3 and 6 months of age; compulsory slaughter of positive animals.

At national level the eradication programmes made progress in terms of coverage, implementation and organisation. The success of the implementation of the programme has resulted in the granting of the ObmF status for the Azores. Furthermore, between 2005 and 2009 the herd coverage increased and reached 94.5% in 2009. This resulted in an improved epidemiological situation during the first decade of 2000. In 2005, 2.019 flocks were found to be positive while in 2009 the number of infected flocks had fallen to 919. Thus during the period the prevalence dropped from 3% to 1.5%.

In the Regions of Algarve and Trás-os-Montes, two regional control and eradication plans have been implemented since the end of 1980s-beginning of 1990s.

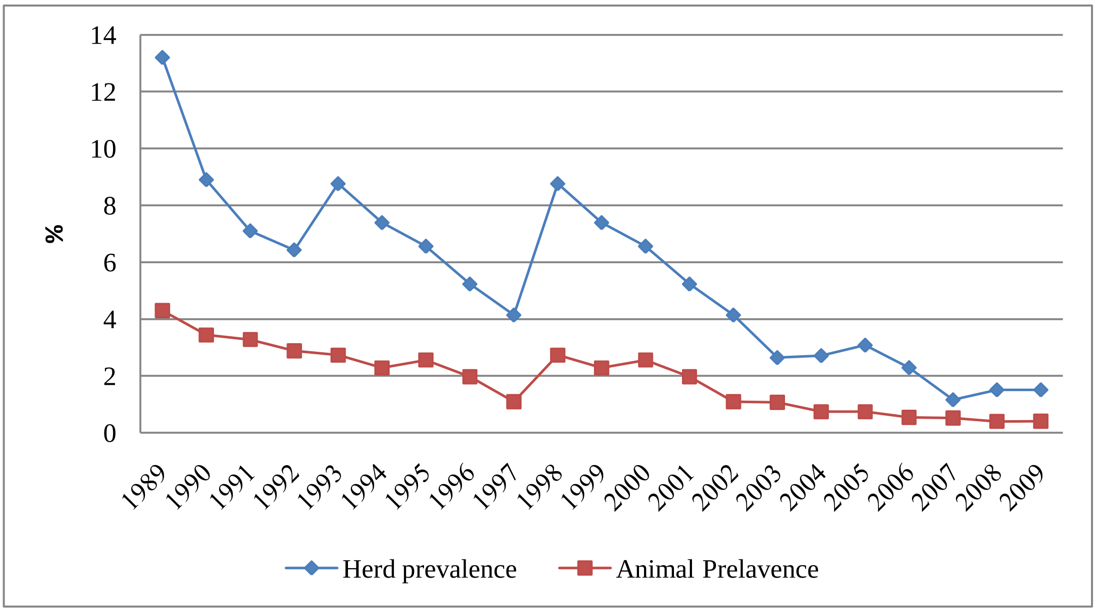
In Algarve, due to the poor results of the programme between 1980s and 1990s, a new eradication strategy was adopted in 2000 which was implemented until 2004, aimed at improving animal identification, increase the pace of screening, laboratory analysis and slaughter, and intensifying controls on quarantine herds. This resulted in a significant decline of herd prevalence from 14.7% in 2000 to 6.3% in 2004.

Subsequently, in 2005, the Region put in place a vaccination plan on young replacement females Herd incidence and prevalence decreased substantially until 2006. A subsequent

[112] Commission Decision of 26 March 1991 approving the plan for the eradication of brucellosis in sheep and goats presented by the Republic of Portugal *OJ L 97, 18.4.1991, p. 23–23*

increase in herd incidence was observed between 2006 and 2009, reflecting problems with the implementation of the programme[113]. For this reason a decision was made to maintain a compulsory vaccination scheme for all replacement young females until 2010.
In Trás-os-Montes, *brucella melitensis* has always been endemic. Between 1995 and 2002 the level of prevalence of the disease in herds was always substantially higher than the national level. Due to the negative epidemiological situation, a massive vaccination plan on young and adult sheep and goats was adopted in 2001. Between 2001 and 2004 a total of 326,742 sheep and goats were vaccinated. The vaccination programme in the region has proven useful and successful in reducing the disease (a significant decrease in herd prevalence was observed since the beginning of the vaccination programme- from 43% in 2000 to 9 % in 2009).

Figure 82 Ovine and caprine brucellosis in Portugal, herd prevalence and incidence (%), 1989-2008



Source: DG SANCO – ovine and caprine brucellosis eradication programme 2011, Portugal

2.5.3.4 Analysis of effects of the programmes

Map 20 and **Map 21** present the MS status regarding freedom of ovine and caprine brucellosis in the last ten years in the EU. Between 1992 and 2010 the situation has positively improved and throughout the period of implementation of the programmes, new areas were declared officially free, namely Austria, Denmark, Finland, ten regions and seven provinces of Italy, all the Azores in Portugal, Autonomous Community of the Balearic Islands, two provinces of the Autonomous Community of the Canary Islands in Spain, Sweden.

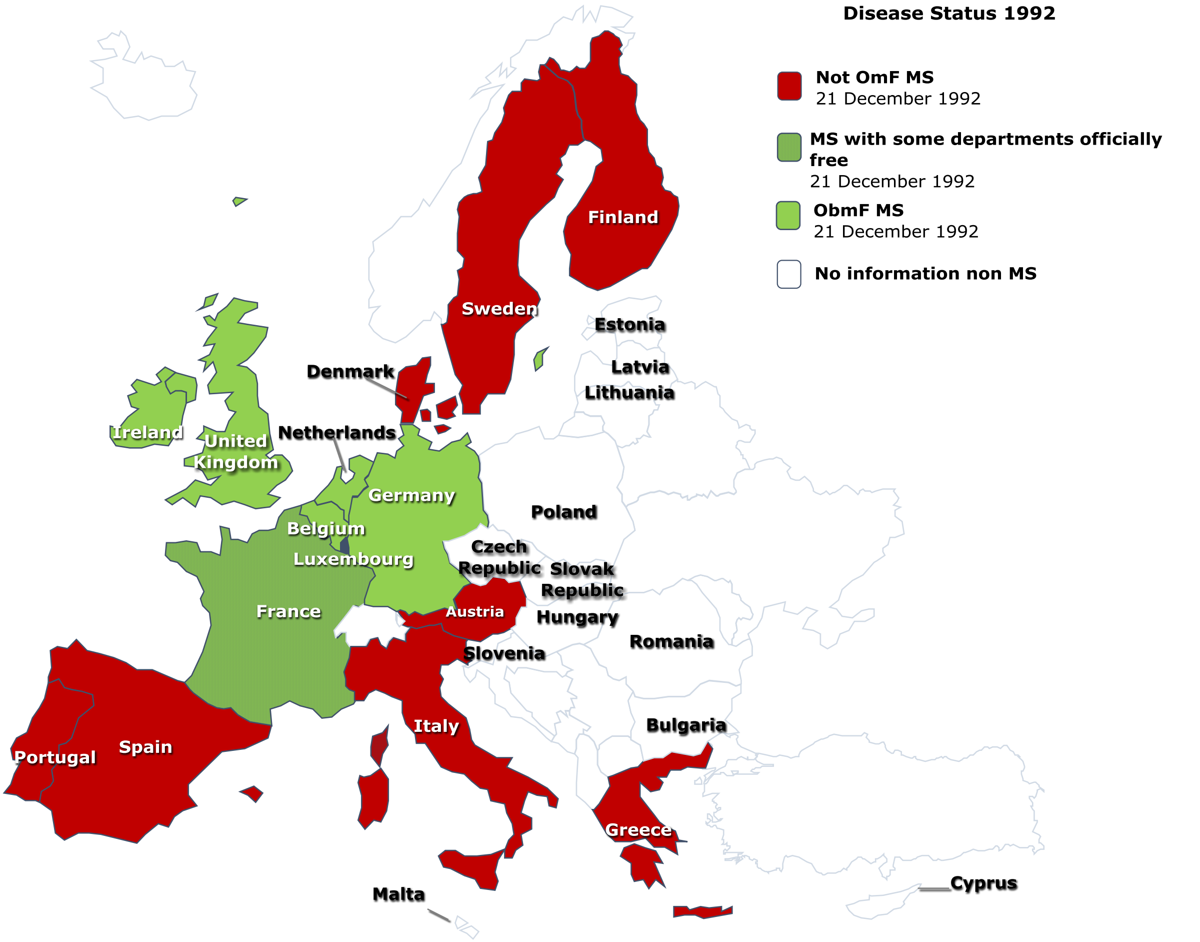
The status of ObmF MS provides, however, only a partial indication on the effects of the programmes and the achievements in terms of eradication. Another useful indicator to take

[113] Several factors were identified to explain the low percentage of implementation (vaccines planned/vaccines carried out): overlaps of the vaccination campaigns for bluetongue and brucellosis, low fertility of the herds, overestimation of the size of holdings, resistance of the producers to keep young animals for replacement.

into account is the proportion of *brucella* infected/positive ovine and caprine herds in the Member States that have implemented eradication programmes co-funded by the EU.

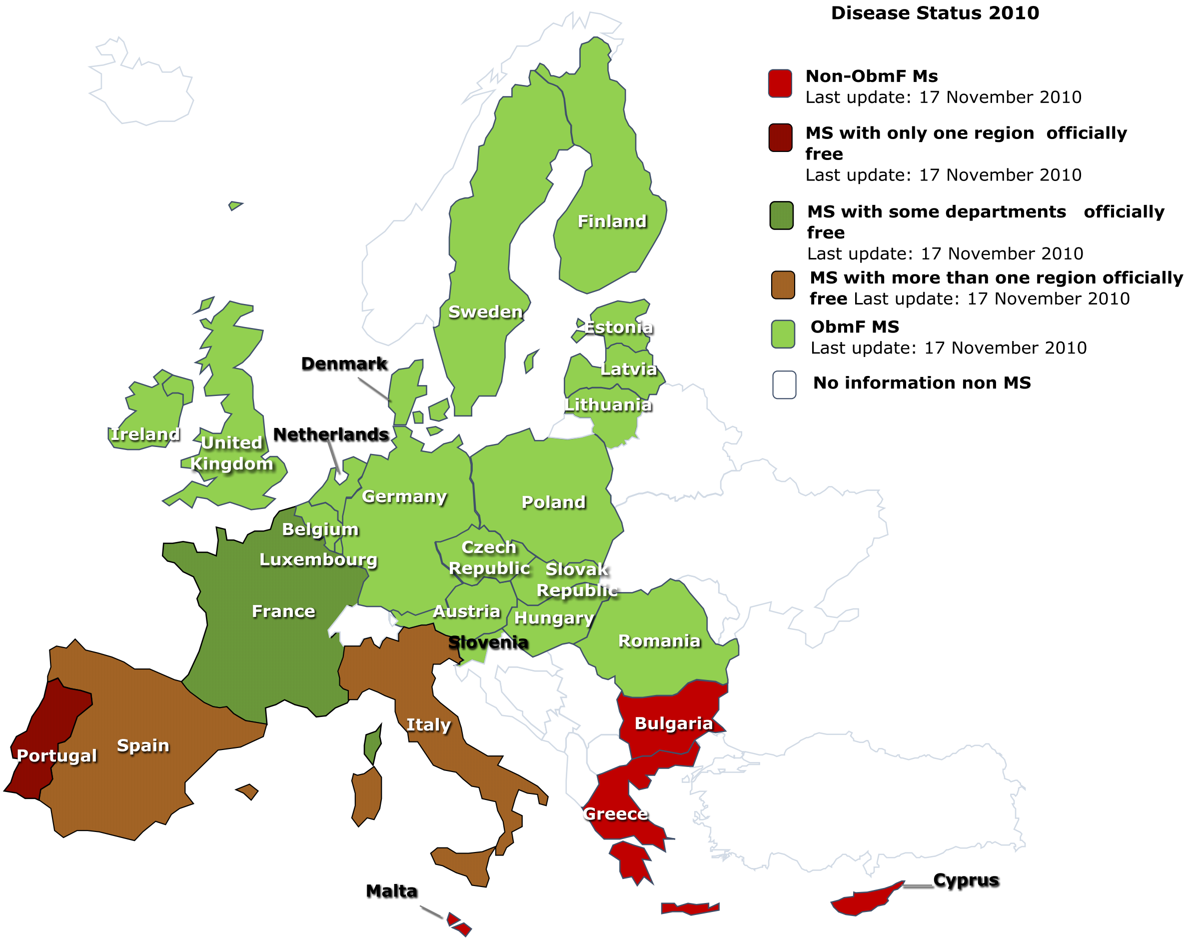
Map 22 and **Map 23** compare the situation in 2005 and in 2009, showing that this indicator has decreased over the period for all the countries considered. This again suggests that the programmes have worked effectively towards the eradication of the disease, despite the regional variations that apply in some Member States, as described in the previous sections

Map 20 ObmF MS, 1992



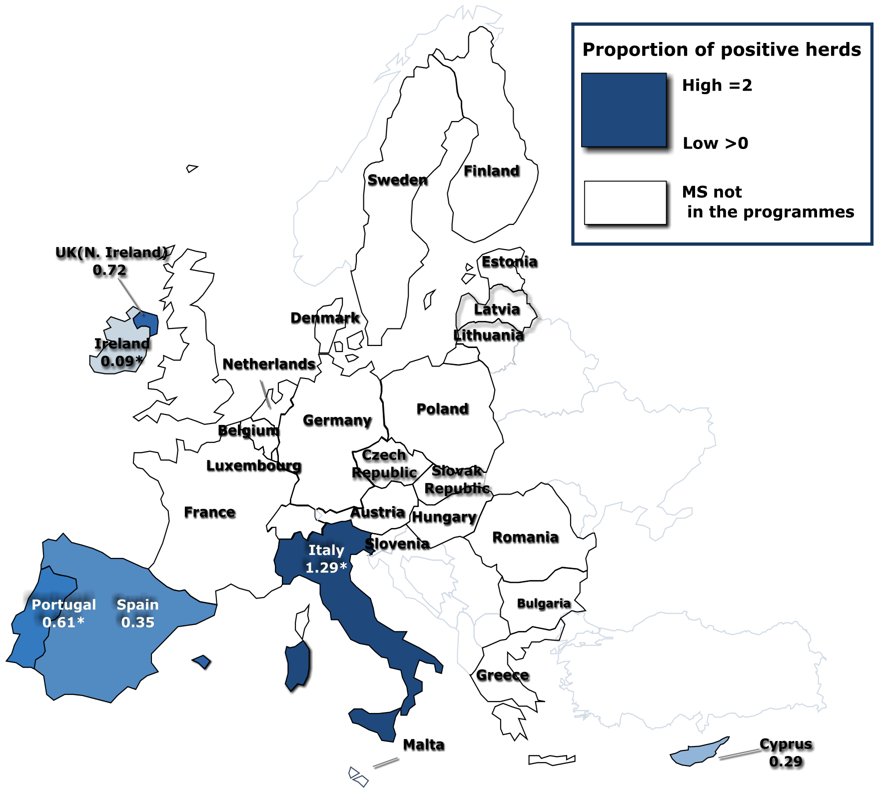
Source: FCEC elaboration based on relevant Commission Decisions

Map 21 ObmF MS, 2010



Source: FCEC elaboration based on relevant Commission Decisions

Map 22 Proportion of *brucella* in infected/positive ovine and caprine herds in non ObmF MS with EU co-funded eradication programmes, 2005



*In Italy the existing number of herds of the regions with co-funded programmes has been taken rather the the number of existing herds in the country (EFSA firures slightly differ).Source: FCEC based on DG SANCO data-ovine and caprine brucellosis eradication programme, 2010, co-funded Member States

Map 23 Proportion of *brucella* in infected/positive ovine and caprine herds in non ObmF MS with EU co-funded eradication programmes, 2009

*In Italy the existing number of herds of the regions with the co-funded programme has been taken rather the the number of existing herds in the country FCEC based on DG SANCO data- ovine and caprine brucellosis eradication programme 2010, co-funded Member States

..

2.5.3.5 Analysis of impacts of the eradication programmes for bovine and ovine/caprine brucellosis

Member States are requested to estimate the overall costs and benefits of the eradication programmes for bovine and ovine and caprine brucellosis when submitting a request for co-funding to the European Commission. The main benefits of the programmes can be grouped into two main types of impact: in terms of animal health and reduction of the risk of infection in humans, and in economic terms.

a) Reduction of risk of infection (animal health, public health)

Brucellosis is a serious zoonosis, which necessitates the exclusion of infected animals and their products (milk and derived products) from the market. The availability of higher quality, safer animal products, ensuring sufficient protection of human health from the potential negative impact of this zoonosis, is one of the objectives and achievements of the programmes. The benefits for risk groups (farmers, veterinarians, butchers, slaughterers, and other people in rural areas) are evident: when the prevalence is reduced the chance for exposure is contained below the limit of infection. The chance of consuming contaminated fresh milk or dairy products will be likewise reduced[114].

Data from EFSA (EFSA-ECDC, 2011a) indicate a solid decreasing trend in the number of confirmed cases of brucellosis in humans. On the basis of information submitted by 26 MS, the report indicates that ten Member States (Cyprus, the Czech Republic, Estonia, Finland, Ireland, Hungary, Latvia, Luxembourg, Malta and Slovakia) reported no human cases. In total, 436 cases of human brucellosis were reported in the EU in 2009, of which 92% were reported as confirmed cases. Member States that are officially bovine brucellosis free (OBF), as well as officially *brucella melitensis* free (ObmF), reported low numbers of cases, whereas the non-OBF/non-ObmF Member States (Greece, Italy, Portugal and Spain), accounted for 74.8% of all confirmed cases reported in 2009. At the EU level, Italy and Greece were the countries which reported the largest reduction (69.3 % and 64.9 % respectively) in confirmed cases in 2009 compared with 2008.

Despite the slight increase in 2009, Spain recorded a dramatic decrease in the last decade (8,500 cases in the 1980s' vs. 114 cases in 2009). In the EU, the notification rate of brucellosis in 2009 decreased slightly from 0.08 cases per 100,000 population, to 0.1 cases per 100,000 population in 2008.

Within the six co-funded Member States, s significant decreasing trend was observed during a five-year period, 2004 to 2009 at the level of co-funded Member States. The notification rate of brucellosis in 2009 remained similar to 2008 (0.12 and 0.13 cases per 100,000 population respectively). Despite the slight increase in the number of reported confirmed cases in 2009 compared to 2008 in Spain Portugal and United Kingdom, over the period under review a statistically significant decreased in the number of reported cases was observed in all the co-

114 In terms of cost of the disease in humans, the UK Department of Environment, Transport and the regions provided in 1997 an estimated cost of a ‘light’ casualty to a human (representing loss of earnings, welfare costs etc.). When this is adjusted to reflect today prices it equates to over £8,000 per human case.

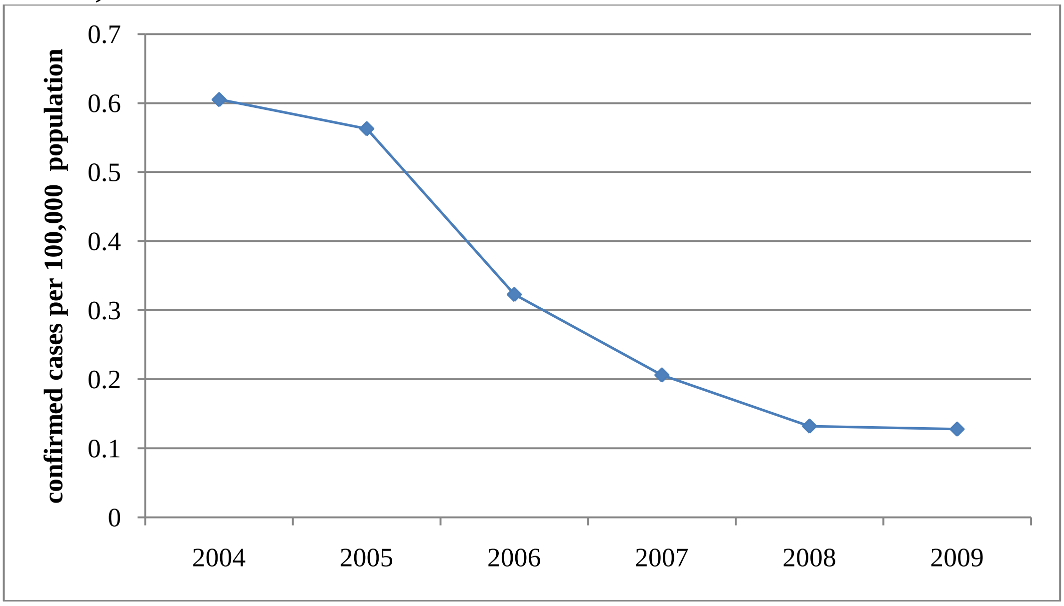
funded MS with the exception of Portugal. It should also be noted that the illness can take several years to manifest in humans and can also last for several years; therefore some cases may represent the late occurrence or recurrence of the disease. These figures for the countries where co-funded programmes are in place give an indication of the success of the programmes.

Table 12 Reported brucellosis cases in humans, 2004-2009, MS with co-funded programmes for eradication of bovine brucellosis

Country/Year	2004	2005	2006	2007	2008	2009
Cyprus	1	2	0	0	0	0
Ireland	2	7	4	7	2	0
Italy	398	632	318	76	75	23
Northern Ireland	31	12	16	13	13	17
Portugal	39	147	76	74	56	80
Spain	589	196	162	201	94	114
Total MS with co-funded programmes	**1,060**	**996**	**576**	**371**	**240**	**234**
EU total	***1,349***	***1,207***	***767***	***541***	***619***	***401***

Source: EFSA-ECDC. *The European Union Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2009*

Figure 83 Notification rate of reported confirmed cases of human brucellosis in co-funded MS*, 2004-2009



**Note:Total cases for 2004 and confirmed cases from 2005-2009 are included.*

Source: EFSA- ECDC: The Community Summary Report on Trends and Sources of Zoonoses and Zoonotic Agents in the European Union in 2007 and 2008; The European Union Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2009

B. melitensis and *B. abortus* were responsible for 11.3% of confirmed cases, while *B. Suis* accounted for only 0.2% of reported cases in the EU. The suspected source of transmission was reported for 612 of confirmed cases, however in 91.8% (562) of these cases, the source was reported as unknown. The suspected known sources reported were contact with farm animals (31 cases), consumption of cheese (15 cases), milk (two cases), dairy products (one case) and sheep meat (one case).

With regard the presence of *brucella* in food, data on the occurrence of *brucella* in milk and cheese, the report (EFSA-ECDC, 2010), based on data provided by six MS, indicates that positive findings were only made in raw, unspecified milk (4.1%) and unspecified dairy products (0.4%), both reported by Italy. Additionally, one brucellosis outbreak caused by contaminated cheese was recorded in 2008.

b) Economic benefits for the sector

The successful implementation of the programmes results in improvement in terms of animal health and welfare. This also yields benefits in terms of the avoidance of direct losses from the cost of morbidity and the cost of reduced production. Control and eradication measures help increase productivity in meat and milk production and thus improve producer incomes. The assessment of the benefits of the programme in economic terms involves the analysis of the trade implications caused by the presence of the disease. As reported by the MS in their estimates of costs and benefits of the eradication programmes, the main advantage of having successful implementation is the prevention of losses of trade consequent to the application of the programme, against the costs related to the implementation of the programme as such.

In terms of the costs of the programme, it is noted that the health status of the herd determines the number and the frequency of sampling. Therefore, it is expected that as the implementation of the programme is advancing and results in improved health status, the costs in subsequent years in terms of visits to the holdings to take blood samples will be reduced. The reduction in the number of reactive sera also involves a reduction in costs relating to reduced need for laboratory analysis, while the number of bacteriological examinations carried out also decreases.

With the reduction of the disease, the number of slaughtered animals also decreases. This implies the immediate direct benefit of reducing the amount of compensation paid, and the overall indirect benefit of preserving the gene pool and the resulting socio-economic benefit of the increased health status of the herds, both at the level of each particular producer and at the level of the various regions in the country.

By way of example, following the declaration of Ireland as OBF, the national Department of Agriculture, Fisheries and Food decided to exempt 50% of suckler and dry stock herds from brucellosis tests, corresponding to 800,000 animals removed from the testing regime in 2011. This translates to an estimated saving for farmers of €2.5m during 2011. With regard to ovine and caprine brucellosis, MS estimate that the measures actually implemented in the last years have led to a decrease in the number of reactor animals, the number of animals slaughtered and consequently the total value paid in compensation.

The presence of the disease can cause major obstacles to the free movement of animals: the avoidance of indirect losses, such as barriers to free trade, is one of the major impacts of the eradication programmes. In terms of competitiveness of the sector, as the percentage of accredited holdings increases, the commercial potential of the products increases, and the movement of animals and animal products is facilitated. This, in turn, allows farmers to intensify the number of commercial operations with a better negotiating position, and it has a positive effect on the value of their products. This is particularly relevant as regards the movement of animals for the purposes of intra-EU trade.

This is particularly important for countries where the sector is highly relevant for the national economy. In Ireland, for instance, the agriculture and food sector continue to make a significant contribution to the Irish economy, accounting for 6.7% of GDP (Gross Domestic Product) (at factor cost), 8.2% of employment and 9.8% of exports. The eradication programme for bovine brucellosis in this country has been extremely effective in reducing the incidence of the disease. Given the predominant position of the dairy and beef sector in the Irish agriculture and as a generator of substantial foreign earnings from the export of livestock and livestock products, the expenditure is considered to yield significant benefits, in terms of: (i) the overall health of the national cow population; (ii) the production of healthy calves (some 2 million calves are borne into the national herd each year); and, (iii) the continued ability of Irish farmers and exporters to trade in livestock and livestock products.

2.6 Bluetongue

Main results – Bluetongue monitoring and eradication programmes:

- Over the period under review, 23 Member States have benefited from the funding with a total of €88 million, excluding funding emergency vaccination for BTV-1 and BTV-8 that took place in 2007-2008. The total amount of funding during the period varies greatly between Member States, depending on whether vaccination was applied as well as the size of the ruminant population in each case;

- In the mid 2006, bluetongue virus serotype 8 appeared unexpectedly in northwestern Europe and spread rapidly across a large part of the EU probably due to the unusually warm climatic conditions. Similarly, in 2007, serotype 1 occurred in the Iberian Peninsula and quickly spread northwards. The EU quickly mobilised significant financial resources, which allowed Member States to perform intense monitoring and surveillance for the disease and later, initially through the emergency fund the then through the annual programmes, to launch a coordinated vaccination campaign across the infected areas. The successful implementation of large-scale vaccination campaigns against the responsible serotypes has contributed to the sharp decrease in the number of outbreaks in 2009 and 2010 through the reduction of the virus circulation;

- From an economic perspective, the successful implementation of the programmes has yielded benefits resulting from the diminution of losses due to the fall in animal value and the value of production (death of animals or decrease in production due to illness);

- The successful implementation of the bluetongue vaccination campaigns has made possible in recent years (after 2007) to move animals vaccinated for the present serotype(s) **from restricted areas into free areas.** One of the main benefits of vaccination has therefore been to have contributed to avoid the losses of farmers that are caused by movement restrictions.

2.6.1 Background and context

Bluetongue is an animal disease affecting domestic and wild ruminants including sheep, cattle, goats and deer. It is a non-contagious infection transmitted by flying midge insects belonging to the *Culicoides* genus. A total of 24 serotypes of the virus are currently known to science, each of which can have differing virulence and mortality rates. The way it can be transmitted and the susceptible species are continually being investigated by scientists.

Bluetongue is not known to be harmful to humans. However, it can cause considerable damage to livestock populations. It is a trans-boundary disease and the epidemiological situation in one country can affect neighbouring countries, therefore national control measures alone might not be sufficient.

The central role of flying insects in bluetongue epidemiology means that the prevalence of the disease is governed by ecological factors that favour insect survival such as temperature, humidity and soil characteristics. Bluetongue outbreaks generally occur seasonally and in warm climates.

Bluetongue can cause spectacular disease outbreaks and is an OIE listed disease.

The bluetongue situation in the EU has considerably changed in recent times with incursions of new serotypes, namely of serotype 8 (BTV-8), in an area where outbreaks have never been reported, and also of serotype 1 (BTV-1) in southern Europe (this has also subsequently spread northwards. It seems that these serotypes (BTV-1, BTV-8) can be efficiently transmitted by vectors that survive in colder areas, bluetongue other serotypes.

Until recently, bluetongue had only been recorded in southern regions of the EU including parts of Italy, Spain, France, Greece and Portugal, caused by different serotypes. In August 2006, the Netherlands, Belgium, Germany and northern parts of France experienced their first ever outbreaks of bluetongue. Further outbreaks were reported in 2007 and 2008 and the disease reached as far as the Czech Republic, Denmark, Hungary, the UK and Sweden. This epidemic was caused by bluetongue virus serotype 8 (BTV-8) which never before occurred in the European continent. In 2007 outbreaks of BTV-1 occurred in the Iberian Peninsula and gradually spread northwards mainly in western parts of France. Pre-2006 outbreaks in Southern Europe were mainly caused by serotypes BTV-4 and BTV-16. The evolution of the disease from 2006 to 2010 is presented in **Maps** from **1** to **5** below.

EU measures to combat bluetongue are in place since 2000 through Council Directive 2000/75/EC[115], which lays down specific provisions for the control and eradication of this disease. The measures include the establishment of protection and surveillance zones, a ban on the movement of susceptible animal species (live ruminants) from affected areas to non-infected regions where the vector is present, vector control (use of insecticides in the animal premises and in the areas where these insects live, insect repellents onto animals, mosquitoes nets, etc.), and the use of vaccines. Further control rules have been adopted to tackle the recent outbreak through coordinated European action. Commission Regulation (EC) No 1266/2007[116] contains detailed implementing rules for the control, monitoring, surveillance of

[115] Council Directive 2000/75/EC of 20 November 2000 laying down specific provisions for the control and eradication of bluetongue *OJ L 327, 22.12.2000, p. 74–83*

[116] Commission Regulation (EC) No 1266/2007 of 26 October 2007 on implementing rules for Council Directive 2000/75/EC as regards the control, monitoring, surveillance and restrictions on movements of certain animals of susceptible species in relation to bluetongue (Text with EEA relevance)
OJ L 283, 27.10.2007, p. 37–52

animals and flying midge insects plus restrictions on the movement of certain animal species. Details on the restriction zones in EU MS are made available by the European Commission. Vaccination against bluetongue is an important tool for the control of the disease and is also used to permit 'safe' trade in live ruminants based on EU legislation and in accordance with OIE standards.

2.6.2 Description of measures funded

The EU started funding annual bluetongue monitoring and eradication programmes in 2002, with the aim to assist MS in following the disease presence and evolution in high risk areas and where necessary apply measures such as vaccination; this was essential for the application of the EU control measures on animal movement from restricted areas and later fulfil the requirements of Commission Regulation (EC) No 1266/2007. The Regulation introduced the obligation for MS to carry out bluetongue monitoring programmes in the restricted zones and surveillance programmes outside the restricted zones. These programmes generally include monitoring (clinical, serological, virological, and entomological) and sometimes vaccination.

Serological and virological monitoring is carried out on an area basis with a geographically representative sample of animals being tested. Entomological monitoring is also carried out, by capturing midges through special traps. The captured insects are counted and identified to define if they belong to species capable of transmitting the disease. This information helps in defining high risk areas for the spread of the disease as well as the seasonally free period for restricted areas, in accordance with the relevant EU regulation.

Vaccination, specific for each circulating serotype, is a very effective measure to control the spread of bluetongue, especially if the coverage of the susceptible animal population is high. For this reason, the Commission has approved for financing MS vaccination programmes that guaranteed high coverage of the susceptible population, preferably through a compulsory regime.

During the period 2005-2009, the EU funded programmes in Spain, Portugal, Italy, France and Greece for serotypes other than BTV 8, and some of these programmes included vaccination. Since 2007, the EU has funded programmes in several other MS for BTV-8 (Belgium, Luxembourg, Denmark, the Netherlands, Austria, Czech Republic, Germany, Hungary and Sweden), and later for the newly appeared BTV-1.

As discussed in section *2.6.4* there are various benefits resulting from the implementation of bluetongue vaccination: the prevention of the spread of the disease; the prevention of the economic losses due to the death of animals and reduced production; the ability to trade from the restricted areas to free areas which consequently prevents further indirect economic losses associated to movement restrictions.

2.6.3 Overall funding

The EU funding for the control and eradication of bluetongue over the period since 2002 (i.e. the start of the EU co-financing) has amounted to € 92,007, 724.This excludes funding under the EU emergency fund which was activated for the first years of the epidemics due to serotypes BTV-8 and BTV-1 (i.e. 2007 and 2008).

In 2007, some Member States received financing for the monitoring and surveillance programmes following the first occurrence of serotype BTV-8, under the EU veterinary emergency fund[117]. Vaccination was not funded under these programmes, as there was no inactivated vaccine against BTV-8 was available at the time. The industry was able to produce a vaccine that MS would be willing to use at the end 2007- beginning of 2008. In 2007, therefore, the Union activated the emergency fund to finance vaccination [118]for serotypes BTV-8 and BTV-1, at a rate of 100% of the costs for purchasing the vaccines (up to a certain limit, and also 50% of the costs of the administration of the vaccine[119] as laid down in Council Decision 2009/470 on expenditure in the veterinary field.

Figure 84 shows a consistent upward trend in funding since 2002, with the most noticeable increase in 2009; this year alone accounted for 70% of the overall funding during the period. This increase was due to the fact that the large scale vaccination programme (against BTV-8 and BTV-1), that was funded under the emergency fund till 2008, was subsequently shifted to the eradication fund. For this purpose, towards the end of 2008, a number of Member States requested at the Agriculture Council additional funds, and the European Commission committed to this. Commission Decision 2009/560/CE was adopted in mid 2009, added vaccine administration as an eligible measure and allocated additional funds to the programmes for this purpose.

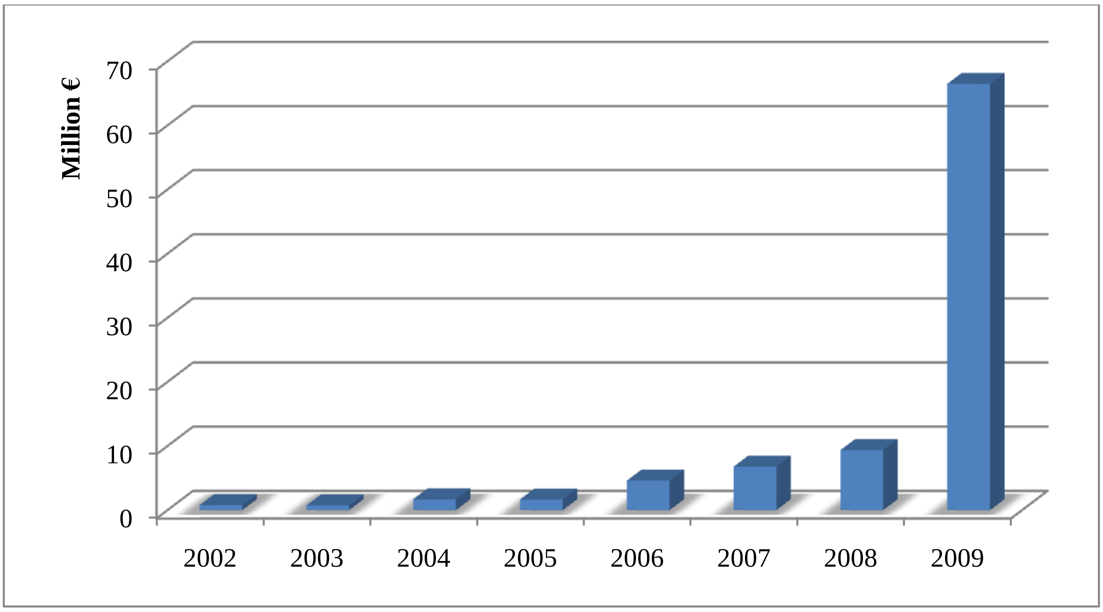
Over the period under review, 23 Member States have benefited from the funding (**Figure 85**). The total amount of funding during the period varies greatly between Member States, depending on whether vaccination eligible for EU funding was applied, as well as the size of the ruminant MS population. The recipients of the largest amounts of funding were: Spain (€30,546,721), France (€27,668,316), Germany (€10,187,305), Italy (€5,257,443), Belgium (€4,435,105), and Portugal (€3,688,087).

[117] Commission Decision 2007/20/EC approved financial contribution for the implementation of an epidemiological survey and bluetongue surveillance measures of Belgium (300,000 €), Germany (2,200,000 €); France (100,000 €); Luxemburg (25,000 €); The Netherlands (165,000 €) *OJ L 7, 12.1.2007, p. 41–43.*

[118] Commission Decision 2008/655/EC of 24 July 2008 approved the vaccination plans against Bluetongue of Belgium, Czech Republic, Denmark, Germany, Spain, France, Italy, Luxemburg, the Netherlands and Portugal and established the maximum amount of the Community financial contribution for the year 2008.

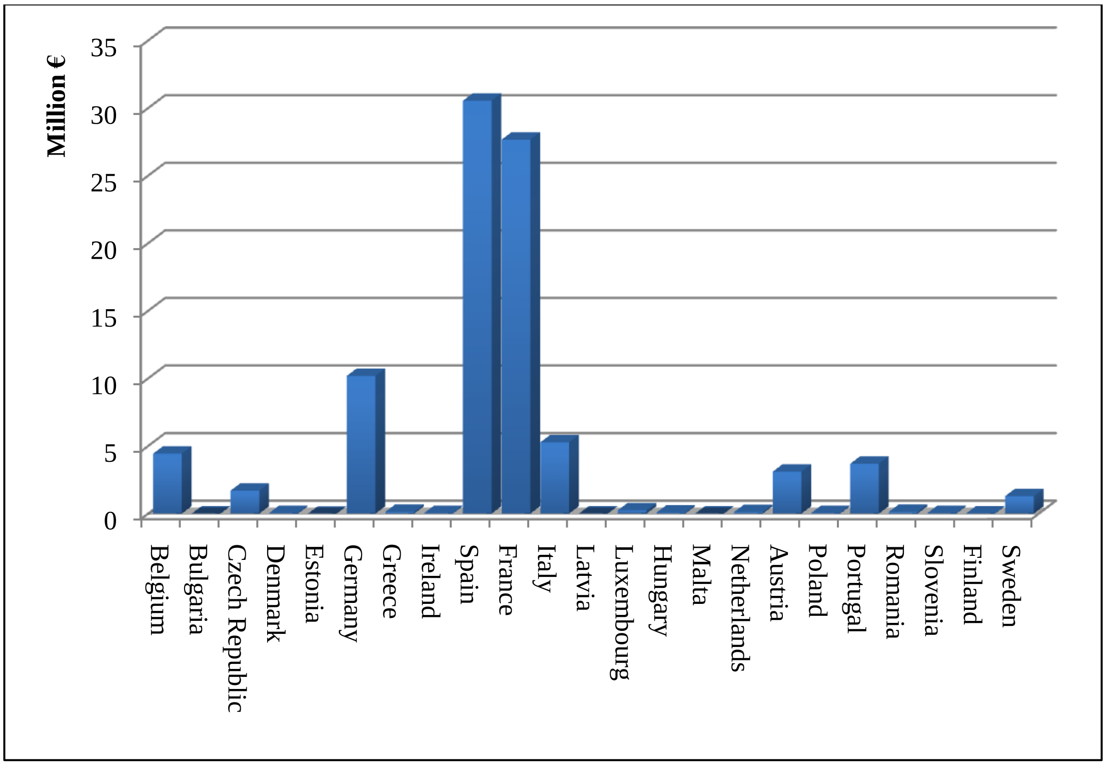
[119] The general rule applied in the normal funding of monitoring programmes is to pay 50% for the purchase of the vaccines and no funds for vaccine administration.

Figure 84 Bluetongue, EU co-funding (payments), 2002-2009



Source: DG SANCO- based on financial decisions from 2002- 2009

Figure 85 Bluetongue, EU co-funding (payments), by MS 2005-2009

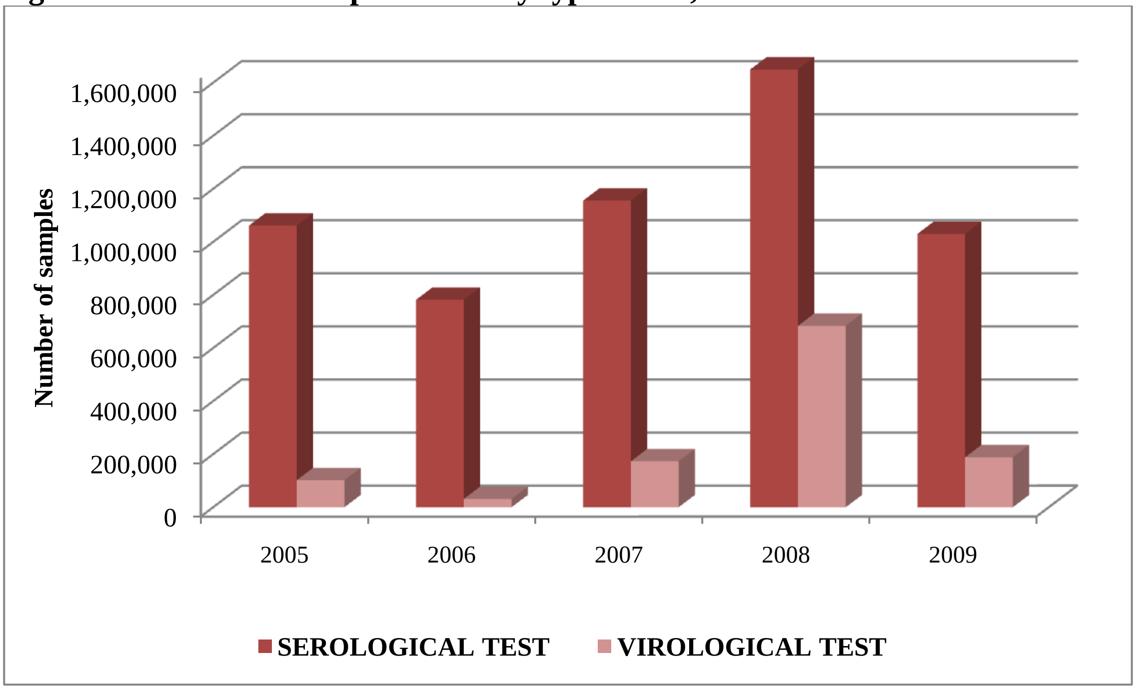


Source: DG SANCO-based on financial decisions from 2002- 2009

As indicated above, Commission Regulation (EC) No 1266/2007 introduces compulsory monitoring programmes in the restricted zones and surveillance programmes outside the restricted zones.

Figure 86 presents the number of sample tests carried out in those Member States which have received financial support between 2005 and 2009[120]. It indicates that in 2009 the number of samples tested both serologically and virologically significantly decreased compared to 2007 and even more noticeably to 2008. The decrease in the number of samples tested is related to the improvement of the disease situation and the subsequent reduction of suspicions subjected to testing (**Figure 87**).

Figure 86 Number of samples tested by type of test, 2005-2009



**Note:*

- Data are not available for France in 2005/2006. In 2007, data for France refer to the number of positive samples instead of samples tested. In 2009, data are missing for Bulgaria and data for Germany refer to the number of positive samples.

- In 2005 and 2006, data for Portugal are from bluetongue Monitoring and Eradication Programme 2008

Source: DG SANCO- Bluetongue Monitoring and Eradication programmes 2011-Member States with cofounded programmes

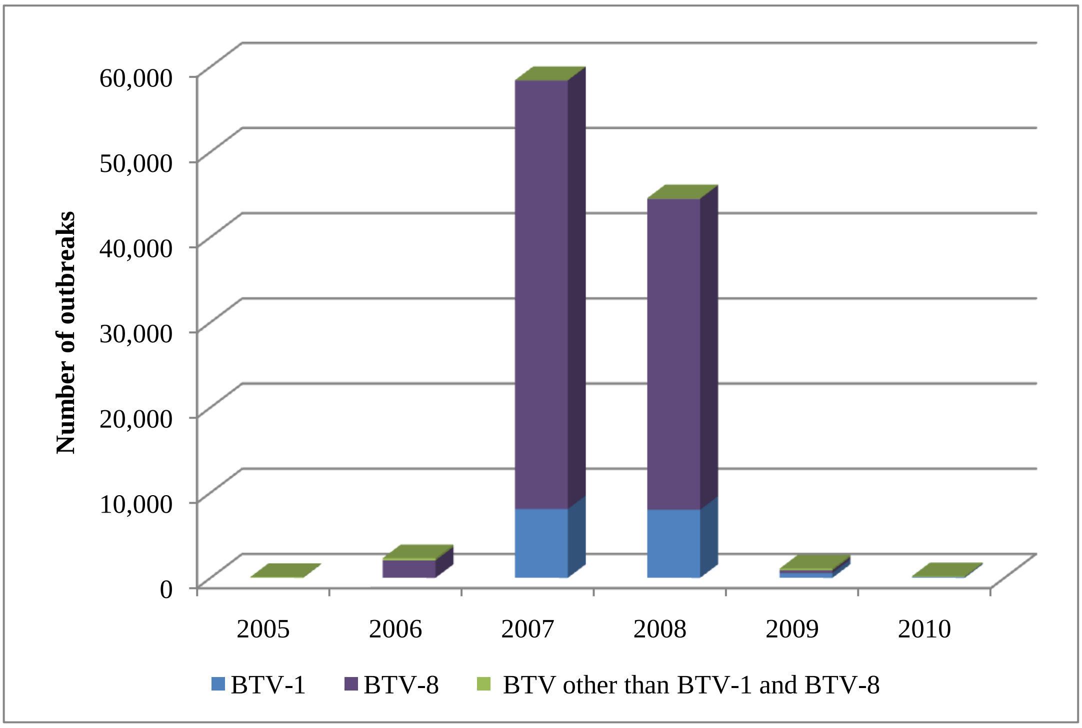
[120] Further to discussion with the Commission, in this report, data on the number of samples tested by type of diagnostic test is used as an indicator of the extent of implementation of the bluetongue monitoring and surveillance programme at EU level over the period under review. It appears that in practice the number of tests corresponds to the number of animals in most cases.

2.6.4 Analysis of results and effects of the programmes

The number of detected cases, resulting from the implementation of the survey, indicates the relevance of the programme in maintaining a sound alert system for the disease and the effectiveness of vaccination campaigns where this measure has been applied.

Figure 87 below presents the number of the outbreaks for the period 2005 to 2010[121]. In those years the outbreaks were almost entirely caused by the "new" serotypes BTV-8 and BTV-1 which spread rapidly in previously bluetongue-free areas. In particular, as Figure 88 shows, the outbreaks that occurred in the EU between 2005 and 2010 were highly localised: in France more than 53.000 outbreaks occurred between 2007 and 2008 caused mainly by serotype BTV-8 and BTV-1. In Germany a high number of outbreaks occurred in 2007 caused by serotype BTV-8. Spain reported over 7. 000 outbreaks in 2007, mainly of BTV-1 serotype. In 2009 and 2010, following the implementation of a large scale vaccination campaigns against the responsible serotypes, the spread of the disease limited and sharp reduction in the number of outbreaks was observed.

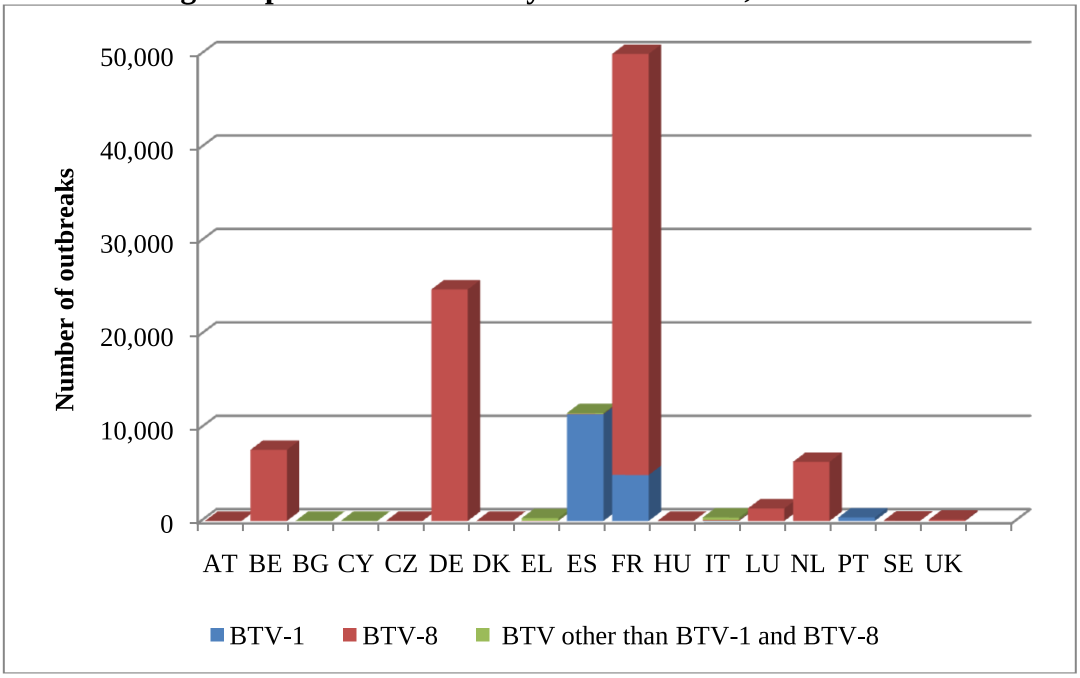
Figure 87 Bluetongue outbreaks, 2005– 2010



Source: Animal Diseases Notification System (ADNS)

[121] In the Report only the number of outbreaks has been used as indicator. Indeed, when collecting data on the number of animal infected some problems has been found: in some case (e.g. Germany) data on infection seems to refer to herd infection rather than to animal infected. Moreover, there are data inconsistencies: Italy and Sweden report 0 cases of infection for 2009 in their reports while ADNS reports 67 and 2 BTV-8 outbreaks in Italy and Sweden, respectively; France reports 6 herds infected, but not data on animal infected.

Figure 88 Bluetongue reported outbreaks by Member State, 2005-2010



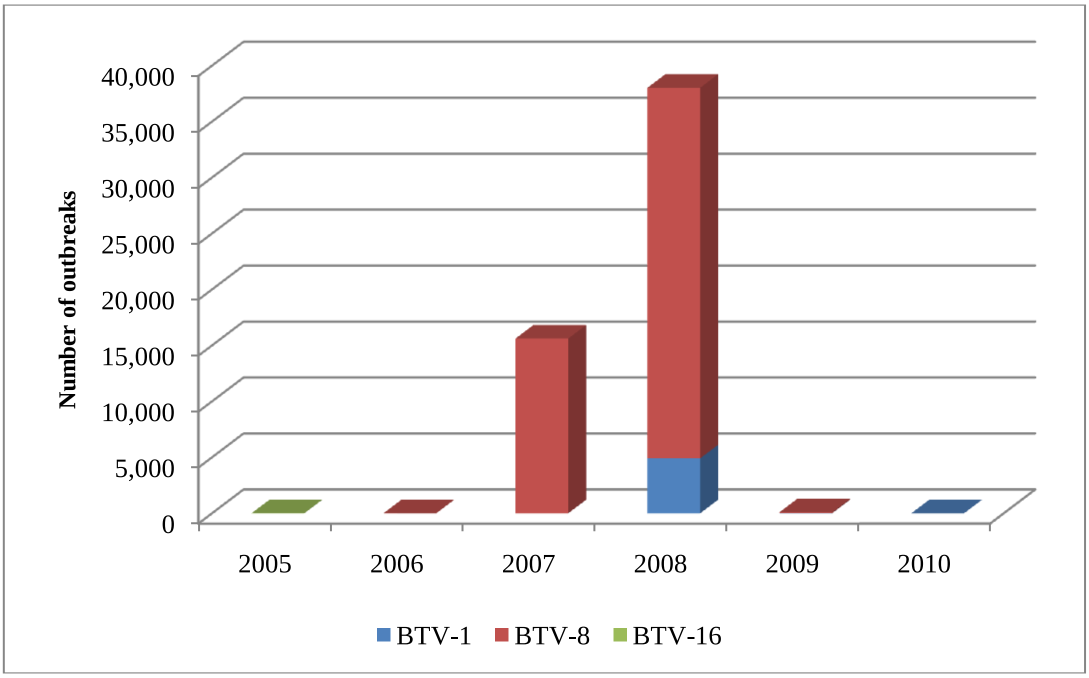
Source: Anima Disease Notification System (ADNS)

Vaccination is a key measure funded under the programmes for in the majority of the affected Member States.

In Italy, is successfully implementing a monitoring and surveillance programme. However, as regards the vaccination in the southern regions, the coverage achieved is very low. As this very low coverage of susceptible animals has minimal effect on the spread of the disease, EU funding for vaccination in those areas has been discontinued. Nevertheless, it is noted that the serotypes occurring in those areas tend not to spread in new areas, and do not appear to cause significant losses for the farmers.

Available evidence clearly shows the advantages of vaccination as an effective measure in containing, and eventually eradicating bluetongue. For example, **Figure 89** shows that in the case of France it appears to have resulted in an important reduction of the outbreaks between 2009 and 2010 compared to the previous years 2007 and 2008.

Figure 89 Number of outbreaks, France 2005-2010

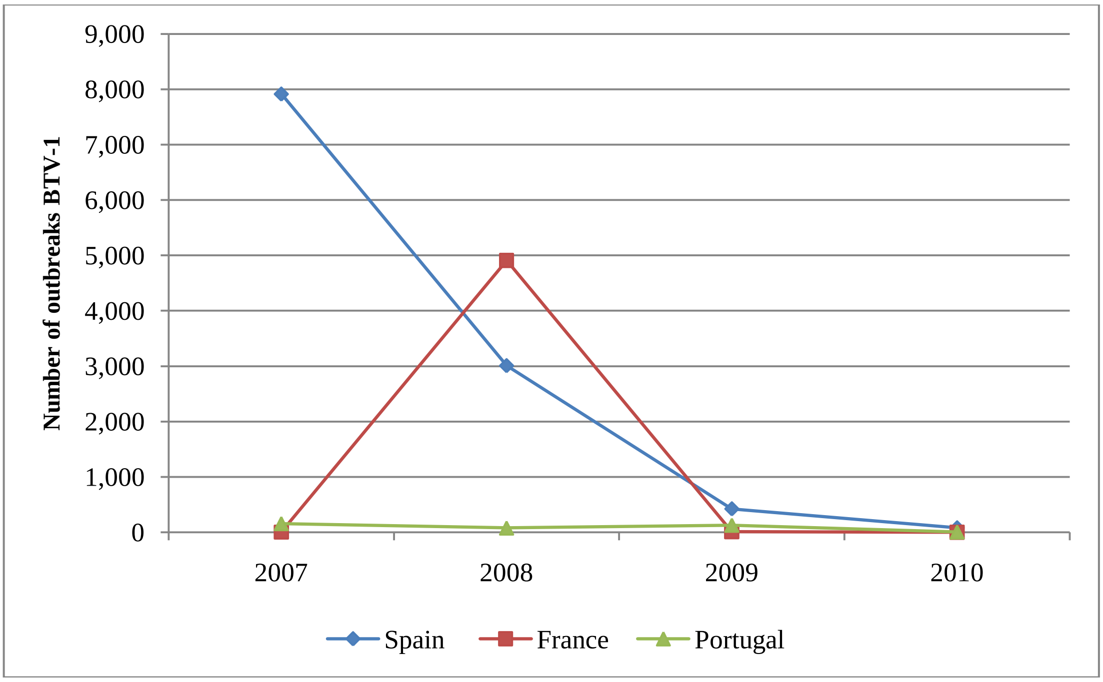


Source: Animal Disease Notification System (ADNS)

After the confirmation of outbreaks caused by serotype 4 (BTV-4) in 2004, Spain and Portugal immediately adopted vaccination programmes of animals in the restricted zones. Vaccination programmes in the two Member States have proven successful as disease outbreaks disappeared as of 2006 and BTV-4 vaccination ceased in 2008.

Vaccination was also successfully used against BTV-1 in France, Spain and Portugal. The presence of serotype 1 was detected in those MS in the second half of 2007. The disease spread rapidly throughout 2008, especially in France where more than 4, 900 outbreaks were recorded and around 350,000 animals were found infected. Despite the potential for further spread the massive vaccination campaigns adopted by the three MS resulted in a significant reduction of the outbreaks between 2009 and 2010, as **Figure 90** shows.

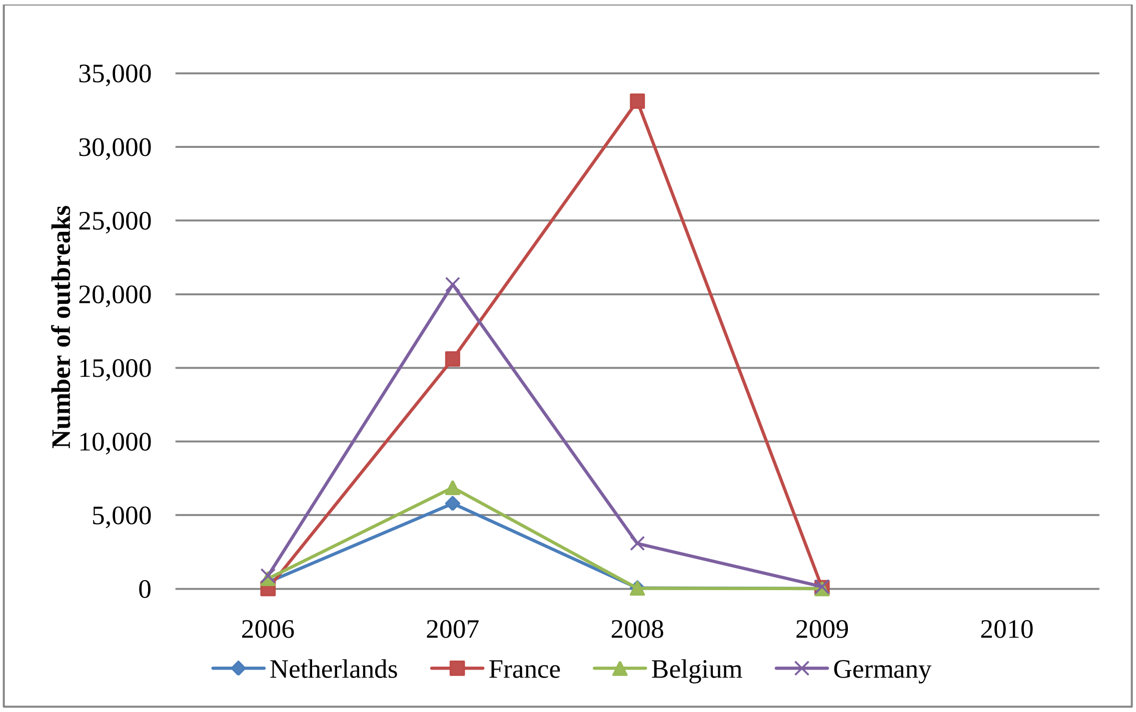
Figure 90 Evolution of the outbreaks caused by BTV-1, France, Spain and Portugal 2007-2010



Source: Animal Disease Notification System (ADNS)

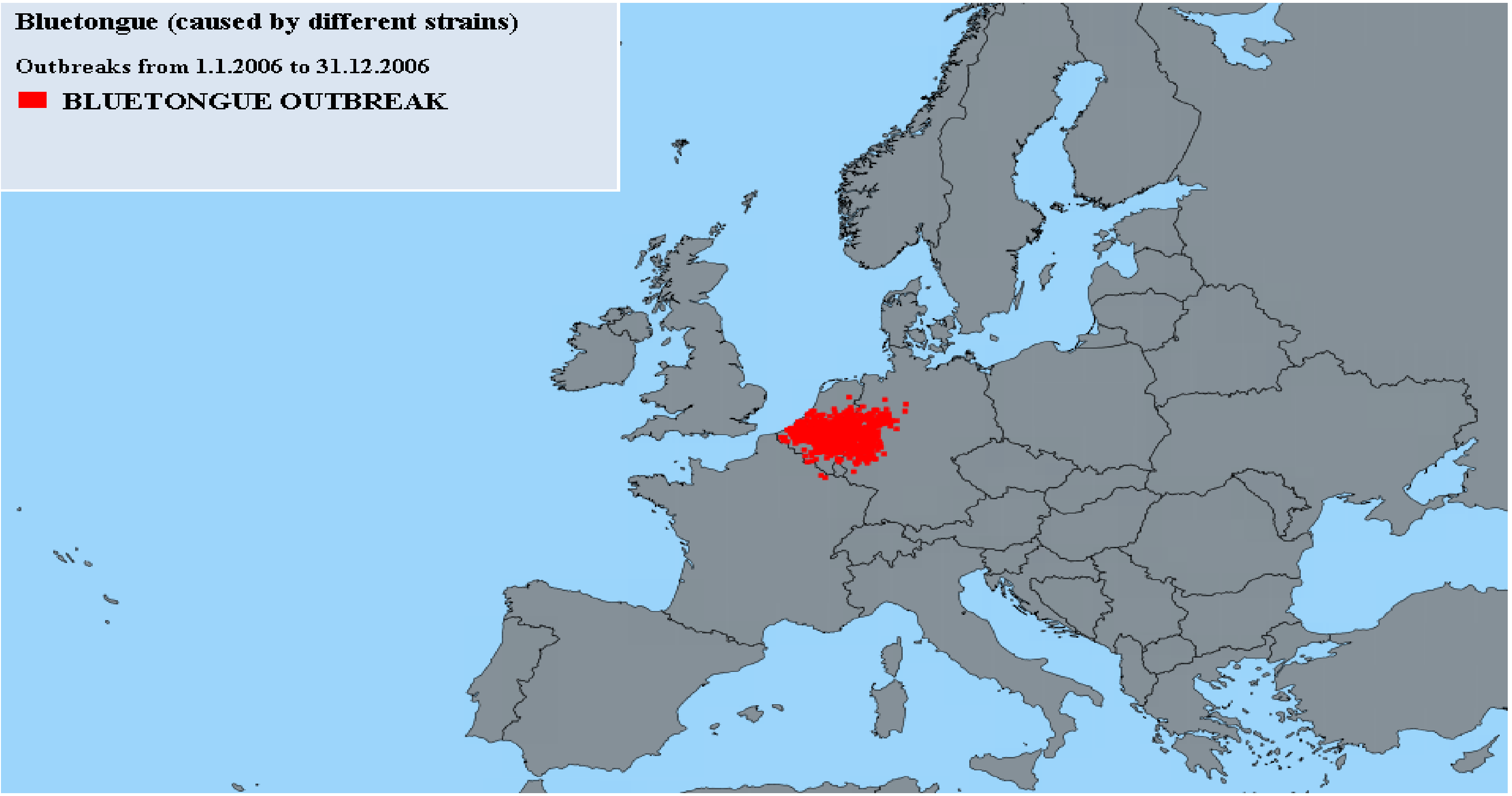
In Belgium, Germany, France and the Netherlands outbreaks were caused by serotype BTV-8. The spread of BTV-8 was particularly significant in France and Germany which reported more than 48,000 and 24,000 outbreaks respectively, between 2006 and 2009. At the end of 2007-beginning 2008, once the vaccine against the serotype was available, the four MS implemented successful vaccination campaigns which significantly reduced the viral circulation of serotypes BTV-8. As **Figure 91** shows, the number of outbreaks has considerably decreased between 2006 and 2009, and in 2010 there has been no evidence of BTV-8 presence in the four MS.

Figure 91 Evolution of the outbreaks caused by BTV-8, Belgium, France, Germany, and the Netherlands, 2006-2010



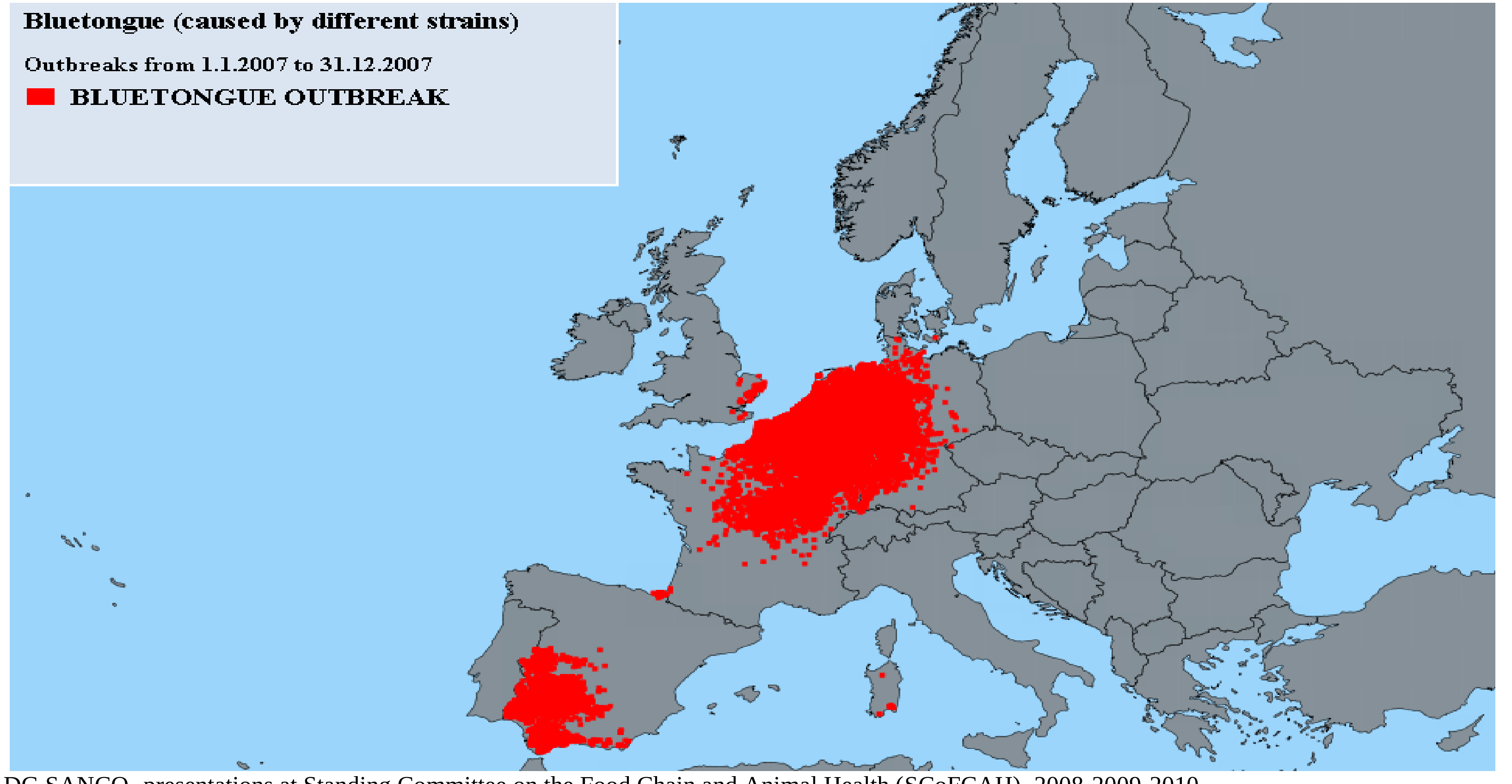
Source: Animal Disease Notification System (ADNS)

Map 24 Bluetongue outbreaks, 2006



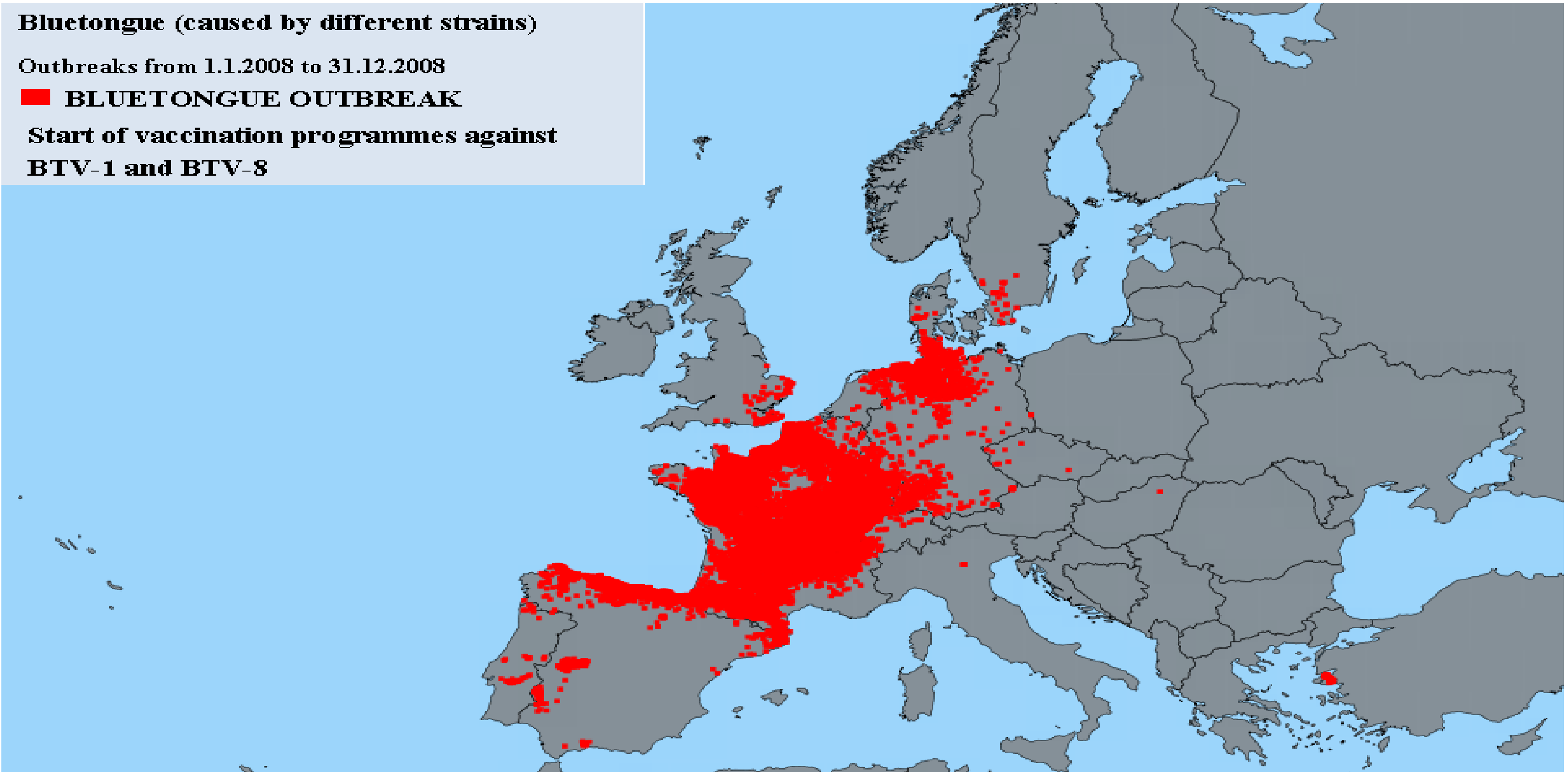
Source: DG SANCO -presentations at Standing Committee on the Food Chain and Animal Health (SCoFCAH)[7],2008-2009-2010

Map 25 Bluetongue outbreaks, 2007



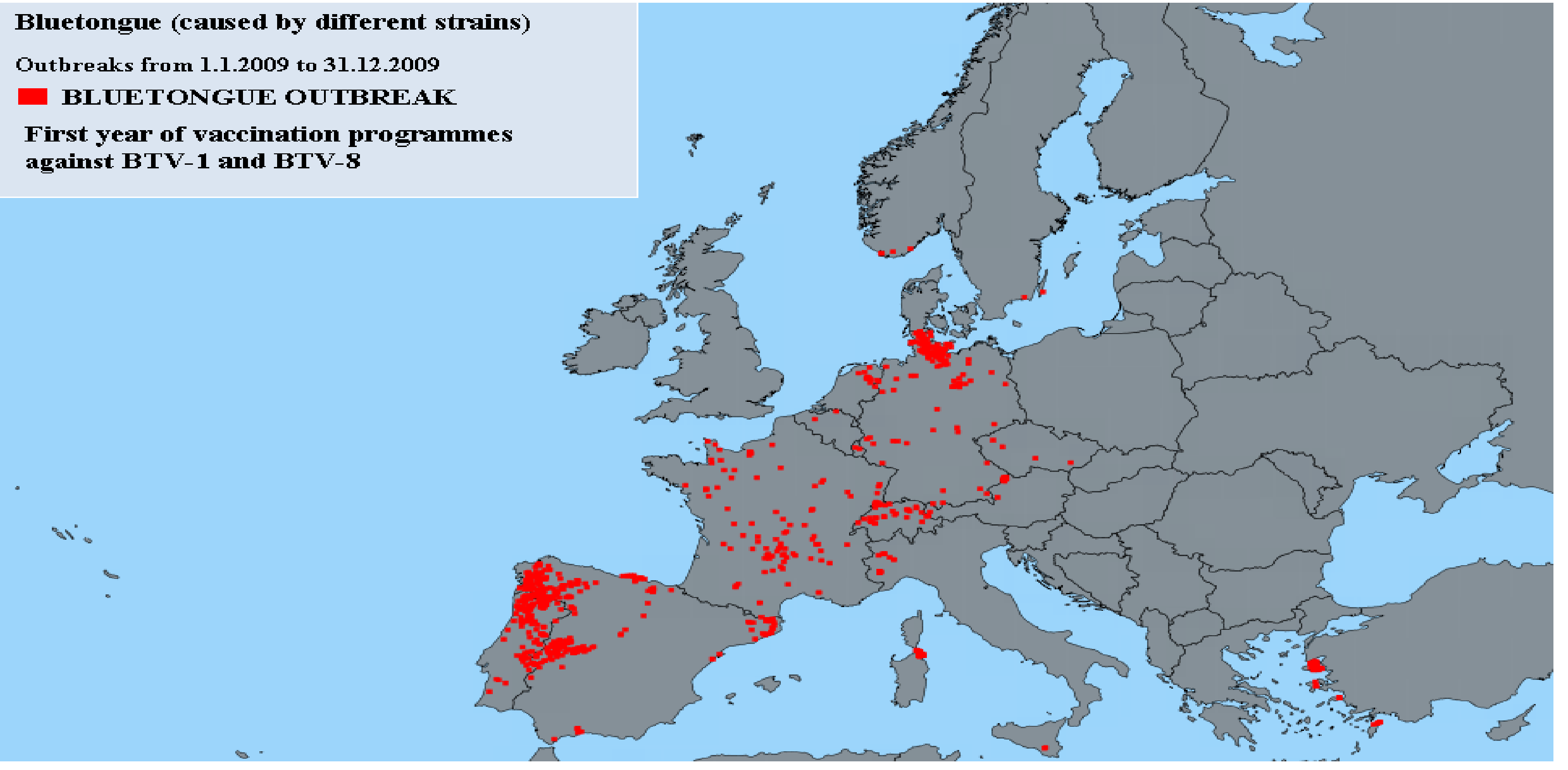
Source: DG SANCO -presentations at Standing Committee on the Food Chain and Animal Health (SCoFCAH)[7],2008-2009-2010

Map 26 Bluetongue outbreaks, 2008



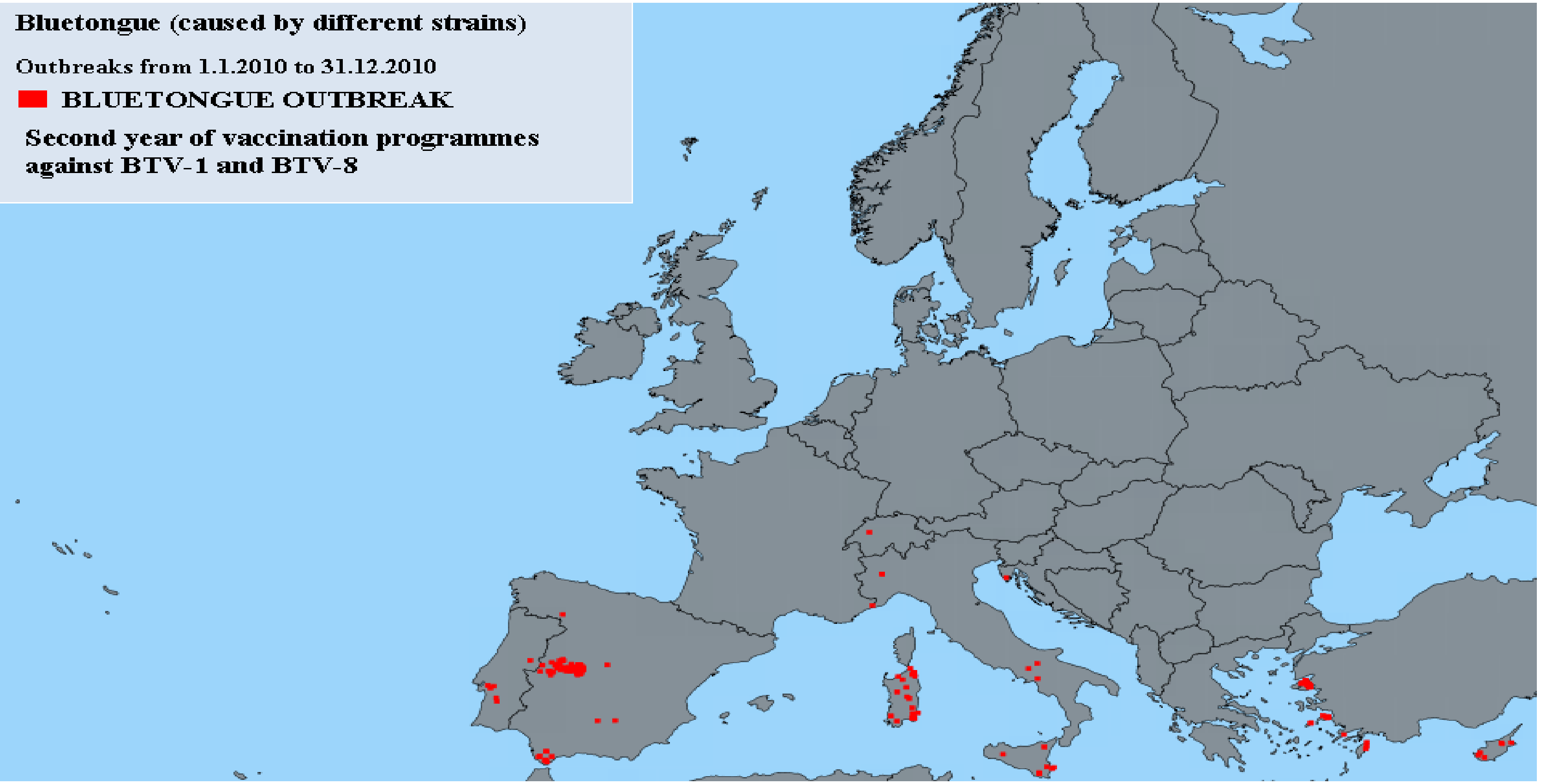
Source: DG SANCO -presentations at Standing Committee on the Food Chain and Animal Health (SCoFCAH)[7],2008-2009-2010

Map 27 Bluetongue outbreaks, 2009



Source: DG SANCO -presentations at Standing Committee on the Food Chain and Animal Health (SCoFCAH)[7],2008-2009-2010

Map 28 Bluetongue outbreaks, 2010



Source: DG SANCO -presentations at Standing Committee on the Food Chain and Animal Health (SCoFCAH)[7],2008-2009-2010

2.6.5 Analysis of impacts of the programmes

The bluetongue monitoring programmes have played an important role in the control and eradication of this disease. The programmes help greatly to gain knowledge on the presence and spread of the disease. Following detection, protection and surveillance zones can be established in and around the outbreak areas, and controls on animal movement – a key factor in the transmission of the disease – can be applied. Furthermore, large scale vaccination can be applied, which is proven to be an effective measure for addressing this disease. These actions in turn ensure the containment of outbreaks and, eventually, can assist in the eradication of the disease.

There are various economic benefits of these overall actions. Benefits of the programmes include the reduction of losses from loss of animal value and the value of production (due to the death of the animals or reduction in production due to illness), and the avoidance of trade implications. In terms of trade gains for the sector, in recent years (after 2007), it has been possible to move animals vaccinated from a restricted area (against the serotypes present in that area) into free areas. One of the main benefits of vaccination has therefore been to have contributed to avoid the losses of farmers that are caused by movement restrictions.

In the section below, the main results from existing literature on the economic impacts of bluetongue in some Member States have been reported. This gives an idea of the significant economic burden that bluetongue outbreaks have had in 2006-2007, before the coordinated vaccination campaign was launched.

Economic impact of bluetongue in France, Belgium and the Netherlands

A number of studies, carried out in Belgium, France, and the Netherlands, have calculated the technical and economic impacts of the bluetongue outbreaks in these countries.

In term of animal losses, in Belgium, Wilson and Mellor (2008) have calculated that bluetongue outbreaks have caused the death of a sixth of the national sheep flock July and October 2007 when compared with the same period in 2006. In economic terms, a study undertaken by the General Directorate for Agriculture (Hannon et al.2008), calculated the economic losses in the south of the country (Wallonie Region), through an epidemiological survey conducted among farmers and veterinarians. As reported in **Table 13** the main losses are related to reproductive problems, and represent 56% (for suckler cows), 50% (for milk cows) and 50% (for sheep cows) of the total loss (i.e. amount to €114, €93 and €26.5 respectively per animal).

Table 13 Summary of economic losses for a standard farm according to the clinical status of the farm in relation to bluetongue and type of animal, Belgium. 2006 and 2007

Losses	Suckler cows		Milk cows		Suckler sheep	
Farms clinically affected by bluetongue						
Mortality	€ 1,39	18%	€ 787	7%	€ 414	34%
Veterinary costs (due to morbidity)	€ 532	7%	€ 558	5%	€ 90	7%
Reduction milk production	-	-	€ 1,17	10%	-	-
Reproduction problems	€ 4,18	56%	€ 4,60	40%	€ 608	50%
Animals sale	€ 337	5%	€ 2,66	23%	36	3%
Sub-total	€ 6,44	86%	€ 9,77	84%	€ 1,15	€0.94
All farms						
Veterinary costs for prevention	€ 549	7%	€ 565	5%	€ 76	6%
Trade loss due to export restrictions	€ 507	7%	€ 1,23	11%	0	0
Sub-total	**€ 1,06**	**14%**	**€ 1,79**	**16%**	**€ 76**	**6%**
Total	**€ 7,49**	**100%**	**€ 11,56**	**100%**	**€ 1,22**	**100%**
Loss per animal	**€ 205**	-	**€ 233**	-	**€ 53**	

Source: Hannon et al., 2008

As the number of clinical outbreaks varies according to the source of data, the study assumes three different scenarios for the estimation of costs: low, medium and high. The technical and economic impacts vary between €35.3 and €104.8 million, according to the scenario considered (**Table 14**).

Table 14 Total losses for Wallonie region (Belgium) due to bluetongue, 2006 and 2007

Hypothesis	Bovines	Ovines	Total losses for the Region Wallonie (millions of €)
Low (official outbreaks)	16.4%	8.4%	32.3
Medium (veterinarians survey)	71%	63%	92.9
High (farmers survey)	82%	92%	104.8

Source: Hannon et al., 2008

These figures are consistent with those calculated by the study for France, although the cost for bovines is higher in the Belgian study, due to the consideration of the costs of reproduction in the latter. In France, a national study was conducted in order to estimate the impacts of bluetongue outbreak of 2007 (serotype 8) in bovine and ovine sector (Mounaix et

al.[122]), and particularly in the farms of suckler cows, milk cows, suckler sheep. The study was realised through the analysis of the national database, the survey of 148 in farms affected, and technical-economic modelling on the basis of these types of farms.
The study identified a variety of impacts, in particular with regard of the mortality rate according to the cattle specie:

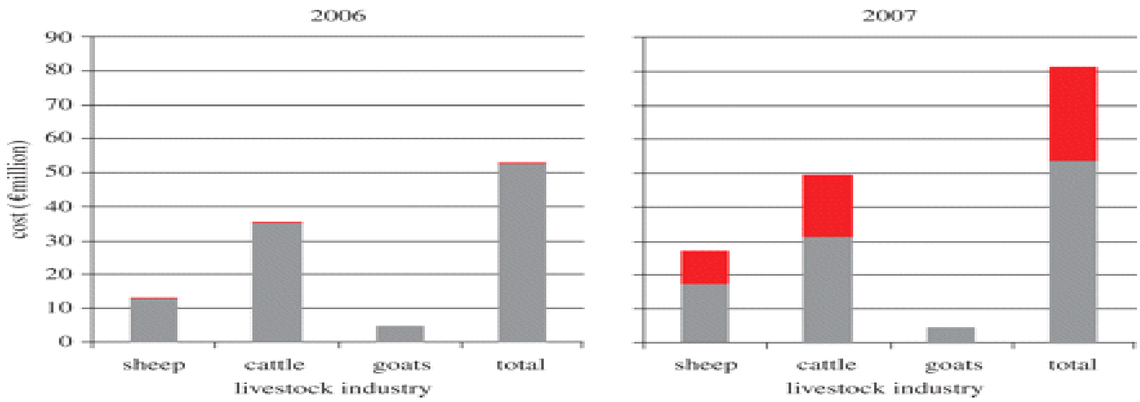
- between 0% and 25% for flocks (sheep),
- between 0 and 13% for suckler cows,
- between 0% and 16% for milk cows.
-

According to the estimates of the study, the bluetongue outbreak in France caused the loss of 7,000 to 40,000 calves. In order to take into account the variability of impacts of the disease, a classification of farms was elaborated according to the mortality and morbidity of the different categories of animals examined. For each category, the simulation done by the study on the technical-economic consequences of bluetongue results in the following decreases of gross margins:

- between 4% and 143% for suckler sheep,
- between 6.1% and 43% for suckler cows,
- between 1.1% and 12% for milk cows.

As farming in the country strongly depends on animal transport, in the Netherlands the main economic losses have been reported in the indirect costs of the movement restrictions associated with the new BTV. A 2007 study (Hoogendam 2007) on the economic impact of BTV infection indeed revealed that the direct costs associated to the infection of BTV are considerably lower compared to the indirect loss. However, it also indicates that while the latter increased considerably between 2006 and 2007, the indirect costs remained roughly constant and far outweighed either (**Figure 92**).

Figure 92 Direct and indirect costs of BTV-8 to the Dutch farming industry, 2006-2007



**Note: Direct costs in red, indirect costs in grey*
Source: Wilson and Mellor (2008)

[122] Mounaix B., Davide V., Lucbert J. 2008. *Impact technico-économique de la FCO dans les élevages ovins et bovins français. Bilan de l'épizootie de 2007*, Rapport Final. Collection Résultats, Institut de l'Elevage

2.7 Classical and African Swine Fever

Main results –Swine fever (CSF and ASF) eradication programmes:

- Over the period under review the EU has co-funded CSF eradication programmes in 9 Member States (Bulgaria, Czech Republic, Germany, France, Hungary, Luxembourg, Romania, Slovenia, Slovakia) for a total amount of €17,116,484 and the ASF eradication programme in Italy which received a total of €347,795;

- Swine fever eradication programmes focussed on the situation in wild boar, as the reservoir for the disease in the EU. The implementation of wild boar vaccination has achieved a decline in cases both in wild boar and in spill over to domestic population;

- Epidemiological data for these countries indicate that, since 2005, CSF (Belgium, Czech Republic, Slovenia, and Luxembourg) incidence in domestic pigs and wild boar has disappeared, or decreased to almost zero (Bulgaria, Germany, France, Hungary, Luxembourg, Romania, and Slovakia). The only exception was incidental big outbreaks in Romania in 2006/7, but the country has remained free since then. In the case of ASF in Sardinia, outbreaks are restricted to the high-risk Nuoro region, while outside the high-risk zone the epidemiological situation of wild boar has been improved and no virological positive animals were detected in 2008-2009;

- The successful implementation of the programmes resulted in the reduction or even suspension of the vaccination of domestic pigs;

- One of the main positive impacts of the eradication programmes has been the reduction of the CSF incidence in domestic pigs, making it possible to focus on the environmental reservoir, the wild boar, as source of infection;

- The improvement in the epidemiological situation brings direct commercial advantages. The successful implementation of the programmes has yielded benefits for farmers in terms of avoiding direct costs and losses such as those resulting from the cost of morbidity and production losses. In terms of trade gains, as the number of countries and regions free of CSF increases, the movement of animals and animal products is facilitated, and the trade potential improves (particularly of intra-EU trade);

- While the CSF situation within the EU27 improves, the endemic situation in the central Balkan countries has become a threat to the neighbouring EU region. It will require ongoing support for the vaccination and eradication programmes in domestic pigs and wild boar to achieve full eradication of CSF from the EU territory in future, along the same lines as the EU strategy for rabies

2.7.1 Classical swine fever

2.7.1.1 Background and context

Classical swine fever (CSF) is an animal disease affecting domestic pigs and wild boar, of all breeds and ages. It is a highly contagious infection, easily transmitted by direct and indirect contact between pigs, and by materials, swill feeding, trucks, instruments, and humans carrying the virus. The CSF virus is an RNA virus, belonging to the family of *Flaviviridae*, genus *Pestivirus*. The virus is closely related to bovine viral diarrhoea viruses (BVDV) in cattle and border diseases virus (BDV) in sheep. There is only one serotype of the CSF virus. CSF can cause severe disease outbreaks and is an OIE listed disease.

CSF does not infect humans. However, it can cause very significant losses to pig holdings, both due to morbidity and mortality, and trade restrictions. It is a transboundary disease and the epidemiological situation in one country can affect neighbouring countries, therefore national measures tend not to be sufficient to control its spread, especially when outbreaks occur near borders.

Laboratory diagnosis is necessary to differentiate CSF from African swine fever (ASF). Clinical symptoms and post-mortem findings alone are not sufficient to diagnose CSF with certainty.

Effective vaccines are available for CSF since the 1980s. Attenuated live vaccines have been proven to be the most effective in reducing disease prevalence by providing quick, long lasting and complete protection. These vaccines are mostly based on C- (Chinese) strain analogues of the virus. However, subunit vaccines have also become available, that allowed differentiation between infected and vaccinated animals, so-called DIVA (Differentiating Infected from Vaccinated Animals) or ‘marker’ vaccines. This allows detecting infected pigs in a vaccinated pig population[123].

Vaccination of wild boar is a key tool for the control of this disease and can be done by distributing baits containing vaccines in the environment. This has proven to be a tool of increasing importance to control CSF in the environment in Europe in the last 20 years.

Movement control is crucial in the control of CSF outbreaks, and forms an important element in the contingency plans that all EU Member States have prepared in the event of an outbreak.

CSF is an example of a highly contagious disease that has been eradicated from most of the EU MS due to stringent vaccination and subsequent prevention and control measures.

Because CSF affects only pigs, effective vaccines are available, and the environmental reservoir is limited to wild boar, eradication has proven to be possible in many countries. When the pig sector developed in large scale farming in the 1960s-1980s, vaccination against CSF became a routine practice in many countries. The use of vaccines contributed

[123] Such vaccines are based on a specific immunogenic part of the virus, the E2 protein, leaving out less important virus proteins, on which the accompanying serological tests are used to detect the infected pigs in the vaccinated population.

significantly to the success in controlling the disease, because they were highly effective in reducing excretion of virus and thereby the transmission of the disease between pigs. However, when countries free of CSF joined the EU in 1973 (UK, Ireland and Denmark) the need for a free market within the EU led to the development of an EU non-vaccination policy. In 1980, EU legislation was adopted, aiming to achieve CSF-free status for all EU Member States. Subsequent to the adoption of the non-vaccination policy, countries with CSF started implementing eradication programmes.

Despite successful eradication of CSF in many countries, occasional outbreaks did occur (Belgium 1993; Germany 1994; the Netherlands 1997), leading to stamping out of large numbers of animals, significant financial damage, and severe trade losses. These events led to even more strict bio-security and hygiene measures, to reduce the risk of CSF transmission.

The enlargement of the EU has led to increased risks, due to CSF reservoirs in the central Balkan region, and an endemic situation of CSF in Bulgaria and Romania at the time of EU accession.

2.7.1.2 Description of measures funded

EU measures to combat CSF were put in place effectively starting in 1977 through Council Directive 77/391/EC, which lays down the basic framework for animal disease eradication and EU co-financing. Current EU legislation for control and eradication of CSF is laid down in Council Directive 2001/89/EC[124] and Commission Decision 2002/106/EC[125]. Measures include stamping-out in case CSF is suspected and confirmed on pig farms, emergency vaccination with a modified live vaccine or with a marker vaccine, and emergency vaccination with baits containing a live attenuated vaccine to control the disease in feral pigs.

The disease has been subject to EU financial measures in 1980[126] to support Member States in their efforts to eradicate the disease. The financial contribution by the EU within the framework of the eradication programmes is at the rate of 50% within a ceiling[127], per country and per year, as specified in the annual Commission's Decision[128] approving the programme, of the costs incurred by each Member State for:

- Compensation to owners for their losses due to culling of animals subject to those programmes;
- Monitoring and surveillance (sample collection);

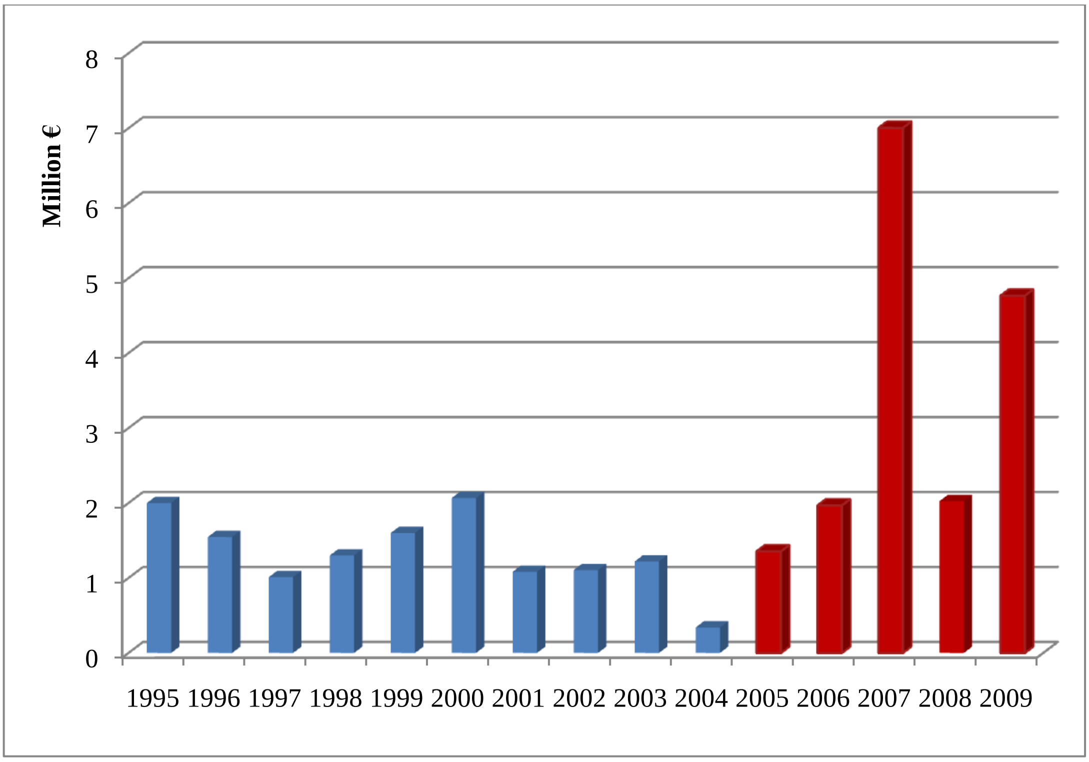
[124] Council Directive 2001/89/EC of 23 October 2001 on Community measures for the control of classical swine fever *OJ L 316 of 1.12.2001*
[125] Commission Decision of 1 February 2002 approving a Diagnostic Manual establishing diagnostic procedures, sampling methods and criteria for evaluation of the laboratory tests for the confirmation of classical swine fever *OJ L 39, 9.2.2002, p. 71–88*
[126] Council Decision 80/1096/EEC of 11 November 1980 introducing Community financial measures for the eradication of classical swine fever
[127] The maximum cost reimbursed per test/animal slaughtered is specified in the relevant Commission Decision.
[128] Commission Decision 2010/712/EU of 23 November 2010 approving annual and multiannual programmes and the financial contribution from the Union for the eradication, control and monitoring of certain animal diseases and zoonoses.

- Virological, histological and serological tests of domestic pigs and wild boar;
- Parenteral vaccination of domestics pigs; and,
- Oral vaccination of wild boar: purchase and distribution of baits containing the vaccine.

2.7.1.2.1 Overall funding

The EU funding for the eradication of CSF over the period since 1995 has amounted to €30,2007,724. **Figure 93** shows a steady distribution throughout the period with the exception of 2007 and 2009. This increase in these years was due to the fact that, since 2007, the EU started funding the newest MS, Romania and Bulgaria, where the disease was still endemic mainly in the backyard pig population.

Figure 93 CSF, EU co-funding (payments), 1995-2009



Source: DG SANCO- based on financial decisions from 1995-2009

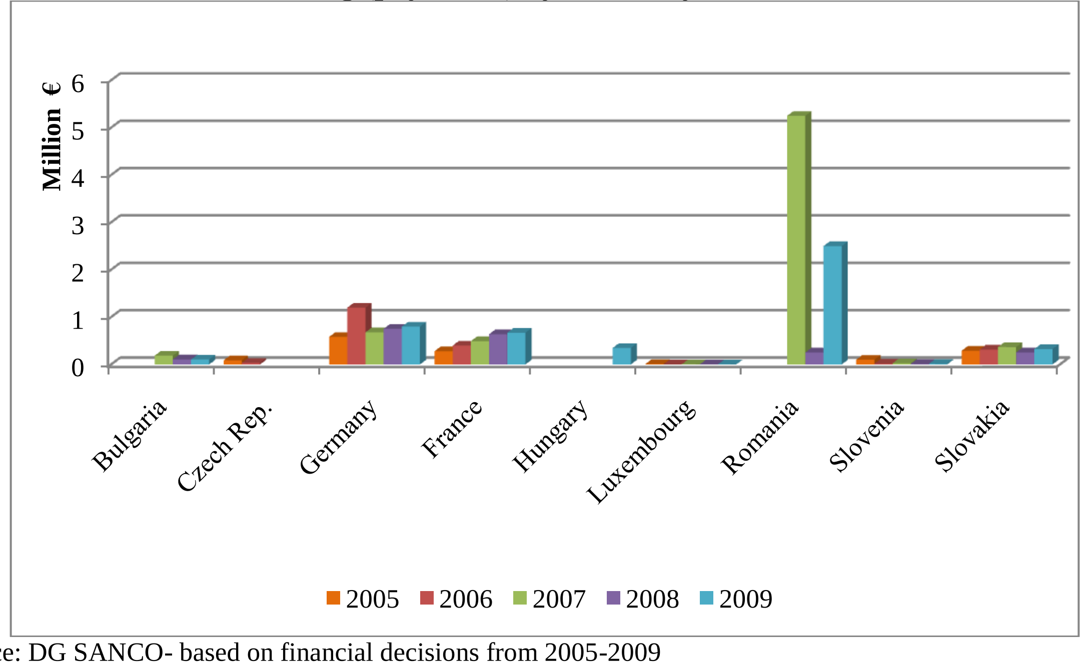
Over the period under review, several Member States have benefited from the funding (**Figure 94**), namely: Belgium from 2002-2005; Bulgaria from since 2007; Czech Republic (2004-2006); Germany (1995- 2003; 2005-2009); France since 2005; Hungary in 2009; Luxemburg since 2001; Romania since 2007; Slovenia since 2004; and, Slovakia since 2004.

Over the 2005-2009 period, the total amount of funding has varied greatly between Member States. The recipients of the largest amounts of funding for CSF during this period were: Romania (€8, 0004, 429); Germany (€4,014,393), France (€2,484,234), and Slovakia (€1,554,410).

While there is no linear relation between the countries receiving funding and those with outbreaks, **Figure 97** shows that between 2005 and 2009 Member States with the highest reported number of outbreaks have for the most part received the bulk of the funding: Romania reported 351 outbreaks during the period and was the largest recipient of funds. Germany reported 143 outbreaks and was the second largest recipient of the funds. This generally reflects the need to target the disease where it is most prevalent.

Some Member States with several cases of outbreaks, notably Hungary (which reported 228 outbreaks during 2007-2009), and Bulgaria (which reported 17 outbreaks during 2006-2009), which are not amongst the top four recipients. On the other hand, Member States reporting few outbreaks such as France (which reported 7 outbreaks in 2002-2009) or zero outbreaks (such as Slovenia) received significant amounts of co-funding to support monitoring activities and preventive measures against CSF in wild boar.

Figure 94 CSF, EU co-funding (payments) by MS and year, 2005-2009



Source: DG SANCO- based on financial decisions from 2005-2009

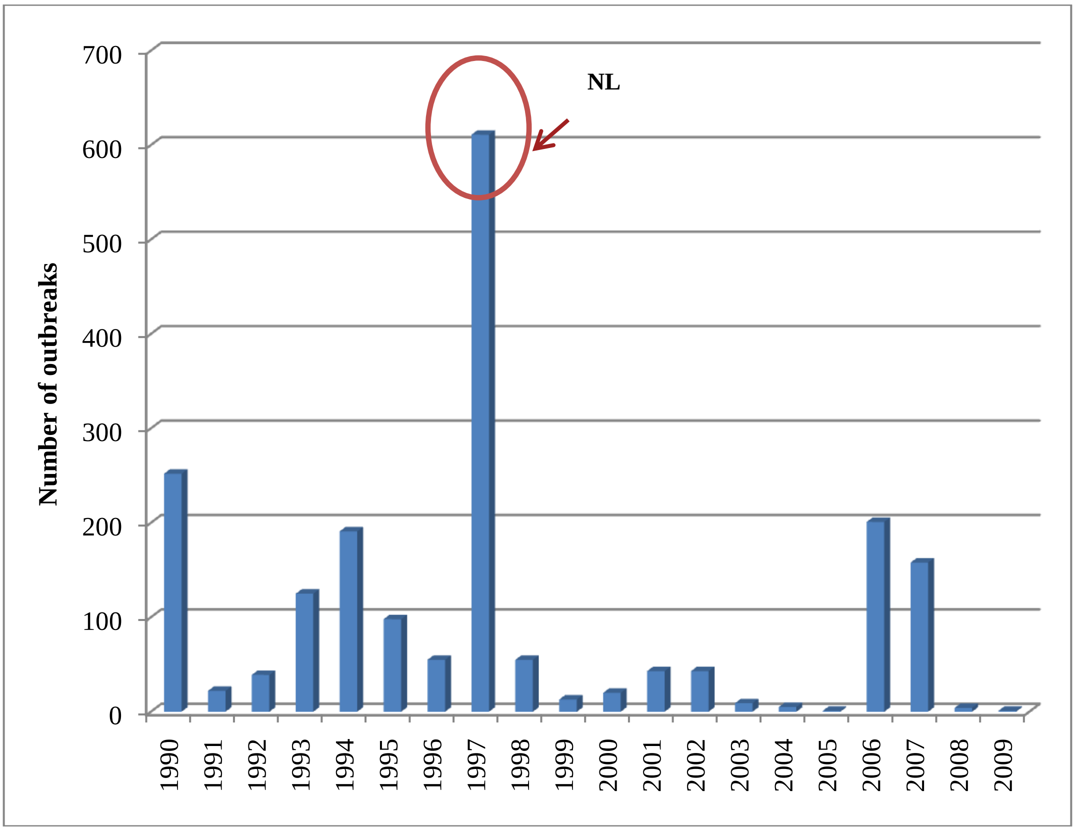
2.7.1.3 Analysis of key results of the programmes

As already indicated, due to the eradication measures and the non-vaccination policy, CSF had been eradicated in most EU15 Member States by 2004, except for certain areas in Germany, Luxemburg and France where the disease still occurred in wild boar. Although preventive measures were introduced, incidental outbreaks of CSF still occurred, such as in 1997, when a large outbreak in domestic pigs occurred in the Netherlands (**Figure 95**)

However, with the enlargement of the EU in 2004, a large number of countries with sometimes endemic CSF situations joined the EU. This led to **a very substantial increase in the financial support to control and eradicate CSF**. Following the increase in funding, in recent years, in these regions good progress in CSF eradication can be observed due to the ongoing control measures. Outbreaks show a gradual decrease with only occasional outbreaks occurring during 2005-2009 in few Member States (Bulgaria, Germany, France, Lithuania Hungary, Romania and Slovakia)[129]; in 2009 no outbreak in domestic pigs occurred and in 2010, no outbreaks in both domestic and wild animals were reported.

As can be seen in **Figure 95** and **Figure 96** CSF cases in wild boars tend to dominate the number of outbreaks in recent years, suggesting that the virus is progressively confined to its natural reservoir in EU Member States. The high number of outbreaks in 1997 is due to the very significant outbreaks in the Netherlands during that year.

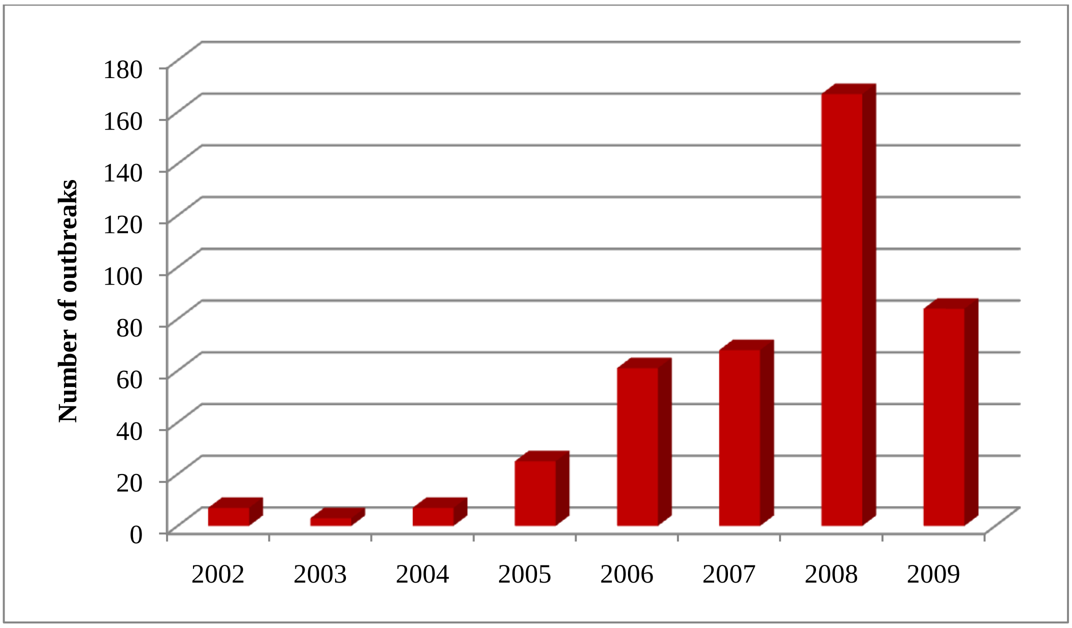
Figure 95 CSF, number of outbreaks in domestic pigs, EU, 1990-2009



Source: Animal Disease Notification System (ADNS)

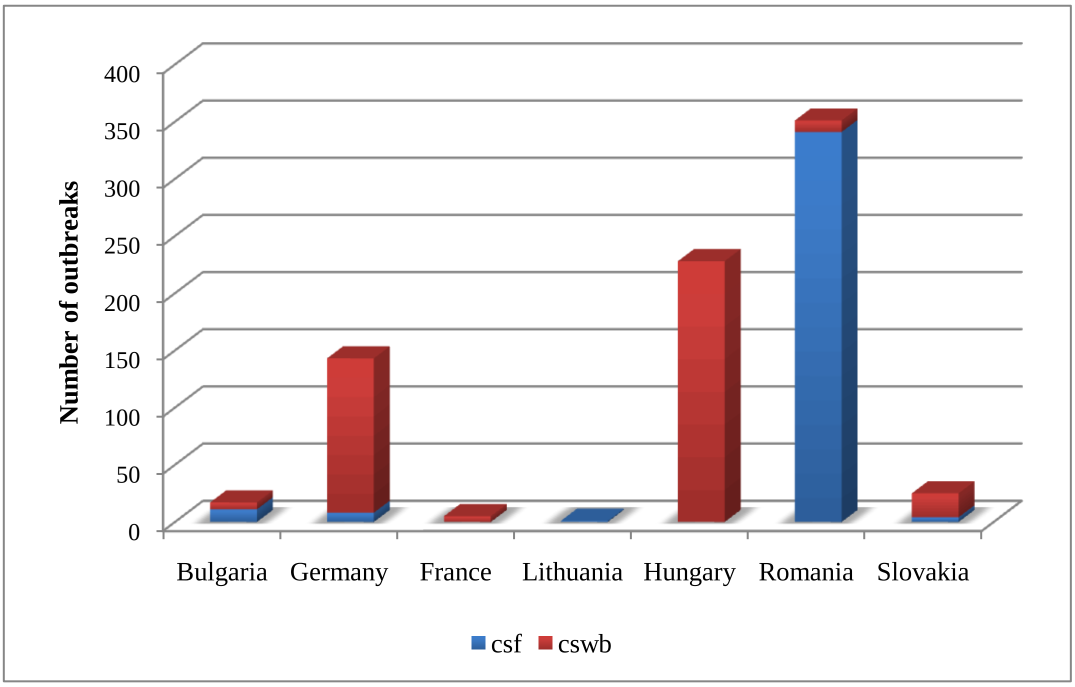
[129] The largest outbreaks during this period were in domestic pigs in Romania between 2006 and 2007 and in wild boar in Hungary in 2008.

Figure 96 CSF, number outbreaks in wild boar, EU, 2002-2009



Source: Animal Disease Notification System (ADNS)

Figure 97 CSF, number of outbreaks by MS, 2005 -2009



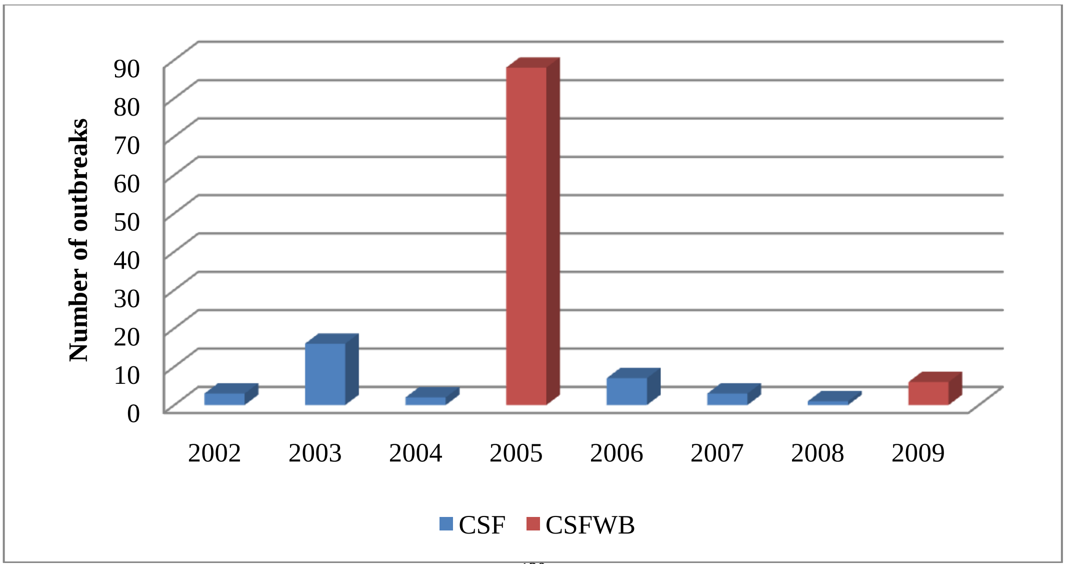
Source: Animal Disease Notification System (ADNS)

Bulgaria

CSF was reported to be infrequent in Bulgaria during the 1996-2002 period. However, because of deficiencies in the prophylactic vaccination and illegal trade in live pigs, outbreaks were reported in few districts of Bulgaria in 2002, 2003, and 2 outbreaks in the domestic pig population in 2004. In 2005, a large number of outbreaks (88) in wild boar were detected. In 2006, 7 outbreaks of CSF were found in domestic pigs in the Yambol districts and 1 case in the Bourgas district. Since 2006, no further CSF cases in the wild boar population have been observed. In early 2007, 3 outbreaks of CSF were recorded of which two were observed in East-Balkan pig herds in the region of Shumen and one in domestic pigs in the region of Yambol. In 2008 CSF was detected on a farm due to the insufficient bio-security measures applied, located in the region of Kustendil, 6 km from the Serbian border. The disease was detected during clinical investigations performed in the framework of the implementation of the programme for control and eradication of CSF. Since May 2008 no cases of CSF have been detected in domestic pigs in Bulgaria. In 2009, 8 CSF cases were detected in wild boar in forest close to Danube River (Silistra region).

It can be concluded that the prevention and control measures have clearly contributed to the significant reduction of CSF in Bulgaria in domestic pigs and wild boar, thus shifting current emphasis to control of CSF in the wild boar population, which should allow achieving full eradication in the future (**Figure 98**).

Figure 98 CSF, number of outbreaks in domestic pigs and wild boar, Bulgaria, 2002-2009



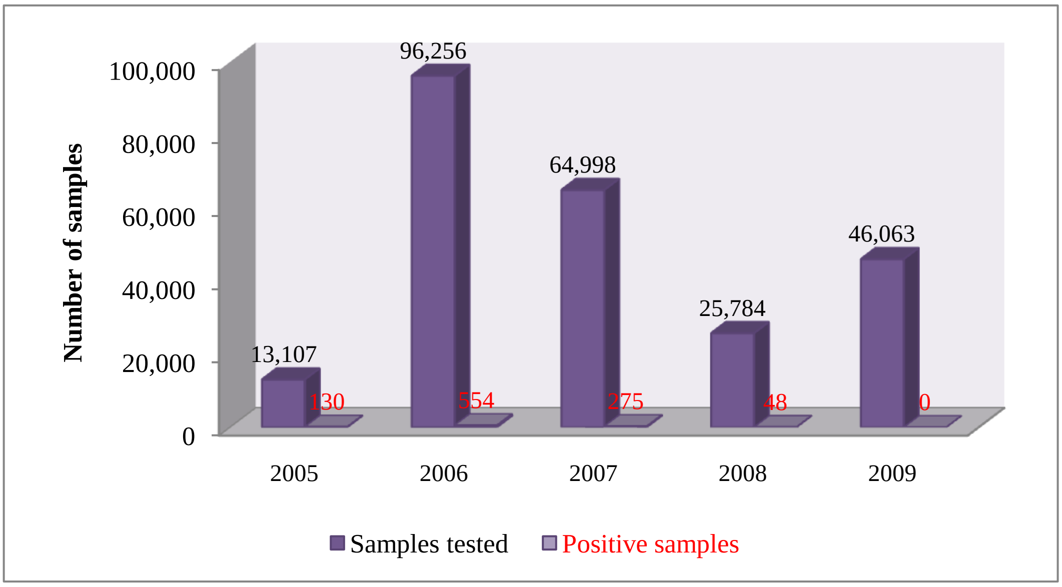
Source: Animal Disease Notification System (ADNS) [130] - DG SANCO eradication programme for CSF 2011-Bulgaria

Monitoring and surveillance programmes contained serological and virological sampling of testing of domestic pigs. In 2005, the programmes were intensified, and subsequently, nearly 100,000 serological tests were applied in 2006 (**Figure 99**), and more than 9,000 samples

[130] Outbreaks in Bulgaria before 2007 were not included in the ADNS system.

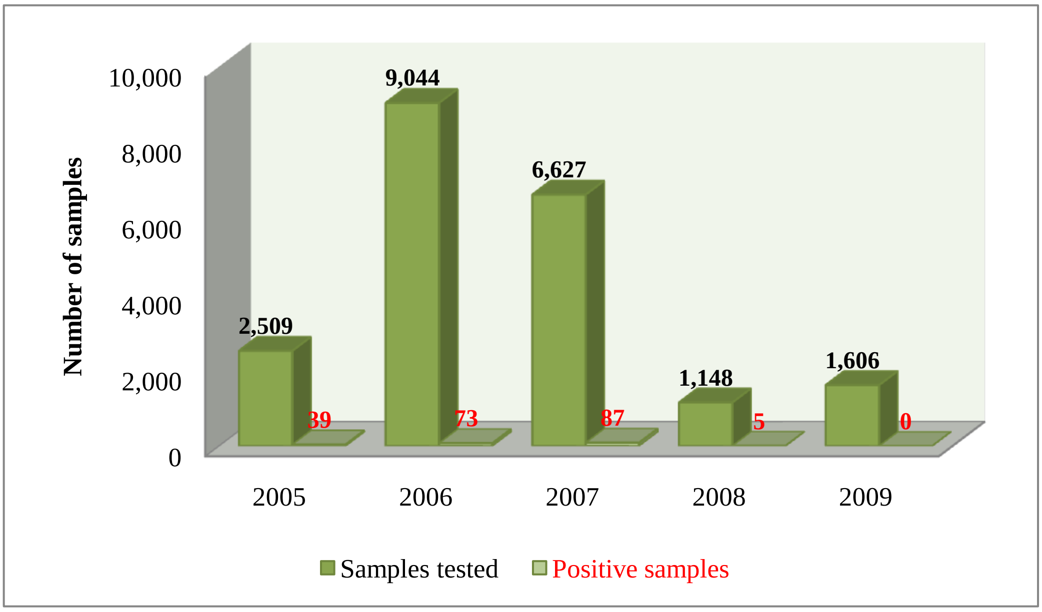
were virologically tested (**Figure 100**). Due to the decreasing detection of antibodies or virus, the numbers were gradually decreased to less than 40,000 serological samples and only 1,606 tissue samples in 2009. In 2009, no outbreaks in domestic pigs were detected.

Figure 99 Surveillance data: CSF serological testing, domestic pigs, Bulgaria, 2005-2009



Source: DG SANCO-eradication programme for CSF 2008-2009-2010-2011 Bulgaria

Figure 100 Surveillance data: CSF virological testing, domestic pigs, Bulgaria 2005-2009

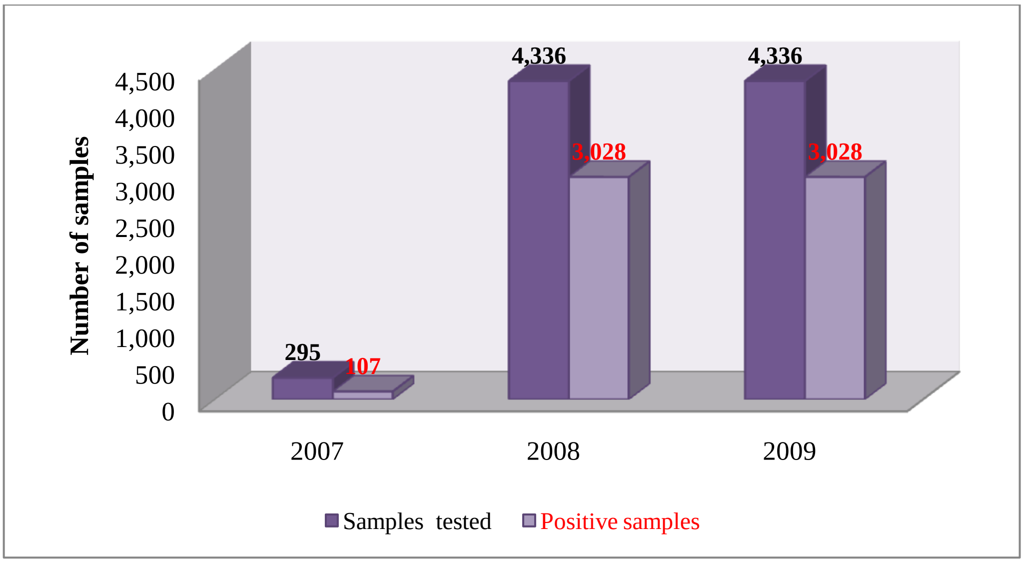


Source: DG SANCO-eradication programme for CSF 2008-2009-2010-2011 Bulgaria

Samples were also obtained from hunted wild boars, as illustrated in **Figure 101** and **Figure 102**. These wild boar monitoring campaigns were intensified in 2008, resulting in more than

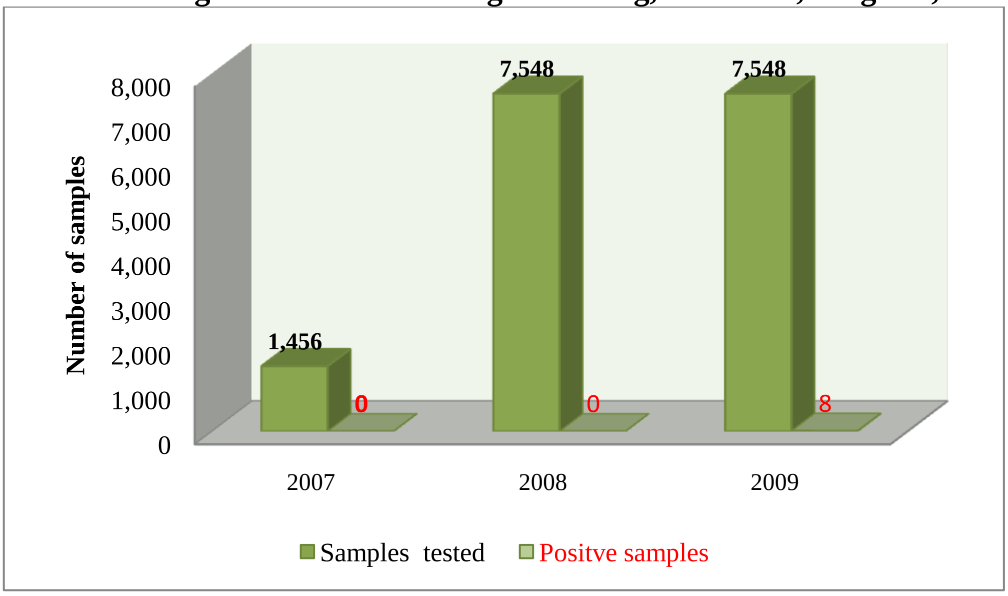
4,000 serological samples (**Figure 101**), and more than 7,500 tissue samples. The CSF virus was not detected in wild boar during 2007-2009.

Figure 101 Monitoring wildlife: CSF serological testing, wild boar, Bulgaria*, 2007-2009



**Note: data for 2007 are until 1.10 2007, samples for 2008 are taken from wild boar shot, found dead or crashed in car accidents reference period 1.10.2008 to 15.01.2009*
Source: DG SANCO-eradication programme for CSF 2008-2009-2010-2011 Bulgaria

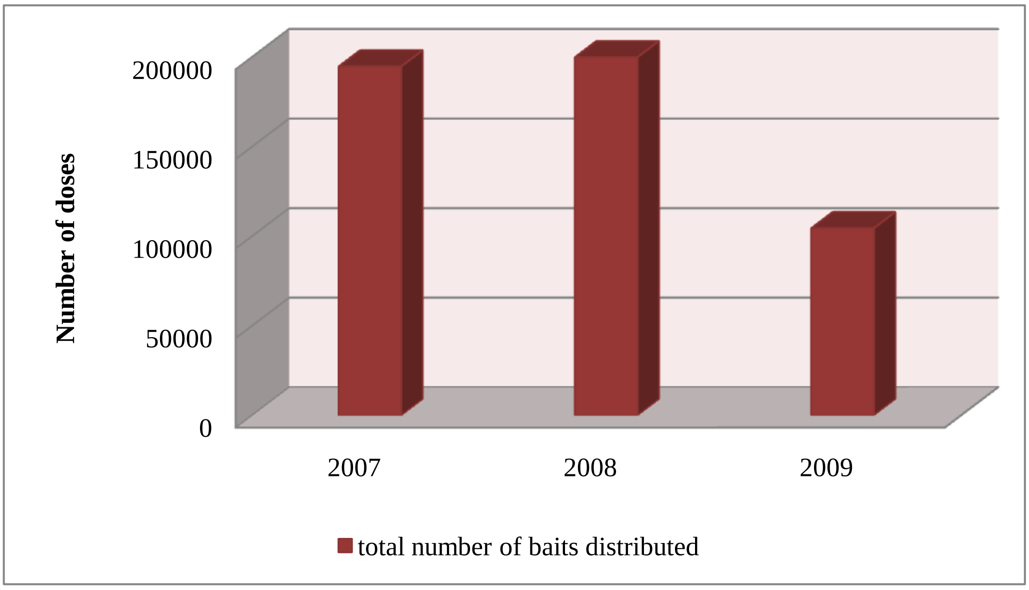
Figure 102 Monitoring wildlife: CSF virological testing, wild boar, Bulgaria, 2007-2009



Source: DG SANCO-eradication programme for CSF 2008-2009-2010-2011 Bulgaria

In 2005, stringent measures were taken that consisted of continuation of vaccination of all domestic pigs, and vaccination campaigns of wild boar, and intensive surveillance. Vaccination of domestic pigs ceased in 2006. The vaccination campaigns in wild boar that started in 2005 contained a relative small number of 60.000 doses of vaccine, in a limited area of about 5000 km^2. During 2006, 2007 and 2008 vaccination of wild boar was increased to more doses (200,000 doses), and to the whole territory of Bulgaria in 2008. From the second half of 2008, the vaccination of wild boars was organised in high-risk and buffer zones, only in the territory of the municipalities on the border with Romania, the Republic of Serbia and the Former Yugoslav Republic of Macedonia. In 2009 three vaccination campaigns of wild boar were carried out in the border zone (**Figure 103**).

Figure 103 CSF, number of vaccination baits in wild boar, Bulgaria, 2007-2009[131]



**Note: for 2009 data from the presentation SCoFCAH 9-10 Nov 2010.*
Source: DG SANCO-eradication programme for CSF -2009-2011 Bulgaria, Presentation SCoFCAH 9-10 Nov 2010.

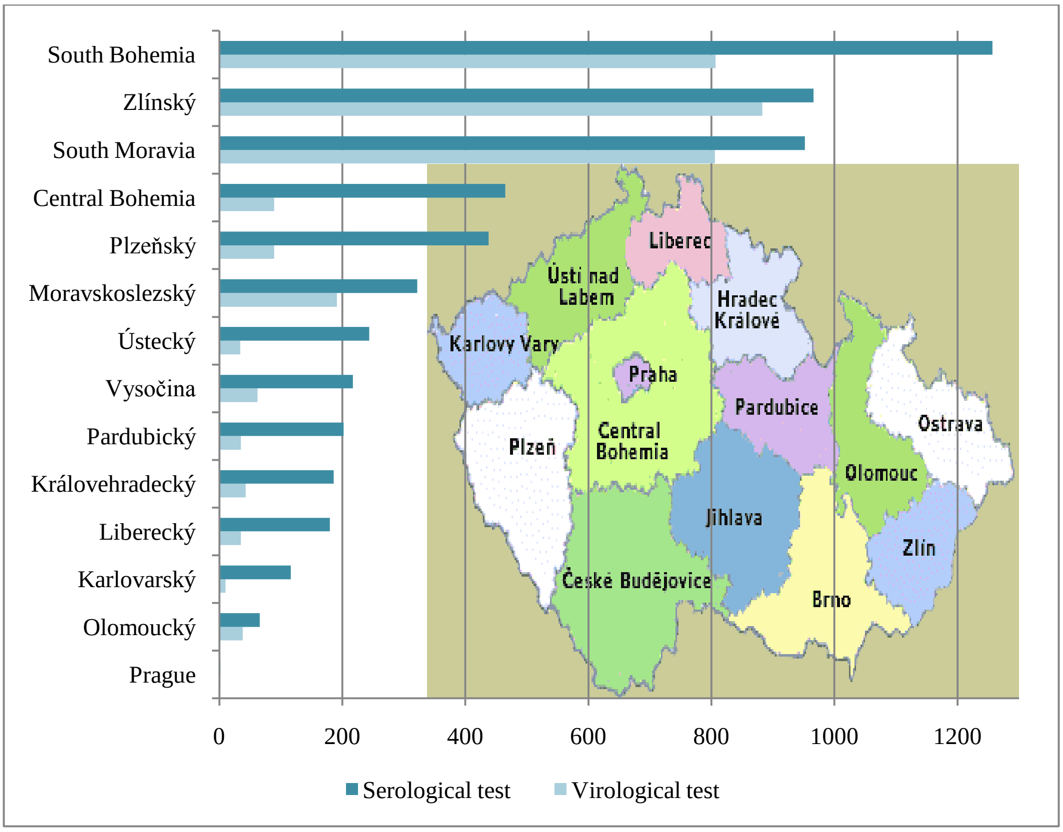
Czech Republic

In the Czech Republic, CSF was last recorded in 1997 in domestic pigs, and in wild boar in November 1999. Since then, the monitoring and surveillance has focused on early detection of CSF through serological tests and virological examination in wild boar population (**Figure 104**) and monitoring prevalence of CSF in the domestic pigs, on the entire territory of the country. Presence of antibodies against CSF virus in wild boar was detected close to the border with Slovakia in 2005 (26 animals) and 2006 (32 animals; 1 and 31 in Moravskoslezský and Zlínský region, respectively). However, no virus was detected, and it is suggested that the antibody titres originated from the vaccination campaign against CSF in wild boar in Slovakia. In domestic pigs, 6,121 animals were tested serologically across the whole country in 2006, but no animals were found with antibodies. Virological tests were applied for 4 domestic pigs in 2006, but no virus was detected.

[131] The vaccination programmes in Bulgaria in 2005 and 2006 had not been included in the co-funding programme

As the virus has not been detected in either wild boars or domestic pigs in the Czech Republic, from 2007 onwards, no co-funded eradication programmes on CSF were running in this country.

Figure 104 CSF serological and virological testing, wild boar, Czech Republic by region, 2006

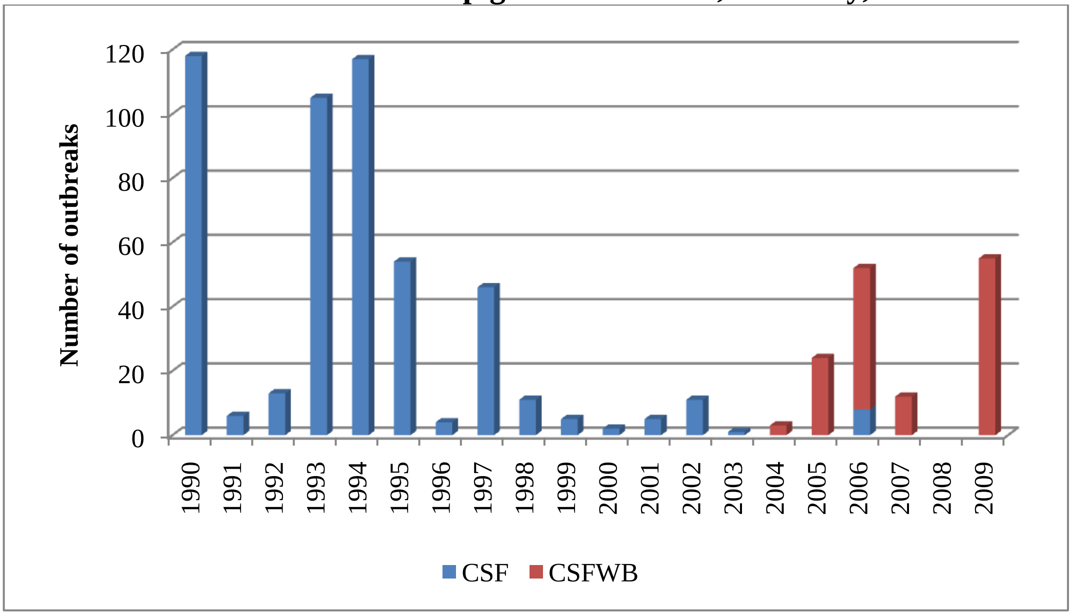


Source: DG SANCO- eradication programme for CSF 2011, Czech Republic

Germany

As a result of vaccination of domestic pigs and subsequent eradication measures, CSF was eradicated in Germany since 2003 (**Figure 105**). However in 2006, 8 outbreaks occurred in domestic pigs. Adequate measures were put in place consisting of culling of all pigs in the restriction zones, monitoring and status determination in herds of pigs, setting up of a buffer zone up of 10 km wide with an absolute ban on all animal movements, setting up information campaigns for pig farmers, as well as hunting measures. Since 2006, no new CSF cases have been reported in domestic pigs.

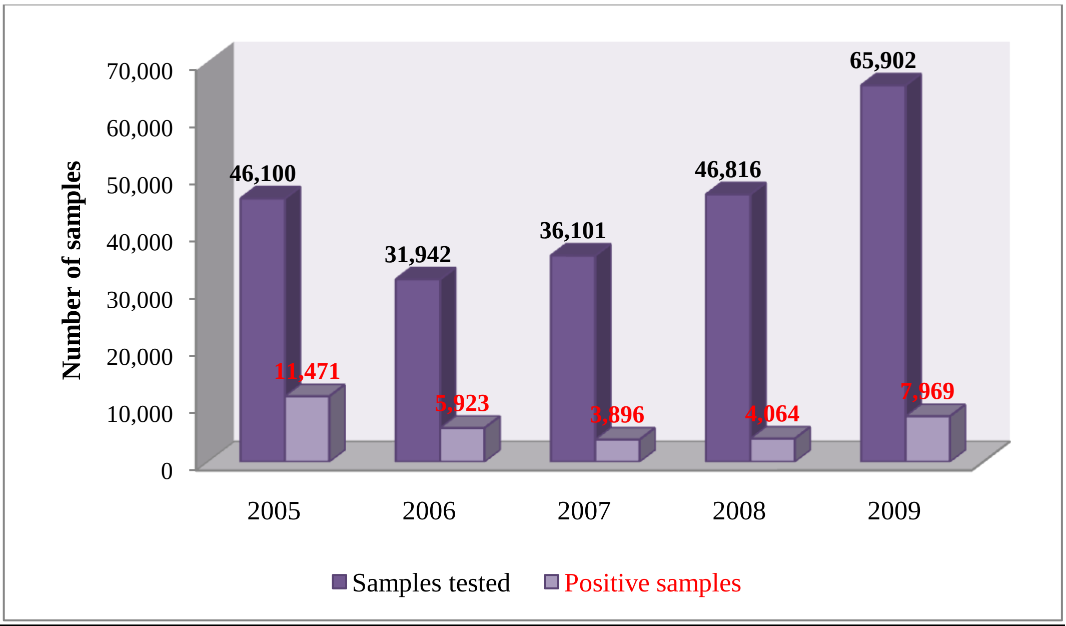
Figure 105 CSF outbreaks in domestic pigs and wild boar, Germany, 1990-2009



Source: Animal Disease Notification System (ADNS)

In certain areas of Germany, the wild boar poses a risk for CSF in domestics pig. Wild boar are mainly located in the German Federal States of Rhineland-Palatinate, Northrhine-Westfalia and Saarland, across the borders with Belgium, France and Luxembourg. Serological surveillance of wild boar between 2005-2009 involved 31,942 to 65,902 serum samples per year (**Figure 106**), and an overall decline can be seen in the number of positive samples, indicating the reduction of CSF in wild boar.

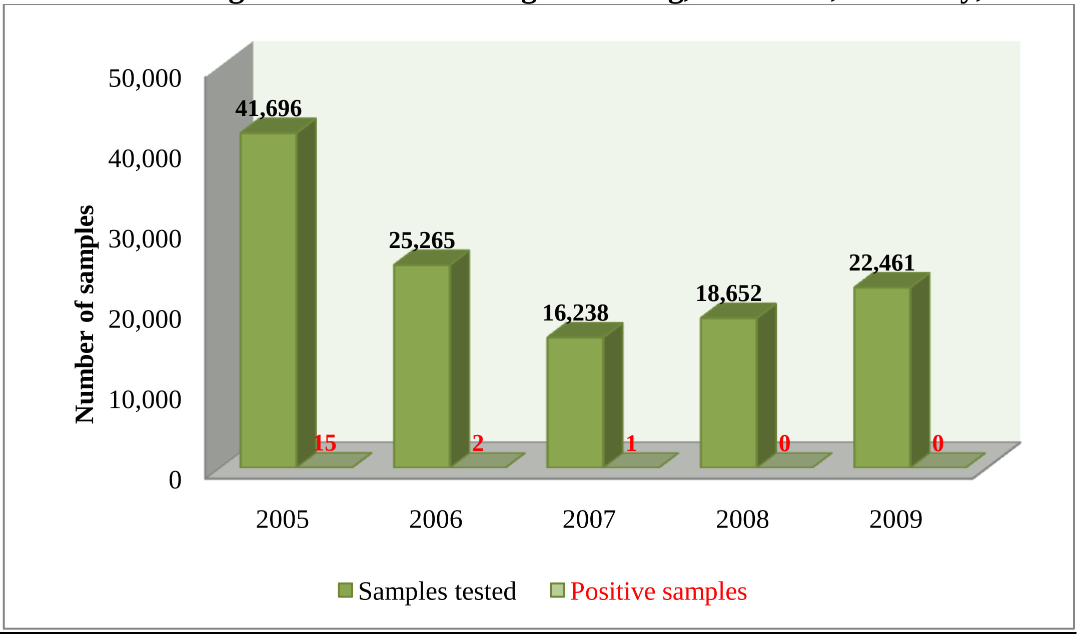
Figure 106 Monitoring wildlife: CSF serological testing, wild boar, Germany, 2005-2009



Source: DG SANCO- eradication programme for CSF 2011 Germany

The identification of the CSF virus in wild boar showed a decreasing pattern, from 15 outbreaks in 2005, to 1 in 2007 (**Figure 107**). The CSF virus was detected in 3 animals in 2004, in 24 animals in 2005 (15 outbreaks recorded in ADNS), and in 44 animals in 2 confined areas (2 outbreaks) in 2006. In two areas in which CSF had been detected in wild boar in the past, control measures were discontinued in 2010.

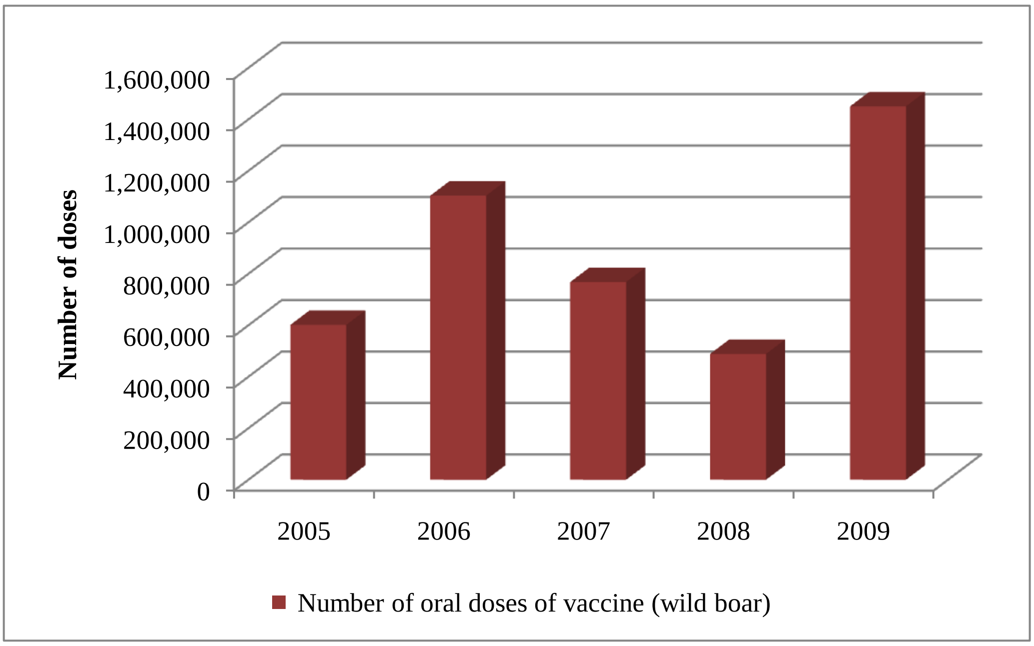
Figure 107 Monitoring wildlife: CSF virological testing, wild boar, Germany, 2005-2009



Source: DG SANCO- eradication programme for CSF 2011-Germany

Vaccination of domestic pigs in Germany was stopped when the non-vaccination policy in the EU was adopted. However, vaccination of wild boar started in 2002 following the discovery of CSF in wild boar. Vaccination campaigns were held in Rhineland-Palatinate, in parts of the district of Euskirchen, parts of the Rhein-Sieg-Kreis, parts of the city of Aachen and the districts of Aachen and Düren. In 2003, four oral vaccination campaigns were carried out in the extended area. The last oral vaccination campaign using double baiting was in spring 2004. Following the reduction of positive cases, the restrictions were lifted at the end of 2004. In autumn 2005, CSF was detected in samples from wild boar in the district of Euskirchen. This led to the establishment of an emergency vaccination area. In January 2009, CSF was detected in wild boar in Rheinisch-Bergischer Kreis and in Rhein-Sieg-Kreis east of the Rhine. Here too, an emergency vaccination area was established. During 2005-2009, oral vaccination in Germany was part of the co-funded CSF eradication measures, involving 601,600 to 1.5 million doses of oral vaccines **(Figure 108**).

Figure 108 Vaccination of wild boar for CSF, Germany, 2005-2009

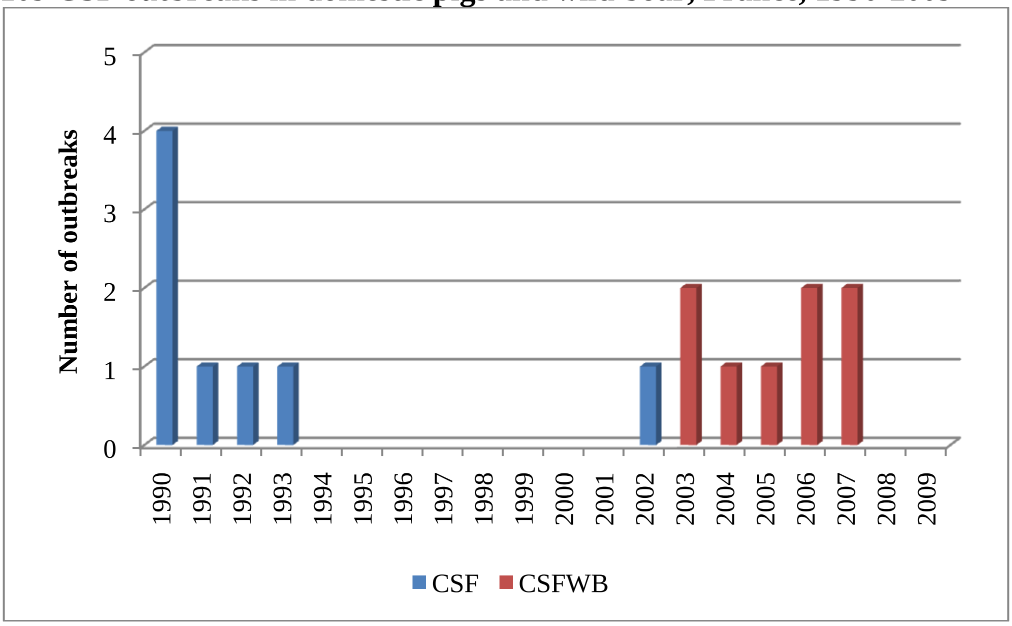


Source: DG SANCO- eradication programme for CSF 2011-Germany

France

In France, CSF was eradicated since 1994. No outbreaks occurred until CSF was detected in a wild boar in 2002 in the region of Thionville. Subsequent intensified monitoring and surveillance programmes led to the identification of few positive CSF cases in wild boar until 2007 (**Figure 109**).

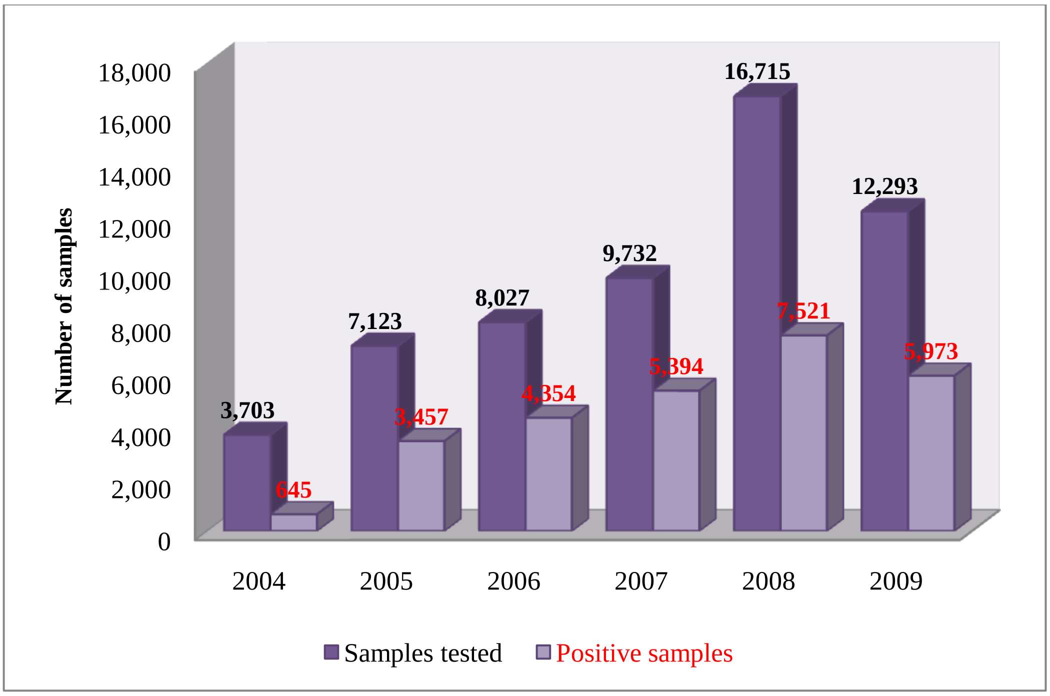
Figure 109 CSF outbreaks in domestic pigs and wild boar, France, 1990-2009



Source: Animal Disease Notification System (ADNS)

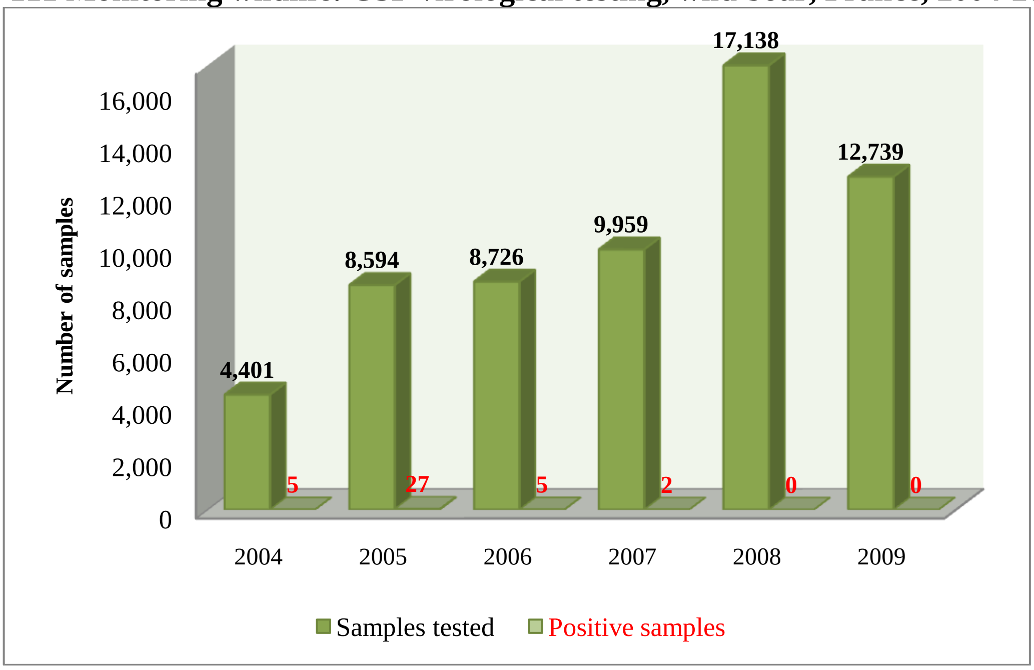
The monitoring consisted of serogical testing of samples from wild boar and revealed a relative high % of infected animals (**Figure 110**). However, the number of animals carrying the virus was low, as demonstrated by the results of the virological tests (**Figure 111**).

Figure 110 Monitoring wildlife: CSF serological testing, wild boar, France, 2004-2009



Source: DG SANCO- eradication programme for CSF 2011-France

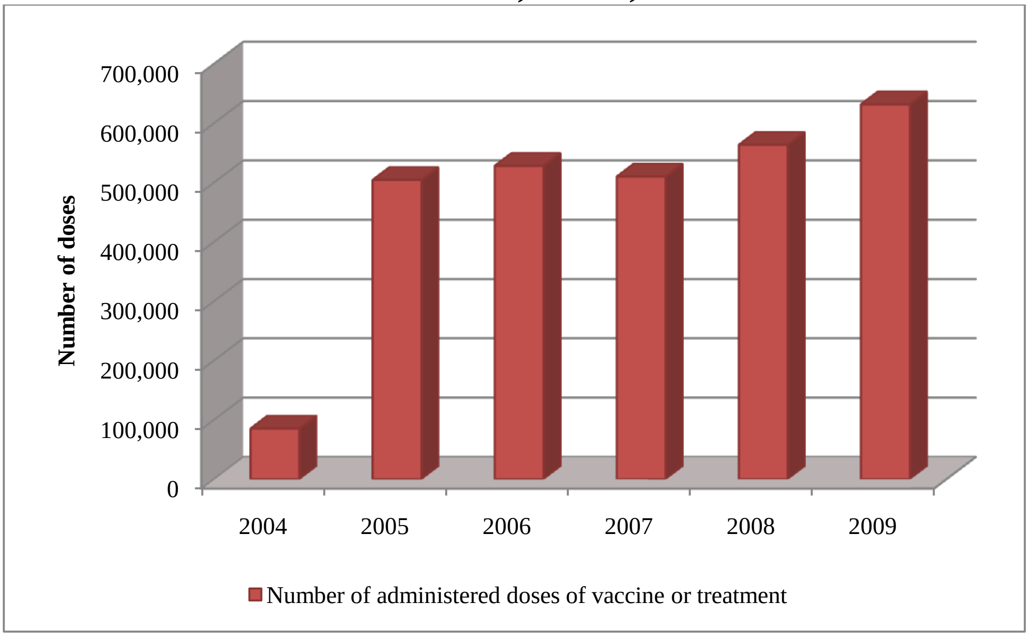
Figure 111 Monitoring wildlife: CSF virological testing, wild boar, France, 2004-2009



Source: DG SANCO- eradication programme for CSF 2011- France

Vaccination of wild boar has been applied in France since 2004 (85,080 doses) until 2009 (631,730 doses) and is ongoing in the regions at risk (départment de la Moselle et du Bas Rhin) **(Figure 112**). Overall the control measures have contributed to reduce the overall number of cases as demonstrated by the small number of animals carrying the virus, yet the high sero-prevalence demonstrates that an important CSF reservoir exists. This will need attention in the coming years, to protect the domestic pig population, and the countries neighbouring France near the infected risk zones.

Figure 112 Vaccination of wild boar for CSF, France, 2005-2009



Source: DG SANCO- eradication programme for CSF 2011-France

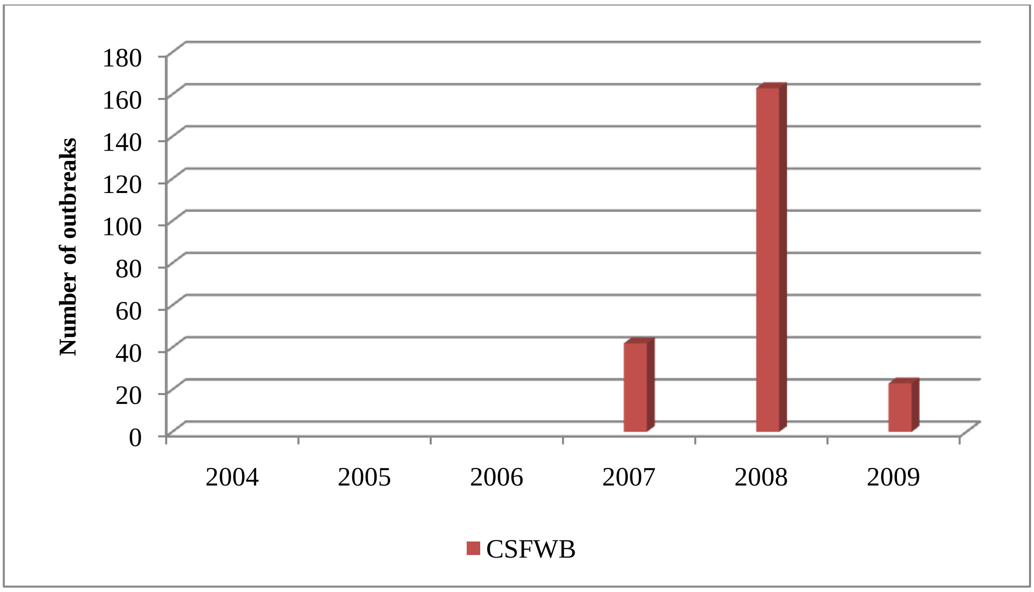
Hungary

CSF has not occurred in domestic pigs in Hungary since 1993. Hence only passive surveillance was practised, and vaccination was not applied. However, Hungary has a large wild boar population of an estimated 100,000 animals and the CSF virus was detected in 2 wild boars in the hunting season of 2006-2007. Subsequently, an intensified surveillance programme was set up in domestic pigs and wild boar. As a result, although the CSF virus was not detected in the domestic pig population, it was detected in a number of wild boar in 2008. Subsequently, in 2009, a smaller number of infected wild boar were detected in 2009, even though the number of tested tissue samples of wild boar was about 3 times higher than in 2006-2007 hunting season (**Figure 113**, **Figure 114**, **Figure 115**).

A compulsory surveillance programme in domestic pigs was initiated in 2009 with a previously determined scheme for the whole territory of the infected area. In 2009, 46,548 domestic pigs were included in the surveillance programme. The surveillance programmes showed no evidence of infection in domestic pigs. However, serological tests demonstrated a relative low percentage of infected wild boar. In 2009-2010, in 1,610 serum samples of 27,561 tested wild boar antibodies against CSF were detected (**Figure 114**). From the virological examinations 15 tissue samples from 14,920 animals tested showed presence of

CSF (**Figure 115**).The laboratory tests were carried out in the infected area according to the risk and the epidemiological situation: in Nógrád county routine testing of domestic pigs started in January 2007, and in Pest county routine testing of domestic pigs started in January 2008.

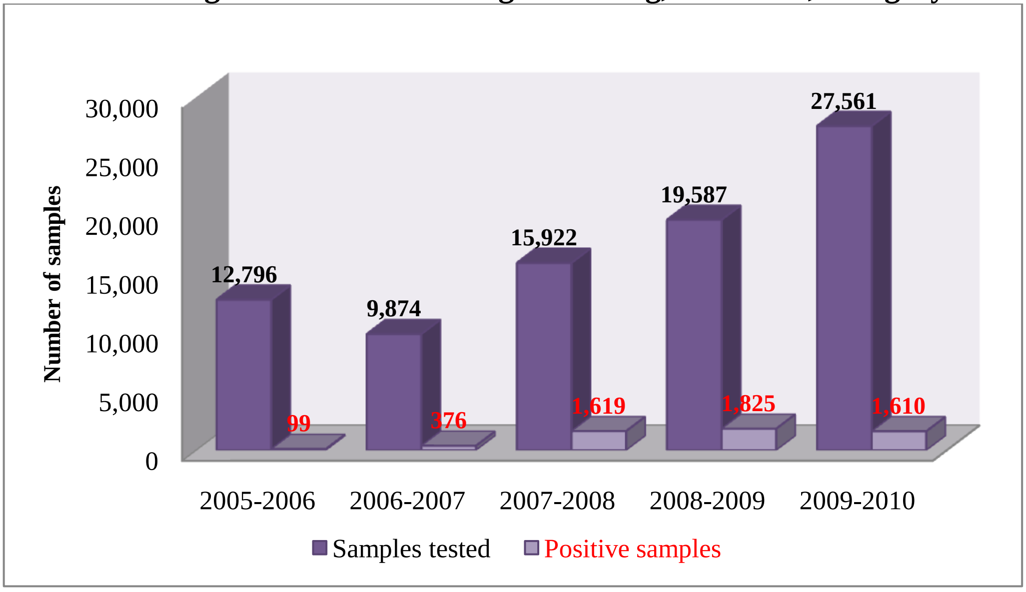
Figure 113 CSF, outbreaks in domestic pigs (no cases) and wild boar, Hungary, 2007-2009



Source: DG SANCO- eradication programme for CSF 2011-Hungary

In 2010, CSF is present in wild boar in Hungary, but at a low incidence. Hungary borders with Slovakia where CSF has occurred frequently during 2002-2008, and both countries collaborate to eradicate the disease in the southern border area of Hungary. Continued vigilance will be needed to limit the risk of spread in regions at risk, and measures, such as serological and virological examination of each hunted wild boar are essential in the high risk surveillance zones.

Figure 114 Monitoring wildlife: CSF serological testing, wild boar, Hungary* 2005-2009

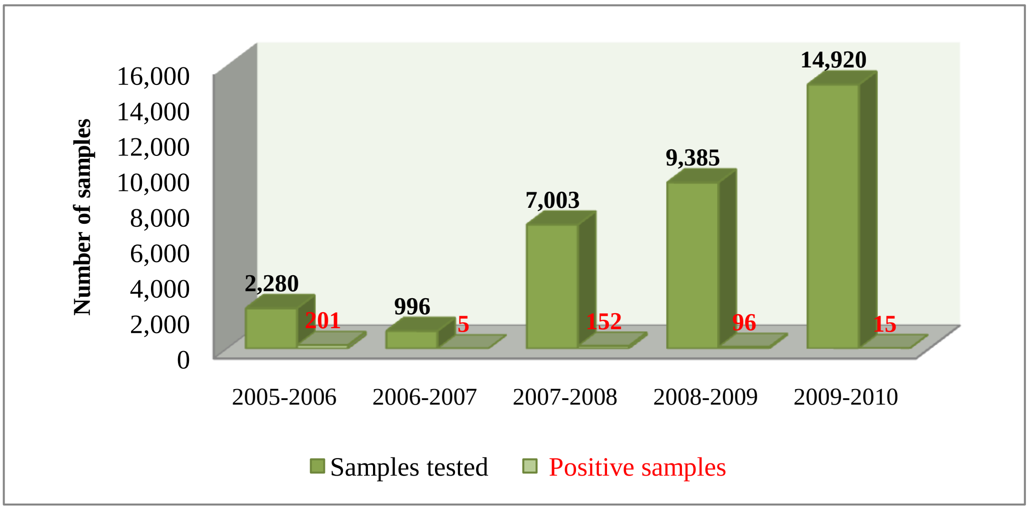


**Note: The year refers to hunting year: for 2005-2006, the hunting year goes from 1/01/2005 to 28/02/2006 and for 2006-2007, 2007-2008, 2009-2010, the years go from 1 March of the first year to 28 February of the following year; for 2005-2006 the virological tests included direct immunofluorescent test and PCR, from then on virological tests included PCR.*

Source: DG SANCO- eradication programme for CSF 2011

Virological examinations for CSF in wild boar showed that the incidence is decreasing over the years: in 2005-2006, 201 out of 2,280 samples were positive (8, 8%), and in 2009-2010 15 out of 14,920 samples were positive (0,001%). This clearly suggests that the virus is gradually more confined in its natural reservoir host (see **Figure 115**).

Figure 115 Monitoring wildlife: CSF virological testing, wild boar, Hungary*, 2005-2009



**Note: For 2005-2006 year goes from 1/01/2005 to 28/02/2006. For 2006-2007, 2007-2008, 2009-2010 the years refer to hunting years which go from 1 March of the first year to 28 February of the following year; for 2005-2006 the virological tests included direct immunofluorescent test and pcr, from then on virological tests included prc.*

Source: DG SANCO - eradication programme for CSF 2011, Hungary

Luxembourg

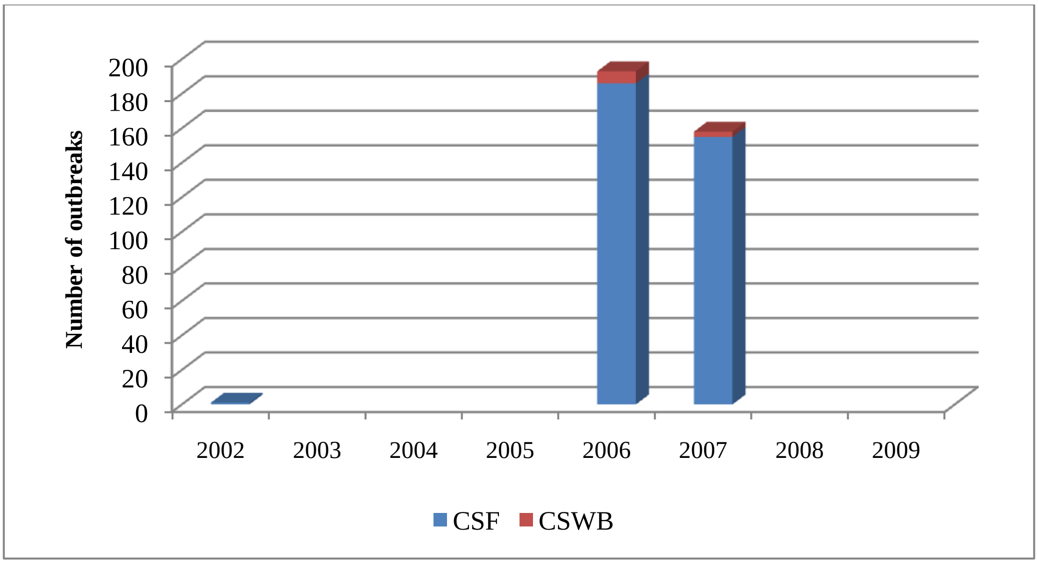
In Luxemburg, CSF outbreaks recorded in ADNS occurred in domestic pigs in 2002 (11 outbreaks) and in 2003 (1 outbreak), with subsequent vaccination campaigns of wild boar implemented in 2002-2003, that resulted in successful CSF eradication within months. Since 2004, no CSF outbreaks have been reported by Luxemburg. Currently oral vaccination is no longer applied. However, Luxemburg has an indigenous wild boar population, and borders with regions in France and Germany where CSF has been detected wild boar and continuous vigilance is needed, although also the domestic pig population is small.

Romania

Romania has a large domestic pig population of over 5 million pigs, and a large number of wild boars, estimated at some 60,000 animals. The way pigs are kept in Romania poses a specific risk for spread of CSF, due to the large number of back-yard holdings (1.3 million in 2010) that rear about 3 million pigs in rural areas, where also wild boars occur. About 2 million pigs are reared in about 300 commercial holdings that can be compared to other industrialised pig holdings present in the EU. Hunting on wild boar is widespread and about 10,000 wild boars are shot annually.

Outbreaks of CSF were recorded in ADNS since 2001. In 2002, one outbreak was recorded in domestic pigs, and in 2006 and 2007 a large number of outbreaks were recorded, mostly in small backyard holdings, except for a very extensive outbreak that occurred on a large commercial holding in western Romania (**Figure 116**). Since October 2007, no new CSF outbreak has been recorded, neither in domestic pigs nor in wild boars.

Figure 116 CSF outbreaks in domestic pigs and wild boar, Romania, 2002-2009



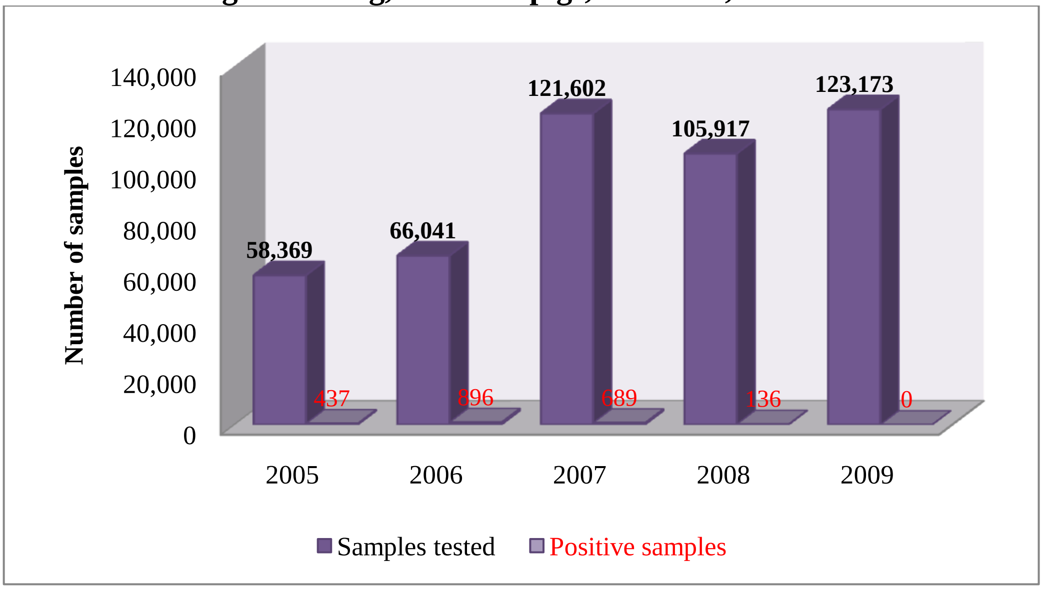
Source: Animal Disease Notification System (ADNS)

Monitoring and surveillance programmes were developed in Romania since 2007. These included: serological and virological monitoring of domestic pigs; serological and virological monitoring of wild boars using samples from hunted animals; emergency vaccination of domestic pigs in large commercial farms with the marker vaccine (applied since April 2008);

emergency vaccination of domestic pigs from non-professional holdings with live attenuated conventional vaccine, in the years 2006 to 2009; and, a plan for emergency vaccination against CSF in feral pigs (2007- 2010).

Surveillance in domestic pigs showed that, between 2005 and 2008, 0.1-1.3% of domestic pigs possessed antibodies, either due to vaccination or infection, and 0% in 2009, when more than 100,000 samples were tested (**Figure 117**).

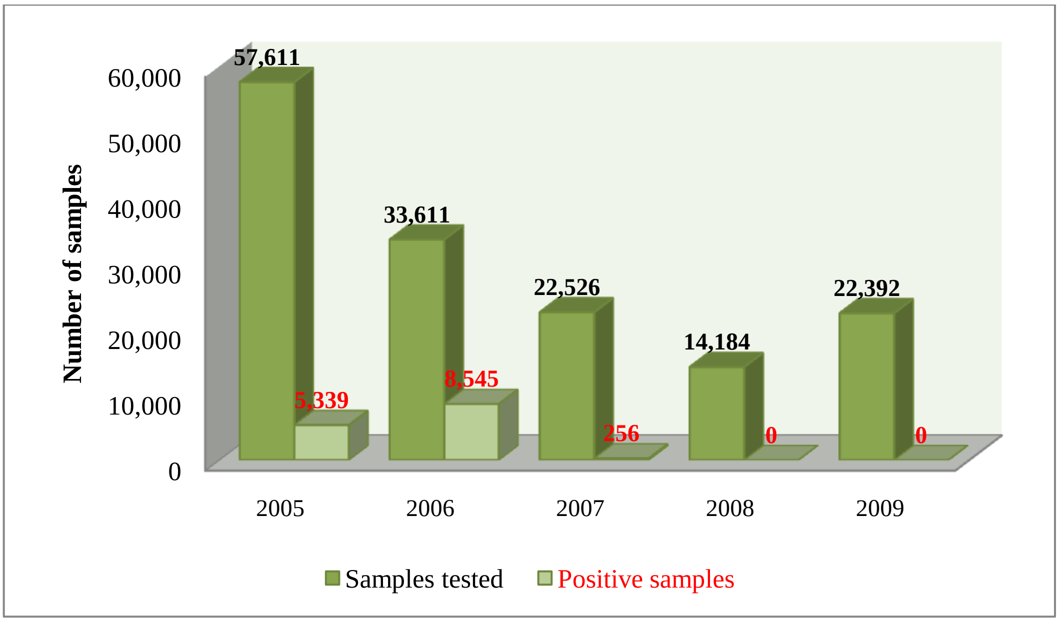
Figure 117 CSF serological testing, domestic pigs, Romania, 2005-2009



**Note: For 2005 data from 2010 Annual Report*
Source: DG SANCO- eradication programme for CSF 2011, 2010-Romania

The virological surveillance of domestic pigs showed a general decrease trend of positive virus detection during the period, despite some year-on-year fluctuations: from 9% in 2005, to 25% in 2006, but then dropping to 1.1% in 2007 and to no cases from 2008 onwards **(Figure 118**). Molecular biology studies conducted on CSF virus strains isolated in outbreaks between 2005-2007 showed that strains belonged to subgroup 2, suggesting that only one genotype of the virus had circulated in Romania.

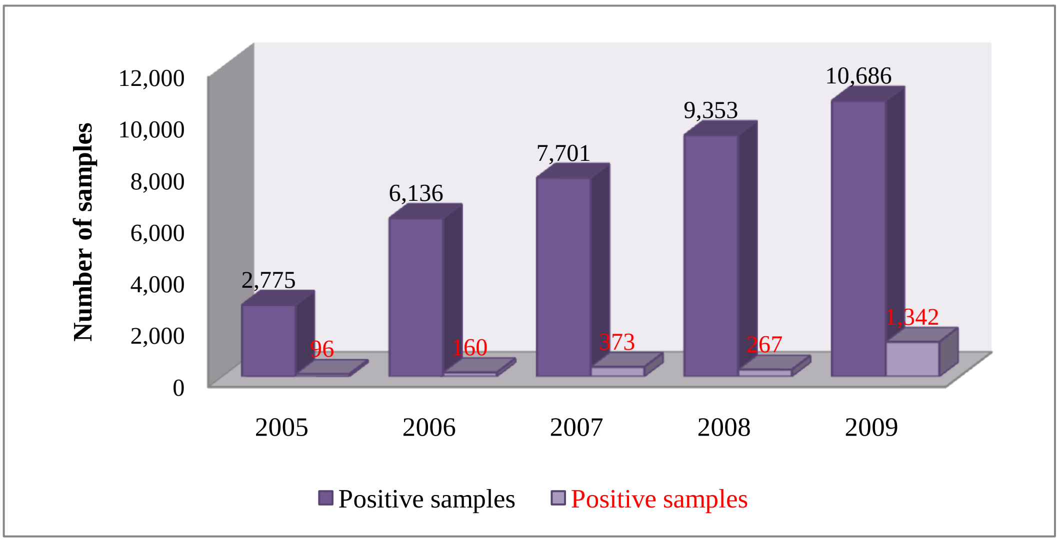
Figure 118 CSF virological testing, domestic pigs, Romania, 2005-2009



**Note: For 2005 data from 2010 Annual Report*
Source: DG SANCO- eradication programme for CSF 2011-2010, Romania

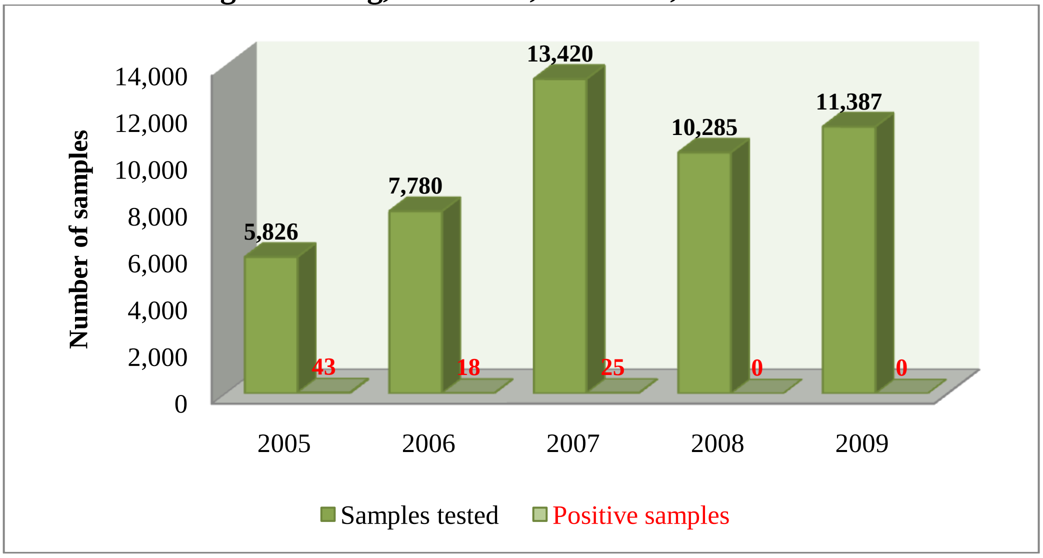
Before 2005, there were no programs for serological monitoring of the oral vaccination of wild boar in Romania. In 2005, monitoring was initiated and amounts of samples from tested wild boars increased from 2,775 serum samples and 5,826 tissue samples in 2005 to 10,686 serum samples and 11,387 tissue samples in 2009. The percentage of positive serum samples were 3-5% in 2005-2008, and increased to 13% in 2009 (**Figure 119).** The percentage of samples from wild boars in which virus was detected gradually decreased from 0.7% -0.2% (2005-2006) to 0% in 2008 and 2009 (**Figure 120**).

Figure 119 CSF serological tests, wildlife, Romania, 2005-2009



Source: DG SANCO- eradication programme for CSF 2011- Romania

Figure 120 CSF virological testing, wild boar, Romania, 2005-2009

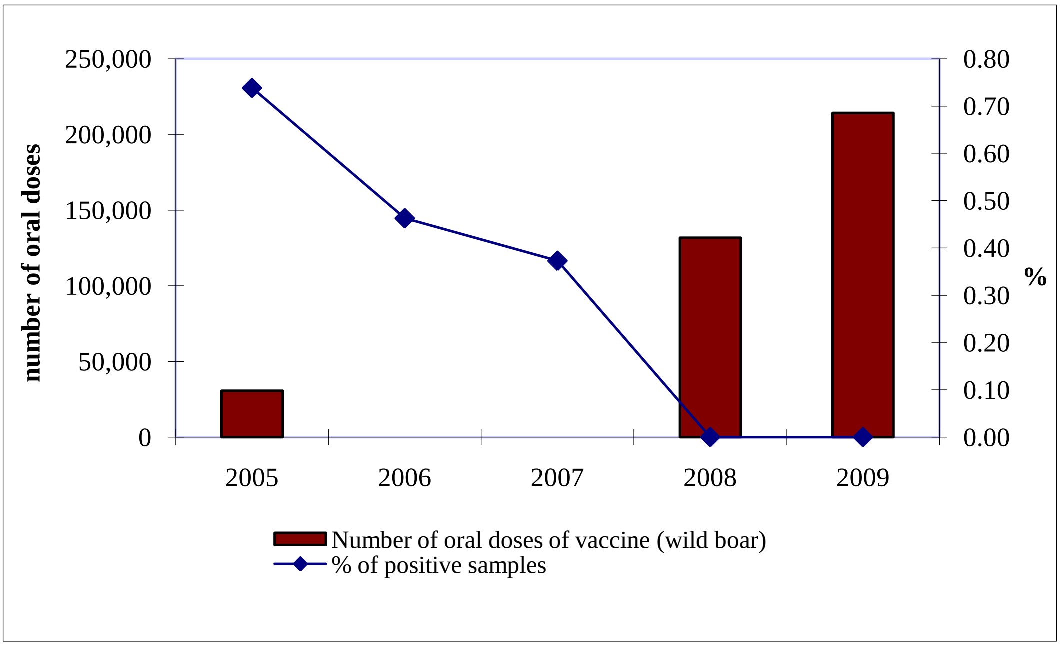


Source: DG SANCO- eradication programme for CSF 2011-Romania

Before 2001, prophylactic vaccination of domestic pigs was mandatory in Romania, using a live attenuated vaccine. Between 2003 and 2006, vaccination of domestic pigs was banned, in an early attempt to eradicate the disease without vaccination, except that vaccinations were allowed on commercial operators, where vaccination was continued. In 2007-2009, vaccination for CSF was resumed in domestic pigs and was performed on the entire territory of the country, for all categories of pigs in non-professional holdings, using live attenuated vaccine. In 2010, vaccination of domestic pigs was stopped. The pigs from commercial holdings were vaccinated until April 2008 with a marker vaccine.

Since 2002, oral vaccination of wild boar was performed in the majority of the Romanian counties, using chicken eggs containing a live attenuated strain virus. Vaccination was performed in the winter season. In the years 2007-2008 (until November 2008) vaccination against CSF in wild boar was compromised because of certain juridical aspects regarding the tender. In 2008, vaccination (with a booster administration) was conducted during November-December, in only 1,577 hunting funds, aimed at 43,112 wild boars, applying bait vaccination of 131,794 doses, of which 3,451 baits were recovered and destroyed as unused. In 2009, there were 3 vaccination campaigns in 33 counties, with a total vaccinated population of about 50,000 wild boars (**Figure 121**). In 2010, the vaccination was performed in 8 counties, in the high risk contact area, on the north and north east border with Ukraine and Moldova.

Figure 121 Vaccination of domestic pigs and wild boar, Romania, 2005-2009



Source: DG SANCO- eradication programme for CSF 2011-Romania

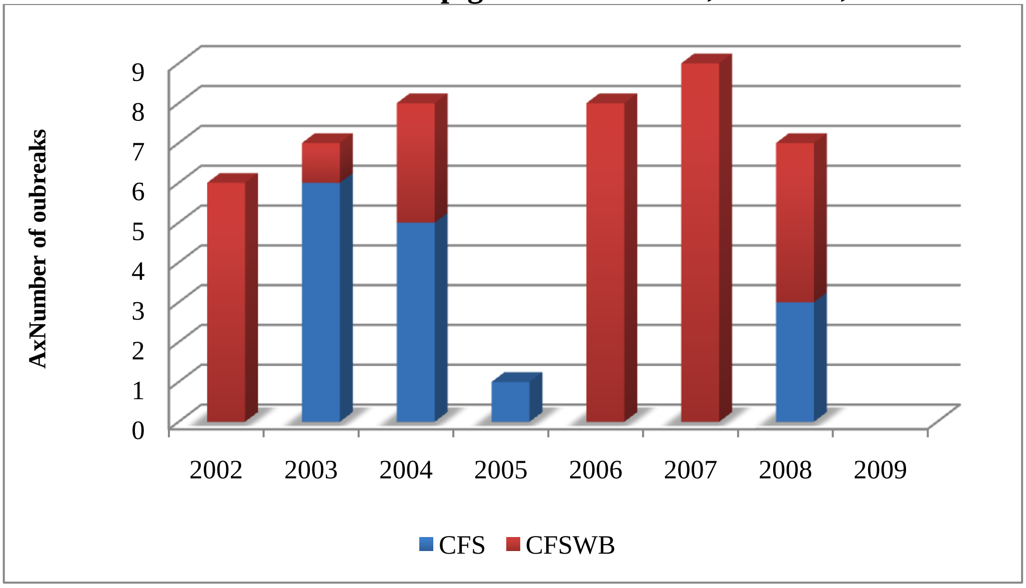
Slovenia

Slovenia has a pig population of about 500,000 pigs on a little more than 20,000 holdings, and a significant wild boar population. The last CSF outbreak was recorded in 1996, and vaccination has been abandoned since October 2000. Swill feeding, that forms a risk for CSF introduction, has been prohibited since 2003. Slovenia has established surveillance programmes for domestic pigs and wild boar. The active surveillance programmes in domestic pigs consist of a risk based serological sampling scheme and testing of fallen stock. The wild boar population has been monitored in a framework of pilot studies since 1998. In March 2002, first serological positive results were confirmed in the southern border region of the country. The Slovenian competent authority then decided to establish a monitoring and surveillance programme on the whole territory of Slovenia in 2003. The wild boar monitoring and surveillance programme consist of collecting and testing of samples from hunted wild boar, as well as risk based collection and testing of samples from wild boars hunted near the border with Croatia.

Slovakia

Slovakia has a population of about 750,000 pigs and a significant wild boar population. CSF has been a risk for the pig sector in Slovakia for many years. Outbreaks in domestic pigs or wild boars occurred every year between 2002 and 2008 but in very low numbers. Since 2009, no outbreaks in domestic pigs or wild boars have been recorded (**Figure 122**). Stringent vaccination measures, monitoring and surveillance programmes have been established since many years to eradicate the disease from the territory of Slovakia. Slovakia borders with Hungary and both countries collaborate to eradicate the disease in the border area. In 1993, vaccination was forbidden, but after increasing outbreaks in domestic pigs and wild boars, vaccination became compulsory in early 1998. This resulted in a reduction of CSF cases, and in 2000, vaccination was again stopped. Since then, outbreaks in domestic pigs occurred incidentally at a low level, but outbreaks in wild boars occurred rather frequently, although effectively reduced by oral vaccination campaigns, starting in 2007. Since 2009, new CSF outbreaks have been reported in domestic pigs or wild boars.

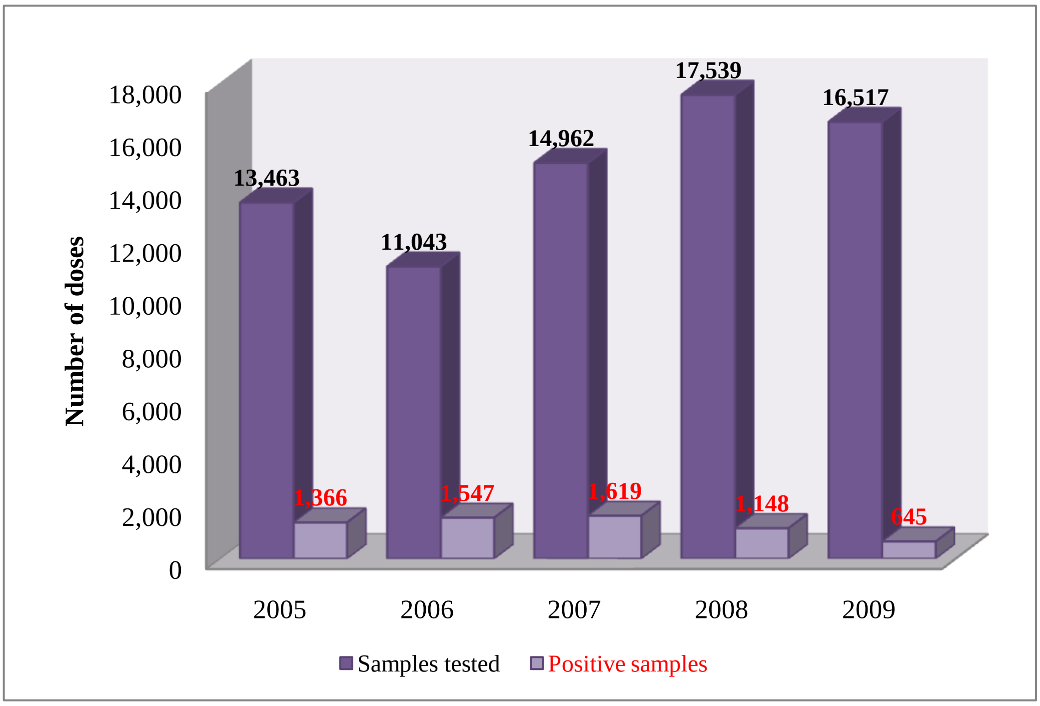
Figure 122 CSF outbreaks in domestic pigs and wild boars, Slovakia, 2002-2009



Source: Animal Disease Notification System (ADNS)

Monitoring and surveillance programmes in domestic pigs have been implemented, and low numbers of positive animals have been recorded between 2003 and 2008. However, emphasis lies on the wild boar, with vaccination and monitoring programmes. The monitoring of wild boars shows a significant proportion of animals are carrying antibodies (**Figure 123**).

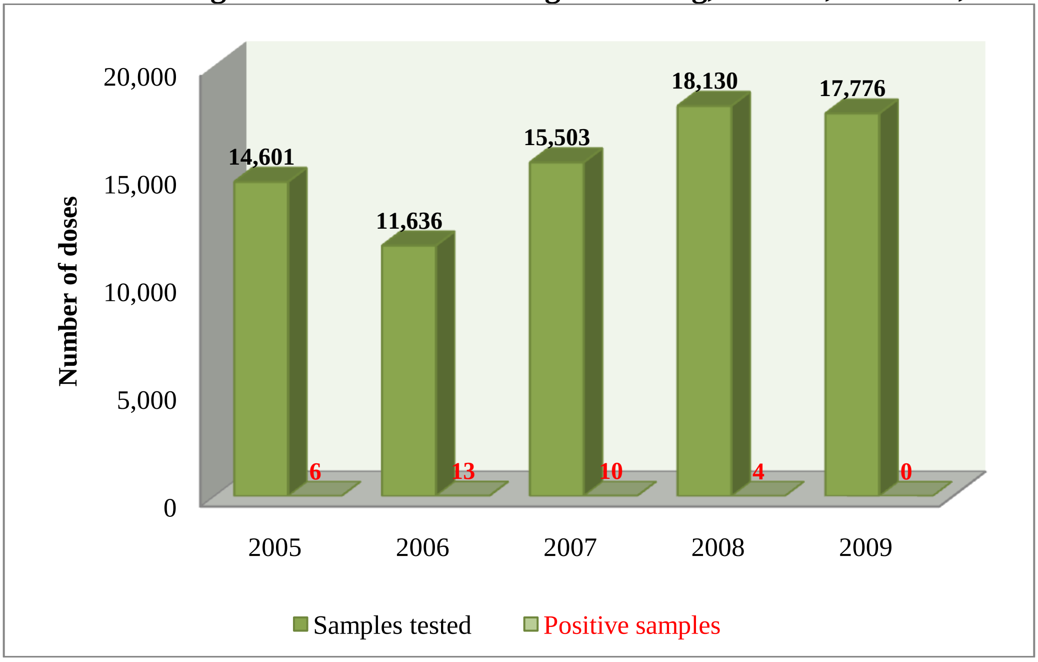
Figure 123 Monitoring on wildlife: CSF serological testing, wildlife, Slovakia, 2005-2009



Source: DG SANCO- eradication programme for CSF 2011-Slovakia

The virological monitoring of wild boars in Slovakia shows a very low incidence of CSF, with 4-13 outbreaks in 2005-2008, and zero in 2009 (**Figure 124**).

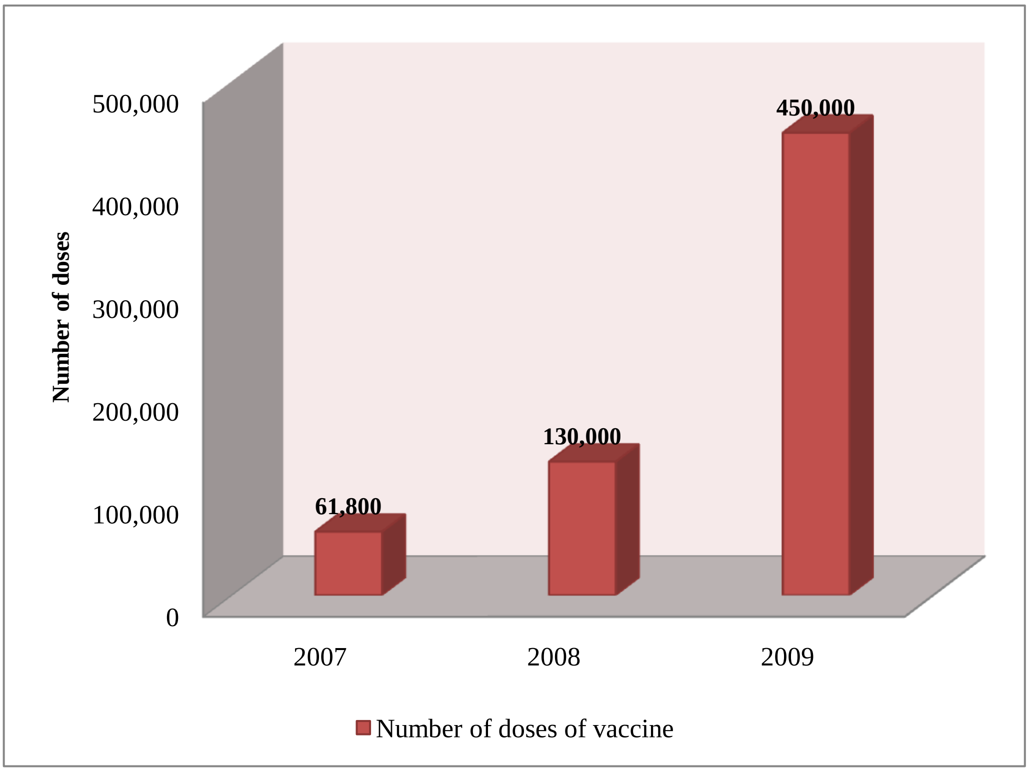
Figure 124 Monitoring on wildlife: CSF virological testing, wildlife, Slovakia, 2005-2009



Source: DG SANCO- eradication programme for CSF 2011-Slovakia

The vaccination of wild boars was intensified during the period, from more than 60,000 doses in 2007 to 450,000 doses in 2009. It is expected that high vaccination rates will further reduce the number of CSF carriers among wild boars in the high risk region of northern Slovakia, thus limiting the natural reservoir of the virus.

Figure 125 Vaccination of wildlife for CSF, Slovakia, 2007-2009



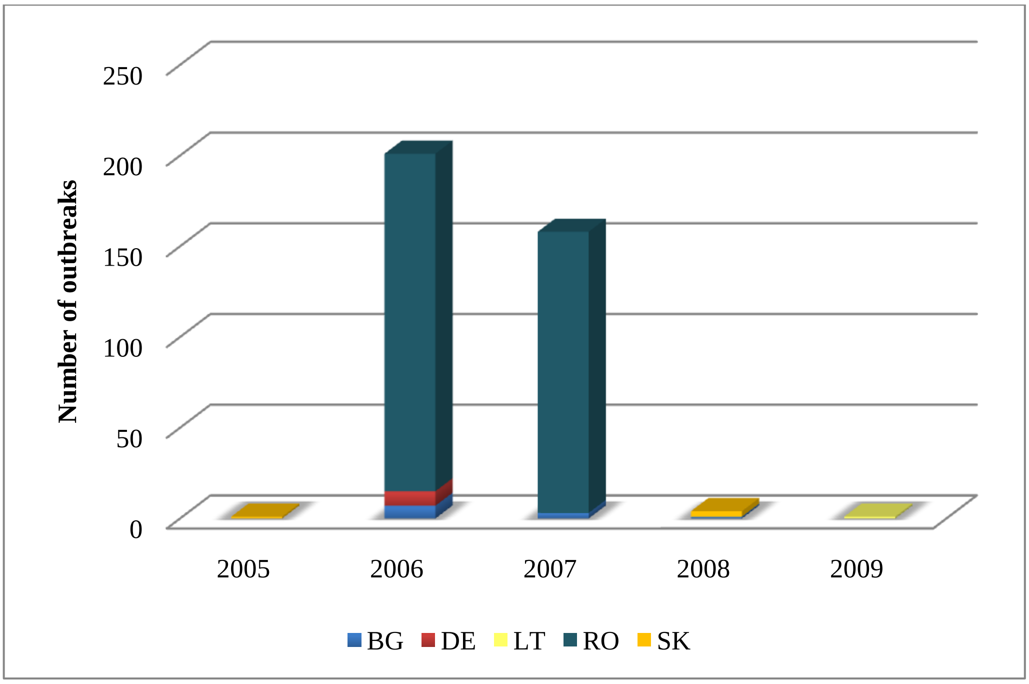
Source: DG SANCO- eradication programme for CSF 2011-Slovakia

2.7.1.4 Analysis of effects of the programmes

The results of the CSF programmes can best be illustrated by the number of EU Member States that are free of CSF in domestic pigs and Member States free of CSF in wild boars.

The objective of CSF eradication programmes is to protect the domestic pigs. As can be seen in **Figure 126**, the outbreaks in domestic pigs during 2005-2009 were limited to a small number of outbreaks in Germany, Lithuania, and Slovakia, and the highest number of outbreaks in Bulgaria and Romania.

Figure 126 CSF outbreaks in domestic animals, EU27, 2005-2009

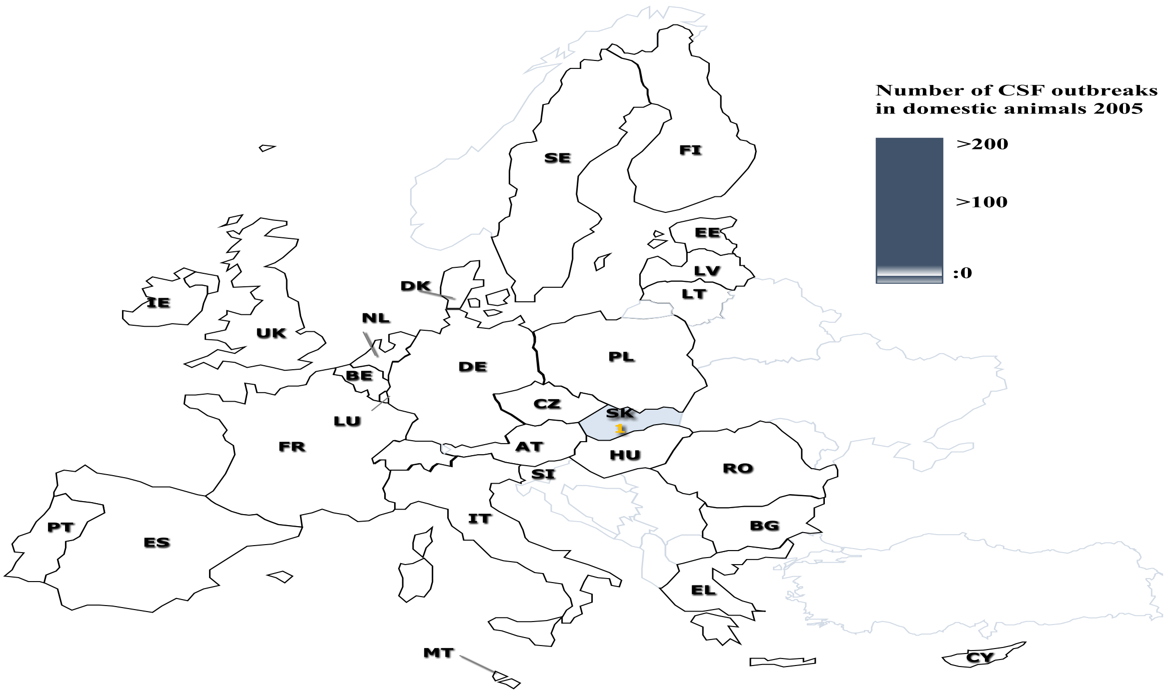


Source: Animal Disease Notification System (ADNS)

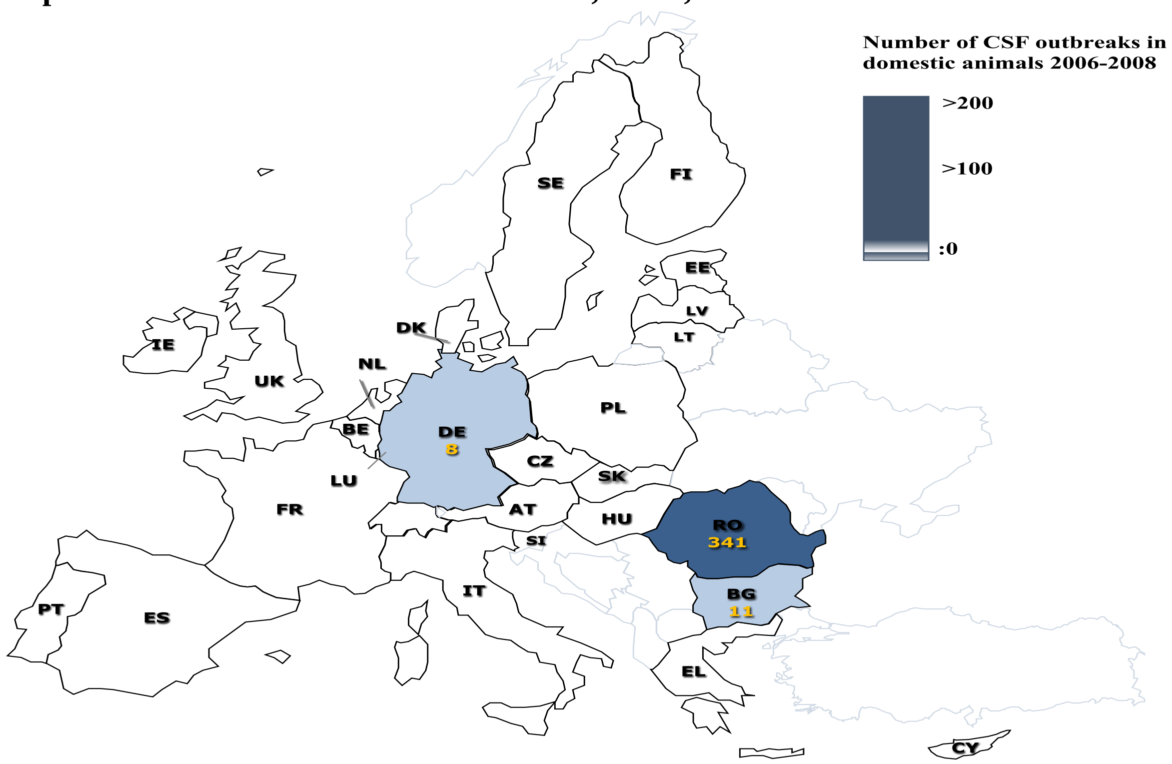
During 2005-2009, 19 Member States remained free of CSF in domestic pigs and wild boars (Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Greece, Ireland, Italy, Latvia, Luxemburg, Malta, Netherlands, Poland, Spain, Sweden, and the UK). A further 3 Member States became free of CSF in domestic pigs during the 2005-2009 period: Germany, Romania and Slovenia. Furthermore, the incidence of CSF in domestic pigs was reduced to near zero during 2005-2009 in 3 Member States: Bulgaria, Hungary, and Slovakia. Finally, the two most recent EU Member States (Bulgaria and Romania) have stopped vaccination of domestic pigs during 2005-2009. These are all important achievements in economic terms, as they set an important condition for unrestricted trade in this sector where intra-EU trade is extensive.

In **Maps 26-28** the incidence outbreaks in domestic pigs is shown in 2005, 2006-2008 and 2009. Outbreaks in Slovakia in 2005 are followed by wild boar-related outbreaks in Germany in 2006-2008 and the large outbreaks in Bulgaria and Romania. In 2009, the EU is nearly completely free of CFS, except for a small incidental outbreak in Lithuania.

Map 29 CSF outbreaks in domestic animals, EU27, 2005

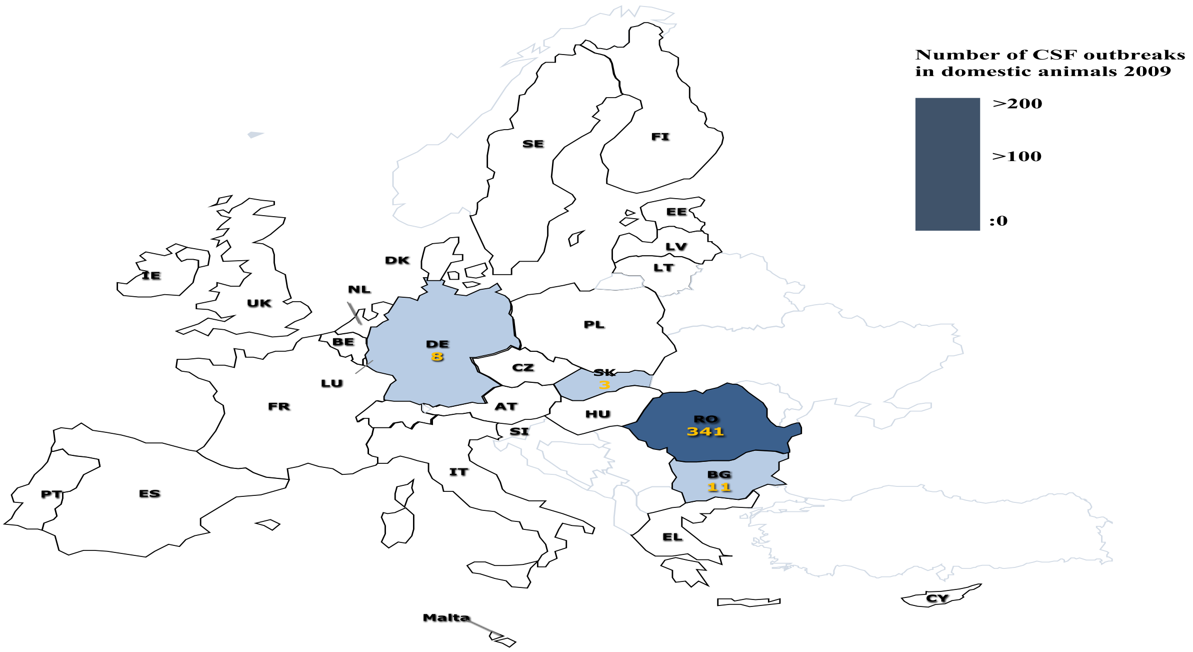


Map 30 CSF outbreaks in domestic animals, EU27, 2006-2008



Source: Animal Disease Notification System (ADNS)

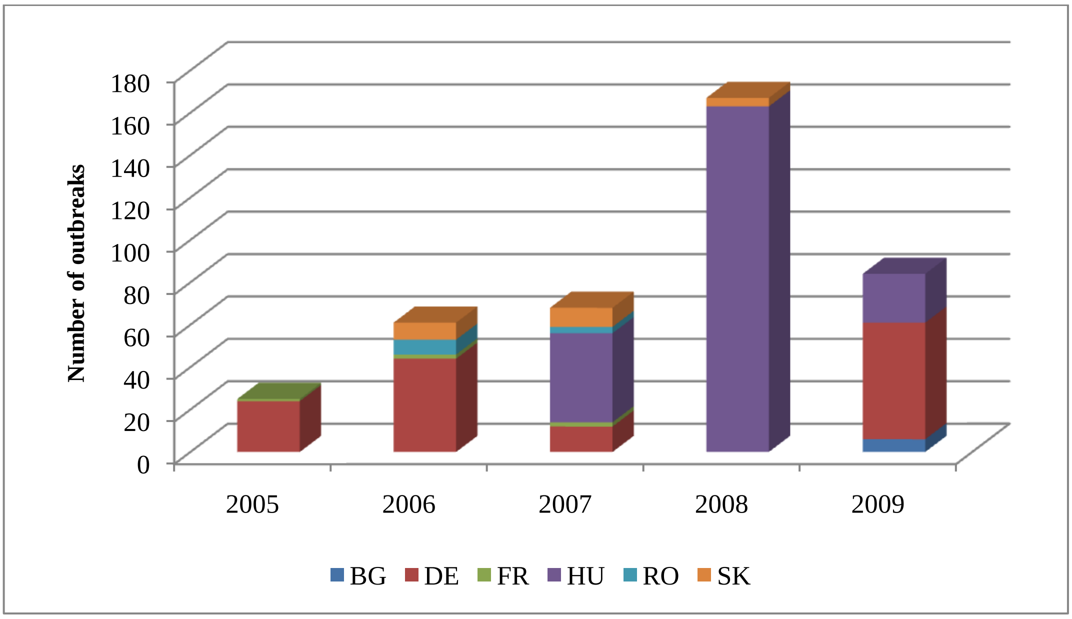
Map 31 CSF outbreaks in domestic animals, EU27, 2009



Source: Animal Disease Notification System (ADNS)

Member States that remained free of CSF in wild boars in 2005-2009 were Belgium, Czech Republic, Luxembourg, and Slovenia. Member States with outbreaks of CSF in wild boar were Bulgaria, Germany, France, Hungary, Romania and Slovakia (**Figure 127**).

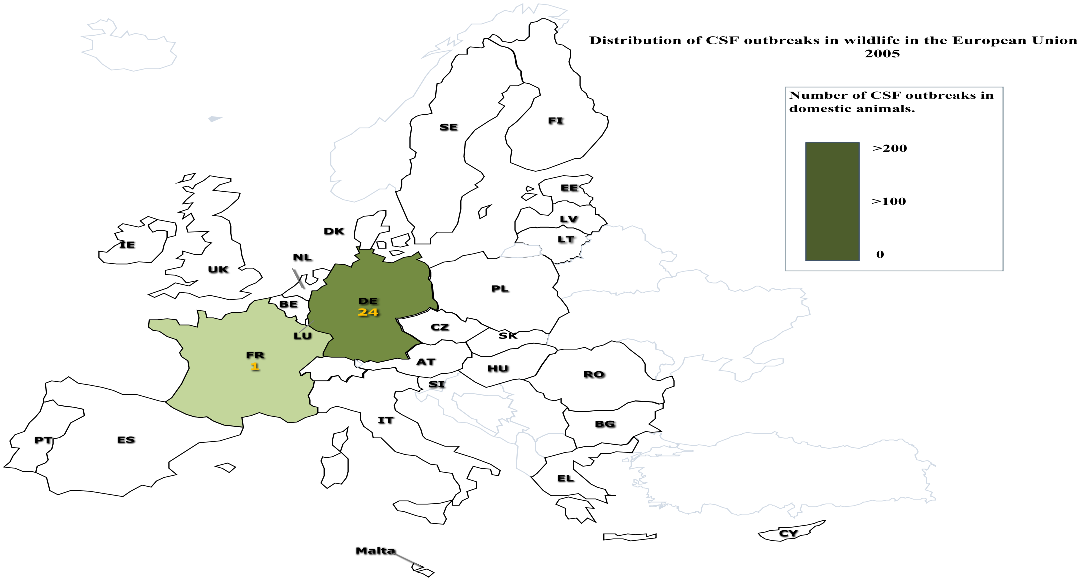
Figure 127 CSF outbreaks in wild boars, EU27, 2005-2009



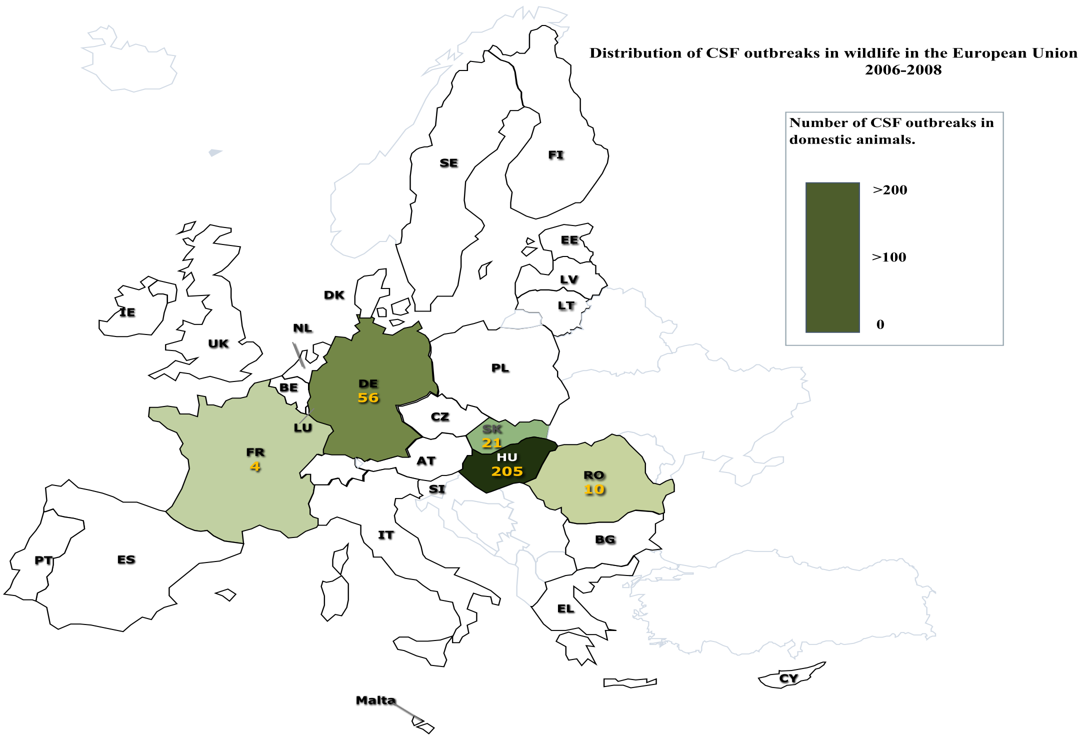
Source: Animal Disease Notification System (ADNS)

Maps 32-34 indicate the start of the oral vaccination campaigns and subsequent results of monitoring and surveillance programmes of hunted wild boar. Member States that reduced CSF in wild boar during 2005-2009 were Bulgaria, Germany, France, Hungary, Romania, and Slovakia. CSF in wild boar still occurred in 2009 in Germany, Hungary and Bulgaria.

Map 32 CSF outbreaks in wildlife, EU27, 2005

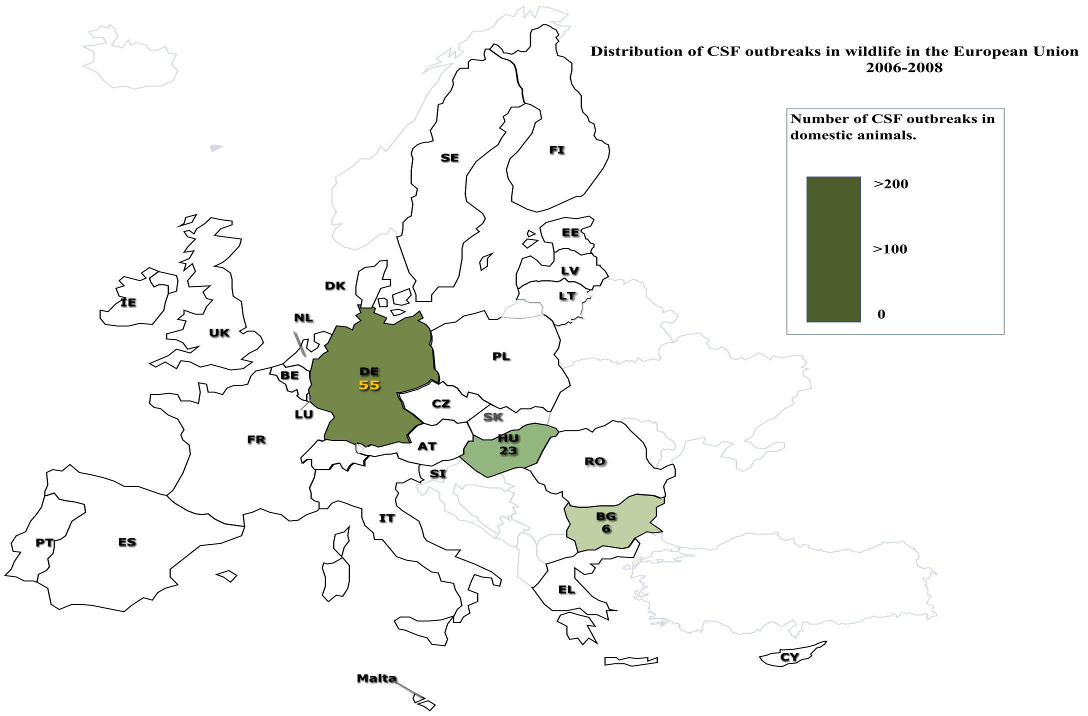


Map 33 CSF outbreaks in wildlife, EU27, 2006-2008



Source: Animal Disease Notification System (ADNS)

Map 34 CSF outbreaks in wildlife, EU27, 2009



Source: Animal Disease Notification System (ADNS)

2.7.1.5 Analysis of impacts of the programmes

The CSF monitoring and surveillance, and emergency vaccination programmes have played an important role in the control and eradication of CSF, especially in the new Member States. The programmes contributed to national veterinary authorities remaining alert on the risks and presence and spread of the disease. The coordinated approach towards CSF in the Member States ensures that the infection is progressively eradicated from the EU territory. Following detection, protection and surveillance zones can be established in and around the outbreak areas, and controls on animal movement – a key factor in the transmission of the disease – can be applied. Furthermore, emergency vaccination can be applied, which is proven to be an effective measure for addressing this disease. These actions in turn ensure the containment of outbreaks and, eventually, can assist in the eradication of the disease.

There are significant economic benefits of these actions. Benefits of the programmes include the reduction of losses that farmers and the wider industry incur from the loss of animals and the loss of production (due to the death of the animals), the increase in productivity and the avoidance of trade restrictions.

As an illustration of the size of potential impacts, in 1997 several Member States, including the Netherlands and Belgium, experienced CSF outbreaks and suffered heavy production losses. The outbreak in the Netherlands resulted in the compulsory slaughter and disposal of over 800,000 pigs and the removal (for welfare reasons) of 8.8 million pigs, with direct costs estimated at around €700 million; the full costs and losses of this outbreak which is reported to have been the most costly in the EU in the last two decades was estimated at several times this amount (Meuwissen et al., 1999[132]). The disease also impacted Belgium, Germany, Spain, and Italy. Although the CSF outbreak did not affect world trade significantly, because the Netherlands is not a major exporter of pork outside the EU, it did affect trade within the EU. Also, the 2006 outbreak in domestic pigs in Germany, despite its relatively small size, resulted to the culling of more than 120,000 pigs.

2.7.2 African swine fever

African swine fever (ASF) is an animal disease affecting domestic and wild pigs of all breeds and ages. It is a contagious infection and is transmitted by direct contact between pigs, by ingestion of contaminated feed such as swill, and by soft ticks belonging to the *Ornitodorus* genus. The causative virus is an enveloped DNA virus, named *Asfivirus,* classified as the only member of the *Asfarviridae*. Different strains can be distinguished, but currently there is only one serotype detectable by serological tests.

ASF is not harmful to humans. However, it can cause considerable damage to all kinds of pig holdings. It is a transboundary disease and the epidemiological situation in one country can affect neighbouring countries, while national measures tend not to be sufficient to control its spread. Due to its hazardous nature, ASF is an OIE listed disease.

Laboratory diagnosis is necessary for differentiating ASF from CSF. Clinical manifestations and post-mortem findings are not sufficient.

As there is no vaccine available for ASF, this severely limits control options to bio-security and hygienic measures, and the culling of infected animals and animals at risk in case of outbreaks. There appears to be no prospect that a vaccine will become available anywhere in the near future. However, even without a vaccine, eradication of ASF has proven to be possible if stringent measures are taken, as demonstrated in the case of Spain and Portugal where a large number of outbreaks have occurred and successfully controlled.

The important role of soft ticks and wild pigs in ASF epidemiology means that the prevalence of the disease is influenced by climatic factors that favour tick survival and contact between wild pigs and domestics pigs, for instance due to free range housing systems.

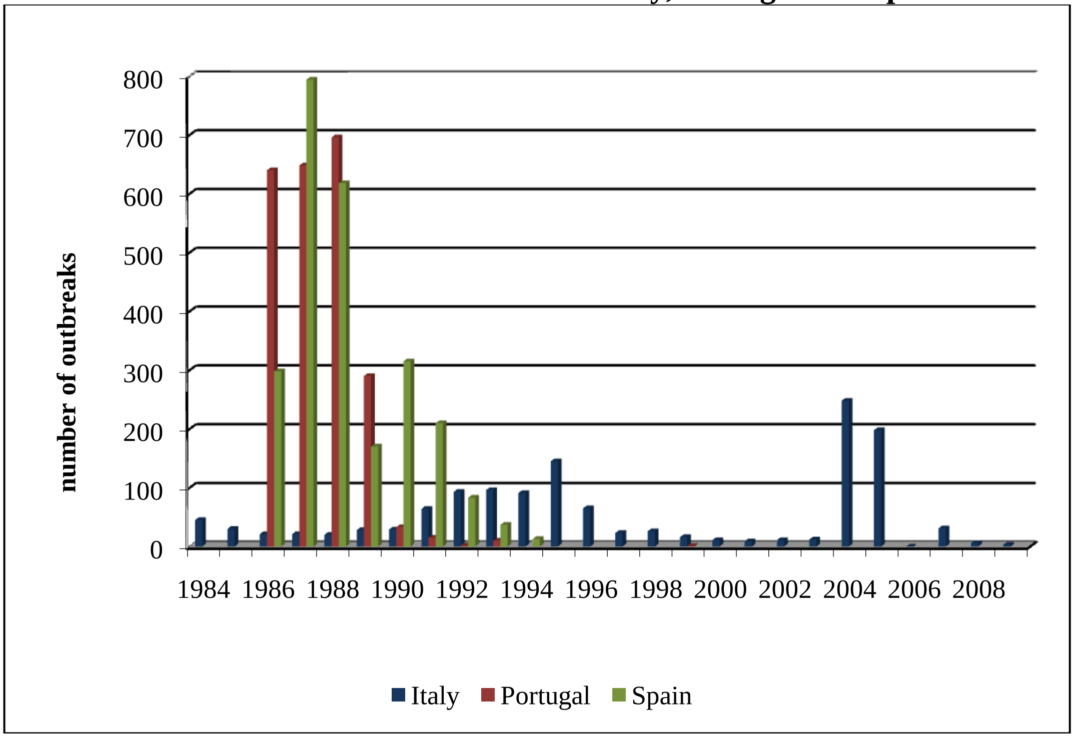
ASF is known as a pig disease with its origin in Africa. In 1957 the disease occurred in Portugal probably when waste from airline flights was fed to pigs near Lisbon. Although this outbreak was eradicated, another outbreak occurred in 1960 in Lisbon and ASF then remained endemic in the Iberian Peninsula until the mid 1990s. A high number of outbreaks was recorded in Portugal and Spain in the period 1985-1991, but the disease was finally brought

[132] Mounaix B., Davide V., Lucbert J. 2008. *Impact technico-économique de la FCO dans les élevages ovins et bovins français. Bilan de l'épizootie de 2007,* Rapport Final. Collection Résultats, Institut de l'Elevage:losses calculated for the CSF-epidemic in 1997-98 in the Netherlands amounted to US$ 2.34 billion), of which: US$ 1.32 billion direct costs (depopulation, welfare slaughter, organisation eradication etc.), US$ 228 million consequential losses for farms (idle production, supply problems, re-population), and US$ 596 million consequential losses for related industries (traders, feed suppliers, breeding organisations).

under control and eradicated since it lastly occurred in Portugal in 1993 and in Spain in 1995 (**Figure 128).**

Incidental outbreaks of ASF were reported in a number of other Member States, including France (1964, 1967, and 1977), Malta (1978), Belgium (1985) and the Netherlands in 1986. In the EU, ASF now only still persists in one region of Italy (Sardinia), where since 1994 outbreaks have been reported very year (except in 2006). The disease has remained endemic in Sardinia since its introduction in 1978.

Figure 128 ASF outbreaks between 1984-2009 in Italy, Portugal and Spain



Source: Animal Disease Notification System (ADNS)

Recently, the Caucasian region has severely been affected by outbreaks of ASF. In 2007-2010 outbreaks occurred in Georgia, Armenia, Azerbaijan and Russia. The EU policy is to strengthen the bio-security for prevention of re-introduction of ASF along its eastern borders, to limit the risk from spreading from that region further into the EU territory.

2.7.2.1 Description of measures funded

EU measures to combat ASF are in place since 1992 through Council Directive 92/119/EC, which lays down specific provisions for the control of certain animal diseases, and in specific EU legislation (Council Directive 2002/60/EC and Commission Decision 2003/422/EC). In particular, Council Directive 2001/89/EC of 23 October 2001 on EU measures for the control of classical swine fever (CSF) is used as a model for the establishment of specific measures for the control of ASF, notwithstanding its particular disease characteristics such as the lack of vaccines, the long incubation period, and vector transmission. The measures include the notification, establishment of protection and surveillance zones, a ban on the movement and trade, stand-still, cleaning and disinfection, tracing backwards and forwards, carcass disposal, restocking, reference laboratories and contingency planning.

The fight against ASF is continuing through Decision 2010/712/EU of 23 November 2010 to support Italy in their efforts to eradicate the disease. The financial contribution by the EU within the framework of the eradication programmes is at the rate of 50% within a ceiling, per country and per year, as specified in the annual Commission's Decision approving the programme, of the costs incurred by the Member State for:

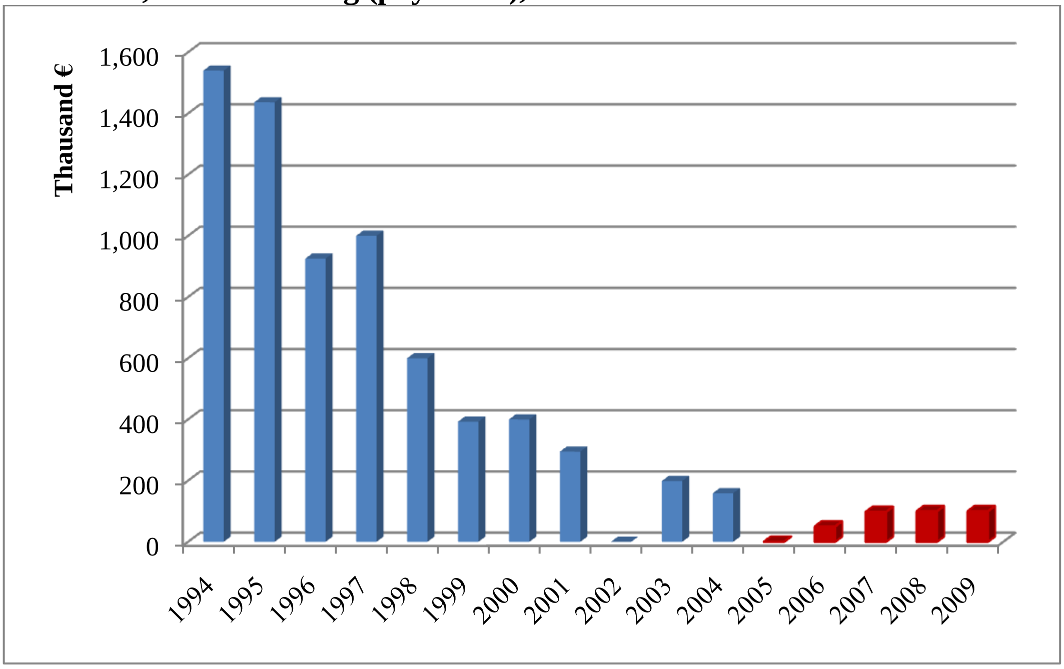
- Virological and serological tests of domestic pigs and wild boars;
- Costs incurred for compensation of the owners for the slaughter of animals.

The main elements of the ASF programme are thus serological and virological monitoring. This is carried out on an area basis in Sardinia; by defining high and low risk areas.

2.7.2.2 Overall funding

Co-funding was considerable during 1994-2004, but declined in that period because the disease was successfully eradicated in most Member States. Thus, during 2005-2009, the EU funded programmes for ASF were limited to Italy which received a total of €347,795.

Figure 129 ASF, EU co-funding (payments), 1994-2009



Source: DG SANCO based on financial decision 1994-2009

The objective for ASF is to achieve complete eradication from the territory of Europe. Only in one region of Italy, the island of Sardinia, ASF still persists, but there has been a favourable decline of ASF outbreaks since the 1990s, with two incidental increases in 1995 and 2004 due to the fact that a number of pigs/semi-wild boar from a "backyard" entered into contact with wild boar. In 2010, a high risk and low risk area have been defined on the island, with most cases in the Region of Nuoro that receives most of the support measures. It is considered that the disease can effectively be eradicated in the future, but due to specific local circumstances it can take considerable time.

2.7.2.3 Analysis of key results of the programmes

The key result in the period 2005-2009 covered by this study is a gradual decrease in the number of outbreaks of ASF in Sardinia, with confinement of the outbreaks in the high risk Nuoro region where most of the seropositive cases are detected in the restricted zones or in rural farms (no seropositive cases at slaughterhouse). In the high risk zone, the viral reservoir exists in the domestic pig population in which the disease is still endemic. Outbreaks outside the high risk zone are sporadic and they are rapidly eradicated without the disease becoming persistent. The epidemiological situation of wild boar is improved outside the high risk zone, where no virological positive animals were detected in 2008-2009. The new outbreaks 2010 recently detected were isolated cases.

The traditional pig husbandry system in Sardinia is represented by free ranging herds, and the presence of ASF infected wild pigs on the island is the major source of infection. Free ranging pigs share the same habitat with wild boar populations in Sardinia, and the free ranging pig production system is practised in mountainous and hilly areas where pigs are kept on communal land. Main risk factors linked to the reintroduction and the spread of ASF in free areas is represented by the movement of animals, swill feeding, and by illegal pig farming. The experience gained in Sardinia shows that in order to increase the surveillance in a territory, different classical health measures, including control of pig movements, should be implemented. This is particularly true for husbandry systems represented by small pig farms or backyard farming systems. Recording of all herds, animal identification and control of herd book updating is important, even if it is difficult to implement in the case of ASF.

2.7.2.4 Analysis of effects of the programmes

The major effects of the programme over the review period have been that whereas in the 1990s outbreaks occurred all over the island of Sardinia, now the outbreaks are more confined to a central high risk region. The number of infected wild boar is reduced.

2.7.2.5 Analysis of impacts of the programmes

The ASF eradication programmes have played an important role in the eradication of ASF in most EU Member States, and restricting the occurrence of the disease. The programmes also have greatly helped to gain knowledge on the presence and spread, hence the risks, of the disease.

There are significant economic benefits of these actions. In terms of trade gains for the sector, ASF no longer affects intra-EU trade; however, the impact is limited over the period 2005-2009, because ASF presence in Sardinia did not significantly change during this period. Benefits of the ASF programmes further include the reduction of losses from animal loss and production losses (due to death of the animals), and the increase in productivity.

5.1. Swine Vesicular Disease (SVD)

Main results – swine vesicular disease (SVD) eradication programmes

- Over the period 1995-2009, only Italy has been supported nearly every year by co-funding to eradicate SVD. The amounts mount to more than € 3,000,000;
- The central and northern parts of Italy have been designated SVD free since 1997;
- The current policy is targeted to reach full eradication of SVD in Italy, considering its easy transmission and risk for other EU MS.

5.1.1. General description of the disease

Swine vesicular disease (SVD) is a viral disease affecting pigs. Its main characteristic is that it can cause vesicles on the feet and mouth and is therefore clinically indistinguishable from foot-and-mouth disease in pigs. Disease causing vesicles in pigs therefore must be promptly investigated in the laboratory to discriminate between the two diseases. However, the last years most SVD infections run a subclinical cause, reducing the likelihood that vesicular disease in pigs is caused by SVD. The virus is transmitted by direct and indirect contact between pigs, facilitated by skin lesions, and frequently by urine and faeces. The causative virus is an RNA virus classified member of the genus *enterovirus* in the family *picornaviridae*. Different strains can be distinguished, that vary in virulence. A characteristic of the virus is that it is extremely persistent in the environment. This makes eradication difficult.

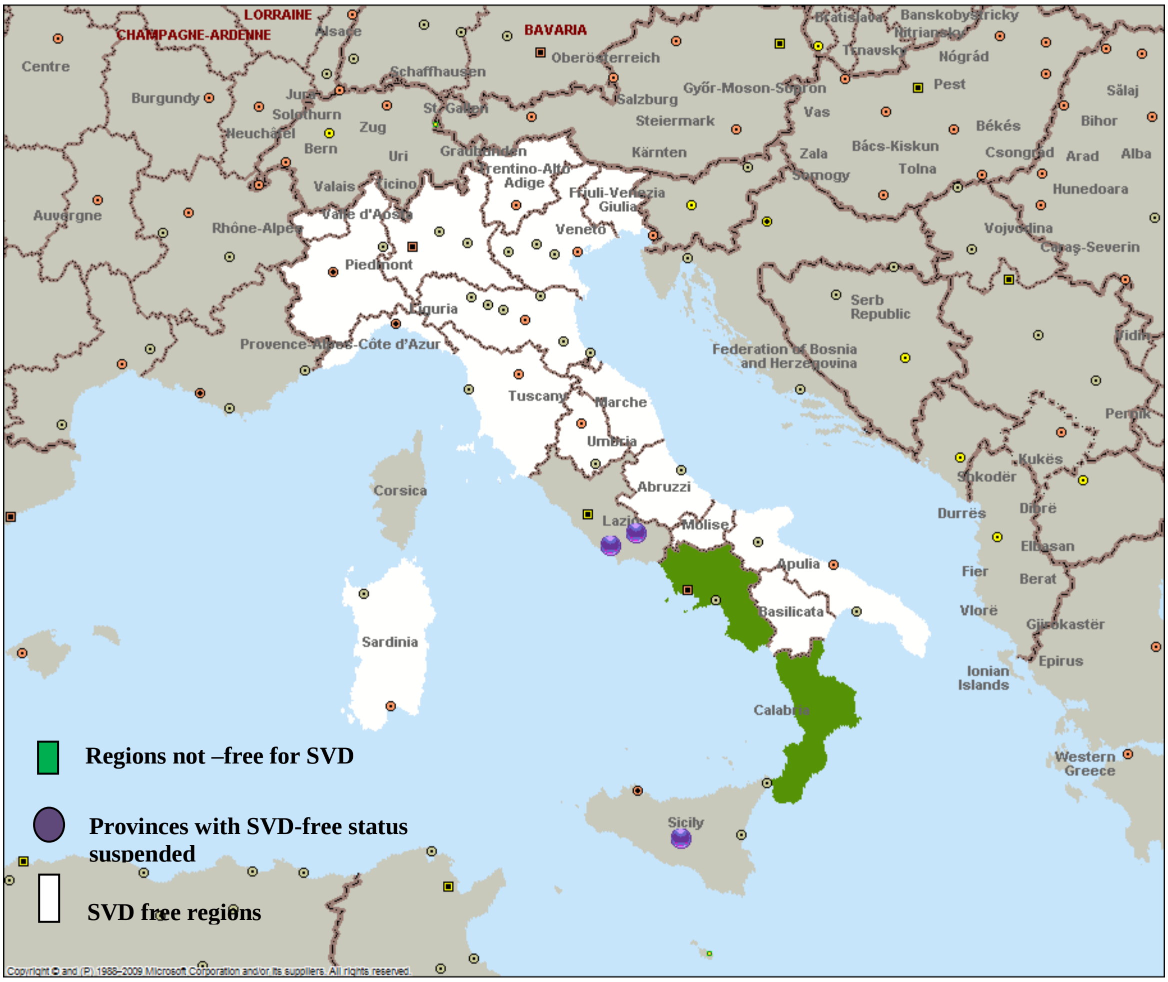
Swine vesicular disease is not harmful to humans. In pigs the clinical relevance is also limited, because it seldom causes mortality and the disease usually runs a mild clinical course. Notably transport of pigs is a risk for spread of SVD between regions and countries, and thus the epidemiological situation in one country can affect neighbouring countries. Swine vesicular disease is an OIE listed disease.

Vaccines against SVD do not exist, but vaccination is also not an option for SVD control, because of its similarity with FMD. Hence, SVD must be eradicated promptly upon detection by culling of infected pigs, and sanitation and bio-security measures.

5.1.2. EU distribution and general policy

The first outbreak of the disease occurred in 1966 in Italy. Subsequently, the disease has been reported in many European countries, but could be eradicated soon in most of these countries. Last SVD cases in EU MS were in reported in Poland (1972), Malta (1978), UK (1982), France (1983), Germany (1985), Romania (1985), Belgium (1993), Spain (1993), Netherlands (1994), Austria (1997), Greece (1997),and Portugal (2007).Only in Italy the infection persists (**Map 35**). The central and northern parts of Italy have been designated SVD free since 1997, while the southern regions have not achieved disease-free status where it is now considered endemic. However, in 2006 incidental SVD outbreaks occurred in Northern Italy (Lombardia) and it took until 2007 to eradicate the disease. The current policy is to proceed to reach full eradication of SVD in Italy, considering its easy transmission and risk for other EU MS.

Map 35 SVD status in Italy, 2009



5.1.3. Description of measures funded

EU measures to combat SVD are in place since 1992 through Council Directive 92/119/EC[133], as amended by Commission Directive 2007/10/EC[134], stipulating that a protection zone of 3km radius from the infected holding, and a surveillance zone of at least 10 km radius will be

[133] Council Directive 92/119/EEC of 17 December 1992 introducing general Community measures for the control of certain animal diseases and specific measures relating to swine vesicular disease *OJ L 62, 15.3.1993, p. 69–8*

[134] Commission Directive 2007/10/EC of 21 February 2007 amending Annex II to Council Directive 92/119/EEC as regards the measures to be taken within a protection zone following an outbreak of swine vesicular disease (Text with EEA relevance)
OJ L 63, 1.3.2007, p. 24–25

set up. All animals of susceptible species on the infected holding must be killed on the site. Directive 92/119 also prescribes the procedure for cleansing and disinfection in cases of SVD, and stipulates minimum time limits before restocking can take place.

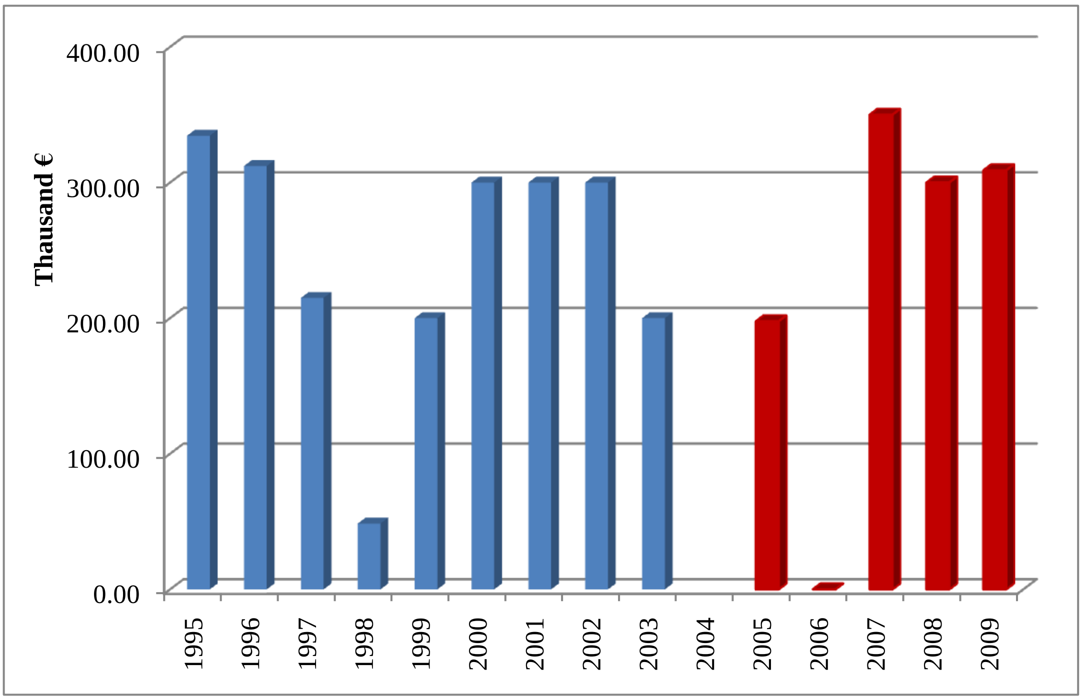
The co-funding of co-financing of SVD eradication and monitoring was initiated by Council Decision 90/424/EEC of 26 June 1990 on expenditure in the veterinary field, amended by Council Decision 2009/470/EC. The financial contribution by the EU within the framework of the eradication programmes is at the rate of 50% within a ceiling, per country and per year, as specified in the annual Commission's Decision approving the programme, of the costs incurred by each MS for:

- compensation to owners for their losses due to slaughter of animals
- monitoring and surveillance (sample collection)
- virological, histological and serological tests of pigs

5.1.4. Overall funding

Over the period 1995-2009, only Italy has been supported nearly every year by co-funding to eradicate SVD. The amounts mount to more than 3,000,000€ (**Figure 130**). Italy received between 2007 and 2009 € 958,000 to eradicate the disease, especially from Lombardia. The main elements of the SVD programme are currently a serological and virological monitoring, and cover surveillance measures and compensation costs in affected regions in the south.

Figure 130 SVD, EU co-funding (payments), Italy, 1995-2009



Source: DG SANCO based on financial decisions 1995-2009

Since the successful eradication of SVD was completed in most EU Member States between 1980-2000, incidental outbreaks occurred in Portugal (2003, 2004 and 2007), and certain southern regions in Italy remained infected. However, in 2006 in Northern Italy SVD occurred in Lombardia and led to fifty-three outbreaks in the region and culling of some 150,000 pigs. The disease was eradicated with success, due to stringent measures (Bellini et Al, 2010[135].) A sero-surveillance programme has been continued in Italy. In 2009, 62233 samples were tested for SVD from different regions. In total 1358 samples were positive (0,2%), with most cases in Campania (#356) and Calabria (#775). The current trend is that SDV is more restricted in southern regions in Italy, and there is prospect for full eradication in the future, although this may take several years to achieve.

5.1.5. Analysis of key results and effects of the programmes

The key results of the co-funding measures for SVD have been the success of sero-surveillance, that allowed timely detection of the disease, and the success of the supported emergency measures that were implemented to eradicate SVD after its incidental outbreaks in Northern Italy in 2006. Furthermore, the key result of the programme over Italy as a whole is the gradual decrease of the number of outbreaks in the high risk regions in Italy. This trend is positive, although the intensive movement of pigs, and densely populated regions such as Lombardia, remain vulnerable once an infection occurs. Therefore, continued sero-surveillance will be necessary for the coming years, until the risk assessment allows reduction of the programme.

The main effect of the programme is the reduction of the risk for new outbreaks.

5.1.6. Analysis of impacts of the programmes

The impact of the programme is safeguarding intra-EU trade, and limiting the risk of trade bans on the exportation of live animals and pork products. Given the fact that there is intensive transportation of pigs across Europe, this is one of the components to safeguard the common market.

[135] Bellini , S., Alborali, L., Zanardi, G., Brocchi.E., 2010. Swine vesicular disease in northern Italy: diffusion through densely populated pig areas; Rev. sci. tech. Off. int. Epiz., 2010, 29 (3), 639-648

2.8 Rabies

Main Results-Rabies eradication programmes

- Over the period under review, 12 Member States have benefited from the funding for a total amount of €36.5 million;
- Rabies programmes have consistently focused on eradication of rabies by oral vaccination of foxes, that are the main wildlife reservoir of the virus;
- Since 1989 the EU finances the MS oral vaccination campaigns and contributed to the intensification and continuity of these activities;
- The disease has now been confined to the east of the EU, and the rabies eradication programme now focuses mainly on the border regions and cooperation with neighbouring non-EU countries;
- Rabies eradication from Europe is now in sight. This is a unique situation in the world as the EU has achieved rabies eradication on a scale which has been experienced nowhere else before.

2.8.1 Disease characteristics and distribution in the EU

Rabies is a disease caused by a rhabdovirus of the genus *Lyssavirus*. This virus can infect all warmblooded animal species and humans, and is transmitted through contact with saliva from infected animals, typically from foxes and stray dogs, e.g. via animal bites. Foxes are the main reservoir, while the raccon dog is a co-reservoir in some countries.The disease attacks the central nervous system of the host and is usually fatal. The majority of rabies cases in Europe are caused by the classical rabies virus (genotype 1). In addition, bat rabies, caused by European Bat *Lyssaviruses* type 1 and 2 (EBLV-1 and -2, respectively), is detected sporadically in bats in Europe. This form of rabies is epidemiologically distinct from rabies of other species. In rare cases, however, the infection from bats can be transferred to other mammals, including humans.

Rabies is a serious zoonosis; worldwide, it is estimated that approximately 50,000 humans die from the disease every year, mainly in developing countries in Asia and Africa. In Europe, human cases are nowadays rare due to the disappearance of urban rabies, the dramatic improvement of the situation in wildlife and the systematic application of post-exposure treatment in cases of contact of humans with suspect animals. Human vaccination is available, and people working with bats and other wildlife in particular are encouraged to carry out preventive immunisation.

Rabies is an OIE listed disease. It is a transboundary disease and the fact that the main reservoir for the disease is wildlife makes it difficult to monitor and control. This disease

being a significant public health threat, the fight against rabies is treated as a priority in the EU. Foxes are the main reservoir, while the raccoon dog is a co-reservoir in some countries.
In the 1980s, wildlife rabies was present in most countries of eastern and central Europe and was expanding westwards. Towards the end of that decade, within the EU15, the Netherlands, Luxembourg, France, Austria, Italy and Germany were infected from the disease. At the time, a number of MS started using wildlife oral vaccination to control the epidemic.

In 1989, the EU started providing financial support to MS wildlife oral vaccination programmes against rabies. This contributed to the expansion of the use of oral vaccination, which led to the gradual eradication of the disease from several MS in the following years.

With the more recent wave of EU accession (2004: NMS-10; 2007: Romania and Bulgaria), the focus of the fight against classical rabies has shifted towards new areas in the enlarged EU-27 where the disease has been most prevalent. This has resulted in a significant increase in the funds devoted to rabies control and eradication in these EU regions.

By 2009, Slovakia and the Czech Republic became free of rabies cases, Estonia, Poland, Hungary and Slovenia detected cases only in areas bordering rabies infected countries where no oral vaccination is applied, and Latvia and Lithuania reported a significant drop in the number of rabies cases.

Generally, very few cases of rabies in humans are reported in the EU, and most MS have not had any indigenous cases for decades. During the 2005-09 period a total of twelve cases were reported in seven MS; some of the cases were infected while travelling abroad. Despite the low number of human cases, the continued incidence in Europe indicates the need for maintaining the effort to monitor the disease. According to Directive 64/432/EC[136] rabies is notifiable in bovine animals and pigs in all MS.

2.8.2 Description of measures funded

The EU financed rabies eradication programmes consist of three elements: oral wildlife vaccination; monitoring the effectiveness of vaccination; and, surveillance for the disease:

The main element of the eradication programmes is oral vaccination (OV) of wildlife, which is performed through the distribution of baits (containing live vaccines). The target species is fox and in some MS also the raccoon dog. It is noted that the prevention through injections for domestic carnivores was never covered by the EU co-financing[137]. The EU started funding oral vaccination in 1989.

To monitor the effectiveness of oral vaccination a sufficient number of samples from target wildlife species is tested for the presence of antibodies against rabies virus, thus measuring

[136] Council Directive of 26 June 1964 on animal health problems affecting intra-Community trade in bovine animals and swine *OJ L 120, 13.5.1975, p. 13–13*

[137] In 2008, vaccination of carnivorous pets, such as dogs and cats, against rabies was compulsory in 14 MS including six MS with co-financed vaccination programmes for foxes

the level of immunity in vaccinated animal populations from areas where the oral vaccination is carried out and for the presence of biomarker to measure the uptake of the baits (i.e. the percentage of tested animals that have consumed baits and thus have traces of the biomarker contained therein).

In the framework of rabies surveillance, samples from suspect animals of all species (i.e. wildlife, pets, and farm animals) are tested for the presence of rabies infection. The aim is to detect any cases of rabies introduction in new areas as well as the evolution of the disease situation in the infected areas.

The distribution of the baits and collection of the samples to test the effectiveness of the vaccination is a particularly costly exercise. The distribution is mostly done by aircraft. Manual distribution is mainly used in areas where distribution by air is not applicable such as no-fly zones or wildlife habitats in close proximity to inhabited areas.

It is noted that MS can have significant differences in distribution and sampling costs due to geographic factors (e.g. access more difficult in mountainous areas).

The EU financial support covered the 50% for the costs incurred for the purchase and distribution of vaccines and for carrying out laboratory tests. In 2010 and 2011 75% of these costs will be financed. Since 2011 the oral vaccination activities that will take place in bordering areas of neighbouring third countries included in the approved MS programmes, will be financed at a level of 100% (see section **2.10**).

2.8.3 Overall funding

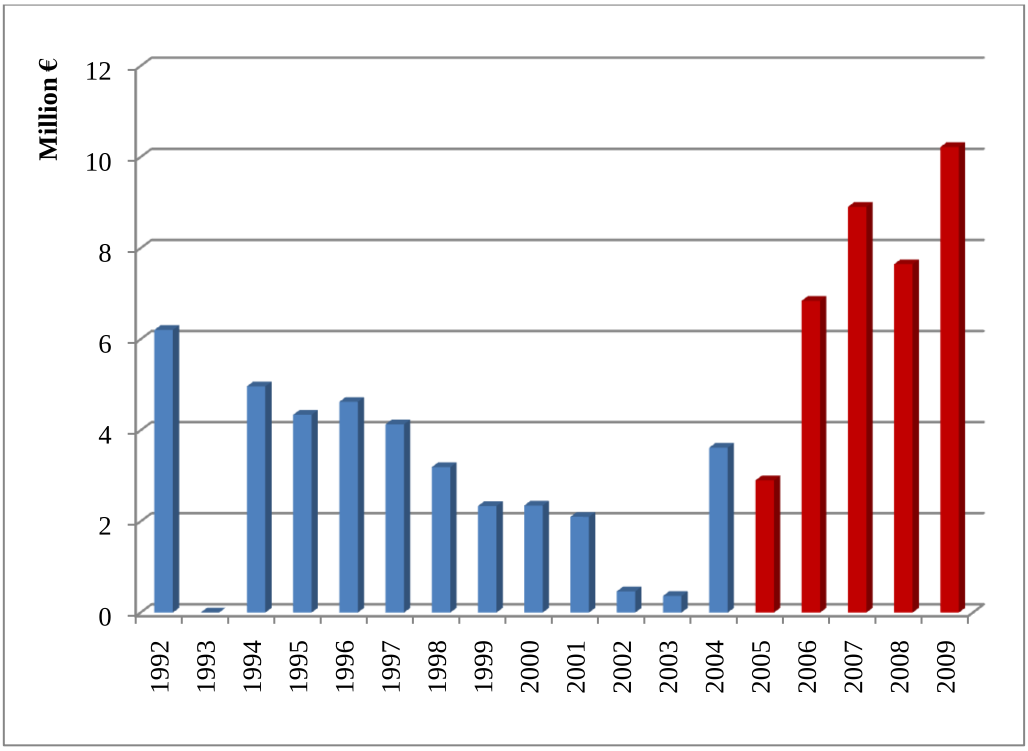
Between 1992 and 2009 EU funding has amounted to €75,246,978. As already indicated, the EU has been funding oral vaccination since 1989. Following EU enlargement in 2005 and 2007, the funding has progressively shifted from the "old" EU Member States that were at that time attaining the objective of eradication, to eastern European New Member States, where wildlife rabies was generally present and most of which are also bordering third countries.

The last rabies infected Member States to launch EU co-funded oral vaccination were Bulgaria and Romania which started implementing oral vaccination in 2009 and 2011 respectively.

With the exception of Romania, in 2009, all Member States with cases of classical rabies in their territory or close to it, have implemented rabies eradication programmes.

Figure 131 shows a consistent upward trend in funding between 2005 and 2009. This increase can be attributed to the extension of the annual wildlife vaccination coverage area in co-funded MS, from a total 837.000 km^2 to 1.314.794 km^2 - as well as to the increase in the number of doses administered[138] , from 18.944.629 doses to 27.980.549 over the period (**Figure 133**).

Figure 131 Rabies, EU co-funding (payments), 1992– 2009

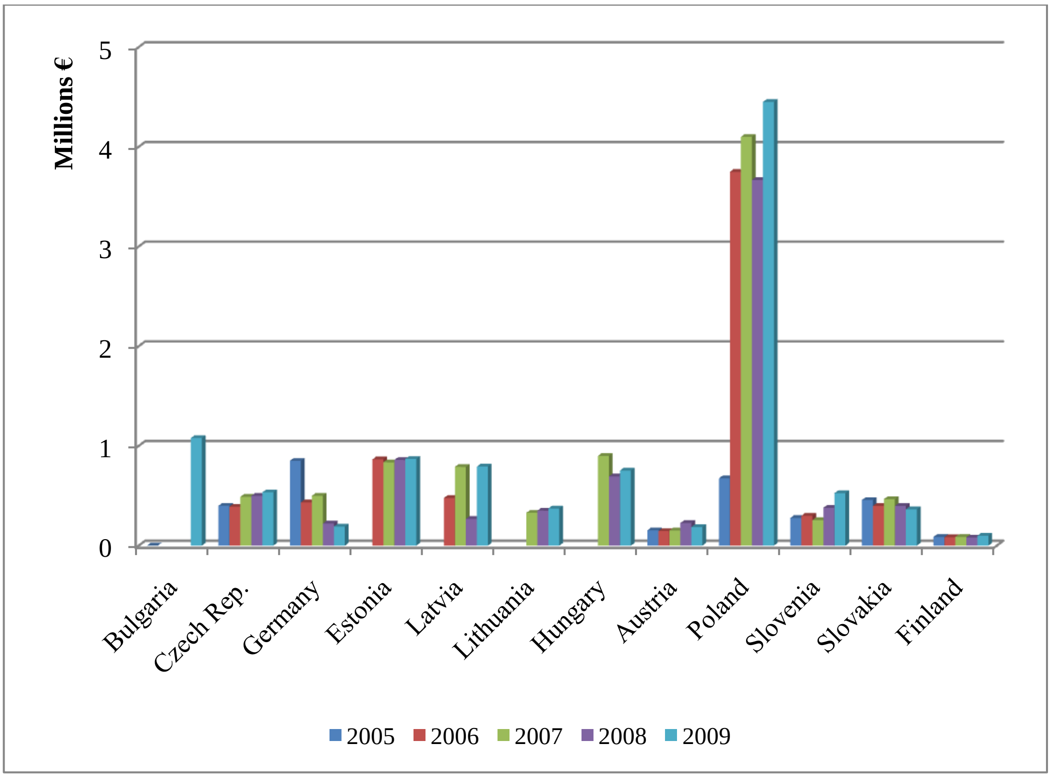


**Note: data include payments for countries which were non-EU MS at the time: Austria (pre 1995) €255.662, Poland €1.043.832 (pre 2004), and Czech Republic €228.466 (pre 2004); also, Switzerland €45.972.*
Source: DG SANCO-based on financial decision 1992-2009

Over the period under review, 12 Member States have benefited from the funding **(Figure 132**). The total amount of funding during the period varies between Member States, according to the size of the area covered by the vaccination programme in each Member State. Poland, the recipient of the largest amount of funding (€16,642.604), has carried out vaccination campaigns twice per year covering the whole territory of the country (around 282,000 km^2), while Finland, which received relatively small amounts (€442,356), has regularly implemented oral vaccination programmes in a focused area of 4000 Km^2 area along the Finnish-Russian south east border.

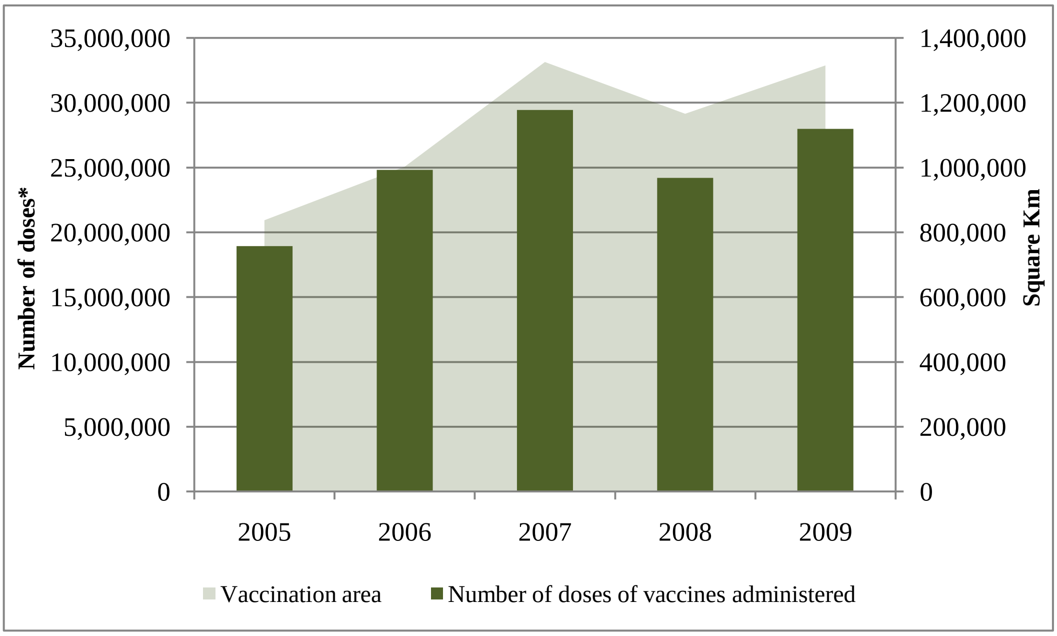
[138] The number of doses represents the total number of doses distributed over a year. Typically, there are two rabies vaccination campaigns per year in each Member State.

Figure 132 Rabies, EU co-funding (payments) by MS, 2005-2009, by MS



Source: DG SANCO-based on financial decision 2005-2009

Figure 133 Implementation of vaccination programmes in MS with co-funded programmes, 2005-2009



**Note: figures on the number of doses are on an annual basis. Typically, there are two vaccination campaigns per year in each Member State.*

Source: DG SANCO- rabies eradication programmes, 2005-2009- co-funded Member States

2.8.4 Analysis of key results of the programmes

Rabies programmes are eradication programmes, the aim of which is to reduce the prevalence and incidence of the disease to zero and therefore the number of rabies cases (for all species) is an indicator of the results of the programme.

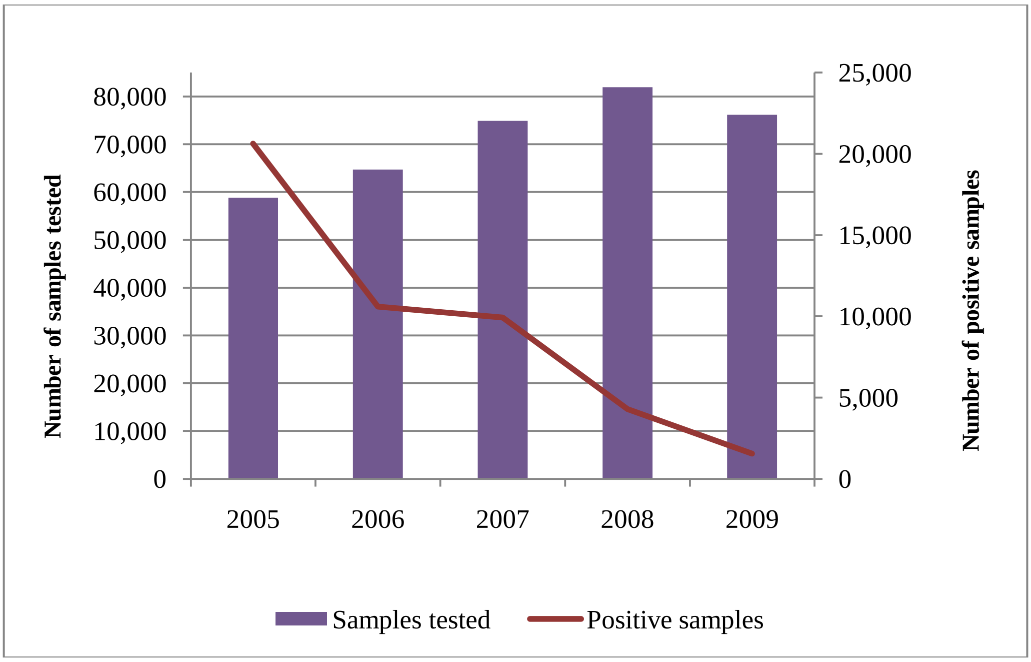
As already indicated, **Figure 133** shows the EU vaccination activities have been significantly expanded between 2005 and 2009. Figure 4 presents the number of samples tested and samples found positive in those Member States that received financial support between 2005 and 2009. More than 90% of the samples tested come from surveillance in wildlife[139]. Figure 134 indicates that while surveillance has intensified during the period, with an increase in the number of virological tests carried out between 2005 and 2009 from 58,810 to 76,151, the number of samples found positive has significantly decreased from 20,630 to 1,555. This large reduction in the number of positive animal samples during the last five years, mainly in foxes and racoon dogs, is undisputedly the result of the successful oral vaccination campaigns.

This is particularly the case for Estonia, Latvia, Lithuania and Poland. Data from the monitoring and surveillance activities of these four Member States have reported a significant decline in the number of positive samples in both domestic and wild animals (**Figure 135**). In Poland and Latvia there has been a notable reduction in the proportion of positive samples between 2005 and 2009, from 84% to 6% and from 44% to 4% respectively; in Lithuania the proportion of sample tested found positive decreased from 24% to 6%[140]; in Estonia the prevalence was very close to 0 (0.1%). It is noted that the proportion of positive samples depends on the criteria of selection of the animals tested for surveillance that might differ between Member States.

[139] There are differences in reporting data on surveillance among Member States: some Member States report samples tested on wildlife only, other Member States differentiate between domestic and wild animals, while others do not differentiate between them. For this reason the reported data on virological tests have been collected according to three categories (wildlife, domestic animals and unspecified sample). It has been found that more than 90% of tests have been carried out on wild animals.

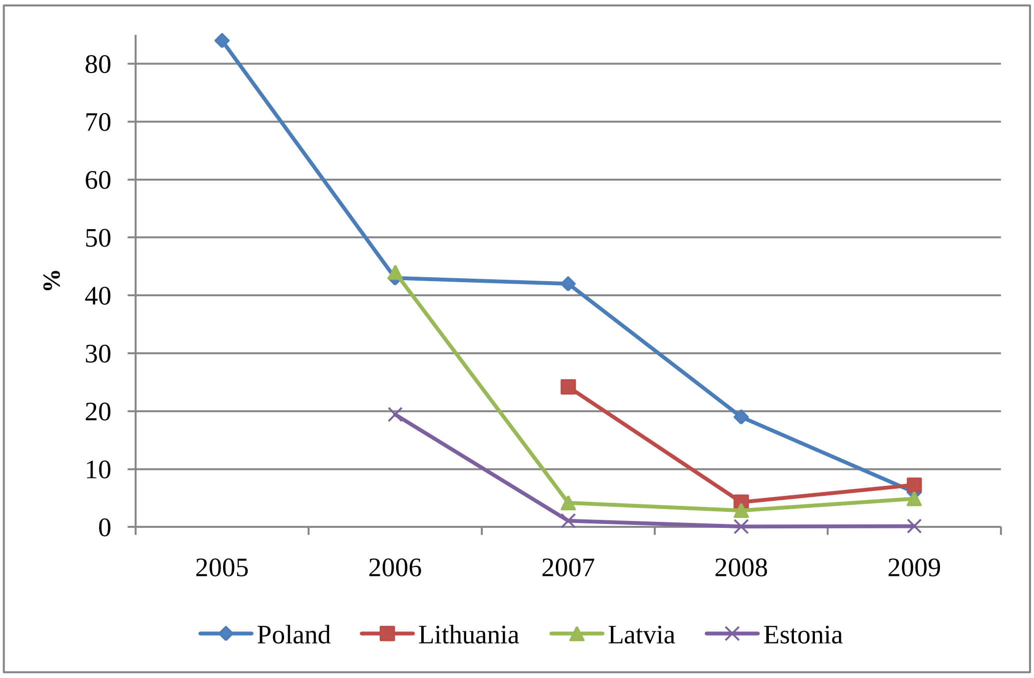
[140] In Lithuania, Lithuania has tested 1143 samples in 2009 and found 63 positives. It is noted that the figures above are only available up to October 2009, therefore the actual number of cases to end year might have been higher.

Figure 134 Results of virological testing for rabies, MS with co-funded programmes, 2005-2009



Source: DG SANCO- rabies eradication programmes, co-funded Member States

Figure 135 Percentage of samples found positive for rabies, Estonia, Lithuania, Latvia, Poland, 2005-2009



Source: DG SANCO- rabies eradication programmes, Estonia, Lithuania, Latvia, and Poland

2.8.5 Analysis of effects of the programmes

As discussed in the previous section, vaccination is the key measure funded under the rabies programmes and the effectiveness of this measure could *a priori* be assessed by its potential impact on the evolution of the disease.

The EC has started funding oral vaccination since 1989 and the programmes have been highly successful as the disease has been gradually eradicated from the EU-15. Austria, Belgium, the Netherlands, France, Luxembourg, Italy and Denmark have all eradicated the disease.

NMS started applying for funding soon after EU accession in 2004, and the disease has started declining also in this region. The Czech Republic and the Slovak Republic are now free, but they continued to vaccinate (the Czech Republic until 2009; Slovakia continues to vaccinate) to contain the threat of the disease coming from neighbouring countries. It is noted that vaccination was not applied by all infected Member States; Bulgaria started in 2009 and Romania in 2011.

Table 15 below provides details on vaccination programmes for rabies in the MS and the status of the disease (in terms of Member States declared free of rabies). Where vaccination has been applied it has been effective in quickly controlling the disease; the evolution of the disease indicates the dramatic progress achieved (see also **Figure 134**). Also progress is quicker than in the past, i.e. compared to the 1990s when vaccination was first introduced. Notwithstanding the progress achieved, in some cases vaccination is still applied to contain the possible threat of the disease from neighboring non-EU countries.

Table 15 Oral Vaccination campaigns and wildlife rabies situation in the MS

MS	Vaccination in wildlife	Wildlife Rabies Situation 2010
Austria	Oral vaccines distributed twice a year in fox populations in areas of higher risk.	No cases
Belgium		No cases
Bulgaria	Oral vaccination programme started in 2009 in the northern parts of the country.	Rabies present in part on the teritory
Cyprus		No cases
Czech Republic	In 1989, oral vaccination of foxes applied in some districts. In 2003, the programmes covered the whole country except for rabies free districts. Since 2004, vaccination twice a year by air in selected areas, mainly along the border with Poland and Slovakia.	No cases
Denmark		No cases
Estonia	In autumn 2005, oral vaccination in wildlife in the Northern part of the county. Since 2006 oral vaccines distributed to foxes twice a year by airplane. Since 2011 only bordering areas with Russia and Latvia receive oral vaccination	Rabies present in part on the territory

MS	Vaccination in wildlife	Wildlife Rabies Situation 2010
France		No cases
Finland	Since 1991, oral vaccines distributed to foxes and racoon dogs twice a year along the Russian borders by airplane. Since 2004, oral vaccines distributed to foxes twice a year.	No wildlife rabies cases
Germany	Oral vaccines distributed twice a year in endemic areas until spring 2008.	No cases
Greece		No cases
Hungary	Since 2004, oral vaccines distributed to foxes twice a year by airplane. The programme started on a smaller scale in 1997. Since 2009 only bordering areas with Ukraine, Romania, Serbia and Croatia receive oral vaccination.	Rabies present in part on the territory
Ireland		No cases
Italy	Oral vaccines distributed in the Region of Friuli Venezia Giulia since 2008.	Rabies present in part on the territory
Latvia	Since 1998, oral vaccines distributed to foxes and racoon dogs twice a year, from 2005 by airplane.	Rabies present
Lithuania	Since 1995, oral vaccines distributed to foxes twice a year by airplane covered a vaccination area between 904 square km (in 1995) to 8000 square km (in 1999). In 2006 a new eradication strategy was introduced including an oral vaccination programme covering the whole territory .	Rabies present in part on the territory
Luxemburg		No cases
Malta		No cases
Netherlands		No cases
Poland	Since 2002, oral vaccines distributed to the whole country twice a year by airplane.	Rabies present in parts on the territory
Portugal		No cases
Romania	2007 to 2009 aerial vaccination programme for foxes, although approved by the EC for funding, this was not implemented. Oral vaccination started in spring 2011 in some western regions.	Rabies present
Slovakia	Since 1994, oral vaccines distributed to foxes twice a year by airplane. Since 2010 only the eastern parts of the country receive oral vaccination.	No cases
Slovenia	Since spring 2000, oral vaccines distributed to wild foxes twice a year by airplane.	Rabies present
Spain		No cases
Sweden		No cases
United Kingdom		No cases

Source: EFSA and ECDC -Union Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2009; WHO- Rabies Bulletin Europe and DG SANCO- rabies eradication programmes, co-funded Member States

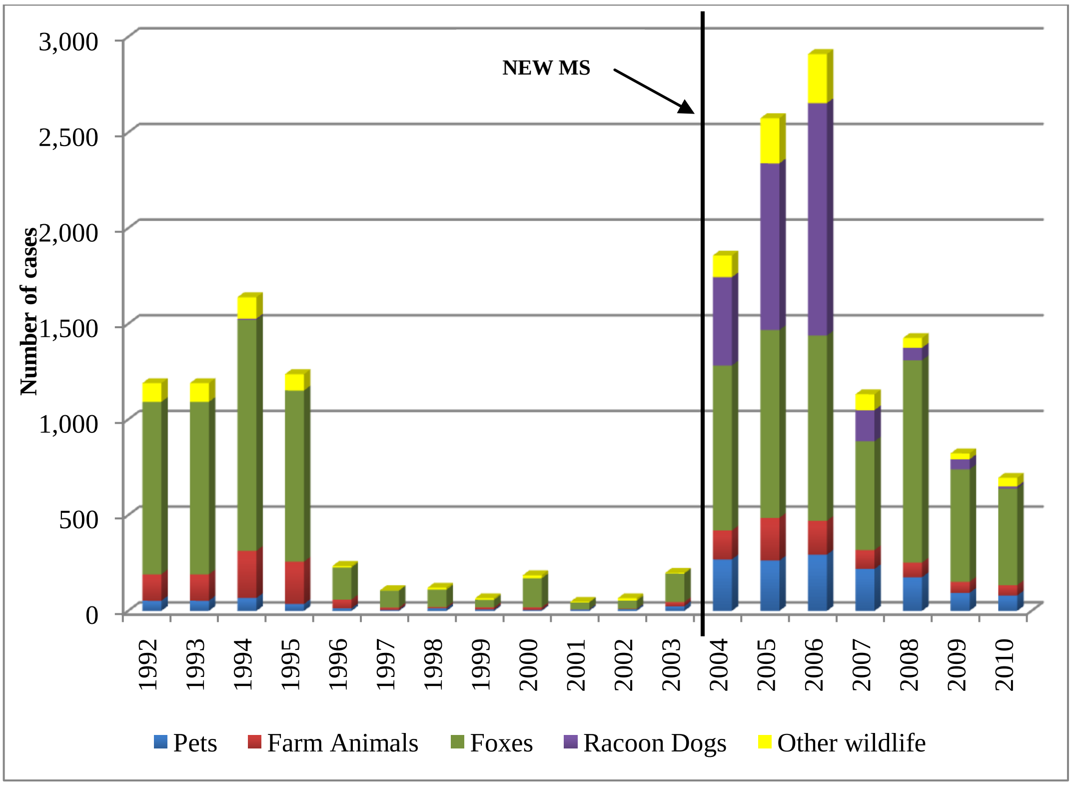
Figure 136 below presents the number of rabies outbreaks at EU level over a longer period, from 1992 to 2010. This indicates an increase in the number of outbreaks starting from 2004, following the accession eastern European Member States where the disease was endemic. According to WHO- Rabies Bulletin Europe, in 2005 and 2006 Lithuania accounted for 64% and 76% respectively of the reported cases of classical rabies in the EU. The reported cases of classical rabies that occurred in the EU in the period 2005-2009 were concentrated in a few Member States, predominantly the Baltic and Poland. In Lithuania, 4,241 cases of rabies were reported; in Latvia some 1,290 cases were reported over the same period (**Figure 138)**.

It is important to note that the increased number of reported cases in these Member States indicates the effectiveness of their surveillance system (see **Figure 137**), also related to public awareness for the reporting of suspect cases to the authorities. This system has been crucial for the successful monitoring of the evolution of the effectiveness of the measures taken. **Map 36 – Map 39** also indicate that high rabies infection rate is mainly in non-EU countries bordering the MS east of the EU.

Nonetheless, since 2005, the total number of positive rabies cases at EU level has decreased very significantly from 2,575 in 2005 to 695 in 2010. This is due to the success of the programmes in the high risk areas of the Baltic MS mainly as noted in several TF subgroup reports (2008, 2009, and 2010): in Estonia, the oral vaccination for the elimination of rabies in wildlife has been effectively implemented and the monitoring and surveillance activities have been correctly carried out (DG SANCO. 2008e)[141]. The oral vaccination programme in Lithuania has proven useful and successful in controlling the disease in this area, as demonstrated by the decrease in the number of positive cases; hence, the TF mission reports recommend that, due to the continuous threat of the disease from non-EU neighbouring countries in this very vulnerable zone, the oral vaccination programme needs to be maintained (DG SANCO 2009f)[142]. In Latvia a well-defined rabies eradication programme has been introduced in 2005 and vaccination campaigns resulted in a significant reduction of rabies cases between 2006 and 2008. It is also noted that an excellent exchange of information with the three neighbouring MS on the rabies situation and oral vaccination programmes implemented has been established. (DG SANCO, 2010c)[143].

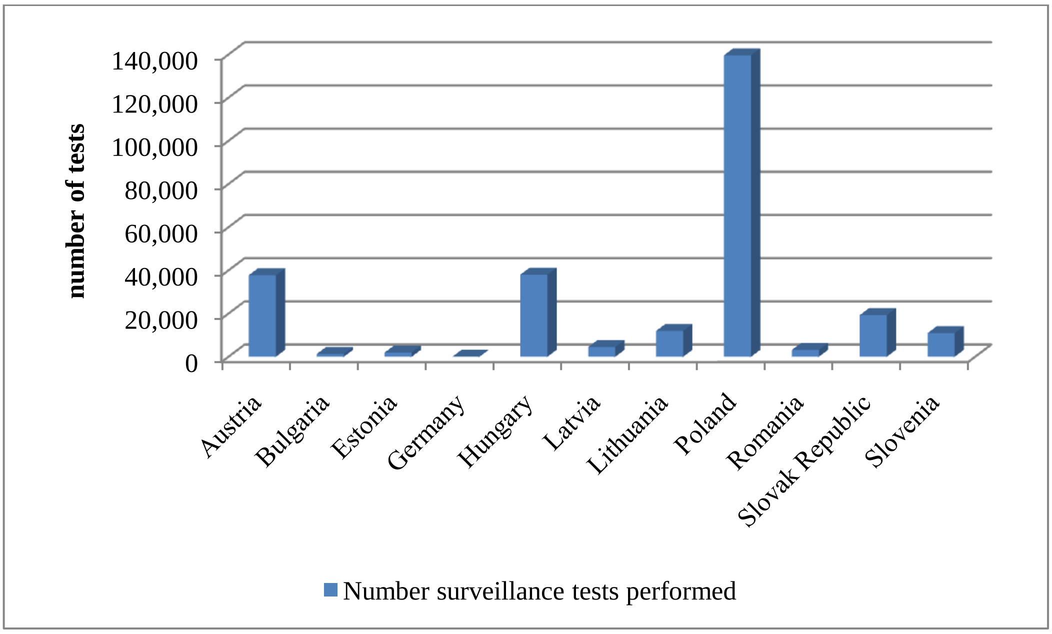
[141] *Report on the Task Force Meeting of the "Rabies" Sub-Group*. Latvia, Riga, 26-27 November 2008
[142] *Report on the Task Force Meeting of the "Rabies" Sub-Group*. Vilnius, Lithuania, 27-28 October 2009
[143] *. Report of the "Foodborne Zoonoes-Salmonellosis" Sub-Group Task Force.* Belgium, 31 May 2009

Figure 136 Reported cases of classical rabies, EU total, 1992 – 2010



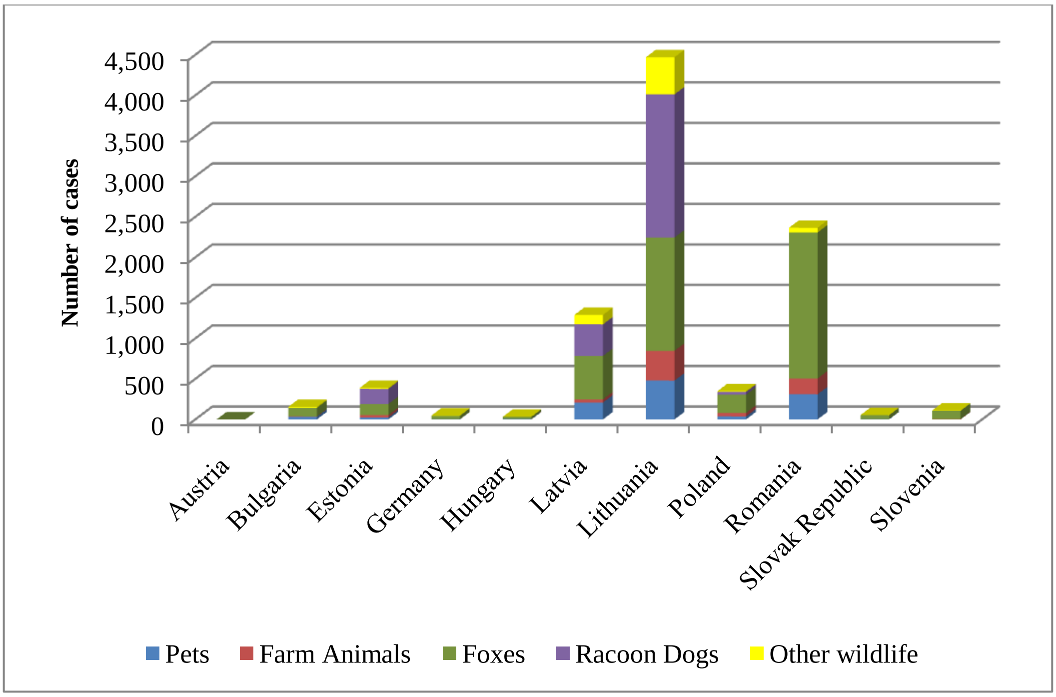
Source: WHO- Rabies Bulletin Europe-1992-2009

Figure 137 Number of surveillance tests performed 2005-2010



Source: WHO- Rabies Bulletin Europe 2005-2010

Figure 138 Reported cases of classical rabies by co-funded MS, 2005-2010

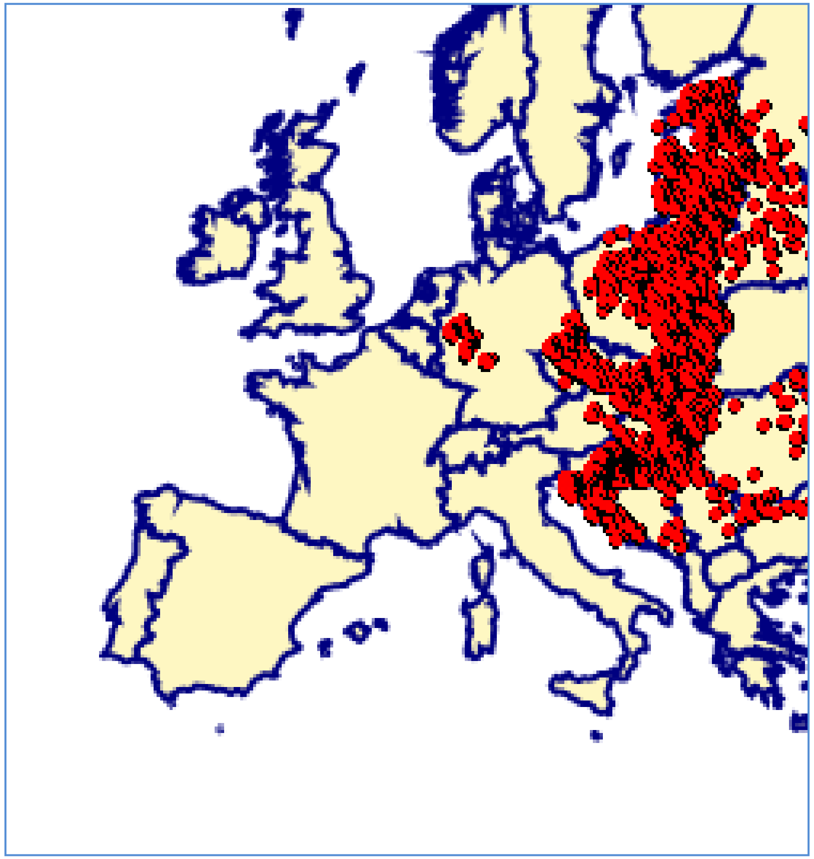


**Note: In Finland and Czech Republic no reported cases between 2005 and 2010*
Source: WHO- Rabies Bulletin Europe 2005-2010

Map 36 Reported cases of classical rabies in wildlife other than bats, 1992

Source: WHO- Rabies Bulletin Europe 1992

Map 37 Reported cases of classical rabies in wildlife other than bats, 1999



Source: WHO- Rabies Bulletin Europe 1999

Map 38 Reported cases of classical rabies in wildlife other than bats, 2005

Source: WHO- Rabies Bulletin Europe 2005

Map 39 Reported cases of classical rabies in wildlife other than bats, 2009

Source: WHO- Rabies Bulletin Europe 2009

2.8.6 Analysis of impacts of the programmes

Rabies in humans is nowadays a rare zoonosis in Europe, and can in most cases be treated by an intensive therapeutic vaccination scheme when applied directly after exposure. Human cases have been very rare already since before the implementation of the programmes in animals. However, when it occurs, the burden of the disease is high as rabies is invariably fatal in unvaccinated infected humans. Between 2008 and 2009, five cases of rabies in humans were reported by four EU MS, and of these three were indigenous. This is the first time since the year 2000 that an indigenous case of human rabies has occurred in the EU mainland territory and appears to be related to the fact that rabies is still prevalent in wildlife in Romania (EFSA-ECDC, 2011a)[144].

Table 16 Human rabies cases in the EU, 2005-2009

Year	MS	Number of Cases
2005	Germany	4 cases imported
2006		No cases
2007	Germany	1 imported from Morocco
	Finland	1 imported from Philippines
	Lithuania	1 imported from India
2008	France	1 indigenous case (French Guinea)
	Netherlands	1 case imported from Kenya
	Romania	1 case indigenous (fatal)
	United Kingdom	1 imported case
2009	Romania	1 indigenous (fatal)

Source EFSA and ECDC -Union Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2009

With regard to the rabies post-exposure prophylaxis, a 2009 ECDC Meeting Report states that in France, due to the secondary transmission of canine rabies from an imported dog to other dogs, a total of 152 Post Exposure Prophylaxis (PEP) were prescribed in February 2008. In 2004, the importation of a rabid dog resulted in more than 1580 PEP prescribed. In United Kingdom, approximately 3500 vaccines and 1200 doses of immunoglobulin have been used per year, with an increase of 50% reported between 2006 and 2008.

In MS where sylvatic (fox) rabies is not present or has been eradicated, only sporadic cases of classical rabies are reported in animals and they are typically related to illegally imported pets from endemic areas, mainly North Africa. Sylvatic rabies is still endemic in a number of eastern EU MS. An introduction of the disease in the north eastern areas of previously free

[144] EFSA and ECDC (2011a) -Union Summary Report on Trends and Sources of Zoonoses, Zoonotic Agents and Food-borne Outbreaks in 2009

Italy occurred at the end of 2008.In these areas, the majority of rabies cases were reported in foxes, raccoon dogs and other wildlife, but cases are also detected in farm and pet animals.

When results for 2010 are compared with results reported for 2005, the total number of rabies cases has decreased by more than 73%. In particular, there was a marked decrease in the number of rabies positive raccoon dogs reflecting the effectiveness of the eradication programmes in the countries where this species is abundant. The number of rabies positive racoon dogs has decreased from 871 in 2005 to 11 in 2010.

As already discussed, Lithuania, Latvia, Estonia and Poland have reported a considerable decrease in the number of rabies positive animals during the past five years, especially in foxes and raccoon dogs. These four MS have implemented oral vaccination programmes in the wildlife with EU co-financing, and the results achieved by the programmes are monitored in the wildlife population. The observed reductions are therefore the direct result of these successful oral vaccination campaigns[145].

In 2008, Slovenia recorded an increase in the number of rabies positive foxes and other wildlife cases, and Italy reported rabies cases for the first time in many years. This indicates a high rabies infection pressure from the western Balkan region.

During the past decade, an increasing number of MS reported cases of rabies in illegally imported dogs. Therefore, information campaigns for the public on the risk of importing pets without the proper rabies vaccination are also important in preventing the introduction of the disease in the EU. Some MS have carried out such campaigns regularly, e.g. France and Spain.

In conclusion, in order to eradicate classical rabies from wildlife throughout the EU, and to avoid the reintroduction of rabies from countries bordering the MS east of the EU, continuous implementation of programmes with oral vaccination in infected and high-risk areas.

The eradication effort is hampered in areas where Member States share land borders with third countries that do not apply systematically equivalent activities (oral vaccination) for the eradication of the disease For this reason, the EC is extending cooperation programmes with these border regions in an effort to effectively address rabies eradication and sustain the progress achieved in its territory during the last two decades. These cooperation programmes are discussed under the external dimension chapter of the Report.

[145] As also noted in the TF rabies subgroup conclusions of October 2009 (DG SANCO 2009f.) and November 2010 (DG SANCO 2011b.).

2.9 Phased out programmes

The EU has co-financed eradication of Enzootic bovine leucosis (EBL) since 1993 and Aujeszky's Disease (AD) since 1996. Both diseases was successfully controlled and in most EU MS eradicated. The successful control makes the diseases less important as a mutual risk for EU MS, also in comparison with other emerging diseases. Hence, co-funding has ceased in 2010 for both diseases.

2.9.1 Enzotic bovine leucosis (EBL)

2.9.1.1 General description of disease

Enzootic bovine leucosis (EBL) is an animal disease affecting mainly adult cattle. It is a contagious infection and the animal can be infected at any age, even at the embryonic stage, but clinical disease usually occur when animal are over 3 years of age. The causative pathogen is a retrovirus, enzootic bovine leukaemia virus (EBLV).

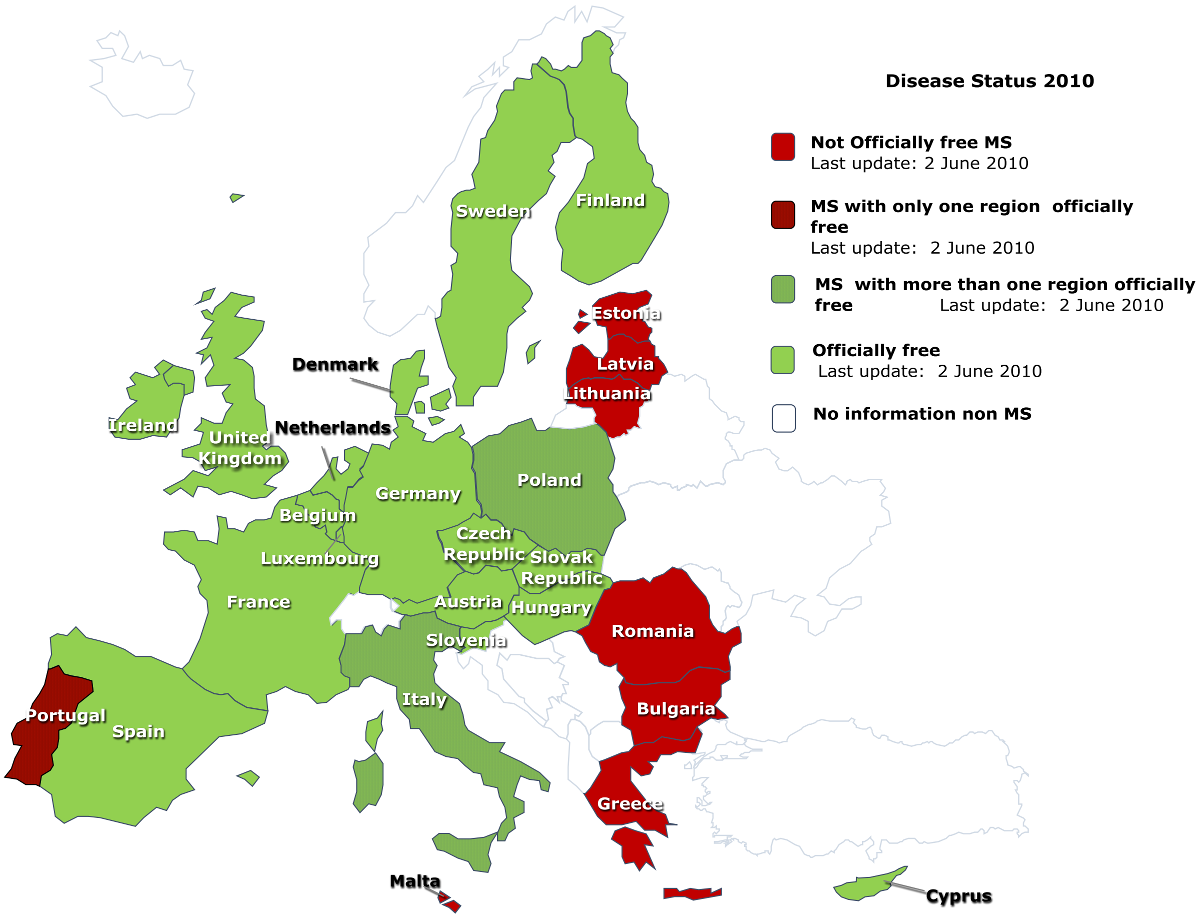
Enzootic bovine leucosis is not harmful to humans. In most cases animal infection is subclinical, but a proportion of infected cattle develop tumours of the lymphnodes (lymphosarcoma's), and in internal organs, which may run a fatal course. Due to its hazardous nature, EBL is an OIE listed disease.

Notably, there is no vaccine available for EBL. Control measures are focused on detection of and slaughtering of infected cattle, and implementation of stringent sanitation and bio-security measures to prevent re-introduction. The aim is to be able to trade cattle, and milk and dairy products free from EBLV.

2.9.1.2 EU distribution and general policy

Enzootic bovine leucosis has been eradicated from most EU MS. In 2010, the disease still occurred in Portugal, Eastern European countries, and specific regions in Italy and Poland, and the Baltic States. The policy is to continue with the eradication in affected countries, until the European territory is completely free of EBL.

Map 40 Member States and regions officially free of EBL



Source: DG SANCO - 2009 Annual report on notifiable diseases of bovine animals and swine

2.9.1.3 Description of measures funded

Measures funded to eradicate EBL are based on the following legislation: Council Directive 64/432/EEC lays down specific measures for animal health problems, affecting intra-EU trade in bovine animals. Council Directive 77/391/EEC of 13 December 1977 established the EU criteria for national plans for the accelerated eradication of brucellosis, tuberculosis and EBL in cattle. Council Decision of 26 June 1990 lays down specific measures for on expenditure in the veterinary field, and Commission Decision 2008/425/EC of 25 April 2008[146] requires the operation of a monitoring and testing programme in order to reach and maintain officially EBL -free status.

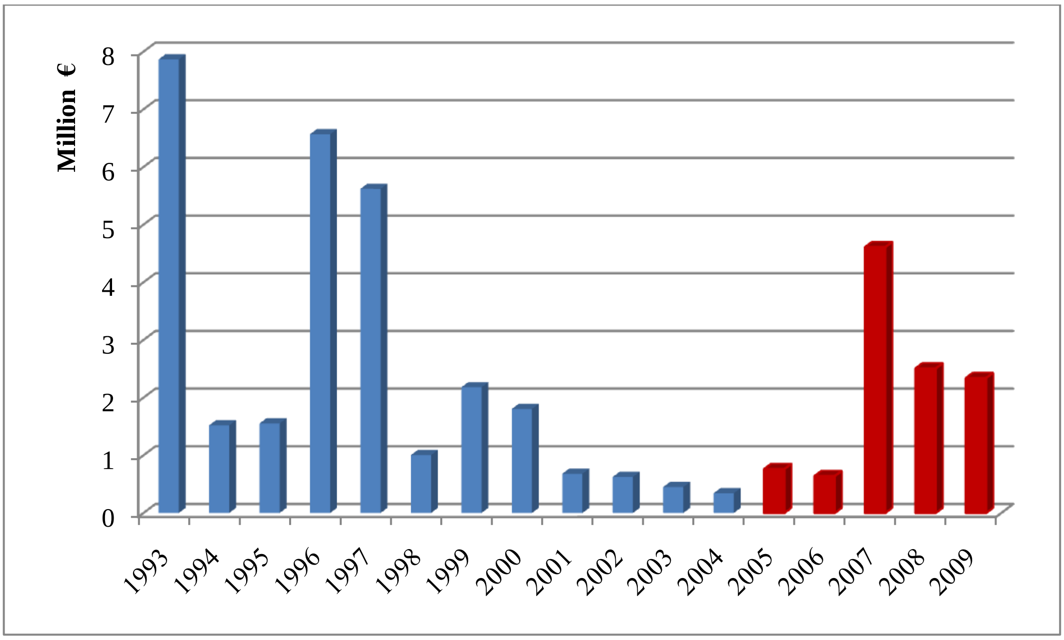
[146] Commission Decision of 25 April 2008 laying down standard requirements for the submission by Member States of national programmes for the eradication, control and monitoring of certain animal diseases and zoonoses for Community financing. *OJ L 159, 18.6.2008, p. 1–45*

For EBL, the measures funded contain:
- serological and milk tests of for cattle
- cost incurred for compensation of the owners for the slaughter of animals.

2.9.1.4 Overall funding

Co-funding was considerable during 1993-2009 and mounted to €40, 238125, but declined between1996-2004 because the disease was successfully eradicated in many countries. During the years 2007-2008 the co-funding for EBL eradication increased significantly, due to new or intensified programmes in Italy, Latvia, Lithuania, Portugal, with a multi-annual eradication programme, and Poland.

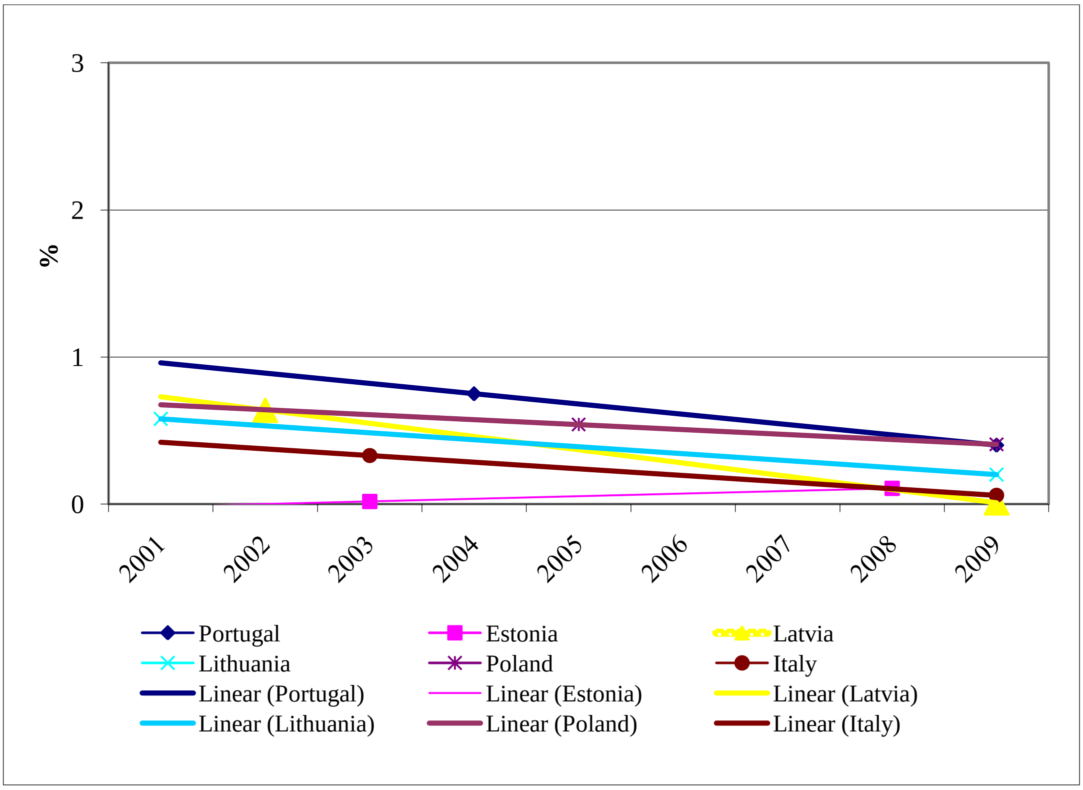
Figure 139 EBL, EU co-funding (payments), 1993-2009



Source: DG SANCO based on financial decisions from 1993-2009

Enzootic bovine leucosis is successfully eradicated from most EU MS, and is still present in Portugal, the Baltic States, Poland and Soutern Italy. Progress is made in co-funded programmes. In Latvia, herd prevalence dropped 573 infected herds in 2002 (0, 64%) to 10 infected herds (0, 01%) in 2009. In Lithuania, herd prevalence reduced from 1427 infected herds (0, 58%) in 2001, to 18 in 2009 (0, 2%). In Estonia, there were 333,349 animals tested positive for EBL in 1992, and only 5 animals tested positive in 2004. In Poland, an increasing number of regions are officially EBL free. In Portugal, the herd prevalence reduced from 387 (0, 75%) in 2004, to 113 (0, 33%) in 2009. As a result of this, Portugal has announced to claim the officially EBL free status for 4 of 5 regions in 2011 on the mainland. In Italy many regions are free, and continuous effort is placed in the remaining infected regions. The herd prevalence decreased from 0, 33% in 2003 to 0,06% in 2009. In **Figure 140** the decreasing trend-lines are illustrated.

Figure 140 EBL, evolution of herd prevalence (%) with linear trendline



Source: EBL eradication programme 2005-2009 , Portugal, Estonia, Latvia, Lithuania, Poland, Italy

2.9.1.5 Analysis of key results and effects of the programme

The key result in the period 2005-2009 shows that the EBL incidence in countries at risk has significantly reduced. This is an important achievement, and shows promises for the future.

The eradication in Portugal and the Baltic states is reaching its completion. Also in Poland there is significant progress. In Italy gradually more regions are becoming EBL free.

The major effects of the programme have been that whereas in the 1990s EBL was still present in many EU MS, in 2009 the disease has been removed from most of the countries, and is confined to risk region at its borders.

2.9.1.6 Analysis of impacts of the programmes

The EBL eradication programmes have played an important role in the eradication of EBL in many EU countries, and currently focus to eradicate the disease from its last remaining areas niches in Portugal, Poland, Baltic States and Italy. The most important impact has been the free trade between officially EBL free countries of animals, milk and dairy products.

2.9.2 Aujesky's disease (AD)

2.9.2.1 General description of disease

Aujeszky's disease (AD)[147] is a viral animal disease affecting mostly pigs, but is known to occur occasionally also in cattle, sheep, goats, horses, dogs and cats. However, pigs are the natural reservoir of the virus and the disease is self-limiting in other species than pigs. It is a contagious infection and is mainly transmitted by direct and indirect contact between pigs. The causative virus is an enveloped DNA virus, named porcine herpesvirus-1 which belongs to the *Alphaherpesvirinae* subfamily, *Herpesviridae* family. Different strains occur that differ in virulence, but only one serotype is distinguished.

Aujeszky's disease is not harmful to humans. However, it can cause huge damage due to the severe disease it causes in pigs. Typical signs are in young piglets' neurological signs, and in weaned pigs and older pigs respiratory disease. In gilts and sows the infection may in addition cause abortion, stillbirth and mummified foetuses. The disease is infectious between pigs , but not very resistant in the environment. However, due to severe trade restrictions the diseases is subject of control. Aujeszky's diseases is listed by the OIE, and subject to the Sanitary and Phytosanitary Measures for trade in animals and animal products. Aujeszky's disease is therefore of economic importance. These rules are published in the International Animal Health Code.

There are many safe and effective vaccines available for Aujeszky's disease. An important tool in the eradication of the disease was the use of DIVA (Differentiating Infected from Vaccinated Animals) or 'marker' vaccines that were developed in the 1980s-1990s. A stamping out policy of infected animals was not possible in many counties due to the high prevalence of the diseases. The newly developed DIVA vaccines reduced the prevalence, and at the same it was possible to monitor the decreasing prevalence by detecting pigs infected with Aujeszky's Diseases in vaccinated pig populations. In the end stage of the eradication a test and slaughter policy could be applied, removing the last infected animals.

2.9.2.2 EU distribution and general policy

In 2010, 13 EU MS or MS with specified regions were free of Aujeszky's disease where vaccination also was prohibited. Seven EU MS or MS with specified regions were applying approved national programmes for the eradication of Aujeszky's disease, as shown in **Table 17**.

[147] Also called "Pseudorabies"

Table 17 EU Member States situation on of Aujeszky's Disease

Free of Aujeszky's Disease without vaccination (Annex I)	Approved national programmes in place for the eradication of Aujeszky's Diseases (Annex II)
Czech Republic	Belgium
Denmark	Ireland
Germany	Spain
France[148]	Italy
Cyprus	Hungary
Luxembourg	Poland
Netherlands	United Kingdom[150]
Austria	
Slovenia	
Slovakia	
Finland	
Sweden	
United Kingdom[149]	

Source: Commission Decision 2010/434/EU of 6 August 2010[151]

The general policy is to eradicate Aujeszky's disease in order to support free intra-EU trade. However, the eradication is a long process depending on the epidemiological situation in countries where the disease is endemic, and may take several years. However, to date 20 of 27 EU MS are free or applying eradication programmes that show progress, suggesting that eradication of Aujeszky's disease in the EU is possible on the long term, provided stringent sanitation and biosecurity measures are implemented.

2.9.2.3 Description of measures funded

Aujeszky's disease is included in Council Directive 90/429 laying down animal health requirements applicable to intra-EU trade and imports of semen of pigs[152], and in Council Directive 97/12, amending and updating Directive 64/432/EEC on health problems affecting

[148] Specified regions in France are free
[149] All regions in England, Scotland and Wales
[150] All regions in Northern Ireland
[151] Commission Decision of 6 August 2010 amending Annexes I and II to Decision 2008/185/EC as regards the inclusion of Slovenia in the list of Member States free of Aujeszky's disease and of Poland and regions of Spain in the list of Member States where an approved national control programme for that disease is in place. *OJ L 208, 7.8.2010, p. 5–8*
[152] Council Directive 90/429/EEC of 26 June 1990 laying down the animal health requirements applicable to intra- Community trade in and imports of semen of domestic animals of the porcine species *OJ L 224, 18.8.1990, p. 62–73*

intra-EU trade in bovine animals and swine. Furthermore, Commission Decision 2008/185/EC lays down additional guarantees in intra-EU trade of pigs relating to Aujeszky's disease (AD) and criteria to provide information on this disease[153]. According to this Decision, Member States are classified into three classes. (1) Member States or regions which are free of AD where vaccination is prohibited, (2) Member States or regions where disease control programmes are in place and which are in an advanced stage of eradication of AD and (3) all other Member States or regions. Pigs can be transported between any Member State if the conditions laid down in Decision 2008/185/EC are respected.

In order to maintain its free status, a Member State or region should comply with at least the following requirements as regards surveillance:

- A targeted serological and clinical investigations of holdings which present a high risk of AD virus introduction
- Serological surveys directed at the detection of antibodies to the whole AD virus should be carried out on a statistically significant number of holdings every year.

Eradication of Aujeszky's disease (but not the measures to maintain a free status) has been subject to co-funding following Council Decision 90/424/EEC on expenditure on the veterinary field, and particularly Art. 24 on programmes for the eradication and monitoring of animal diseases, and Council Decision 90/638/EEC laying down criteria for the eradication of certain animal diseases (Annex I)[154].

The financial contribution by the EU within the framework of the eradication programmes for Aujeszky's disease is at the rate of 50% within a ceiling, per country and per year, as specified in the annual Commission's Decision approving the programme, of the costs incurred by each MS for laboratory tests.

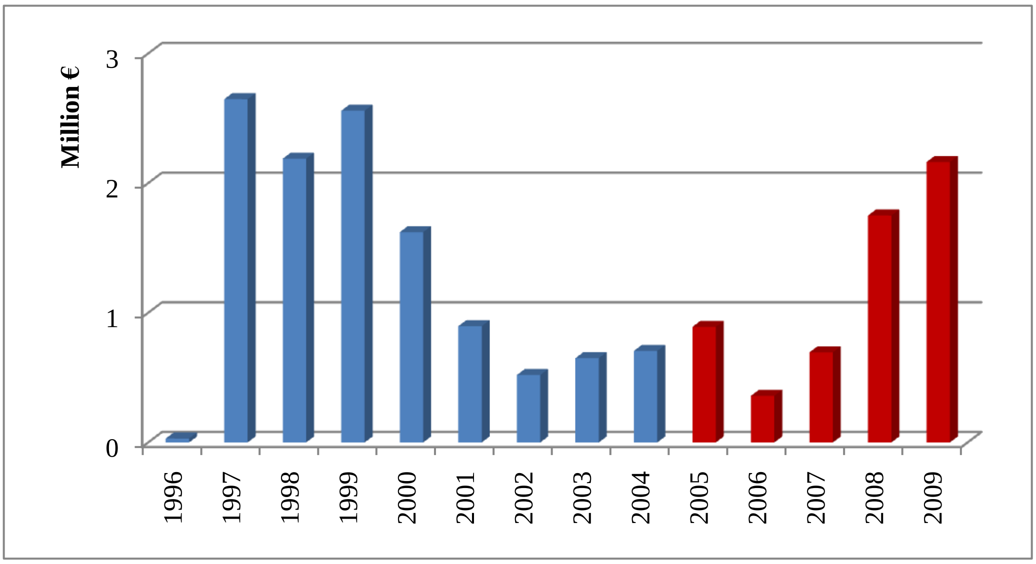
In 2004 the approach for funding was changed, due to an intensive discussion to improve the effectiveness of the eradication programmes. It was concluded that for eradication programmes a multi-annual approach was needed (DG SANCO, 2004)[155]. For Aujeszky's disease, in 2009 multi-annual co-funding was granted to Belgium.

2.9.2.4 Overall funding

The overall funding for Aujeszky's Disease between 1996 and 2009 was €17,680,653 (**Figure 141)**

[153] Commission Decision of 21 February 2008 on additional guarantees in intra-Community trade of pigs relating to Aujeszky's disease and criteria to provide information on this disease *OJ L 59, 4.3.2008, p. 19–30*
[154] Council Decision of 27 November 1990 laying down Community criteria for the eradication and monitoring of certain animal diseases *OJ L 347, 12.12.1990, p. 27–29*
[155] DG SANCO 2004. *Multi-annual programmes for Animal disease and zoonoses eradication, control and monitoring*. Working Document.

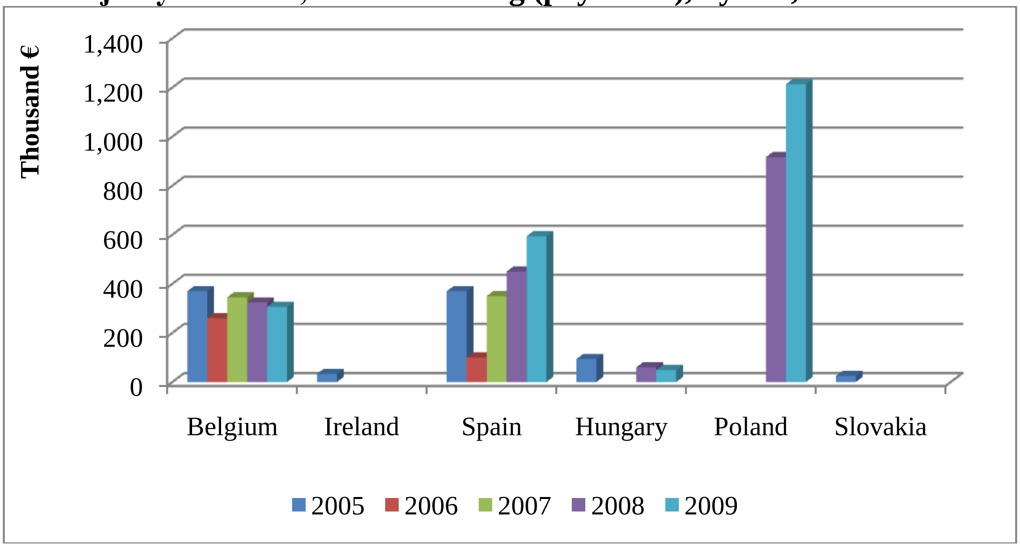
Figure 141 Aujeszky's disease, EU Co-funding (payments), 1996-2009



Source: DG SANCO based on financial decisions from 1996-2009

After a substantial co-funding during 1997-2002, to a large extent for Germany and Belgium, the amounts decreased when an increasing number of countries became free from AD. After 2006 the amounts increased substantially, especially for Poland, Spain and Belgium (continued since 1999), which were applying substantial AD eradication programmes (**Figure 142**)

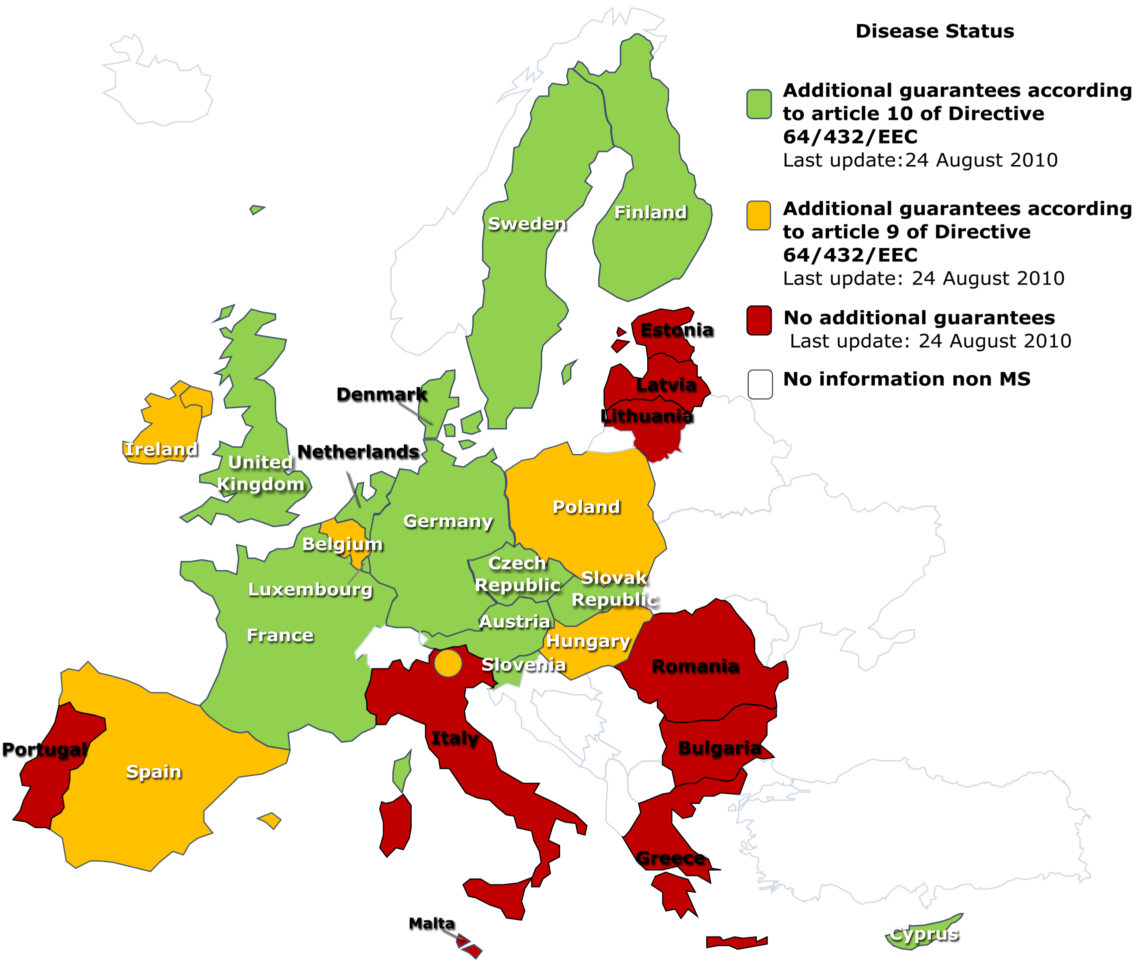
Figure 142 Aujesky's disease, EU Co-funding (payments), by MS, 2005-2009



Source: SANCO based on financial decisions from 2005-2009

For Aujeszky's disease the trend is positive, and an increasing number of 13 EU MS have become free of AD. In 2008, the European Commission listed France and the Netherlands with disease free status and Hungary with approved control programme status. The region of Northern Ireland submitted an application for EU in 2009 for approval of the eradication plan to the Commission. Ireland also intends to seek EU approval for their eradication plan from the Commission. In 2010, surveillance programmes were also in place in Northern Italy (region of Bolzano) [156]regions of Northern Spain, Hungary and Belgium (see **Map 41**).

Map 41 Aujeszky's disease status in EU



**Note: In the French departments of Landes and Pyrénées-Atlantiques free status suspended since September 2010*

Source: DG SANCO - 2009 Annual report on notifiable diseases of bovine animals and swine

2.9.2.5 Analysis of key results and effects of the programme

Over the period 2005-2009 key results of the AD eradication programmes are that the disease has been eradicated from Germany, Slovakia, and regions of the UK. Meanwhile, progress has been made in Ireland, Spain, Hungary, and Poland, United Kingdom (region of Northern Ireland).

[156] Italy has not been receiving co-funding for AD

The effect of the AD programmes is increased trade between the EU MS, and less restrictions due to the disease.

2.9.2.6 Analysis of impacts of the programmes

There are various economic benefits of progress in AD eradication. First, pig health will be improved because AD does not longer cause economic losses due to morbidity and mortality on the farms, and by productivity loss. Also, export markets require certification of meat from AD free herds and live pig exports for breeding or production necessitate blood sampling before certification. The pig industry will no longer have this additional burden once disease-free status is achieved. Second, intra-EU trade is less affected. In terms of trade gains for the sector, the impact is substantial over the period 2005-2009, and shows even more potential when the EU territory is free of AD.

2.10 Related external animal disease funding activities

Due to the implementation of EU co-financed oral rabies vaccination, the rabies situation dramatically improved over the recent years in the majority of EU MS sharing borders with third countries and now eradication within the near future appears to be feasible. The Commission, together with the affected MS identified the need for action in bordering areas of neighbouring third countries, in order to safeguard the favourable results achieved. As the disease reservoirs are in wildlife, it is evident that in a number of Member States eradication would not be possible to achieve or maintain as reintroductions though infected wild animals crossing the borders would be inevitable.

The classical swine fever is similarly a transboundary disease which the EU has dedicated a lot of resources to combat. The control of the disease both in domestic pigs and in wild boar in the neighbouring candidate and potential candidate countries for accession to the EU would reduce the risk of introduction of the disease to the EU and also contribute to the development of pig farming in these countries.

Kaliningrad

Kaliningrad, a Russian region surrounded by Lithuanian and Polish territory, was the first external dimension that was considered under the global EU rabies eradication strategy. Thus, an EU financed plan on rabies vaccination is running in Kaliningrad since 2007 and is intended to be continued at least until 2014.

Cooperation with this specific region of Russia was initially through the Lithuanian programme for 2007, under which the activities implemented in Kaliningrad were also made eligible. Since 2008, the Union is financing Kaliningrad directly through the emergency fund component of the veterinary expenditure[157]. Since the second half of 2009 the programme has been intensified (twice a year distribution of vaccine baits and sufficient monitoring, i.e. collection of samples and testing). The neighbouring MS are reporting already a good improvement in the disease situation in their territories bordering Kaliningrad.

Western Balkans -IPA

In the framework of the Instrument for Pre-accession Assistance (IPA) destined for candidate or potential candidate countries, monitoring and vaccination activities against rabies (and CSF) are funded in the Western Balkan region. The project consists of two components: the national component, consisting of seven separate national programmes, and the regional component.

Under the national programmes funding is provided for the implementation of the ORV (purchase and distribution of oral vaccine) as well as monitoring and surveillance activities. The regional project, to be launched within the second half of 2011 intends to coordinate the implementation of the national projects and provide technical assistance.

[157] Art 6 old 8 new of Council Decision 2009/470/EC of 25 May 2009 on expenditure in the veterinary field (Codified version).

North-eastern neighbouring countries

To address the rabies threat originating from in bordering third country areas along north eastern limits of the EU, the Commission encouraged the interested Member States to come into agreements with their respective neighbours for the inclusion of oral vaccination activities in their territory along the common borders, to their EU co-financed rabies programmes. Funding for the creation of vaccination belts in the territories of these countries could then take place through the co-financed programmes of the neighbouring MS. For 2011, Slovakia had included the adjacent Ukraine regions into its programme and similar action had been taken by Lithuania for the adjacent Belarus territories. In this case, vaccine purchase and distribution costs are eligible for 100% financing, up to maximum limits

The third countries that are at the moment being considered under this plan include Russia, Ukraine, Belarus; at a later stage, possibly also Moldova. The plan involves the establishment of a buffer zone of 50-70 km along the border. Currently the Union is waiting for the relevant MS to finalize the bilateral negotiations with the countries and to sign the agreement which will set the conditions on what the third country will do.

A bilateral cooperation on rabies exists between Finland and Russia. Finland is cooperating with Russia since 2001 with the Union contributing to the purchase of baits through the Finnish programme. As of 2011, these activities will take place under the rabies cooperation with bordering third countries.

Table 18 Estimate of costs for third country programmes, rabies

Third country	Cost
Ukraine	€1.700.000
Belarus	€2.400.000
Russia	€1.100.000
Total	***€5.200.000***

Source: DG SANCO estimates