

Compliance with mandatory standards in agriculture

A comparative approach of the EU vis-à-vis the United States, Canada and New Zealand

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Compliance with mandatory standards in agriculture; A comparative approach of the EU vis-à-vis the United States, Canada and New Zealand
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This report presents some of the interim results of the project 'Facilitating the CAP reform: Compliance and competitiveness of European agriculture'. It summarises and integrates the implementation of cross compliance measures in seven EU countries (France, Germany, Italy, Netherlands, United Kingdom, Spain and Poland), with a particular focus on the degree of compliance and the costs of compliance. Also, the implementation of similar measures is examined in three non-EU countries (Canada, United States and New Zealand).

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Preface

This report presents some of the interim results of the project 'Facilitating the CAP reform: Compliance and competitiveness of European agriculture'. The primary focus of the project is to investigate the value-added resulting from introducing cross compliance as a tool to improve compliance with existing standards. A second issue is the investigation of the cost implications and competition effects of compliance to EU standards on the world market in the specific context of cross compliance. The project started in 2005, and will be completed in early 2008. This report compares statutory management requirements (SMRs) and the requirements following good agricultural and environmental conditions (GAECs) implemented in 7 EU countries in the context of cross compliance. The project is being led by LEI Wageningen UR, in co-operation with:

- Institute for European Environmental Policy (IEEP), United Kingdom;
- Katholieke Universiteit Leuven (KULEUVEN), Belgium;
- Centro Ricerche Produzioni Animali (CRPA), Italy;
- Applications des Sciences de l'Actions (AScA), France;
- Ecologic Institut für Internationale und Europäische Umweltpolitik (Ecologic), Germany;
- Warsaw Agricultural University (SGGW), Poland;
- Universidad Politécnica de Madrid (UPM), Spain;
- Winrock International (Winrock), USA;
- Department of Food, Agricultural and Resource Economics, University of Guelph (University of Guelph), Ontario, Canada;
- Massey University (Massey University), New Zealand.

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A handwritten signature in black ink, consisting of a large, stylized initial 'B' followed by a series of loops and a final flourish.

Dr. J.C. Blom
Director General LEI

Summary

This synthesis report summarises and integrates ten country reports on cross compliance or comparable policies. Out of this seven are EU member states (France, Germany, Italy, Netherlands, United Kingdom, Spain and Poland) and three are key competitors to the EU (Canada, United States and New Zealand). The main aim of the project is to provide further information about the national implementation of cross compliance, with a particular focus on the degree of compliance and the costs of compliance with mandatory standards on environment, health, food safety, animal welfare and their implications for competitiveness. Part of this project was also an investigation into the role of voluntary certification schemes, the role they play in imposing standards to agricultural production and potential interactions with the cross compliance standards. A synthesis of the results on this part is provided in a separate report.

This report is structured as follows. It starts with an introduction which provides some information about the national contexts and the choices that have been made. Among this is the choice to consider only seven EU member states, and to focus on a limited number of specific products within each member state. Moreover it discusses the research approach that was chosen, and it provides an overview of the methods used (expert interviews, analysis of grey literature, consultation with farmers' unions, analyses of records of inspection agencies, etc.).

Subsequently in the two following chapters the requirements which are part of the cross compliance package are discussed. For each statutory management requirement (SMRs), as well as for the requirements following from the good agricultural and environmental condition (GAECs), the requirements are noted, relevant implementation issues are discussed and indicative tables are given which are helpful in assessing the potential impacts (sectors affected, number of holdings, animals, area surface of protected zones, etc.). With respect to the SMRs, in particular the requirements following from the Nitrate Directive and the Identification and Registration of animals create tensions with farmers. Implementation of the Nitrate Directive in a number of countries also gave problems, leading to infringement procedures against some member states. With respect to the GAECs it is

noted that there is a lot of variation in the requirements imposed on farmers over member states. To a large part this is due to the specific situations and different context of the member states. Since some requirements only recently became part of cross compliance, or will become part not earlier than in 2007, for these requirements difficulties were faced in getting already the desired information.

A central chapter (chapter 4) evaluates the degree of compliance and the associated costs. Conceptual remarks are made about compliance, cost types, ordinary costs of SMRs and additional costs of cross compliance. As regards the degree of compliance it is concluded that in general the rate of compliance is rather high. This holds both for the SMRs and the GAECs. Two exemptions are the Nitrate Directive and the Identification and Registration of animals, for which there are substantial rates of non-compliance, sometimes as high as 30%. There is evidence that cross compliance is effective in that it leads to an improvement in the degree of compliance. Although an exact measurement of improved compliance remains a difficult issue, anecdotal evidence showed that cross compliance induced farmer activities aimed at improving their farming practice up to EU standards and also, for specific requirements, 'significant' improvements in compliance were noted.

With respect to the costs of compliance a distinction is made between the ordinary costs associated with the SMRs and the additional costs as following from cross compliance. As regards the SMRs cross compliance in general does hardly imply additional costs to farmers. Costs, also when being additional costs, arise due to improved compliance and are related to the standards and not to the cross compliance instrument. As regards the costs of satisfying standards, the Nitrate Directive is found the most costly one. Costs of compliance can amount to several thousand euros per farm. The costs of the GAEC requirements, which are likely to present the main costs of cross compliance because these requirements were the only introduced new element, were in general found to be small. Partly this is due to the fact that a large part of the farmers already voluntarily do the actions included in the GAECs (examples are preservation of organic matter content in soils and actions to reduce erosion). Because of the variation in requirements however, costs also can vary significantly.

A short discussion is provided of the 'value added' or benefits of cross compliance. The main 'benefit' of cross compliance, which is essentially an additional enforcement mechanism, is the improvement of compliance both by imposing an additional sanctioning scheme as well as by increasing farmers' awareness of standards. The measurement of the contribution of a

higher level of compliance to a better achievement of the policy goals, as specified in the various underlying Directives and Regulations, was beyond the scope of this research.

The results obtained for the EU's key competitors Canada, the United States and New Zealand, indicate that none of these countries has a system of requirements comparable to the EU's one. A comparative analysis covering all the themes addressed in the SMRs and GAECs shows that in general the intensity of regulation is less in these countries as compared to the EU. Since also the production intensity in these countries is lower than the EU the need felt for generic regulations might be lower. A lower regulation intensity does not necessarily imply a higher level of environmental degradation, biodiversity loss, or harm to animal welfare, but indications were found that the local concerns about these issues are increasing. The approaches in the three non-EU countries rely, relatively to the EU, on voluntary action. This action is facilitated and encouraged by financial incentive and assistance schemes. The financial incentives include cross compliance mechanisms (e.g. Canada, where participating in voluntary schemes is sometimes a side condition for receipt of specific direct payments). In a comparative sense, the regulatory intensities in Canada and New Zealand seem to be rather comparable. The US seems to present the lower end of regulation. As compared to the US Canada and New Zealand rely to a relatively high degree on exports of sensitive products. This has led them to address in particular themes related to market risk (food safety, surveillance systems on animal diseases).

1. Introduction and overview

1.1 Introduction

The 2003 Mid-Term Review (MTR) of the Common Agricultural Policy (CAP) introduced a number of adjustments to agricultural support. One of the most substantive changes was the introduction of a system of decoupled payments per farm (Single Farm Payment). Moreover, these payments were made conditional on recipients meeting environmental, food safety, animal and plant health, animal welfare requirements as well as standards of good agricultural and environmental practice (cross compliance). The primary objective of this policy reform was to promote a more market-oriented agriculture and sustainable agriculture. Conditions of eligibility to direct payments were introduced to enhance compliance with existing mandatory standards as well as requirements of good agricultural and environmental practice. This synthesis report considers the cross compliance requirements with respect to its implementation and impact on farmers. Special attention is given to the degree of compliance and the impact of the requirements or standards on costs of production.

The concept of cross compliance originated in the United States, where it has been used from the 1970s onwards. It refers to conditions farmers must meet in order to be eligible for assistance under government support schemes for agriculture, notably commodity programmes. Claiming support under one programme, US farmers had to meet the rules of that programme and simultaneously also certain obligations of other programmes. In that way a linkage between programmes, or 'cross compliance' was introduced. Since its first application in the US, the term has been extended and used to in particular refer to linkages between agricultural and environmental policies. Currently such conditions are attached to the Conservation Reserve Programme (IEEP, 2006).

With the growing commitment in the EC in the late 1980s to integrating environmental considerations into the CAP, cross compliance became part of the debate on agricultural policy reforms. The 1992 the Mac Sharry reforms of the CAP, which increased the reliance on direct payment-instruments also lead to the introduction of an optional cross compliance scheme that was

voluntary for member states to introduce. The greater transparency of these payments prompted a debate about the return-transfer EU agriculture should give to society. This intensified the debate about the tangible social and environmental benefits farmers should provide in reciprocity to these payments. Although elements of environmental cross compliance were introduced into the CAP by the Mac Sharry reform its impact remained rather limited. Member states were obliged to apply so-called appropriate environmental conditions to the management of compulsory set-aside in arable cropping. Moreover, they were allowed (but not obliged) to introduce environmental conditions on the direct payments offered as headage payments for beef cattle and sheep. Only a limited number of member states (notably the UK) implemented such schemes.

The Agenda 2000 reform of the CAP extended the switch from traditional price support to direct payments already initiated under Mac Sharry. Also cross compliance became a more prominent part of the agricultural policy package. Regulation 1259/1999 (Article 3) required member states to take measures to ensure that agricultural activities within the scope of the 'common rules regulation' were compatible with environmental protection requirements. It allowed member states several options for such measures among which support in return for agri-environmental commitments, the introduction of general mandatory environmental requirements, and the introduction of specific environmental requirements constituting a condition for direct payments (cross compliance). Member states were able to decide on a sanctioning system punishing violations. Punishment should be appropriate and proportionate and could include withdrawal or even cancellation of direct payments. Only a limited number of member states (among them Denmark, France, Greece, the Netherlands and the UK) set down conditions for direct payments.

With the 2003 MTR policy reform, cross compliance became a compulsory measure. Moreover, its scope was extended from its original environmental focus to one dealing with a much wider range of public concerns, each of which was already covered by EU legislation. Added concerns regarded were in regard to animal welfare, food safety, animal health, and good agricultural practice. More specifically, Regulation 1782/2003 in return for direct payments under the SFP-scheme requires farmers to observe certain standards in the following areas:

- environment;
- identification and registration of animals;
- public, animal and plant health;

- animal welfare;
- preservation of good agricultural and environmental conditions.

More precisely farmers must comply with 19 Statutory Management Requirements (SMRs) defined in Annex III of the regulation, and a number of standards ensuring the good agricultural and environmental condition of agricultural land (GAECs) as defined in Annex IV of the Regulation (see also appendix 1 to this report).

The SMRs are based on pre-existing EU directives and regulations such as the Birds and Habitat Directives and the Nitrate Directive. With respect to the SMRs cross compliance acts as an additional incentive to stimulate enforcement of existing legislation. The GAEC is a new requirement and consists of a total of 11 standards relating to the protection of soils and maintenance of habitats. In addition, member states must ensure that the area of permanent pasture is maintained at the same magnitude as in 2003. The latter clause was added to avoid the abandonment of land and associated environmental degradation. Abandonment of land was feared to be a potential side-effect of the introduced decoupling, which delinked support from production activities. As such the GAEC requirements can be seen as a precautionary policy to prevent potential problems in case the land was not managed properly (land abandonment)

With respect to the GAEC, member states have introduced a wide range of measures to implement the standards as set out in Annex IV. The majority of member states has implemented measures for some, but not all of the Annex IV standards. The requirements vary from very basic, simple and already required or satisfied measures to more complex measures. The result is a highly variable approach to Annex IV standards. Given the aim of implementing conditions taking into account the specific characteristics of areas concerned, including soil and climatic conditions, existing farming systems, land use, crop rotation, farming practices and farming structures the variability is not-surprising. Member states do not have an obligation to justify their choice of GAEC measures. A careful analysis seems appropriate here to evaluate the effectiveness of the measures taken.

Detailed rules for the implementation of cross compliance are set down in Regulation 796/2004. The implementation started in year 2005 with the SMRs on environment, public and animal health, and the identification and registration of animals. Also the GAECs were imposed in 2005. In 2006 additional SMRs related to food safety (public health) and notification of

diseases are implemented. The last part, regarding animal welfare was implemented in 2007.

Several issues concern the degree of compliance to these measures. Firstly, as far as cross compliance concerns pre-existing legislation, in principle information about the degree of compliance should be available. This could be derived from the monitoring and inspection agencies. However, assessing compliance will depend on whether there are regular and systematic sample inspections or on the catch-rate if farmers are only penalized when a clear violation of the rules is observed.

With respect to assessing the impact of cross compliance on costs of production, issues that have to be considered are to what extent cross compliance leads to additional costs. In principle all costs associated with pre-existing legislation should be excluded. This roughly implies that only the costs associated with the GAECs can impose additional costs. All costs associated with the SMR standards, even if improved compliance lead to additional costs, are related to these standards, rather than to cross compliance. An exception to this could be some registration and monitoring and inspection costs, which contain some additional elements coming from cross compliance. (The administrative costs of cross compliance were not included in the scope of this research.)

When analysing the impact of environmental, food safety and animal welfare regulations on the EU's competitiveness as compared to key-competitors like the US, Canada and New Zealand, all costs involving these regulations should be taken into account. Other issues playing a role in assessing the impact on costs of production are which type of costs should be distinguished, the valuation of additional labour efforts (requiring an imputed wage for family farm labour for example), short-term and long-term costs, cost with an investment character and those with an operational character, the possibilities farmers have to mitigate costs, and cost accumulation.

1.2 Outline of the report

This synthesis report is designed to make a strategic comparison of the statutory management requirements (SMRs) and good agricultural and environmental practice conditions (GAECs) implied in the cross compliance policy package for seven selected EU member states, notably France, Germany, Italy, Netherlands, Spain, Poland, and the United Kingdom. Several research interests are at stake. Since the SMRs follow in principle from EU

legislation, no or limited variation in the requirements over member states is expected. However, there might be variation over countries in the degree of compliance as well as with respect to the costs of compliance. Moreover, as was discussed in the previous section more variation in requirements is expected with respect to the GAECs, where countries have been left much more discretion to define the specific measures within the general framework put in the Regulation. Also with respect to the GAECs the degree of compliance and costs of compliance may vary over countries. Finally, the situation in the EU is compared with those of some key competitors in the world market, namely the USA, Canada, and New Zealand. The main aim there is not primarily to check whether these countries have a system of regulations comparable to cross compliance, but to check to which extent cost increases are imposed to agricultural production due to local restrictions on themes similar to the ones mentioned in cross compliance. This information will be used at a later stage of the project aimed at assessing potential impacts of compliance with standards on competitiveness.

This report is based upon the findings of the following ten 'national reports' which were prepared by project partners in each of these countries.

1. Martin Farmer, J. Bartley and Vicky Swales (2006). Deliverable 5: Mandatory standards in 7 EU countries and 3 non-EU countries. Country Report: United Kingdom, IEEP, London.
2. Glenn Fox, and Elisabeth Ramlal (2006) Deliverable 5: Mandatory standards in 7 EU countries and 3 non-EU countries. Country Report: Canada. Department of Food, Agricultural and Resource Economics, University of Guelph, Guelph.
3. Roel Jongeneel (2006) Deliverable 5: Mandatory standards in 7 EU countries and 3 non-EU countries. Country Report: Netherlands. Agricultural Economics Institute, The Hague.
4. Zbygniew Karaczun (2006). Deliverable 5: Mandatory standards in 7 EU countries and 3 non-EU countries. Country Report: Poland. Department of Environmental Protection SGGW, University of Warsaw, Warsaw.
5. Anton Meister (2006) Deliverable 5: Mandatory standards in 7 EU countries and 3 non-EU countries. Country Report: New Zealand. Department of Applied and International Economics, Massey University, Massey.
6. Rainer Müssner, Anne Leipprand, and Stephanie Schlegel (2006) Deliverable 5: Mandatory standards in 7 EU countries and 3 non-EU countries. Country Report: Germany. Ecologic, Berlin.

7. Consuela Ortéga, and A. Simó, (2006) Deliverable 5: Mandatory standards in 7 EU countries and 3 non-EU countries. Country Report: Spain. Departamento de Economía y Ciencias Sociales Agrarias, Universidad Politécnica de Madrid, Madrid.
8. Xavier Poux, and Blandine Romain (2006) Deliverable 5: Mandatory standards in 7 EU countries and 3 non-EU countries. Country Report: France. Application des Sciences de l'Actions, Paris.
9. Kees de Roest (2006) Deliverable 5: Mandatory standards in 7 EU countries and 3 non-EU countries. Country Report: Italy. Centro Ricerche Produzioni Animali, Reggio Emilia.
10. Jonathan Winsten (2006) Deliverable 5: Mandatory standards in 7 EU countries and 3 non-EU countries. Country Report: United States. Winrock, University of Vermont, Burlington.

Drawing upon the more detailed findings of the national reports, this synthesis summarises the broad pattern of member states implementing the cross compliance requirements. More specifically the focus is on assessing the degree of compliance to these standards as well as on their impact at farm level. With respect to this, particular attention is paid to the additional costs of cross compliance.¹ This information will be used in a second stage of the project, which aims to analyse the impact of cross compliance on internal and external competitiveness of EU agriculture.

The report, firstly, seeks to identify differences and similarities in standards between countries at farm level (i.e. direct, operational constraints upon farming practices). These differences, which will in particular show up when discussing the GAECs, need to be evaluated in the context of the different environmental situations of the countries. Secondly, the report aims to assess the degree of compliance of farmers at the level of specific regulations. Also the organisation of the monitoring and inspection of the cross compliance regulations is analysed. Thirdly, estimates are provided about the impact of cross compliance on the production costs. A methodology has been developed for a standardised measurement of these costs. This allows for making a comparative analysis of the impacts. The heterogeneity in

¹ Additional costs refer to the expenditures that have to be made by those farmers who previously did not comply, but now have started to comply because of cross compliance. In sections 4.5 and 4.6 a more detailed discussion of the concept of additional costs is provided.

agriculture is accounted for by distinguishing several farm types, farm scales and by selecting case studies taking into account regional particularities.

This synthesis report partly goes beyond the country reports in that a number of tables are composed and added, which reflect relevant characteristics of agriculture related to the specific requirements under scrutiny. This is done to better assess the potential impact of the Regulations and Directives on the farm sector.

In order to understand the implications of compliance with production (and processing) standards implied by cross compliance for the relative competitiveness of EU agriculture, vis-à-vis its main competitors on the world market, an inventory of comparable requirements in the US, Canada and New Zealand is made.

Not only is an assessment of compliance and costs made, but a limited evaluation of the 'value added' or benefits of cross compliance has also been pursued. Implicit in the cross compliance package are aims and targets for a sustainable agriculture. As far as the instruments and compliance to the regulation contribute to the realisation of these objectives, the cross compliance policy can be said to be effective and creating intended policy 'benefits'. So the main benefit from cross compliance is its contribution to improvements in compliance rather than the achievement of the policy goals specified in various SMRs.

The report includes a mix of reasoned qualitative and quantitative analyses. Comparative summary tables help to form a quick overview. We view the assembly and comparison of the additional cost impact of the on-farm constraints from compliance with standards as a necessary first step to eventually conducting a trade competitiveness analysis, as aimed for in the second phase of this project. The developed cost accounting methodology and the obtained cost figures for the on-farm constraints will later be complemented by a more detailed assessment of costs and revenues. For example, it will be further analysed where costs are non-compensated or partly or wholly compensated (e.g. investment aid, and 'cost sharing' or incentive schemes).

Alongside the comparative information and tables, some boxes are presented throughout the report, which show particular highlights. These will be in regard uniquely specific country details, information on the results of the survey among about 1,600 farmers which was held in one country (Netherlands), and derived calculations in which it is tried to generalize some results to the EU level.

The report is divided into chapters that reflect the steps outlined above:

1. *Introduction and overview of the study*
2. *Comparative analysis of the implementation of SMRs in selected EU member states* - this chapter provides a comparative analysis of the implementation of the SMRs in the fields of environment (Birds and Habitat Directives, ground water protection, Sewage sludge Directive and Nitrate Directive), the identification and registration of animals, public, animal and plant health, and animal welfare (housing requirements for calves and pigs). This chapter also summarises differences in background conditions and in the national implementation of the EU directives.
3. *Comparative analysis of the implementation of the GAEC regulations in selected EU member states* - this chapter focuses upon an identification of the major differences in the policy and legislation as it applies at farm level, focussing on specific constraints where possible, noting the considerable variation within the EU and some of the other countries in the study. This chapter also considers differences of context, and plausible reasons for possible differences in standards. These might include different biophysical conditions, different agricultural structures, and differences in land use.
4. *Degree of compliance and impact on costs* - this chapter discusses the methodologies used to measure compliance and impacts on costs of production, as well as the empirical results found. A distinction is made between the total costs associated with the SMRs (a concept relevant in competitiveness analysis) and the additional costs of cross compliance (i.e. the costs associated with new legislation only)
5. *Comparable measures and their impacts in the US, Canada and New Zealand* - this chapter describes the regulations comparable to the ones in the EU's cross compliance package for the EU's main competitors. It highlights similarities as well as differences and provides also approximations of compliance and cost impact issues.
6. *Perceived benefits of cross compliance* -this chapter elaborates on the benefits or 'value added' of cross compliance. This requires a discussion of both the aims and the (expected) achievements realised by the measures as they are currently taken. Moreover, the additionality-character of cross compliance will be taken into account. This issue is not extensively treated in this research, but a number of comments could be made. They could be important for a future perspective on cross compliance.

7. *Conclusions and outlook* - the study concludes by highlighting the key areas (in terms of issues and commodity sectors) where differences seem most apparent, discusses the lessons learned from this particular study, and sets out possible avenues for future, more detailed research.

1.3 National contexts: production conditions and policy implementation

As already noticed in the introduction the main part of cross compliance is in regard to pre-existing EU legislation which might be expected to be implemented in the member states in a similar way. As such not too much variation from the national contexts is expected as regards the requirements following from these regulations and directives. However, the aim of this research is to better understand the issue of compliance, be it the current degree of compliance and the expected improvements in compliance, as well as the costs of compliance due to the cross compliance provision.

The main issues and differences regarding the national implementation of EU legislation have to do with the degree of implementation, both at national and regional or local levels. The main problem is not that 'wrong law' deviating from EU legislation is implemented, but rather the degree to which law is implemented. If the SMRs are not fully integrated in national legislation there is an issue of lacking compliance at macro-level. The Commission has the means to start a case against this, and to sanction countries by reducing the money payments they receive. If compliance at macro-level is lacking, compliance at (micro) or farm level will be in general lacking too. In principle lack of compliance at the farm level in that case can still be penalised by a reduction in direct payments, but no legal sanctions following from violation of implemented law can be made.

The cross compliance requirements are introduced in a phased way. In 2005 all the environmental SMRs (Birds and Habitat Directives, Groundwater Directive, Sewage Sludge Directive, and Nitrate Directive) and Identification and Registration SMRs (SMRs regulating identification and registration of animals in general, bovine animals and their passports, and I&R of ovine and caprine animals) are taken up under cross compliance. In 2006 the following SMRs were added: requirements regulating the use of plant protection products, the use of hormones and beta-antagonists in animal husbandry, food safety and requirements regulating the notification of the animal diseases Foot and Mouth, BSE, swine vesicular disease, and Bluetongue. Finally in 2007

the requirements regulating animal welfare (in particular of calves and pigs) became part of the cross compliance package.

Italy has chosen to apply the Nitrate Directive by designing Nitrate vulnerable areas in each of its 20 regions. Whereas this process started in 1999 it will not be before 2006 that the draft decree regulating the zones and providing rules for manure and slurry spreading activities will be approved upon. In the absence of a final decree, the national paying agency, the AGEA, has listed a series of requirements farmers have to fulfil in order to comply with the nitrate directive. Since these requirements are not yet backed by formal national law, Italy lacks macro compliance with the Nitrate Directive. After an official warning in 2001, the EU Commission started a procedure of infringement against Italy for inadequate application. In principle the Commission is allowed to sanction the country and impose a reduction on the EU payments made to Italy.

The compliance of individual farmers, i.e. micro compliance, is there when the requirements specified by the AGEA are satisfied. A farmer violating these requirements can be sanctioned by a reduction on the direct payments he is entitled to. However, in this case further legal sanctions are not possible due to the lack national law.

Box 1.1 Macro and micro compliance: Italy

Several countries have a layered governance structure, where the national government delegates discretion to lower levels, i.e. regional authorities, the Länder in Germany, the provinces in Italy and Spain, etc. Whereas the implementation at lower level should respect the general framework, as defined by the translation of the EU Directives into national law, usually the regional implementation gives the regulations a local 'colour', addressing the regional specifics.

The country reports showed that the agricultural sectors of the selected countries show a great extent of diversity. There are significant differences in location, soil and climate conditions. Moreover, the farm size structure can significantly vary over member states as well as over region.

In the Netherlands a survey was done among about 1,600 farmers. Farmers were asked to give a mark for several propositions, with the marks ranging from 5 (completely agree) to 1 (completely disagree). On the question whether the cross compliance regulations have led to a higher respect of farmers for environmental and animal welfare regulations, Dutch dairy-beef farmers tend to weakly agree (average score was 2.77). Farmers almost completely agreed when they were asked if the regulations about the I&R Directive were too strict and the sanctions too hard (4.12).

The question to the Dutch arable farmers whether they felt that the new regulations make good agricultural practice impossible, nearly all farmers agreed (4.25). The farmers seem to disagree (2.00) on the question whether the de-coupling of EU subsidies made their crop producing plan more flexible. Arable farmers are more or less neutral (3.05) when asked if CC would lead to a more honest competition between the countries in the EU.

Box 1.2 Farmer attitudes towards cross compliance

1.4 Approach chosen and difficulties faced

The approach chosen in this project is a comparative analysis of cross compliance in a limited number of countries for a selected number of products. Several methods were applied of which the main ones are shown below:

- examining and evaluating grey literature about cross compliance (Germany);
- interviews with experts (all countries);
- focus group with experts and stakeholders (Germany, Spain and UK);
- survey among farm unions (Italy);
- desk-research of existing studies, usually of a specific character, which are analysed in order to make new generalisations (Italy, Netherlands, Canada);
- use of inspection records of official authorities (UK, Spain);
- survey among farmers (Netherlands and Spain).

Whereas in general a unified research methodology would have been preferable, at this stage reliance on a unified approach was not feasible. For example, for various reasons it was expected that doing a written survey among farmers in some countries would have generated insufficient responses. So alternative routes had to be followed to obtain the required information for meeting the project's objectives to the best possible extent.

The variation in research methods, as well as the limitation to specific regions and activities (see below) gave this research a bit of a fragmented character. However, given the state of knowledge and the recent implementation of the policy, this was judged to be unavoidable. As far as possibly it was tried to stick to a common framework, even although the information would be obtained by following various approaches. Regarding the degree of compliance and the costs of compliance, uniform and common concepts and calculation procedures were defined. However, this could not prevent that specific pieces of information were still often simply not available. It will come at no surprise that as such this complicates the comparability and synthesis of the country-specific findings.

Figure 1.1 provides a further overview of the choices that have been made. Seven EU countries are distinguished, notably France, Germany, Italy, the Netherlands, Poland, Spain and the United Kingdom. Of these Poland belongs to the group of new member states that entered the EU in 2004, and has a special position. The new member states are currently only obliged to satisfy the GAEC requirements. The SMR standards will be come part of cross compliance not earlier than 2009. Alongside the selected EU countries three non-EU countries are analysed. This group of countries consisting of Canada, New Zealand and the United States, represent some key competitors of the EU.

At the product or activity level, selective choices were made (see columns of figure 1.1). Six activities were analysed in detail, whereas a more general approach was chosen with respect to agriculture as a whole. In particular in the second phase of this research project, which is aimed at assessing the impacts on competitiveness, the selected activities or crops will be leading.

As figure 1.1 makes clear this study is no general or comprehensive study about the EU's cross compliance in that only a subset of the EU-27's member states are analysed. However, as table 1.1 makes clear, the selected countries play a prominent role in the EUs agricultural production. As such they provide a sample which in principle should allow for generalizations to the aggregate EU level.

	Cereals	Dairy	Beef	Pigs and poultry	Fruits	Olives
Netherlands	a)	a)	a)	a)		
France	a)	a)				
UK		a)	a)	a)		
Germany		a)				
Spain					a)	a)
Italy		a)		a)		
Poland	a)		a)			
USA	Corn/soy	a)	a)	a)	a)	
Canada	a)			a)		
New Zealand		a)				

Figure 1.1 Chosen farm types for national case studies

a) Case study will be undertaken.

Table 1.1 The shares of the selected countries in EU's agricultural production

	France	Germany	Italy	Nether-lands	United Kingdom	Spain	Poland a)
Value Agricultural							
Production x							
million euro	60,996	41,690	43,499	17,584	22,911	41,570	12,774
Share	0.2	0.14	0.14	0.06	0.07	0.13	0.04
of which Crops	37,189	22,044	29,282	9,912	9,482	26,590	6,440
Share	0.21	0.13	0.17	0.06	0.05	0.15	0.04
of which Animal							
Products	23,806	19,645	14,217	7,672	13,429	14,980	6,334
Share	0.18	0.15	0.11	0.06	0.1	0.11	0.05

Evaluated at base prices. a) As a new member state Poland has a special position in that the SMR-requirements become part of the CC requirements not earlier than in 2009. The GAEC requirements are already imposed (see more detailed discussion in main text).

Source: LEI (2006).

The shares in table 1.1 represent a country's share in the EU-25's total. As can be derived from table 1.1, the selected countries represent 78% of the total agricultural production value. Their value share in crop production value is 76%, whereas the share in the animal production value is 80%.

Structure of report: The structure of the synthesis report roughly follows the structure of the individual country reports. In the comparison a distinction is made between EU member states and non-EU countries US, Can and NZ (mainly because of differences in degree of comparability).

2. Comparative analysis of the implementation of the Statutory Management Regulations in selected EU member states

2.1 Introduction

This chapter provides a comparative overview of the way in which the SMRs are implemented in the selected EU member states. The main focus will be on the requirements formulated at national level. Moreover other details, like areas of Natura 2000 are taken into account.

The requirements reported may be similar, or in some cases even go beyond the requirements as specified at EU level (e.g. irrigation requirements in Spain). Strictly such extensions can not be part of the CC requirements, and will also be treated in this sense). In some cases it will appear that the SMRs are not yet, or only very recently translated into national law. A country risks an infringement procedure in this case. If compliance at country or macro-level is not in proper order, this will usually preclude measurement of compliance and costs at farm level.

In what follows the 19 SMRs included in cross compliance will be discussed. They are ordered according to the following categories: environment (2.2), identification and registration of animals (2.3), public, animal and plant health (2.4), and animal welfare (2.5). For each SMR a short description of the standard is given. Subsequently, the affected sectors are mentioned, and an indication is given to what extent farms are affected. The degree of compliance and the costs of compliance will be discussed in a later chapter (see chapter 4).

2.2 Environment

2.2.1 Birds and Habitat Directive

The SMR standard

The aim of the Bird Directive 79/409/EEG is to protect about 500 listed bird species. Measures need to be taken to preserve, maintain or re-establish a sufficient diversity and area of habitats for all the species of birds, as they are referred to in appendix 1 of the regulation. These measures include creation of

protected areas, upkeeping and management in accordance with the ecological needs of habitats inside as well as outside the protected zones, re-establishment of destroyed biotopes, and creation of biotopes. The protected areas following from the Birds Directive are the Special Protected Areas (SPAs) and those following from the Habitat Directive the Special Areas of Conservation (SACs) or Sites of Community Importance (SCIs), which together make up the Natura 2000 areas. The Habitat Directive required EU member states to transpose its provisions into national law and transmit the national list of proposed sites. Farmers are affected if any of their land lies within a Special Protection Area. A number of rules also apply whether or not farmland lies within a SPA.

- a. On land classified as an SPA:
 - consent must be gained from the authorities in order to carry out any specified operation likely to damage the protected interests (i.e. its flora, fauna, geological or physiographical features) of the SPA.
- b. On all holdings the farmer must not:
 - take part in the intentional killing, injuring or taking of any wild bird; the possession of any live or dead wild bird; intentionally damage or take any nest while it is in use; or recklessly disturb certain birds whilst they are nesting;
 - kill or take game birds during the close season for that bird species;
 - use prohibited means of killing or taking wild birds.

The SMRs have often a negative focus: they require farmers refrain from doing certain actions, but do not compel them to carry out positive management actions. These latter actions would be more costly. In a number of cases such actions are prescribed in the already existing management regulations for these areas. Often then they are accompanied by compensatory payment schemes (agri-environmental payments).

For most countries the exact standards which hold for Natura 2000 areas are still in the process of stipulation and, or need further refinement or implementation at lower-layer governance levels. Similarly, for most countries the management plans for the Natura 2000 areas are still in the process of being designed.

The Natura 2000 sites often overlap with sites also covered by other regulations, such as for example the Sites of Special Scientific Interests in the UK, or the Ecological Network Structure in the Netherlands. The management requirements linked to these already existing schemes cover part or whole of the requirements following from the Birds and Habitat Directives.

As such the independent actions required by these Directives can be rather limited, which than also holds for the associated additional costs.

Sectors Affected

This directive affects all farmers to varying levels. All farmers need to comply with the requirements outlined in (b) above. More specific requirements affect those farmers located in SPAs or more generally the Natura 2000 sites.

Tables 2.1 and 2.2 indicate the magnitudes of the SPAs and SCIs (together forming the Natura 2000 areas), as well as some lines to put the special zones into a broader perspective. In particular a percentage share line is added (see lowest line of the tables) indicating the share of 'protected land' (excluding marine area) as a percentage of the member state's total land area. The data are derived from the EU's Biodiversity and Nature barometer, and reflect the situation at June 2006 (http://ec.europa.eu/environment/nature/nature_conservation/useful_info/barometer/barometer.htm).

Table 2.1 Some statistics about the SPAs

	France	Germany	Italy	Nether-lands	United Kingdom	Spain	Poland
Special Protected Areas x 1,000 ha	4,519.80	4,810.20	2,486.50	1,010.90	1,496.70	9,237.70	3,315.60
of which land	4,192.80	3,188.50	2,446.90	519.7	1425.7	9180.3	2,436.20
of which marine	326.9	1,621.60	39.6	491.3	71	57.4	879.4
Total Agricultural Area x 1,000 ha	29,433	17,008	15,097	1,924	16,352	25,297	16,136
Total Area x 1,000 ha	54,909	35,703	30,134	3,553	24,410	50,537	31,269
Land percentage share	7.6	8.9	8.1	14.6	5.8	18.2	7.8

Source: Nature and Biodiversity barometer EC (June 2006).

Table 2.2 Some statistics about the SCIs

	France	Germany	Italy	Nether-lands	United Kingdom	Spain	Poland
Special Area of Conservation or Sites of Community Importance x 1,000 ha	4,881	5,329	4,398	751	2,510	11,910	1,312
of which land	4,320	3,521	4,175	349	1,597	11,391	1,312
of which marine	561	1,809	223	403	913	519	0
Total Agricultural Area x 1,000 ha	29,433	17,008	15,097	1,924	16,352	25,297	16,136
Total Area x 1,000 ha	54,909	35,703	30,134	3,553	24,410	50,537	31,269
Land percentage							
Percentage share	7.9	9.9	13.9	9.8	6.5	22.5	4.2

Source: Nature and Biodiversity barometer EC (June 2006).

2.2.2 Protection of groundwater

The SMR standard

The Groundwater Directive is aimed at protecting the groundwater from contamination with hazardous substances. Farmers must:

- not knowingly permit the entry into groundwater of poisonous, noxious or polluting matter;
- not knowingly permit the disposal or tipping to land of any List I (e.g. organohalogen, organophosphorous or organotin compounds; mercury and cadmium and its compounds; mineral oils or cyanides) or List II (e.g. individual substances and the categories of substances of zinc, copper and nickel; certain biocides, toxic or persistent organic compounds of silicon; fluorides) substances which lead to an indirect discharge of that substance into groundwater, unless carried out under a permit granted by the authorities;
- take particular care with List I substances, such as sheep dip and pesticides, as small quantities can cause serious damage to groundwater;
- comply with notices served by the authorities for the protection of groundwater.

Sectors Affected

Sheep and arable sectors are mainly affected by this Directive. Organophosphorus compounds, as found in sheep dip, are one of the most prevalent of the substances listed in List I and List II. Arable farmers using plant protection products, and more generally all farmers using mineral oil products

Table 2.3 provides an overview of the sheep populations for the selected countries, as well as the utilised arable land areas (including horticulture).

Table 2.3 Some relevant member state characteristics with respect to the Groundwater Directive

	France	Germany	Italy	Nether-lands	United Kingdom	Spain	Poland
Sheep x 1,000	8,760	2,036	7,954	1,725	23,933	22,514	318
Holdings with sheep	81,430	30,400	78,590	14,730	84,560	91,950	17,900
Goat x 1,000	1,252	170	945	310	96	2,835	177
Holdings with goats	25,850	?	31,320	4,710	10,020	40,630	68,370
Area of arable and horticultural land x 1,000 ha	18,278	11,821	7,956	1,087	5,511	12,952	12,554
Arable and horticultural farms	432,100	305,100	1,041,800	58,600	115,600	558,300	2,020,400

Source: Number of holdings and area of arable land are data for 2003, Number of animals are data for 2005. LEI (2006).

2.2.3 Sewage sludge directive

The SMR standard

The Sewage sludge directive (86/278/EEG) sets limits on the use of sewage sludge subject to conditions for the protection of human health and the environment. Member states need to define these conditions. Supply of sludge is prohibited for use on grassland or forage crops if the grassland is to be grazed, as well as on soil in which fruit and vegetables are growing (with the exception of fruit trees) and vegetable crops which are normally in direct contact with the soil and normally eaten raw. Following this Directive, farmers and sludge providers must not allow sewage sludge to be used:

- unless it is tested according to the Sludge Regulations which includes checking that the limit on the average annual rate of addition of metals in the sludge is not exceeded;
- on a field unless the soil has been tested according to the Sludge Regulations which includes checking that the limit on the concentration of metals in the soil will not be exceeded by using the sludge;
- on soil if the soil pH is less than 5.

Farmers and sludge providers must not allow sewage sludge to be used:

- without taking account of the nutrient needs of the plants;
- if the quality of the soil, surface water or groundwater will be impaired through its use.

Sectors Affected

The above SMRs apply to all farms. However, the proportion of the land to which sewage sludge is applied will depend on each individual farmer's practices. In practice, this Directive affects a very small proportion of farms. Table 2.4 provides some agricultural sector characteristics relevant for assessing the potential impact of the sewage sludge requirements.

Table 2.4 Some characteristics relevant for assessing potential impact of sewage sludge

	France	Germany	Italy	Nether-lands	United Kingdom	Spain	Poland a)
Area of arable and horticultural x 1,000 ha	18,278	11,821	7,956	1,087	5,511	12,952	12,554
Area Grasland x 1,000 ha	9,860	4,966	4,378	791	5,690	7,058	3,276

Source: LEI (2006). Number for 2003.

a) See main text for more details about CC implementation in new member states.

2.2.4 Nitrate directive

The SMR standard

If land is located within a Nitrate Vulnerable Zone (NVZ), the farmer must comply with NVZ Action Programme Measures. These are roughly as follows:

- The organic manure loading averaged over the whole farmed area each year (beginning on 19 December) must be limited to:
 - 250 kg total N per hectare for grassland in any NVZ;
 - 170 kg total N per hectare for non-grass crops in any NVZ designated in 1996; or
 - 210 kg total N per hectare for non-grass crops in an NVZ designated in 2002 (this limit applies until 19.12.2006 and then will revert to the 170 kg limit).

These limits include N from manure deposited by animals while grazing.

- N cannot be applied during the following periods.
- Crop requirement limits must be respected by not applying more N than a crop requires, taking account of crop uptake, soil N supply, excess winter rainfall, and plant or crop available N from organic manures.
- Any material or fertiliser that contains N and is applied to the land must be taken account of in the N fertiliser calculations.
- There are a number of spreading controls:
 - N fertiliser and organic manures should be spread as evenly and accurately as possible;
 - Organic manures or N fertilisers cannot be applied where the ground is waterlogged, flooded, frozen hard or snow covered; cannot be applied to steeply sloping fields; and in a way that contaminates watercourses (where organic manures cannot be applied within 10m of watercourses).
- There must be sufficient slurry storage facilities (or alternative arrangements) to cater for the closed period.
- Farmers must keep farm and field records on cropping, livestock numbers, N fertiliser usage and manure usage, for a minimum of five years after the relevant activity takes place.

Several countries faced difficulties to properly implement the Nitrate Directive. Very recently The Netherlands changed its manure legislation because its earlier legislation (Minas system) was judged not to be EU proof.

Also infringements procedures were started against Italy and Germany. Italy, like some other EU member states, delayed application into national legislation of the Nitrate Directive for many years. This lack of macro-compliance did not preclude some regions to integrate the Directive into their legal framework, but others have been defaulting. As a consequence there currently exist significant differences over regions. Germany allowed 210kg N to be applied per hectare of grassland rather than the Commissions standard of 170 kg N per hectare. The procedures against Italy and Germany are currently still pending.

The Netherlands successfully applied for derogation, which was granted for a period of 4 years (2005-2009). This implies that the maximum allowance on grassland is 250kg N per hectare (rather than 170 kg N per hectare). Germany applied also for a derogation on grassland of 230 kg N per hectare, this is likely to enter into force as soon as the Directive is fully implemented.

Sectors Affected

All farms located in NVZs face the requirements of the Nitrate SMR. The SMR regulations requiring closed periods for the spreading of organic manures on sandy or shallow soils and will mainly affect dairy and pig farmers on those soils within the NVZ zones. All farms within the NVZ zones that apply manufactured N fertilisers could be affected by the closed periods for spreading these as the periods apply to arable and grassland.

Table 2.5 provides an overview of the magnitude of the nitrate vulnerable zones in the selected states. As the table and graph show in the Netherlands, a country with a high production intensity the whole agricultural land area is designated as a NVZ. As the detailed regional maps of the member states (see country reports) in all countries it are the regions with a high production intensity which are designated as NVZs (eg. Lombardy in Italy, Bretagne in France, etc.).

Table 2.5 The nitrate vulnerable zones in the selected member states

	France	Germany	Italy	Nether-lands	United Kingdom	Spain
Nitrate Vulnerable Zone x 1,000 ha	239,700	357,000	24,900	41,500	93,700	63,900
% of total area	44.1	100	8.3	100	38.4	12.6

Source: Commission 2007, Annex I.

Because of the deficits of the old pre-2006 manure policy of The Netherlands, the European Commission initiated an infringement procedure against the country. In October 2003 the European Court judged that the Dutch system was meeting the requirements of the Directive in a satisfactory manner. As a consequence recently the Netherlands amended its policy, which increased the restrictiveness of the regulation. The former manure policy (known under the acronym Minas) focused on so-called loss norms and was an ingenious bookkeeping system of nutrient flows to and from the farm. Its main drawback was that it was not EU-legislation-proof, since it allowed farmers to having a surplus (and paying a fine).

The new system was put in place 1 January 2006 introduced use norms rather than surplus, and does not allow transgression of the application norms. June 27 2005 the Nitrate Committee honoured the Dutch derogation request and derogation from the upper limit of 170 kg N was granted for a period of 4 years (2005-2009). The derogation facility allows farmers, which have more than 70% of their total land in use as grassland to apply 250kg N/ha originating only from manure of grazing animals.

Even though derogation was granted the new legislation requires significant adjustments. And Dutch farmers indicated the Nitrate Directive as being one of the most difficult SMRs to satisfy. Whereas in 2005 farmers were in compliance with Dutch national legislation, they were not with the Nitrate Directive. In 2006 the Dutch government appropriately applied the Nitrate Directive, therewith guaranteeing macro-compliance. In the same year the majority of farms indicated that a number of adjustments to the farming practice and organisation had to be made to achieve full compliance.

Box 2.1 The Dutch manure policy adjustment

2.3 Identification and registration of animals

2.3.1 Identification and registration of bovine animals

The SMR standard

The EU Directives on Identification and Registration of animals (92/102/EEG, and Regulations 911/2004, 1760/2000, and 21/2004) imply:

a. Eartags:

- Calves born on the holding (or imported from outside the EC) must be tagged, carrying approved eartags with the same unique identification code;
- Calves must be tagged within 20 days of birth, or before they leave the holding, if this is sooner. Dairy calves must be tagged with one eartag within 36 hours and the other eartag within 20 days;
- Eartags must not be removed or replaced without permission. Illegible or lost tags must be replaced within 28 days.

- b. Cattle passports:
 - An application must be made for a cattle passport within seven days of a calf being tagged (that is, no more than 27 days after birth);
 - When cattle are moved, you must ensure that they are accompanied by their cattle passports, which must be completed and signed.
- c. Notification:
 - Births must be notified to the responsible authorities by an application for a cattle passport within seven days of tagging (that is, no more than 27 days after birth);
 - Deaths must be notified to the registration authorities within seven days;
 - Movements of cattle on and off a holding must be notified within three days.
- d. On-farm registers:
 - Up-to-date on-farm registers must be kept with the required information, including births and deaths of cattle and movements of cattle on and off your holding. The dates of these events must also be recorded;
 - For movements, the details of keepers who sent the cattle and to whom cattle are consigned must be recorded;
 - The register must be completed within 36 hours of a movement, within seven days of a death and within seven days of a birth in a dairy herd (or within 30 days of the birth of any other calf);
 - The register must be kept for ten years and be available to the authorities on request.

Sectors affected

All farms holding bovine animals are affected. These SMRs apply to all cattle including dairy cows. It is difficult to estimate the precise number of eartags that are lost or illegible. Based on a survey done among Dutch farmers loss-rates were found varying from 2% to 20%. Similar numbers were reported for Germany. Table 2.6 provide an overview of the cattle animal numbers of the selected member states, as well as an estimate of the number of holdings concerned.

Table 2.6 Cattle numbers and cattle-holdings in the selected member states

	France	Germany	Italy	Nether-lands	United Kingdom	Spain	Poland a)
Bovine animals x 1,000	18,930	12,919	6,460	3,746	10,160	6,467	5,385
Holdings with Bovine Animals	258,210	196,550	147,850	39,190	111,300	150,800	935,190

Source: LEI (2006). Number of bovine animals in 2005, number of holdings in 2003.

a) See main text for more details about CC implementation in new member states.

2.3.2 Identification and registration of ovine and caprine animals

The SMR standard

The identification and registration of ovine and caprine animals, as prescribed by EC Regulation 21/2004, implies the following:

a. Identification:

- all sheep and goats born before 9 July 2005 must be properly identified in accordance with EC Directive 92/102 except that, where animals did not previously have individual numbers, they will be required to do so now when they leave the holding;
- all sheep and goats born on the holding after 9 July 2005 must be identified with an eartag, within six months of birth for intensively farmed animals and nine months for extensively farmed animals, or before they leave the holding of birth;
- sheep and goats must be properly identified with the correct eartags, before they leave the holding;
- identification must not be removed or replaced without permission unless it is lost or illegible. You must also ensure that you apply the appropriate identification, as required;
- up-to-date on-farm records must be kept with the required information, including;
- an inventory of the animals kept at regular intervals, and in any case annually;
- details of the movement of sheep and goats on and off the holding, including the date of the movement, the destination or origin of animals, and their identification.
- the on-farm records must be kept for at least six years and shown to an inspector on demand.

Sectors Affected

All farms which have sheep and goats are affected. table 2.7 provides some further details in the sheep stock for the selected member states.

Table 2.7 The stock of sheep in the selected member states

	France	Germany	Italy	Nether-lands	United Kingdom	Spain	Poland a)
Ovine and caprine animals x 1,000	10,012	2,206	8,899	2,035	24,029	25,349	495
Holdings with sheep	81,430	30,400	78,590	14,730	84,560	91,950	17,900
Holdings with goats	25,850	?	31,320	4,710	10,020	40,630	68,370

Source: LEI (2006). Number of animals in 2005, number of holdings in 2003.

a) See main text for more details about CC implementation in new member states.

The identification and registration requirement is one of the SMRs EU farmers are struggling with most. Formally animals had to be identified within 20 days, but often countries have their own, more stringent rules. One of the problems with this requirement is that the double eartags that the animals should carry often get lost and then have to be replaced within a restricted time. It is interesting to compare the European experience with that of New Zealand (see Section 6.4 for a more general discussion of this key competitor of the EU).

The evolution of New Zealand's current identification and traceability system is different from the EUs, among others because the country has a different history of animal disease outbreaks. BSE, for example, an animal disease which fuelled the identification and traceability requirements, does not exist so far in the country. However, the country as one of the world's important agricultural exporters has strong commercial interests. In order to reduce these market risks the government is supportive of an industry-driven process that is well underway now.

The Animal Identification and Traceability Working Group (AITWG) has proposed that the currently existing identification systems be enhanced and that electronic tracing of animals of animals shall be implemented using a centralised register of core data which approved users can access. The electronic system will be first applied to the cattle and deer sectors, with first a voluntary uptake leading to mandatory adoption of a modified national identification system in October 2007.

The electronic system not only is a more technically advanced system than the EU's double eartag system, it is also much cheaper, less sensitive to tag-loss, and probably more animal friendly. The variable costs per animal of the electronic system are \$NZD0.30 per cow, or €0.16 per cow, which is much less than the €2.75 per cow in The Netherlands or the €1.80 per cow in France.

Box 2.2 I&R, history and technology: the case of New Zealand

2.4 Public, animal and plant health

2.4.1 Plant protection products

The SMR standard

The Directive on the placing of plant protection products on the market (91/414/EEC) implies that:

- a. farmer must not use any plant protection product unless:
 - it has been officially approved.
- b. it is used in accordance with any requirement or condition which is:
 - specified in the approval or in any extension of use;
 - required by the approval or extension of use to be on the labelling.
- c. it is used in accordance with the principles of 'good plant protection practice'
 - 'Good plant protection practice' is the practice whereby the treatments with plant protection products applied to a given crop or area in conformity with the conditions of their approved uses, are selected, dosed and timed to ensure optimum efficacy, taking due account of local conditions and of the possibilities for cultural and biological control.
- d. whenever possible, it is used in accordance with the principles of integrated control.
 - 'Integrated control' means the rational application of a combination of biological, biotechnological, chemical, cultural or plant-breeding measures whereby the use of chemical plant protection products is limited to the minimum strictly necessary to maintain harmful organisms below levels above which economically unacceptable damage or loss would occur.

Sectors Affected

These requirements only apply if plant production products are used on the holding. The requirements affect arable and mixed farms, including horticulture where other premiums have been claimed in the past. It also affects dairy holdings, where maize is often grown. Table 2.8 provides some agricultural sector characteristics relevant in assessing the potential impact of the plant protection products requirements.

Table 2.8 Agricultural sector characteristics relevant for the Plant protection products Directive

	France	Germany	Italy	Nether-lands	United Kingdom	Spain	Poland a)
Total sales of pesticides(ton active I ingredient)	99,635	27,885	76,346	7,865	32,971	35,700	?
Area of arable land x 1,000ha	18,278	11,821	7,956	1,087	5,511	12,952	12,554
Area of maize land x 1,000ha	1,451	1,290	269	224	117	1,451	286
Arable Holdings (x 1,000)	432.1	305.1	1,041.8	58.6	115.6	558.3	2,020.40

Source: LEI (2006).

a) See main text for more details about CC implementation in new member states.

2.4.2 Food traceability systems/matters of food safety

The SMR standard

The provisions from the EC regulation 178/2002 relevant for CC (articles 14, 15, 17-20) have the following implications:

- food must not be placed on the market if it is unsafe. Procedures must be followed if food believed to be unsafe enters the market;
- unsafe feed should not be placed on the market or be fed to food producing animals if it is unsafe. Feed is deemed to be unsafe for its intended use if it is considered either to have an adverse affect on human health or animal health, or if it makes the food derived from food producing animals unsafe for human consumption;
- adequate records and documentation should be kept. Traceability systems and procedures should be in place and be maintained in proper order for both inputs to and outputs from the business. This traceability information must be made available to the competent authorities on demand. A farmer will need to be able to identify:
 - any person or business from whom you have been supplied with a food, a feed, a food-producing animal or any substance that will be incorporated into a food or feed;
 - any businesses that you have supplied with any of your products.

- farmer should comply with rules on storage to prevent cross-contamination from hazardous products;
- adequate measures should be taken to prevent the spread of contagious diseases;
- feed additives, veterinary medicinal products or biocides should be correctly used;
- on the sourcing of feed, farmers rearing animals, whether for food or for their products, must only source and use feed from establishments that are registered and/or approved;
- record keeping for: (a) veterinary medicinal products, or other treatments, administered to your animals; the dates of the treatment and the withdrawal period; (b) the results of any analyses carried out on samples taken from food-producing animals, plants or other samples taken for diagnostic purposes, that have importance for human health; (c) any relevant reports on checks carried out on animals or products of animal origin; (d) use of plant protection products and biocides; (e) any use of genetically modified seeds (in feed production);
- there are additional requirements concerning dairy hygiene;
- there are additional requirements for egg hygiene.

Farmers sometimes also need to comply with the new feed hygiene regulation (EC) 183/2005, although this is not an SMR.

Sectors Affected

This applies to all farmers. The dairy and egg producing farming sectors are subject to more specific hygiene requirements. Table 2.9 provides some statistics indicating the number of cattle and poultry holdings for the selected member states.

Table 2.9 Some relevant country indicators with respect to food safety regulation

	France	Germany	Italy	Nether-lands	United Kingdom	Spain	Poland a)
Farm Holdings x 1,000	606.4	410.6	1,962.50	42.2	244.6	1,120.80	2,144.70
Holdings with cattle x 1,000	258.2	196.6	147.9	39.2	111.3	150.8	935.2
Holdings with poultry x 1,000	195.5	93.3	141.8	2.7	40	192.6	1,127.80

Source: LEI (2006). Number of bovine animals in 2005, number of holdings in 2003.

a) See main text for more details about CC implementation in new member states.

2.4.3 Hormones and beta-antagonists

The SMR standard

EU Directive 96/22/EC on hormones and beta-antagonists implies that: Farmers must not:

- store substances containing or related to oestradiol 17 β , beta-agonists that are for induction purposes in the treatment of tocolysis, or products containing these substances on the farm;
- use hormonal substances for growth promotion;
- use substances containing or related to oestradiol 17 β for oestrus induction in farm animals after October 2006. (You should note that domestic law allows the use of oestradiol 17 β or its ester-like derivatives only for oestrus induction in cattle, horses, sheep or goats or for treating cattle for foetus maceration, mummification or pyometra. However, its use for oestrus induction in cattle, horses, sheep or goats is prohibited from 14 October 2006.)

Farmers must:

- use only authorised veterinary medicinal products for their authorised purposes;
- obtain medicines through a veterinary surgeon or a registered pharmacy;
- follow the instructions for use;
- update medicines records whenever these substances are used on the farm;
- follow the withdrawal periods as laid out in the product's instructions for use or veterinary prescription.

The types of substances whose uses are limited by this SMR include:

- oestrogens, such as oestradiol and zeranol;
- androgens, such as testosterone;
- gestagens, such as melengestrol acetate;
- thyrostats, such as methylthiouracil;
- stilbenes, such as diethyl stilboestrol;
- beta-agonists, such as salbutamol and clenbuterol.

Sectors Affected

All livestock farms including cattle, horses, sheep or goats. Table 2.10 provides some relevant numbers on livestock numbers and holdings.

Table 2.10 Some relevant country indicators with respect to the Directive on hormones and beta-antagonists

	France	Germany	Italy	Nether-lands	United Kingdom	Spain	Poland a)
Holdings keeping cattle x 1,000	258.2	196.6	147.9	39.2	111.3	150.8	935.2
Holdings keeping sheep x 1,000	81.4	30.4	78.6	14.7	84.6	92	17.9
Holdings keeping goats x 1,000	25.9	?	31.3	4.7	10	40.6	68.4

Source: LEI (2006). Number of holdings in 2003.

a) See main text for more details about CC implementation in new member states.

2.4.4 Notification of diseases

The SMR standard

According to the Directives on notification of diseases (Directives 2003/85/EC, 92/119/EEC and 2000/75/EC; Regulation 999/2001) the suspected or confirmed presence of several animal diseases, e.g. food-and-mouth disease, swine vesicular disease, and bluetongue, has to be notified immediately to the competent authority.

Sectors affected

The affected sector are all holding on which cattle, swine and sheep and goats are present. Tables 2.11, 2.12 and 2.13 present an overview of the relevant animal numbers and holdings.

Table 2.11 Foot and mouth and BSE disease notification and cattle numbers

	France	Germany	Italy	Nether-lands	United Kingdom	Spain	Poland a)
Cattle x 1,000	18,930	12,919	6,460	3,746	10,160	6,467	5,385
Holdings with cattle x 1,000	258.2	196.6	147.9	39.2	111.3	150.8	935.2

Source: LEI (2006). Number of cattle in 2005, number of holdings in 2003.

a) See main text for more details about CC implementation in new member states.

Table 2.12 Swine vesicular disease notification and swine numbers

	France	Germany	Italy	Nether-lands	United Kingdom	Spain	Poland a)
Pigs x 1,000	15,117	26,989	9,200	11,000	4,724	24,889	18,711
Holdings with pigs x 1,000	52.99	102.17	124.44	10.73	10.86	130.75	760.57

Source: LEI (2006). Number of pigs in 2005, number of holdings in 2003.

a) See main text for more details about CC implementation in new member states.

Table 2.13 Bluetongue disease notification and some relevant sheep and goat numbers

	France	Germany	Italy	Nether-lands	United Kingdom	Spain	Poland a)
Sheep x 1,000	8,760	2,036	7,954	1,725	23,933	22,514	318
Holdings with sheep x 1,000	81.4	30.4	78.6	14.7	84.6	92	17.9

Source LEI, 2006. Number of sheep in 2005, number of holdings in 2003.

a) See main text for more details about CC implementation in new member states.

2.5 Animal welfare

The provisions of animal welfare (housing requirements for calves and pigs) did become relevant for cross compliance in 2007. As such they are often not yet included in the checklists and brochures provided to farmers by the agricultural authorities.

2.5.1 Housing of calves

The SMR standard

The main aspects ruled in the EU legislation with respect to the housing of calves (Directive 91/629 and its amendments 97/2 and 97/187) are:

- the use of individual boxes (for animals over 8 weeks of age) and the tying of calves is forbidden;
- minimum standards on stock rate should be respected;
- regular animal and equipment checking should take place;
- requirements with respect to barn hygiene and floor quality should be respected (including requirements with respect to air circulation, temperature, relative air humidity, maximum gas concentrations within buildings, and light requirements);

- calves must be provided with an appropriate diet adapted to their age, weight, and behavioural and psychological needs (including requirements with respect to iron and fibre).

Sectors affected

The affected sectors are all holding on which calves are present, and more in particular holdings specialised in veal production. Table 2.14 presents some characteristics about the number of calves slaughtered, the veal production in the selected countries (includes production coming from animals of foreign origin), and the number of holdings with bovine animals. On the latter at some stage usually also calves will be or are likely to be present.

Table 2.14 Some characteristics of the calves sector

	France	Germany	Italy	Nether-lands	United Kingdom	Spain	Poland a)
Calves slaughtered x 1,000 head	1,777	378	984	1.382	102	202	175
Veal production x 1,000 ton	237	46	141	198	3	32	9
Holdings with Bovine Animals x 1,000	258.2	196.6	147.9	39.2	111.3	150.8	935.2

Source LEI, 2006. Number of animals in 2005, number of holdings in 2003.

a) See main text for more details about CC implementation in new member states.

2.5.2 Housing of pigs

The SMR standard

The housing requirements of pigs (as specified in Directives 91/630, and 2001/88) involve the following conditions:

- it is forbidden to tie sows and gilts;
- it is forbidden to use a complete slatted floor for sows and gilts;
- it is forbidden to isolate the sow during the period between 4 weeks after insemination and the week before farrowing;
- maximum stock rates for different pig categories should be respected;
- slatted floors should satisfy minimum standards.

Usually in the national laws a differentiation is made between existing pig barns and facilities and new ones. In general new housing facilities have

to satisfy all the specified requirements mentioned above. Existing pig farms and housing facilities are granted an adjustment period. In Italy, for example, all farms have to comply in 2013.

Sectors affected

All farm holdings involved in breeding, reproduction and fattening of pigs will be affected. Table 2.15 provides some relevant characteristics of the pig sectors of the countries considered.

Table 2.15 Some characteristics of the pigs sector

	France	Germany	Italy	Nether-lands	United Kingdom	Spain	Poland a)
Fattening pigs x 1,000	5,764	10,389	4,739	3,850	1,744	9,948	5,808
Other pigs (sows, piglets, boars) x 1,000	9,353	16,600	4,461	7,150	2,980	14,941	12,903
Holdings with pigs	52.99	102.17	124.44	10.73	10.86	130.75	61

Source: LEI (2006). Number of animals in 2005, number of holdings in 2003.

a) See main text for more details about CC implementation in new member states.

2.6 Conclusions

Reviewing the described SMRs, it shows that nearly all agricultural sectors are affected and required to realise some minimum standards with regard to the environment, food safety and traceability, animal welfare and sustainable or 'good' farming practices.

The SMRs contribute to create an equal level playing field with respect to minimum standards for agricultural production. Whereas the requirements may be similar across countries, the sector structure and geophysical conditions may be not. As such the impact of the SMRs might be different in different countries, irrespective of the rules being similar across countries.

Several countries have had (and still have) problems with properly implementing the Nitrate Directive. This has led to infringement procedures against some member states. The necessary (recent) adjustments made in national legislation in order to achieve compliance at member state or macro-level, might have an impact on the degree of compliance as well as farm actions undertaken to improve compliance with the new (more strict) requirements (see also later chapters).

3. Comparative analysis of the implementation of 'good agricultural and environmental condition' regulations in selected EU member states

3.1 Introduction

Whereas the SMRs that are part of the cross compliance package concern pre-existing legislation, the Annex IV requirements on keeping agricultural land in good agricultural and environmental condition (GAECs) contain, although not exclusively, new elements. Several countries (cf. Netherlands as one example) have put existing national legislation under the GAEC-heading. Table 3.1 summarises the main results found.

3.2 Specific requirements

3.2.1 Soil erosion

Two sets of measures are introduced to control soil erosion: post-harvest measures, mainly in regard to soil coverage after the main crop has been removed from the land, and 'other soil erosion measures', including measures on sloping soils to control land management practices (see also table 3.1).

As table 3.1 shows, for France, Italy, Spain and Poland no specific requirements were observed with respect to post-harvest measures. Germany, The Netherlands and The United Kingdom have soil cover requirements. The UK's requirement is the most extensive since it requires the application of a cover crop on all arable land. For Germany this is only required for 40% of the total area, whereas for The Netherlands cover crops are only required after cereals and maize. Also in The Netherlands, a post-harvest soil tillage at minimal depth of 20 cm is required.

With regard to other soil erosion measures all EU countries considered in this analysis have noted requirements. The requirements in particular focus on crop growing on sloping land. Germany and The Netherlands have requirements with respect to the preservation of grasslands on sloping areas. The UK's requirement which prohibits overgrazing also indirectly refers to grassland preservation. Another set of measures are in regard to soil treatment. Germany precludes the ploughing of grasslands. Germany and

Poland have a clause on retaining terraces. Italy, the United Kingdom, Spain and Poland have requirements aimed at reducing the run-off from sloping land, be it by creating furrows (Italy), hedge rows (UK, and Poland), or vegetation rowlines (Spain). France, the UK and Spain explicitly require erosion reducing buffer strips or zones.

3.2.2 Soil organic matter

The requirement to maintain soil organic matter is achieved by two kinds of interventions: stubble management and crop rotation requirements.

Stubble management conditions are imposed in all selected EU countries, except for France. Stubble burning is generally prohibited, although some countries (notably Italy and Spain) allow for exemptions.

With respect to crop rotation five out of the seven selected EU countries have no specific requirements. Only France and Germany have restrictions in place. They both require a crop rotation scheme that should at least include three different crops (dispensations for monocropping in France). Moreover the crop rotation is linked to its impact on the soil organic matter content by requiring obligatory soil sample analysis. This analysis should show that the crop rotation scheme balances the humus content of the soil.

3.2.3 Soil structure

The preservation of soil structure is dealt with in all selected countries except for Germany and Poland. The requirements vary from maintaining drainage networks to prohibitions on driving and working on swamped, flooded or snow covered land. The United Kingdom and Spain have requirements preventing mechanical operations on waterlogged soils. In the Netherlands removing of wheel tracks after seeding sugar beet and maize is required.

3.2.4 Minimum level of maintenance

The minimum level of maintenance requirement consist of four types of requirements: minimum stocking rates, retaining a sufficient permanent pasture area, preservation of landscape features, and the avoidance of unwanted vegetation.

Table 3.1 GAEC requirements for selected countries

GAEC theme	France	Germany	Italy	Netherlands	United Kingdom	Spain	Poland a)
Soil erosion control							
Post-harvest measures	n.a.	Plant cover on at least 40% of the area from 1/12 till 15/2	n.a.	Post-harvest soil tillage at minimal depth of 20 cm. Obligatory follow-up green manure crop after maize and cereal crops.	Stubble must remain on land, cover crop after harvest	n.a.	n.a.
Other measures	Buffer strips along watercourses (5-10m)	Retain terraces and no ploughing up of grassland on slopes. Appropriate landuse on land vulnerable to erosion.	Realisation of furrows on slopes at maximum distance of 80m.	No erosion enhancing crops on slopes greater than 2%. Only grassland on slopes greater than 18%.	Soil protection review. No cultivation of fertiliser with 2 metres of hedge-row. Prevention of overgrazing.	Prohibition to grow herbaceous crops on slopes greater than 10%. Compulsory maintenance vegetation rowlines on slopes greater than 15% are required.	Arable land with a slope greater than 20% should not be used for cultivation Of crops that require maintenance of ridges along the slope and may not be bare fallow.

a)Poland has chosen to receive direct payments under the Single Area Payment Scheme and faces a different regime until 2009-10, when they will switch to the Single Payment Scheme and all cross compliance requirements will have to be satisfied

GAEC theme	France	Germany	Italy	Netherlands	United Kingdom	Spain	Poland
Minimum level of maintenance							
Minimum stocking rates	n.a.	n.a.	Regions may apply minimum or maximum stocking rates	n.a.	n.a.	6 different agro-pasture system specific minimum stocking rates, restrictions on undergrazing and overgrazing	n.a.
Permanent pastures	n.a.	When permanent pastures decrease by 5%, Länder intervene by ploughing prohibition. When 8% decrease reseeded obligations are imposed	No reduction and maintenance of pastures in mountain areas	If the ratio of grasland decreases by more than 10% reconversion of land into permanent pasture is ensured	n.a.	n.a.	Meadows and pastures may be used interchangeably
Landscape features	n.a.	No destruction of hedges, groves, wetlands and single trees (felling license is needed)	Pruning of olive tree at least once every 5 years. Maintenance of terraces, prohibition of their elimination	n.a.	No destruction of stone walls, no hedge row trimming between 1/3 and 31/7. Tree preservation order.	Take all measures to retent terraces and existing ridges in good conditions, avoiding ruins and collapse	

GAEC theme	France	Germany	Italy	Netherlands	United Kingdom	Spain	Poland
Minimum level of maintenance							
Minimum stocking rates	n.a.	n.a.	Regions may apply minimum or maximum stocking rates	n.a.	n.a.	6 different agro-pasture system specific minimum stocking rates, restrictions on undergrazing and overgrazing	n.a.
Permanent pastures	n.a.	When permanent pastures decrease by 5%, Länder intervene by ploughing prohibition. When 8% decrease reseeded obligations are imposed	No reduction and maintenance of pastures in mountain areas	If the ratio of grassland decreases by more than 10% reconversion of land into permanent pasture is ensured	n.a.	n.a.	Meadows and pastures may be used interchangeably
Landscape features	n.a.	No destruction of hedges, groves, wetlands and single trees (felling license is needed)	Pruning of olive tree at least once every 5 years. Maintenance of terraces, prohibition of their elimination	n.a.	No destruction of stone walls, no hedge row trimming between 1/3 and 31/7. Tree preservation order.	Take all measures to retent terraces and existing ridges in good conditions, avoiding ruins and collapse	

GAEC theme	France	Germany	Italy	Netherlands	United Kingdom	Spain	Poland
Avoid unwanted vegetation	On set-aside prevention of scrubs and weeds	Set aside land cut each year, vegetation cover obligatory, no cutting and mowing between 1/4 and 15/7	Set aside lands, in Natura 2000 prohibition of cutting from 1/3 till 31/7, in other areas from 15/3 15/7	n.a.	Scrub cutting at least once every 5 years, no cutting between 1/3 and 31/7	??	Arable land should not lay fallow longer than 5 years. Land is considered fallow if it is cut prior to 15/7 and undergoes cultivation measures preventing weeds from occurring and spreading

With respect to stocking rates, only Spain imposes certain restrictions which are related to specific agro-pasture systems and aimed at avoiding both overgrazing and undergrazing. In Italy regions are allowed to take some measures restricting stocking densities, but no such rules exist at the Italian country level, neither does it for the other distinguished EU countries.

As required by the EU Regulation permanent pasture area (used as grassland for a period of 5 years or more) may not decline beyond 90% of the level of 2003. All countries impose restrictions to ensure this, although they differ with respect to the allowances that are made to account for grassland reconstruction and improvement.

As regards the preservation of landscape features countries come up with divergent measures: no destruction of wetlands, hedges, groves and single trees (Germany), regular pruning of olive trees and maintenance of terraces (Italy), no destruction of stone walls, limits on hedge row trimming and tree preservation (UK), and retention of terraces and existing ridges (Spain). France, The Netherlands and Poland do not report specific measures. With respect to the avoidance of unwanted vegetation in particular restrictions regarding the proper management of set-aside land are taken. France and the United Kingdom have requirements to prevent scrub. Germany, Italy and the United Kingdom put limitations on the period when cutting is allowed, therewith protecting wildlife. Finally, France and Poland require adequate treatment against weeds and their spreading.

3.3 Conclusions

Comparing the post-harvest measures as well as the 'other measures' there is a lot of variation across countries. This is partly due to differences in national circumstances. A flat country like The Netherlands, for example, has only a limited region where slopy soils are important. There was already a requirement that farmers were required to take action (and show this in a plan) to control erosion. For other countries sloping areas play a much more important role. The differences in standards are likely to not only reflect differences in local soil conditions and cropping practices, but also past local efforts and standards used to cope with erosion problems.

Requirements on soil organic matter are introduced to a limited extent only. This may be due to an already adequate treatment of this issue in the regular crop rotation schemes. However, there are some signals (see later), that in this area more could have been done.

A number of requirements are formulated regarding preserving soil structure. These requirements could pose difficulties with respect to monitoring compliance, because certain actions have to be taken only at a specific time and are difficult to detect outside this observation-period.

Whereas only a few countries apply stocking density regulations, this issue is likely to be dealt with also indirectly by the requirements on manure use (see discussion of Nitrate Directive). So, there are SMRs which are indirectly contributing to the objectives of the GAECs.

As a qualifier it should be added that when in the country studies no requirements are reported, this does not necessarily imply there is no kind of regulation in place.

4. Degree of compliance and impact on costs

4.1 Introduction

This chapter discusses the estimated degree of compliance as well as the estimated costs of compliance. Since the measurement of both is rather complicated, separate sections are added to explain the approaches followed (see sections 4.2 and 4.5).

4.2 Methodology of measuring compliance

Regarding the measurement of compliance two ways could be followed. One approach is to rely simply on the results of the monitoring and inspection services. This could be labelled as the official approach. If only a few violations are detected this can then be interpreted as signalling a high degree of compliance. However, there are several qualifications which have to be taken into account. For example, how to interpret this information if there are no systematic inspections?

Also issues of sample selection and the intensity of inspection clearly matter. An inspection agency which inspects 'suspected' farms is likely to end up with a higher rate of violation than the agency following a random sample selection procedure. Similarly, a country which has an intensive inspection and monitoring regime is likely to detect a higher number of violations than a country which chooses an extensive inspection regime. Paradoxically it might even be the case that a country which takes inspection and monitoring very seriously, will end up with detecting a lot of violators. This might, relative to the country which chooses a loose inspection and monitoring regime, suggest a bad performance of the country taking inspection seriously.

It will be clear from the previous remarks that it is very difficult to make comparative statements on the degree of compliance, when relying only on monitoring and inspection accounts. Alternatively one could rely on interviews with experts and extension service, groups of farmers. Within the

project also these kind of approaches were followed to obtain and cross-check information.¹

In the survey done among Dutch farmers, farmers were asked questions which allowed cross-checking. If directly asked whether one complies most farmers are likely to respond 'yes' and the degree of compliance estimate will approach 100%.

In the survey questions about the degree to which farmers felt themselves informed were incorporated. From this it appeared for example that X percent of the Dutch dairy farmers were uncertain about fully understanding the requirements and about their exact degree of compliance. Interestingly, about 14% of the sample indicated in room left over for 'remarks' that they would be happy with a trial inspection in order to check their degree of compliance. Partly this uncertainty might have increased because the detailed questions of the survey might have given some the feeling that they did not yet consider all the details implied in the requirements.

Another group of questions in the survey asked farmers about the requirements where they felt that further improvement of their situation was necessary. Several farmers, who initially signalled 'full compliance' indicated at the same time that further improvements were necessary. Partly this might be due to a change in the Dutch manure legislation, which makes the on-farm restrictions more severe, without all farms, which even might have been fully complying to the old regulation, complying with the new regulation, without taking further action.

An alternative estimator of the degree of compliance could be obtained from the monitoring and inspection agencies. Unfortunately this sample inspection information is usually not easy to generalize to the whole population. Nevertheless, when comparing the general picture out of this information with the survey results, it seems that both show similar patterns, an exception being the Plant Protection Products-requirement, which show a relatively high number of detected offences in the official inspections, whereas this was not the case in the farm survey.

Box 4.1 Cross-checking compliance measurement

4.3 Degree of compliance

Table 4.1 summarises the estimated degree of compliance for all SMRs as well as for the GAECs. Because of the uncertainties and problems with exact measurement general classifications are made rather than reporting specific numbers. The following legend was used. Compliance is considered very high

¹ Although within the time span of the project member states reported to the Commission about their status with respect to cross compliance (implementation and monitoring), these results were not available for our analysis.

if the degree of compliance is greater than 95% (95% of the farmers or more are fully compliant). Compliance is labelled as 'high' in case the degree of compliance is in the interval 90 - 95%. Compliance is labelled as 'not high' if compliance rates were in interval 80 - 90%. Compliance was labelled 'low' when the degree of compliance was in the interval 70 - 80%. It was labelled as 'very low' when the degree of compliance was in the interval 40 - 70%. Finally, it was labelled to be 'extremely low' in case of compliance rates below 40%. For a detailed comments about usually country specific measurement procedures followed (sample, experts, etc.) one should consult the underlying reports.

The general impression from table 4.1 is that compliance is rather high for the groundwater protection and sewage sludge requirements. With respect to the Nitrate Directive and the identification and registration of bovine and ovine and caprine animals compliance rates are significantly below the level of full-compliance.

In a number of cases the rates of compliance were difficult to establish. A first example are the Birds and Habitat Directives, where for most countries the areas are now properly selected, but where in most cases still the management plans have to be defined and implemented. As such this prohibits detection of non-compliance.

A second example is the requirement to notify diseases like Foot and Mouth, BSE, swine vesicular disease and Bluetongue. Whether notification is properly done can be only observed in case of outbreaks. Although this complicated the empirical measurement of compliance, it is still estimated that compliance will be very high.

As regards animal welfare, these requirements have become part of cross compliance in 2007. This might explain why no systematic information about compliance was yet available, although in principle this does not preclude the measurement of compliance, since the legislation is already there, independent from cross compliance.

A lack of compliance remains to be further qualified. When compliance is lacking this could reflect different situations. A farmer who by far not meets the requirements does not comply, as does a farmer which only lacks compliance in a minor respect. It turned out to be infeasible to obtain a more refined understanding on the qualification of compliance with standards.

More importantly one would like to assess whether the introduction of cross compliance is likely to lead to an improved rate of compliance. In principle this would require a comparison of the rate of improvement in compliance without cross compliance introduced (reference rate of

improvement or deterioration in compliance) with the rate of improvement in compliance as observed under cross compliance. Even without cross compliance, compliance with standards might improve over time because of the ongoing investments and upgrading of production facilities. In general it was not possible to make such an analysis, which would require a time series analysis of rates of compliance.

However, even without such an analysis, it is possible to combine rates of compliance with expected improvements in compliance. If the current rate of compliance is already very high, the rate of improvement due to cross compliance is likely to be limited. On the other hand, where current rates of compliance are low, potentially cross compliance can contribute to improvement in compliance.

Note that as table 4.1 shows for Poland hardly any information about levels of compliance was available. Note however that for Poland, which as a New Member State faces an implementation regime that differs from that of the old member states, this is partly due to its special position (until 2009 only the GAECs apply). The estimates for compliance to the SMRs given for Poland provide an estimate of its current status (to rules which not yet apply).

As regards Spain cross compliance measures tied to single farm payments have been introduced not before January 2006. A discussion at a more detailed level follows in the subsequent sections.

Table 4.1 Estimated degree of compliance (observations mainly based on 2005 data; see main text for used Legend)

	Environment	France	Germany	Italy	Netherlands	United Kingdom	Spain	Poland
Environment	Birds and habitat directives	n.a. probably very high	management plans not yet in place in most areas	management plans not yet in place in most areas	very high	very high	very high	low
	Protection of groundwater	not very high for exhaustible oils	very high	very high	high	very high	very high	extremely low
	Sewage sludge directive	very high	very high	very high	very high	very high	very high	very high
	Nitrate directive	dairy farmers low and beef farmers extremely low	not high	extremely low national implementation tool place only recently	low (mainly due to recent change in the regulations)	very high	high	extremely low to very low
	Identification and registration	France	Germany	Italy	Netherlands	United Kingdom	Spain	Poland
Identification and registration of animals	Identification and registration of bovine animals	high but not always within 7 days	very low	n.a. databank working since 2005	very high	low	very high	very high
	Identification and registration of ovine and caprine animals	extremely low new regulation since 2005	very low	n.a. databank working since 2005	high	very high	very high	very high
	Public, animal and plant health	France	Germany	Italy	Netherlands	United Kingdom	Spain	Poland

Public, animal and plant health	Plant protection products	high, no precise estimate available	n.a.	n.a.	high	n.a	n.a	
	Food traceability and food safety	n.a.	n.a.	n.a.	high	n.a.	n.a.	
	Hormones and beta-antagonists	n.a.	n.a.	n.a.	n.a.	nearly all farmers comply	n.a.	estimated to be high
	Notification of diseases	high, no precise estimate available	n.a.	n.a.	high	n.a. since 1 January 2006 imposed	n.a.	
	Animal Welfare	France	Germany	Italy	Netherlands	United Kingdom	Spain	Poland
Animal welfare	Housing of calves	expected to be high	expected to be high	expected to be high	expected to be high	expected to be high	n.a.	very low
	Housing of pigs	expected to be high	expected to be high	expected to be high	expected to be high	expected to be high	n.a.	very low
Good agricultural and environmental condition	Good agricultural and environmental condition	France	Germany	Italy	Netherlands	United Kingdom	Spain	Poland
	Soil erosion control	n.a.	very high	n.a.	not high	very high	very high	high
	Maintain soil organic matter	n.a.	very high	n.a.	not high	very high	very high	high
	Soil structure	n.a.	very high	n.a.	not high	very high	very high	high
	Minimum level of maintenance	n.a.	very high	n.a.	not high	very high	very high	high

The survey done among farmers in the Netherlands allows for some estimates of the improvement of compliance as well as the seriousness of non-compliance (see table 4.2 about compliance of Dutch dairy/beef farmers).

Table 4.2 Some impact-estimates of cross compliance: the case of Dutch dairy/beef farmers

Theme	Estimated degree of compliance	Estimated seriousness of non-compliance	Estimated % of farmers who made CC-in	Estimated degree of compliance after 2005 in %	Percentage improvement in rate of compliance as compared to pre-2005
Birds and Habitat					
Directive	85.3	Non-serious	4.6	95.4	12%
Protection of groundwater	81.5	Non-serious	18.5	88.9	9%
Sewage sludge Directive	100	Non-serious	0	100	0
Nitrate Directive	74.8	Serious	30	75	0.50%
Identification and registration of bovine animals	75.2	Non-serious	24.8	93.6	25%
Food traveability and food safety					
Notification of diseases	70.1	Unknown	29.9	92.5	32%
Housing of Calves	86	Non-serious	10.3	89.7	4%
Good agriculture and environmental conditions	75.7	Non-serious	24.3	90.7	20%
	80	Non-serious	35	88.6	11%

As table 4.2 shows in most cases the non-compliance has not a serious character. This means that when there is no full compliance it are only a limited number of issues at which the farmer is non-complying. For example, as regards the Identification and Registration of bovine animals it is likely that for the major part of the dairy herd everything is in proper order (cows identifiable), but that the farmers is late with the in time replacement of lost eartags for some cows.

Farmers indicated that the introduction of cross compliance and the information brochures which they received about it had strongly increased their awareness. As the table 4.2 shows a significant number of farmers indicated that as a consequence of Cross compliance they made further changes on their farm. This not always lead yet to a strong increase in the rate of compliance (see case of Nitrate Directive). Moreover, they seem to

have the impression that the monitoring and inspection regime is taken more serious since then. Finally, they fear that the potential sanctions could be severe.

Also from Germany there is evidence that cross compliance improves the degree of compliance. Interviewed farmers in Germany stated that due to the uncertainty and the higher financial risk, they tend to do 'more than necessary' or try to be 'even better than required' in order to make sure that their direct payments are not threatened. Triggered by cross compliance farmers expressed increased interest in management tools, advisory systems and checklists in order to improve their farm practice.

As is shown in the right column of table 4.2 the degree of compliance is likely to substantially improve for Dutch dairy farmers. Remarkable cases are Identification and Registration and Food safety. As regards the Nitrate Directive it appeared to be an issue which got due attention of farmers. The reason for the lack of compliance is partly due to recently changed legislation, which has become more restrictive. At the time farmers were asked (first quarter of 2006) a significant number indicated that they had to make further changes during the year in order to get their manure supplies and demands balancing. But they seemed in general optimistic about being able to comply at the end of the year.

Box 4.2 The impact of cross compliance on compliance: the case of Dutch and German farmers

4.3.1 Environment

As regards compliance with the SMRs headed under the theme environment a number of more specific remarks can be made. Concerning the Birds and Habitat Directives:

- the degrees of compliance with the Birds and Habitat Directives were hard to obtain, in particular because details on the management plans have not yet been established or are currently in the process of being developed). However, degrees of compliance based on expert judgement are rather high. Partly this is due to the simultaneous presence of schemes associated with the Rural Development Programmes. These latter schemes have requirements which go beyond the minimum standards as included in the SMRs and generally also include payments compensating for income losses;
- compliance rates for the UK are based on a sample of 649 cross compliance inspections. The estimates for the Netherlands are mainly based on a survey among farmers, which however could not be fully sure about the specific requirements as reflected in the management plans which were to be completed. The estimate for France is based on the low number of detected infringements, although the mapping of Natura 2000 sites did not yet provide a legal basis for prosecution.

- As regard the Groundwater Protection and Sewage Sludge Directive:
- compliance is generally estimated to be very high. There were some uncertainties with respect to the treatment of exhaustible oils (e.g. France, where however only a few fines were stated during the past few years);
 - the degree of compliance with the Sewage Sludge Directive for France was estimated to be high at farm level. However, there was evidence that in 2005 40% of the water purification plants spread sludge illegally. Since the biggest plants are estimated to comply the proportion of sludge spread illegally is probably much lower;
 - as regards the UK the Environmental Agency lacked a complete data set, but in general the levels of non-compliance with the Groundwater Protection Directive were identified to be very low. With respect to the Sewage Sludge Directive in 2004 65 pollution accidents were reported. However, this was no reason to prosecute any farmer.

- As regards the Nitrate Directive:
- together with the SMR on Identification and Registration of Animals, the Nitrate Directive is one with significant levels of non-compliance;
 - the compliance estimate for France is based on studies carried out by the Ministry of Agriculture according to which in 2003 one quarter to one third of the farms keeping animals was oversupplying manure. However, some difficulties were experienced in decomposing the total fertilization in terms of organic manure and chemical fertilisers. 90 percent of crop land and 50 percent of grassland complied with the requirement to register manure applications;
 - the estimate for Germany is based on on-the-spot checks done in 2005 in three German Länder, notably Lower Saxony, Mecklenburg-Western Pomerania, and Thuringia. From the on-the-spot check done in Lower Saxony it appeared that about half of the total number of non-compliers faced difficulties due to insufficient reporting to be available;
 - just like with Germany, currently an infringement procedure is pending for Italy for not properly implementing the Nitrate Directive in national legislation. By now most of the twenty one regions have designated vulnerable areas, but the large majority has not yet set up any action plan. Emilia-Romagna is the only region which can boast complete compliance with the Directive. Taking into account the lacking implementation the degree of compliance at national level is

- provisionally estimated to be about 10% (share of Emilia-Romagna NVZ in the country's total NVZ-area);
- The Netherlands renewed its manure policy in January 2006 and switch from a system focused on so-called loss norms to a more strict system focusing on surplus-norms. This is likely to have decreased the farmer's rate of compliance (*ceteris paribus*);
 - for the UK the main cause of breaches of the Nitrate Directive was the failure to keep adequate records outlining N application on land within the Nitrate Vulnerable Zones (NVZ). The second most common breach was excess amounts of manure used by intensive livestock farms that are based in NVZs. Very few breaches were recorded relating to storage requirements;
 - although Poland will have to change from the single area payment-scheme to the single farm payment scheme not earlier than by the end of 2009, it has already started to specify implementation rules. Twenty one NVZs are designated and action programmes are prepared which are directly linked to national law and aimed at reducing the effluent of nitrate from agricultural resources.

4.3.2 Identification and registration of animals

As regards the identification and registration of animals table 4.1 shows there is a significant degree of non-compliance, with 30% non-compliance not being an exception. A large part of the lack of compliance seems to be due to the loss of eartags, which are inherent to the EU's current system. Loss rates of 4% are quite normal, but also sometimes peak rates of about 20% were recorded. Loss rates depend on farming practice and systems.

As became clear from the Dutch survey and German on-the-spot checks, identification and registration of animals is one of the most frustrating requirements to the farmers. In general non-compliance with the ovine and caprine animals identification and registration requirements is much higher than for ovine animals (based on information from France, Germany, and The Netherlands).

4.3.3 Public, animal and plant health

As compared to the SMRs captured under Environment for the category public, animal and plant health more information about the degree of

compliance is lacking. Partly this is related to most of the SMRs under this heading only became part of cross compliance in 1 January 2006.

More generally, at various occasions in the research it appeared that farmers feared the potential inclusion of the hygiene package into the SMRs relevant for cross compliance. One of the arguments mentioned that it was felt to be almost impossible to fulfil the general requirements, such as the protection of animal feed against contamination by birds or rodents. Farmers feared a risk of losing considerable amounts of CAP support, in case this policy was going to be controlled as part of cross compliance. In the handbook for farmers in the UK it is written that farmers need to comply with the new feed hygiene regulation. For the other countries no such requirement was (yet) specified.

Below follow some more detailed remarks, specified at the particular SMR-level. Plant protection products:

- data are often lacking because the SMR became a cross compliance obligation on 1 January 2006.

Food traceability and food safety:

- data are often lacking because the SMR became a cross compliance obligation on 1 January 2006;
- for the Netherlands a high rate of compliance was found, in particular for dairy farmers. This could be due to a quasi-voluntary certification scheme which nearly all dairy farmers participate in, which regulates food safety and hygiene issues in dairy. There is some evidence that participation in such a scheme gave farmers the impression that they were going beyond the EU's minimum standards.

Hormones and beta-antagonists:

- data were generally lacking. However, anecdotal information suggests that compliance will be generally high. In several countries these substances have not been used much historically (notably in the UK).

Notification of diseases:

- data are often lacking because the SMR became a cross compliance obligation on 1 January 2006;
- compliance is difficult to check if there is no outbreak of disease;
- generally speaking compliance is expected to be high and to the own interest of farmers.

4.3.4 Animal welfare

The concerned SMRs covering animal welfare only became part of cross compliance in 1 January 2007. As such at this moment not yet much information about compliance is available. The legislation the SMR for calves and pigs is based on has been in force for years already. This is the reason why most farmers will have had already time to implement the standards, many of which reinforce best practice guidelines for good animal husbandry. In that sense it is not surprising to find that from several countries there was anecdotal evidence, pointing into the direction of an expected rather high degree of compliance. As regards new animal housing facilities, it is also from a cost consideration much cheaper to directly guarantee compliance (or even go beyond to meet possible future requirements) rather than ignoring it and being obliged at a later stage to modify and adjust the existing housing. So for new animal housing facilities compliance is expected to be nearly complete. As regards existing facilities there is an adjustment period before full compliance is required. Moreover, in particular with respect to pigs there could be an interaction with voluntary certification schemes, which often specify similar requirements of good animal husbandry.

In some countries (notably Germany and The Netherlands) the housing space standards go beyond what is required by the EU's animal welfare legislation.

4.3.5 Good agricultural and environmental condition

With respect to the GAECs it was impossible to estimate the level of compliance with the standards since prior to 2005 there was generally no obligation on farmers to meet them. An exception is overgrazing in the UK, which was already part of voluntary cross compliance. More specifically the following observations were made:

- the estimates for the Netherlands and Germany are based on on-the-spot-check and a farm survey sample respectively. Numbers presented should indicate orders of magnitude;
- for the UK there is evidence that the majority of farmers are taking action to prevent soil erosion. From 649 inspections conducted in 2005 4 single payment claimants were found to be non-compliant with the GAEC for the Soil Protection Review. All inspected farms satisfied organic matter and prevention of deterioration of habitat-standards.

4.4 Inspection and enforcement

The control of Statutory Management Requirements (SMR) is a central element of the cross compliance instrument. Standards need to be verifiable in order to implement proper control measures. In principle, two basic ways of performing controls can be distinguished. These are direct measurements in the form of on the ground control of existing or non-existence of particular requirements or the use of indicators. The latter might be used to examine the degree of compliance with some of the mandatory EU standards.

On the spot measurements and control is the most efficient way to control standards in the public, animal and plant health; the identification and registration of animals and the rules on animal welfare differ from most of the standards relating to the environment. Due to the complexity of agricultural ecosystems and the interrelations involved there is often no direct, easily measurable link between agricultural practices and environmental qualities. In particular when it comes to diffuse pollution issues, cumulative effects or effects that can only be measured on a landscape level rather than a farm level are difficult to measure directly. In the case of the destruction of natural or semi-natural habitats, protected by national conservation law or by the birds and habitats directive some negative effects might be detectable using aerial photography. However the gradual deterioration of habitats caused by farming operations can only be measured indirectly. The success of any kind of control or auditing system is directly related to how practical the selected indicators are.

Data coming from cross compliance inspections remain still scarce and hard to have access to. For the UK probably the most extensive information was available: an inspection survey among 649 farms. For other countries, among which The Netherlands, some information was available from inspections originating from other backgrounds (environment, etc.). It was not always possible to derive an expected degree of compliance based on this information, although the qualitative judgements remain informative.

Some more specific observations were:

- the new element introduced by cross compliance is that it requires systematic inspections. The authorities have to achieve a 1% level of on-farm checks. Most countries state to employ a way of sampling which creates a relatively high chance for non-compliers to be inspected. Farmers seem to perceive that by the intensity of control significantly increases as compared to the situation without cross compliance;

- in Italy several regions have their own autonomous competences in the field of environmental policies and some defined their own checklist to control compliance with standards. For those standards applying uniformly over whole Italy the National Paying Agency is responsible for control, which it might delegate to Regional Paying Agencies;
- in the UK holdings are also inspected by the Rural Payments Agency, where 68% of the sample is selected by scored risk, 20% is selected at random and 12% of the checked farms are selected by targeted risk, using referrals received from other agencies;
- in France there are six institutions which are in charge of controlling compliance;
- in Germany for the animal identification control a 5% minimum control rate is used, which is higher than the 1% requirement imposed by the EU. The regional (Länder) administrations are responsible for the control. They usually use control-teams consisting of people from several expertise agencies. Several efforts are made to co-ordinate the controls.

4.5 Methodology of measuring costs

This section addresses the issue of the costs of compliance. It was hard to find much empirical evidence on costs of compliance with standards. There are inevitably great uncertainties costs observed. As known part of the implementation of cross compliance has to take place or is at a very early stage of development. As such in some cases the only possibility is to use ex-ante evaluations, whereas in other some ex-post information should be in principle available. However, even then this will be very preliminary.

4.5.1 Additional costs

As regards the costs of cross compliance it is important to avoid confusion, which easily arises. The 19 SMRs all concern pre-existing legislation and therefore by definition cannot generate costs related to cross compliance (except maybe for some minor record keeping and administration costs). In fact only the GAEC requirements are a new element introduced with cross compliance, and only they have the potential of generating costs that can be attributed to cross compliance. However, even here one should be careful. Several countries have integrated pre-existing national legislation into the

GAEC requirements. To the extent this is done these requirements cannot in principle generate costs that can be attributed to cross compliance (farmers already had to satisfy these (national) requirements before CC was introduced).

The additional costs related to cross compliance could be understood in two ways. First, additional costs could refer to specific actions (like registration, form-filling, inspection, etc.) which are superimposed on the existing legislation due to cross compliance. Second, additional costs could refer to the costs associated with compliance to the Annex IV requirements on Good Agricultural and Environmental Condition.

Where farmers were previously not fully compliant with pre-existing standards the cross compliance enforcement mechanism could induce an improved degree of compliance with regulations. As such this could induce costs for those previously non-compliant, which they have to make to become compliant. However, it would be wrong to attribute these additional 'induced costs' as costs of cross compliance. Rather than costs of cross compliance these are additional costs related to satisfy the pre-existing standards.

As noted before in calculating costs the choice of the reference situation is a crucial one (for example whether or not and which (pre-existing) legislation it includes). In order to avoid the analysis of costs made in the past, in this research year 2005 is used as the year of reference for the cost calculations. As far as cross compliance refers to satisfying pre-existing legislation, theoretically speaking the additional costs should be zero.

4.5.2 Competitiveness assessment and costs

A final aim of this project is to assess the impact of the CC-Regulations and Directives on competitiveness. The basis for this will be the costs associated with satisfying standards. Some of these may be already fully complied to in the base year, in which case no further costs have to be considered. As far as standards are newly introduced or are only partly satisfied this may lead to costs or additional costs, that might potentially affect the EU's competitiveness. Below cost of compliance figures will be estimated and presented reflecting what it costs to satisfy a requirement or standard. As such these number will need further correction before they can be used in the competitiveness assessment since there only the additional costs that have to be made to satisfy the standards are relevant.

The standards included in cross compliance may imply additional potential costs and benefits due to higher enforcement and may affect competitiveness, both internally and externally. Whereas cross compliance will increase compliance with standards within the EU also in areas where compliance previously was lacking, it affects the internal competitiveness by creating a more equal level playing field and a reduction of the distortion because of uneven standard enforcement in the past.

As far as the standards as applied in the EU differ from those applied with its key competitors, they affect external competitiveness. According to the OECD (2004) cross compliance might potentially affect producer competitiveness, but according to their estimates these estimates are not sufficient to explain the differences in competitiveness between OECD countries.

Several approaches can be followed in order to assess the impact on competitiveness, among them the cost of production approach, the index approach and a full quantitative trade model analysis. Whatever approach followed, one of the important issues remain to which extent the additional costs will be transmitted to the clients. In particular in the short term the burden of several costs (for example the implicit labor costs associated with form-filling and paperwork) might be carried by the farmers themselves, therewith negatively affecting their income. In the long run the remuneration of the productive activities should outweigh all costs in order to guarantee continuation of the farm.

In the second phase of this project, the impacts of the concerned standards and cross compliance on internal and external competitiveness will be further addressed.

Box 4.3 Assessing competitiveness

4.5.3 Cost mitigation and accumulation

As regards the costs of new or changes regulation, farmers can and often will mitigate newly arising cost increases. Costs can be mitigated by changing the levels of the input mix, changing farm practices, or adjusting production levels. In the longer term adjustments might also include 'defensive' investment decisions and farm scale choice. Moreover, what a farmer will choose will depend on a range of factors, such as skills, location, markets, farm succession or farm family life cycle, etc. For example, the Nitrate Directive may induce an intensive dairy farmer to lowering his stocking density by downscale milk production, or by extending its land base (buy or rent additional land). As such costs are likely to vary over farmers even if at first sight they look rather similar, and also over time as the mitigation possibilities increase with the length or run considered. Moreover it makes a difference whether an ex-ante or ex-post approach is followed. The first usually exclude these mitigation effects and therefore tends to overestimate costs. The ex-post evaluation, will, depending on the adjustment time, partially or fully include the substitution or mitigation effects.

Next to mitigation the accumulation of costs deserves attention. Cross compliance involves a set of regulations. Since several of these regulations might interact with each other, assessing the (additional) burden of this legislation requires that attention should be paid to issues of conflict, synergy and aggregation. For example, compliance with one regulation might reduce the costs of compliance of another. There might be compound pressures identifiable, which go beyond analysing of the impact of single regulations.

4.5.4 Cost categories

With respect to the (additional) costs associated with cross compliance several cost categories could be distinguished: administrative costs, financial costs and compliance costs. Administrative costs or costs associated with form-filling and other paperwork connected with the regulation. Financial costs are the costs for any charges (e.g. payment for licences). The costs of complying with the regulation might involve actual abatement or clean-up costs, or induced production losses, etc. Within the latter category a further distinction could be made into changes in operational costs and changes in investment costs. Not only be costs for farmers, but there may also be increased costs to government as a result of administration, policing and enforcement of the concerned regulations. These latter costs are not dealt with in this research.

In the country reports the general approach was chosen to gather as much information as could be found, bet it of an ex-ante or an ex-post nature. To guide the data handling and presentation within the project a general calculation procedure for assessing the costs of compliance was specified in Deliverable D7. As is clear from table 4.3 irrespective of the preparatory work done to achieve a certain degree of standardization, a lot of data are lacking or 'below' the required standards. In the subsequent phase of the project additional time is allocated to further data generation.

4.5.5 A proposed cost calculation framework

As was referred to in the previous section as part of the research project a common framework was developed to determine the costs associated with the SMRs and GAECs. In this section the basic principles for the specific requirements are provided.

Birds and Habitat Directives:

The ordinary costs of compliance are related to the obligations and constraints farmers have to respect in the Special Protection Areas (SPA) and Sites of Community Importance (SCI), which primarily depend on the management plans set up by the public authorities in these areas. If the national standards consider only set-aside areas the costs of these Directives can be considered zero, but management plans may foresee additional rules concerning crop harvesting. In case of permanent grasslands, which may be present in the protection areas, an obligation to delay grass cutting reduces the production and quality of hay or silage produced for animal feeding. So the costs mainly involve the reduced quality and yield of crops and grass. Moreover as a lower number of grass cuts is carried out there might also be a reduction of harvest costs.

Farmlands in Natura 2000 sites often is subject to requirements from Agro-Environmental Measures and farmers tend to be financially compensated for the specific agronomic measures they take. It is highly probable that farmers will not face any extra costs due to cross compliance.

Groundwater protection

The ordinary compliance costs with this Directive is mainly based on the costs associated with the disposal of exhausted transmission oil and pesticides. Before estimating the eventual additional costs of compliance with this Directive it will be important to investigate if the national legislation did already foresee a prohibition on the discharge in the environment of all the dangerous substances listed in the directive. Since this requirement reflects pre-existing legislation the costs attributable to cross compliance are zero.

Sewage sludge

The imposed restrictions on the use of sewage sludge may generate extra organic fertiliser costs as farmers will have to reduce the use of a relatively cheap source of minerals and organic matter. The main mineral present in sewage sludge is nitrogen, hence the cost analysis are be based on comparison of the costs of N per hectare from sewage sludge with the costs of N in alternative organic fertiliser. The quantity of organic fertiliser to be used to substitute sewage sludge is based on the comparison of the N content.

Typically a consent is needed to be allowed using sewage sludge on the farm. The costs of compliance with these requirements will be compared with the costs of receiving such an authorisation and the time consumed of

obtaining it. Since from a cross compliance perspective this again concerns pre-existing legislation the costs related to cross compliance are zero.

Nitrate Directive

Among all the environmental directives the Nitrate Directive has the most important cost implications. The overall production costs of livestock products will rise in particular for intensive farms located within the NVZs areas. The costs include:

1. investment and running costs for manure storage equipment and/or manure treatment plants;
2. transport cost to dispose excess manure outside vulnerable areas;
3. the purchase of extra farm land or the acquisition of manure spreading rights on extra farm land;
4. the reduction of nitrogen content in feed and the inherent decrease of the lean meat percentage, which determines a reduction of farm receipts;
5. the reduction of crop yield due to the decrease of manure spreading;
6. the costs of a nutrient management plan.

In order to assess how many livestock farms will be affected by the Nitrate Directive within the vulnerable zones the number of farms should be counted which exceed these limits as these farms face extra costs to comply with the Directive. The time period of prohibition of manure spreading defines the required capacity to store livestock manure. An expansion of the existing capacity may be needed and extra investments may become necessary. The cost calculation necessarily should be based on the analysis of a series of case studies of intensive livestock farm types in vulnerable areas. For the case studies an average farm size of intensive pig, dairy and beef farm has to be chosen. For each farm type at first the quantity of excess manure has to be calculated by means of the same methodology used to calculate excess manure in NVZ.

The presence of a plan for spreading manure and nutrient management will be an essential document to be shown in case a farm is controlled by the national payment agency. The set up and design of a manure and fertilisation plan may be carried out by agronomists specialised in this type of activity and will have to be updated yearly when changes occur in the animal density or the crop rotation of the farm. The costs charged for the design of these plans will be part of the compliance costs related to the Nitrate Directive. As will become clear later there might be significant additional costs for this Directive since the base year's degree of compliance level is below full

compliance. Since , like all SMRs, also this SMR is an example of pre-existing legislation, the costs attributable to cross compliance are in principle zero.

Identification and registration of animals

For the Council Directives related to the identification of animals a farm will have to *update registers and eartags* continuously. The costs generated by the mandatory part of these directives essentially are a administrative in nature. They are related to the time necessary to update the registers and to the purchase of eartags for new born calves and imported calves. Since the identification and registration of animal-requirements all reflect pre-existing legislation the cannot lead to costs attributable to cross compliance.

Plant protection products

The first objective of the directive is to harmonise the overall arrangements for authorisation of plant protection products that are being used in the European Union. Furthermore, member states shall prescribe that plant protection products must be used properly. The farm costs are mainly related to the request for authorisation of toxic plant protection products, and the registration of the use of plant protection products. All inputs of toxic pesticides, fungicides and herbicides have to be registered indicating characteristics, provenance and date of purchase. The same system is applied to the use of these products in terms of type, quantity and crop. The farm costs of these systems for all sectors are related to the time necessary to update the obligatory registers. Again this concerns pre-existing legislation, implying that the costs attributable to cross compliance are zero.

Prohibition of hormonal or thyrostatic action and of beta-agonists substances

Farms are not expected to face any specific costs to comply with this directive, as the use of hormones and beta-agonists is forbidden anyhow. Following this directive no specific register has to be updated. There might be some costs (forgone benefits) in case farmers are not yet fully complying to this regulation. Since this requirement concerns pre-existing legislation, the costs attributable to cross compliance are zero.

Food law, and procedures in matters of food safety

Most of the costs related to the updating of traceability systems are of administrative nature. All sensible inputs have to be registered indicating characteristics, provenance and date of purchase. Roughage, concentrated,

pesticides, fertilisers, medicines etc. are all subjected to systematic registration. The same system is applied on the outputs of the farm, where volume, characteristics and destination of products have to be registered. The farm costs of traceability systems for all sectors are related to the time necessary to update the obligatory registers. Like the ones mentioned before also this requirement concerns pre-existing legislation and the costs attributable to cross compliance are essentially zero.

Notification of diseases

Farms do not have to face any specific costs to comply with these directives, as the obligation to signal the presence of diseases is in force anyhow. Following this directive no specific register has to be updated.

Animal welfare

Complying with animal welfare requirements may imply the following costs:

1. investment costs for the full conversion of the farm;
2. the feed costs of calves will rise as a consequence of the larger space in which they are raised and due to the minimum quantity of fibre in the feed ration which decreases the feed conversion rate as well;
3. the feed cost of pigs will rise and their meat growth productivity might decline, thereby increasing costs of production.

The protection of animals kept for farming purpose provides only for generic recommendations to improve the welfare of all kinds of animal species. The directive does not contain specific space allowances to respect or obligatory group housing requirements. As such the directive does not generate extra costs for farmers. Since this requirement concerns pre-existing legislation, the costs attributable to cross compliance are zero.

Good agricultural and environmental conditions

Large differences are observed regarding the constraints that member states have issued. The differences in application of Annex IV are huge between member states and are strongly related to the specific climatic and geopedologic conditions. A uniform overall cost methodology for the GAECs will therefore be difficult to set up. Cost estimates will thus usually reflect different requirements over countries. Since the GAEC requirements are newly introduced with cross compliance, costs associated with these can in principle be attributed to cross compliance. However, in order to make a precise estimate of the costs of cross compliance the costs associated with the

GAECs have to be corrected for the part which reflects pre-existing national legislation.

4.5.6 Remaining issues

Whereas the focus is on costs, it became clear that in a number of cases costs could be offset (e.g. birds and habitat requirements). Within the scope of this research no systematic treatment of these cost offsets was possible. However, for an integral assessment of the additional costs of cross compliance they need to be taken into account.

Partly as a strategy to cope with the lack of data, for one country (The Netherlands) a survey was held among about 1,600 dairy, livestock, arable and intensive livestock farmers, in which detailed questions were asked about the actions and associated costs involved in meeting the cross compliance conditions. Together with the anecdotal evidence from the general country reports this survey information will be used to upgrade the cost information necessary for analysing competitiveness issues in the second phase (activity based normative costing).

In the next section a comparative cost statement will be made at the detailed level of the SMRs and GAECs.

4.6 Obtained cost of compliance estimates

4.6.1 Introduction

Table 4.3 provides an overview of the obtained results from the country reports. As is clear a lot of information is still lacking. Where information is available this often does not match the intended standards for the project. Moreover, the estimates are originating from various sources, which poses questions with respect to their representativeness and limits their comparability. However, as far as possible a common cost calculation framework has been used (see section 4.4.4), which at least guarantees that several potential costs items are taken into account in a systematic and consistent way.

Table 4.3 Costs of compliance (additional costs of compliance in case of non-compliance)

Environment	France	Germany	Italy	Netherlands	United Kingdom	Spain	Poland	
Environment	Birds and habitat directives	€190/ha depends on management plan farmers may be compensated (rural development)	n.a. depends on management plan farmers may be compensated (rural development)	n.a. depends on management plan farmers may be compensated (rural development)	€160/ha depends on management plan, farmers may be compensated (rural development)	low, directive does not compel farmers to carry out positive management	€3/ha, excluding any AES compensation payment	€200/arable farm €500/animal farm
	Protection of groundwater	Low, as for management of exhausted oils €0/farm	Return system of exhausted oils is free of charge considerable costs might be incurred with storage	Delivery charge for exhausted oils and pesticide containers is zero	Delivery charge of exhausted oils (low), costs for storage	Costs of requesting authorisation and correct storage	€1000-€8000 costs for flow measurement system	€500 per household
Environment	France	Germany	Italy	Netherlands	United Kingdom	Spain	Poland	
	Sewage sludge directive	All costs of soil testing, transportation and application are met by sewage producers. Sewage sludge is free source of nutrients providing net gain approximate €3/ha as fertilization value	No costs farmers are usually paid for applying sewage sludge	n.a.	No significant costs main costs come from record keeping	All costs of soil testing transportation and application are met by sewage producers; Sewage sludge is free source of nutrients providing net gain	n.a.	analysis costs €75/ha.yr

	Environment	France	Germany	Italy	Netherlands	United Kingdom	Spain	Poland
	Nitrate directive	Costs for storage and spreading manure €205/head for intensive dairies	Costs for exceeding manure and storage €/m3 fee paid by supplier €120-€175/ha (land rent price) €50-€200/m3 (costs storage facilities)	In pig sector of Lombardy adjustment costs will rise from €0.11-€0.23 per kg of liveweight meat (transport spreading right storage)	€40 million (manure disposal costs dairy sector) in 2006; will increase to €60 million in 2009 €5000-€7000/farm benefit for specialised arable farms (spreading right payments)	Approx. €9 million per annum, of which €1.9 million storage and transport costs and 17 million record keeping costs	n.a.	Storage €350-500 cow full costs €500-750/cow
Identification and registration of animals	I&R of bovine animals	France €1.80/animal €109/farm €0.004/kg milk €0.003/kg meat	Germany €2.65-€3.19 per animal (including services)	Italy n.a.	Netherlands €2.75 per animal +0.15h/animal* €7.00=€4.50 (excl.loss) €5.00 including loss	United Kingdom €4.20 per animal (replacement) passports are for free replacement costs passport €70	Spain 2,2-2,5 €/animal (depending on the system used) taking into account amortisation movements labour 12,2-15,70€/animal and year 1,63€4,64€/animal and year	Poland €5-10 per LAU

	Public, animal and plant health	France	Germany	Italy	Netherlands	United Kingdom	Spain	Poland
Public, animal and plant health	Plant protection products	zero	cupboard costs €200-€2000	n.a.	n.a. but non-zero	n.a. no additional costs	zero	n.a.
	Food traceability and food safety	zero	Construction costs of new silo's (cereals storage)	n.a.	n.a. record keeping time costs	no additional costs	zero	n.a.
	Hormones and betaantagonists	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Notification of diseases	zero	n.a.	zero	zero	zero	zero	n.a.
	Animal welfare	France	Germany	Italy	Netherlands	United Kingdom	Spain	Poland
Animal welfare	Housing of calves	extra costs €10/calf	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Housing of pigs	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Good agricultural and environmental condition	France	Germany	Italy	Netherlands	United Kingdom	Spain	Poland
Good agricultural and environmental condition	Soil erosion control			creation of water gullies €6/ha				

Maintain soil organic matter	no costs for animal farms average total costs €22/arable farm	no major costs, there are costs of soil cover, but this is compensated by expected additional returns	extra ploughing costs €20/ha cleaning channels €7/ha expenses for shredding and planting €2/ha Costs for surface levelling and water drainage €6/ha cleaning ditches €6/ha varying from €20/ha to €1740/ha	operational costs low, annual investment costs varying from €0-€100/ha, with a medium value of €5/ha	no detailed estimates available, but no major costs identified	no costs for animal farms about 200€/arable farm	n.a. but expected to be low
Soil structure							
Minimum level of maintenance							

As it appeared that the notification of diseases did not include any costs in any of the selected member states, for convenience sake these SMRs are not explicitly mentioned in table 4.3.

In the next subsections a more detailed discussion at SMR and GAEC level is provided. In this section also the outcomes from some further data treatments are presented.

The costs of compliance will depend on farming type and farming system used. As part of the Nitrate Directive, it is estimated that about 10,000 farms in France are having a manure supply which exceeds 170 kg N per hectare. The farms having manure surpluses are expected to be mainly located in Bretagne, where the most intensive production units are based. A farm typology established for Bretagne showed that only farms combining dairy and pork or poultry production (mixed farms) had an excess for organic nitrogen. The surpluses varied from 5 to 20 tons per average farm. Farmers with dairy production alone, appear to have always sufficient land to not exceed the Nitrate Directive norm. The costs associated with the required manure disposal and storage capacity necessary for compliance with the Nitrate Directive for the mixed intensive dairy farms was estimated to be €2.40 per kg N, or €0.027/kg milk (milk yield 6,500kg/cow), whereas the costs of the specialized dairy farms was zero. The administrative costs for the mixed intensive farmers were estimated to be €145/farm (or €0.0006 per kg milk) and zero for specialized dairy farms.

Compliance costs for intensive beef systems varied depending on whether the focus of the farm activities was on rearing or a combination of rearing and fattening. In case of rearing the costs of compliance were €0.15 per kg beef, and in case of rearing plus fattening the costs were €0.11/kg, which is about 25% lower.

Compliance cost for specialized cereals and general field cropping farm systems were estimated to be zero. When mandatory soil coverage would be included (which was in 60% of the Départements not the case) costs of compliance could increase to about €2,300 per farm. For The Netherlands it appeared that the Nitrate Directive could even imply significant economic benefits for arable farmer if they offer land for spreading of manure surpluses of other (animal) farm types.

Box 4.4 Costs of compliance and farming system: the case of France

4.6.2 Total and additional costs of SMRs

Since the costs associated with the SMRs are primarily attached to these regulations, they are in general not related to cross compliance. To the extent cross compliance improves compliance with these SMRs the costs previously non-complying farmers have to make in order to comply could be stated to be additional costs associated with satisfying the SMR standards.

With respect to specific regulations the following more detailed observations were made:

- as regards the ordinary costs of compliance the Nitrate Directive and Animal Welfare requirements could impose significant costs on farmers. However, because these and the other SMRs represent pre-existing legislation, the additional costs attributable to cross compliance will be zero, unless cost need to be made in order to comply with standards that were previously (partially) ignored;
- for France the ordinary costs associated with compliance of the Nitrate Directive amount about €6,300 for an average intensive dairy farm in the Bretagne area, and up to €30,000 per average intensive beef farm located in a French nitrate vulnerable zone. The costs of arable farms (specialised cereals or having general field cropping systems) are estimated to be zero;
- for the Netherlands, which recently had to adjust its national laws in order to satisfy the Nitrate Directive criteria, there are studies indicating that the costs of compliance in 2006 due to the 'new' regulation could amount €2,100 for an average dairy farm, and €5,700 for average intensive livestock production (pigs and poultry) farms. In contrast, arable farmers could realize a €3,000 per average farm benefit of the regulation. In the period 2006-2009 both costs and benefit show a tendency to significantly increase;
- for the Lombardy-region in Italy, which is the region with the highest animal load, it was found that the difference in costs for slurry management between ordinary zones and vulnerable zones amounted €0.12 per kg of pig meat produced. Total costs in the vulnerable zone were estimated to be €0.238 per kg of pig meat;
- as regards the animal welfare requirements for sows, data from Italy show that the additional housing costs associated with switching from the old standard practice system to a new system which satisfies the welfare requirements, could amount to about €700 per sow place;
- for the UK the total or ordinary compliance costs associated with the Nitrate Directive were estimated to be €4,950 per dairy farm, €480 per beef farm, zero for sheep farms, about €1,500 per average pig farm. No good data were available for the poultry sector, but significant costs are expected there also.

4.6.3 Total and additional costs of GAECs

As regards the GAECs in general only limited cost are expected. However, when there are such costs they are directly related to cross compliance (e.g. additional costs). Where there are such costs, like those involved in reducing soil erosion for example by green manure cover crops, there are costs which could amount €500 per hectare. However, at the same time there are often expected benefits from these actions, which in terms of higher returns, would in the end (partly) offset the costs. This also explains why a lot of farmers have already voluntarily included such actions to be part of their good farming practice. The net costs due to cross compliance are therefore expected to be low.

Given that the requirements following from the GAECs are tailor-made taking into account the specifics of the local area (slope and erosion, olive groves, intensive or extensive arable production, etc.) it is not easy to provide general costs estimates. The variation in requirements and conditions is reflected in differences in costs. Below a number of specific observations made are mentioned.

- Maintenance measures like sowing of land, mulching and mowing sometimes constitute a cost factor. Costs for sowing set aside land were estimated to be between €400 and €500 per hectare in Germany (based on information of farmer's associations). However sowing set-aside land was usually not mandatory; one could also choose for natural regeneration of vegetation cover. Costs of mowing and removing of stubble material amounted €50 - €300 per hectare.
- For Italy costs to prevent land erosion by creating water gullies in sloped land was estimated to be €66/ha. The yield loss from maintaining straw on the land (aimed at managing organic matter content of the soil) was estimated to be €27/ha, whereas additional ploughing costs were estimated to be €20/ha. Costs for maintenance of drainage network efficiency were estimated to be €9/ha (include levelling of surface and expenses for cleaning of sluices and collecting channel by removing wild plants). Costs for prevention of deterioration of habitats on grasslands was estimated to amount about €20/ha. Maintenance costs for set-aside land management were estimated to be about €400/ha. The yearly cost for grove maintenance (including pruning, elimination of shoots and thorns) amounted €1,130/ha. The retention of landscape features for terraced surface area amounted about €1,750/ha.

- For Spain it appeared that farmers have to have a water meter and a formal allowance to irrigate as part of the specified GAEC requirements. Although strictly speaking going beyond the GAEC requirements as specified by the Commission, in Spain the GAECs are introduced in such a way that they are likely to have significant impact on the water management.
- For The Netherlands the operational costs for the GAECs for arable farmers were estimated to be zero, whereas the annual investment costs varied from €0 to €100 per hectare (medium was €5/ha).
- For the UK the costs of completing the soil protection review were estimated not to exceed €3.00 per hectare. Post harvest management of land after combinable crops were estimated to be nihil. Cost of introducing 2 meter margins next to hedgerows and water courses were estimated to amount €7 - €10 per hectare.

4.7 Conclusions

The degree of compliance is in general rather high for most SMRs as well as most GAECs. The two main exemptions are the Nitrate Directive and Identification and Registration Directive and Regulations. There non compliance rates up to 30% were observed.

As regards the non-compliance rates found for the Nitrate Directive, this could be partly related to the problems some member states have with compliance at macro-level. As national legislation is further adjusted to EU standards the restrictions at farm level further tighten, which may at least temporary negatively affect the degree of compliance at farm level.

As regards the non compliance with the identification and registration of animals, one factor causing troubles is the loss and required replacement of eartags. Considering a more robust (and technically advanced) tag-system might have a positive impact on compliance rates, although not solving all problems.

Costs of complying with standards include income foregone due to production losses, costs associated with investments in housing, machinery and other capital inputs, as well as operational costs associated with required changes in management practices, and costs (labor time) associated with handling required paperwork (record keeping).

As will be clear from the previous discussion the additional costs of cross compliance associated with the SMRs, which all contain pre-existing

legislation, will be zero or negligible by definition. Farmers may have to take some measures in case they (partly) ignored the requirements in the past. However, these additional costs cannot be attributed to cross compliance, but are related to the standard concerned. (Additional) costs that have to be made, whether attributable to standards or cross compliance, should be taken into account in a competitiveness assessment.

Combining the information about the degree of compliance with the cost statistics, cross compliance is likely to have influenced the degree of compliance with pre-existing legislation, and has a such an induced effects on costs (even if these may be formally attributed to the original legislation rather than to cross compliance as such).

Costs of compliance Regulations and Directives could be very diverse, depending on farm structure, farming system or pursued farm management practices, and geographical and biophysical conditions.

Ordinary costs of compliance to comply with Nitrate and animal welfare legislation can be substantial. Costs could amount to several thousands of euros per farm.

With respect to the GAECs both information on the degree of compliance as well as on costs remains scarce. However, the research done allows for making some provisional estimates. These estimates indicate the additional costs of compliance to be rather low. Partly this is due to the fact that the requirements included among the GAEC-heading were already included in the countries pre-existing national legislation. Partly this is due to the fact that the requirements are so minimal that they hardly impact current farming practices.

5. Benefits of cross compliance

5.1 Primary benefits

Within the project the main emphasis has been on implementation, compliance and costs of cross compliance. It is not only costs which are relevant, but also the benefits matter. Just as no costs of the pre-existing legislation can be attributed to cross compliance, likewise it makes no sense to relate the benefits of compliance to pre-existing standards to cross compliance. As regards pre-existing legislation the main benefit of cross compliance clearly is the contribution it makes to increased compliance. No effort has been made to come up with monetary equivalents of the benefits. However, still some information about benefits became available.

An evaluation of the benefits of cross compliance requires a good and clear insight into the purpose and benefits of this policy. The preamble provides the following statements:

- cross compliance rules should serve to incorporate in the common market organisations (CMOs) basic standards for the environment, food safety, animal health and welfare and good agricultural and environmental conditions;
- standards should be established in order to avoid the abandonment of land and to ensure that the land, even if not used for commercial production, is kept in good agricultural and environmental condition;
- permanent pasture, which is stated to have a positive environmental effect should be maintained and a massive conversion to arable land should be avoided.

These statements give an indication of the purpose of cross compliance, although they are rather open and vaguely expressed. Further and more detailed information could be found in the preambles of the involved SMRs. The first aim of cross compliance is rather to enforce compliance with this pre-existing legislation than specifying new policy goals or creating a set of new policy instruments. As such the benefits of cross compliance should be measured primarily in terms of improved compliance. Where it helps to improve compliance it could be argued to create benefits without any

additional costs. For, if farmers are required to respect the pre-existing legislation, which they clearly are, then potential cost increases cannot be attributed to cross compliance, but is solely associated with this legislation.

A second aim of cross compliance is that it seeks to avoid land abandonment and some aspects of land use change (any significant declines in permanent pasture). This goal relates to the concerns, expressed by a number of member states during the midterm review negotiations, where they feared that decoupling of support would result in land being taken out of production, and, in some regions, might go to be completely abandoned. So the aim was to protect this land as well as to maintain the agricultural and environmental condition of the land. As far as the legislation specified under the heading of the GAECs contributes to this policy goal, cross compliance can be stated to be beneficial. From the observations done it seemed successful in achieving this goal. However, in order to be sure whether this benefit is due to the cross compliance provisions, one should compare the situation with cross compliance with the counterfactual of the situation without cross compliance. It could be well the case that even without cross compliance the fear for land abandonment and land degradation would not have materialized. The impression is that in this respect cross compliance mainly acts as a safety provision.

5.2 Secondary benefits

Beyond the primary benefits mentioned above, also other types of indirect or secondary benefits are imaginable. The main area to think of is probably the interaction of cross compliance with voluntary certification schemes. The growing importance of these kinds of schemes, may contribute to the benefits of cross compliance in two ways. First, as far as such voluntary schemes make the minimum conditions as specified in cross compliance part of their label and advertise them, they can valorise the increased sustainability of agriculture, and try to translate them into a premium-activity, which in the end can be argued to benefit both consumers and producers (farmers and agribusiness).

Second, where cross compliance requirements coincide with the requirements of voluntary schemes, potential savings on monitoring and inspection costs might be available. Since the voluntary schemes and cross compliance have their own inspection and monitoring regimes synergies and

cost savings could be possible (see Deliverable D8 for more a more detailed discussion and some examples).

Finally, a more general benefit could be that cross compliance increases the awareness of farmers that sustainability, food safety and animal welfare matters in agriculture. As such cross compliance can be seen as part of the new contract society has made with agriculture. Continued support is linked to reciprocity in terms of satisfying a set of minimum requirements (license to produce). Several observations made in the country reports, underlying this synthesis report, emphasize that cross compliance has been successful in this respect.

In order to get some idea about the 'added value' and as a way to measure farmer acceptance of the cross compliance tool, in the survey farmers were asked to express their estimate of the perceived benefits of cross compliance.

In the questionnaires sent to Dutch arable farmers they were asked to indicate whether they thought the SMRs and GAECs contributed to nature conservation and wildlife preservation, and/or to an improved environmental condition. Thirty three percent of the arable farmers in the sample expected positive impacts of the Birds and Habitat Directives on nature and biodiversity. Again forty percent of the arable farmers in the sample indicated to expect positive nature and environmental benefits from the GAEC requirements on their farm.

Box 5.1 Benefits as perceived by farmers

5.3 Conclusion

The benefits side of cross compliance is left relatively unaddressed in this research. As regards the contribution of cross compliance to improved compliance positive evidence was found (see also chapter 4). A scheme was developed to see the potential benefits of cross compliance in a broader context and to at least create some further conceptual clarity about various kind of benefits.

When focusing on the benefits of cross compliance an issue similar to the costs discussion is relevant. As regards costs a distinction was made into the costs of a regulation and the additional cost generated by imposing cross compliance. Applying the same principle to benefits as to costs, the benefits associated with cross compliance are those which are additionally generated due to the imposition of the cross compliance mechanism. They are mainly

related to the benefits associated with the (newly introduced) GAECs. e to the pre-existing legislation, the contributed benefits can be significantly greater.

It is argued that several types of benefits can be distinguished. The primary benefits reflect the contribution made to achieving good agricultural and environmental conditions. Secondary or indirect benefits could arise from interaction with voluntary certification schemes (valorisation increased 'quality'-standards and potential cost savings and synergies). Another indirect benefit is the increased awareness of regulatory requirements among farmers. The research showed that indeed this awareness effect was present, but not everywhere to the same degree.

6. Regulations in the US, Canada and New Zealand: a comparative analysis

6.1 Introduction

This section discusses the specifics of three key competitors of the EU, notably the US, Canada and New Zealand. This section offers a basis comparing the type of standards applied in other parts of the world. Differences with the EU are due to reflect different circumstances (for example history with respect to animal diseases), differences in production intensity and different policy environments. As a general rule, the more comparable the production intensity the more comparable the type of constraints applying to farmers are.

In the following sections first the situation of each country is discussed. This is followed by a section in which a comparative assessment is made of these countries in relation to the EU. The chapter closes with some conclusions.

6.2 The US

The major U.S. federal policies related to agriculture and the issues of environmental quality, animal identification, food system health, and animal welfare that were reviewed differ significantly from the standards applied in the EU. They are usually less restrictive and more relying on voluntary participation rather than being obligatory. The inventory of federal policies did not generally provide information on the specific constraints at the farm-level imposed by the regulations.

The specific regulations that apply to U.S. farms of various types are highly dependent on the products and states in which the farming and marketing operations occur. Unfortunately, this level of specificity will be examined in the second part of the project.. As such, this project will proceed to unveil the specific regulations and their associated impacts on selected types of farming operations in the leading states for production of the respective products.

One of the main results from the federal policy inventory, is that, in the U.S., across the policy areas there is a large variation of regulations and implementation levels. For example, with respect to environmental quality, there are several comprehensive laws that have been in existence for decades. However, it has only been in recent years that some of the environmental laws are being implemented and enforced at farm level. The CAFO regulations enacted in 2002, under the Clean Water Act or 1972, is a good example of this.

With respect to biodiversity the Endangered Species Act is relevant. With respect to agriculture pesticides are a common source of species alteration. The Environmental Policy Agency (EPA) has programmes, which address the detrimental effects of pesticides, including scientific risk assessment of pesticides with respect to the listed species, and attempts to find means to avoid concerns for the listed species. States maintain or develop conservation programmes to protect threatened and/or endangered species. Federal financial assistance and incentives are available to facilitate state action.

As regards environmental issues the approach toward managing the environmental impact from farming has been largely voluntary, or with compliance being a condition for cost-sharing assistance with best management practices. The Clean Water Act (CWA), which was originally focused on point sources of pollution, has been expanded to non-point pollution, with agriculture identified as one of the key sectors. However, it was not until 2002 that the federal government issued specific rules governing Concentrated Animal Feeding Operations (CAFO's), requiring the design and implementation of a comprehensive nutrient management plan. Since only 2 percent of all confined livestock operations are CAFO's, this policy currently only affects a minor number of farms. The implementation and enforcement of the CWA is delegated to the states. Many states are anticipating future federal rule changes and already creating regulations similar to the CAFO-one for smaller farm operations.

The CWA also contains provisions with respect to sewage sludge and stipulates concentration limits for arsenic, cadmium, copper, lead, mercury, molybdenum, nickel, selenium and zinc as well as proper application practices. In addition to the CWA there is the Clean Air Act, which is aimed at regulating air emissions from area, stationary, and mobile sources (including nitrogen gasses, methane from dairy cows, ammonia, odour, nitrogen oxides from fertilized fields, etc.). The potential costs of monitoring non-point pollution are the reason that agriculture has been largely exempt

from environmental regulations. To protect drinking water quality the Safe Drinking Water Act provides further regulations (residues of pesticides, fungicides, fertilizers and their metabolites). Due to the way in which 'public water systems' are defined only a very small proportion of the farms will be directly subject to these regulations. Moreover, unless prohibited by additional state laws, in general farms can dispose of solid, non-hazardous agricultural wastes (including manure and crop residues returned to the soil as fertilizers or soil conditioners, and solid or dissolved materials in irrigation return flows) on their own property.

With respect to animal identification and registration, a formerly voluntary programme, the Animal Identification Plan, is being transformed into a mandatory regulation, called the National Animal Identification System. There is a suite of laws related to food system health, however their impact at the farm level is not readily available, as many of these laws apply at post-harvest stages. Filling the void of mandatory federal animal welfare regulations are a series of industry-led standards that are only mandatory for producers wishing to sell to certain market segments.

The US has established a comprehensive web of authorities to govern food safety issues, among which the Food and Drug Administration, the Food Safety and Inspection Service and the Animal and Plant Inspection Service. In particular attention is given to health based standards for pesticides. Hormones and beta-antagonists may be used in certain livestock classes. Since 1989 a programme is effective which certifies meat to come from non-hormone treated cattle (in order to address exports interests to the EU).

Animal welfare issues are currently weakly addressed in the US. No federal legal protection exists for animals raised on a farm. There is some law in relation to transporting farm animals across state lines, although this law is considered to be rather weak. Moreover, the most well-known law regarding animal cruelty, the Animal Welfare Act, entirely excludes animals raised for food production. Beyond this there are a number of existing federal regulations that related to the treatment of animals, but also these are rarely applied to on-farm situations. There are some private initiatives aimed at increasing transparency about animal welfare to consumer groups in the pigs and eggs sector.

Regarding the land management requirements, the majority of government interventions in the US in agriculture takes the form of voluntary programmes that use technical assistance and cost-sharing to establish best management practices. There are a host of such programmes, mainly administered by the USDA. The five most important ones are the

Conservation Reserve Programme, the Environmental Quality Incentives Programme, the Wetland Reserve Programme, the Conservation Security Programme and the Grassland Reserve Programme. In 2005 about 3.5 billion dollar was spent on these programmes.

Given the foregoing it was difficult to obtain any reliable compliance and costs figures associated with up-keeping standards. An attempt was made to provide cost estimates for a number of state and federal regulations that have a direct impact on U.S. agriculture, with a particular focus on the dairy and swine sectors. Results of this investigation are presented in the second part of the project.

6.3 Canada

Canadian farmers do have to comply with numerous federal and provincial environmental regulations that govern agricultural production practices. Additionally, there are many programmes that do require environmental standards be applied in primary agriculture in Canada. Farmers also participate in voluntary, industry-led standards that aim to mitigate the negative impacts of agricultural production practices on the environment. These voluntary, industry-led standards are embodied in voluntary programmes, often in partnership with governments, which may be certified by a government agency or otherwise.

These Codes of Practice are usually initially described as voluntary, but are used as the basis for payments in government agri-environmental programmes. This is the way in which environmental cross compliance is applicable in Canada. Farmers can, if they so desire, receive a payment under a government programme, if they comply with an environmental standard that is often embodied in a voluntary Code of Practice.

Environmental regulations include a broad range of issues and instruments that include air, water, and soil quality; biodiversity and wildlife and habitat preservation; and human, animal and plant health. It was not possible to address these issues in depth, and therefore the focus was on describing a selected set of environmental regulations programmes and policies related to agriculture in Canada at the federal, provincial and municipal levels; regulations, programmes and policies in place for the identification and registration of animals; for public, animal and plant health and for animal welfare.

From the research it appeared that the agri-environmental landscape in Canada cannot be easily described in terms of statutory management requirements or good agricultural and environmental conditions as in the case of the EU. In Canada, there is a division of authority between the federal, provincial and municipal levels of government. Agriculture is a shared jurisdiction between the federal and provincial levels of government but the primary responsibility lies with the provincial governments. Environmental concerns in Canadian agriculture have been addressed through a combination of policy measures at several levels of government in Canada: federal and provincial legislation and regulation; municipal and zoning permit processes; common law litigation and liability with respect to nuisance, public nuisance and riparian rights; national and provincial voluntary stewardship initiatives such as Codes of Practices, Environmental Farm Plans and Best Management Practices and economic instruments such as payments.

The federal government is for a nationwide system of water and air quality standards, pesticide registration, and financial assistance for regional agricultural environmental projects. Most provinces have their own legislation to protect water and air quality, public health and other environmental values that might be impaired by agriculture. They also have passed a 'Right to Farm' legislation, to clarify the standards under which farmers can be held liable for nuisances. The most critical environmental issues, ranked according to importance, are the use of pesticides, air and water quality. Water contamination by nitrogen has become an increasingly important issue in all provinces. The same holds for biodiversity (wildlife habitat provision on farm land), which has been under pressure in particular to the intensified agricultural production. The policies pursued have been effective in the sense that air and soil quality have generally improved during the last 20 years.

As regards wildlife and biodiversity there are several biodiversity initiatives aimed at addressing key issues such as agricultural practices (conservation tillage, rotational and delayed grazing, buffer zones around pastures), habitat conversion and fragmentation, wild species at risk, diversity of domesticated species, living modified organisms and atmospheric changes. Often these initiatives include economic incentives.

As concerns the protection of groundwater and sewage sludge applications, or more generally water quality, all provinces have adopted legislation, strategies, policies or guidelines that affect siting and managing of livestock production. Where intensification of production is most pronounced the use of nutrient management plans is most common. A main driver behind the siting restrictions (farm building and manure storage facilities) is odour

(Minimum Distance Separation legislation). Right to farm-legislation protects farming activities from nuisance actions (odour, dust, noise) provided that the farm operations conform to 'normally accepted agricultural practices'. The legislation usually contains requirements with respect to sufficient manure storage capacity (prescriptions varying from 150 to 250 days were found).

Land application standards for manure deal primarily with setbacks from wells and surface water, and application times and methods. For example, the Nutrient Management Act of the Ontario province stipulates that no person shall apply liquid manure to land, within 150 metres from the top of the bank of surface water in case the maximum sustained slope of the land is 25% or greater, or to land closer than 100 meters to a municipal well. If liquid agricultural source materials are applied at any time when the soil of the land is snow covered or frozen, application must be done by injection or by spreading and incorporation into the soil within 6 hours. The Ontario legislation also contains some conditions for calculating the maximum application rates for manure, which are based on crop production requirements plus a surplus-margin.

However, by examining environmental concerns in Canadian agriculture, it has been shown that there are numerous regulations concerning pollutants such as nitrates and sludge that farmers must obey. Given this difference in agri-environmental landscapes, we present our findings by describing the regulations, programmes and policies that govern the livestock and crop production sectors and the conservation and protection of wildlife and biodiversity. We have similarly described the regulations, programmes and policies governing the identification and registration of animals; public, animal and plant health; and animal welfare. We have not used the suggested methodology to evaluate costs of cross compliance. As we have indicated, the concept of environmental cross compliance is not used the same way in Canadian agriculture as it is used in the EU context. However, we have reviewed the literature to determine the abatement costs that are associated with implementing standards within agri-environmental regulations. The application of non-agricultural source material (sewage sludge; pulp and paper biosolids) is subject to various standards and in general not allowed without having obtained approval from the authorities. Restrictions include stipulations for metal concentrations, requirements to minimize runoff potential, and maximum application rates.

As regards Nitrate there is no Nitrate Directive comparable to that of the EU. The water quality guideline for nitrate-nitrogen concentration is 10 milligrams per litre. A survey study showed that in several provinces there are

a significant amount of wells (10% or more) where the concentration is higher. The policies described above have to contribute to reducing the nitrate problems. Likely more restrictive application requirements will follow in the future.

As respect with issues included in the EU's GAEC requirements (soil health, erosion), overall soil quality in Canada (and provinces) is increasing (with Quebec as an exception). These improvements were largely due to changes in land management and land use, including things like decreases in area under summerfallow, increases in cropland area under reduced tillage or no till and increase in areas under forage crops). As such these policies counteract the evolution from small, low-mechanized mixed farms to larger, highly mechanized farms growing monocultures, a development which increased soil degradation (erosion, productivity loss, soil crusting and compaction, acidification, etc.).

Each province has its own separate soil conservation programmes and regulations. In the east these programmes mainly deal with drainage, soil fertility and reforestation; in the western provinces the focus is more on land rehabilitation, erosion control, drainage, irrigation and tillage. Many of these programmes include provisions for technical and financial assistance to farmers for implementing appropriate management practices as well as to purchase equipment or build erosion structures. Not only at the level of the provinces, but also at federal level soil health gets attention (e.g. National Soil Conservation Programme, 1989). Participation into such programmes is usually voluntary, but made attractive by financial incentives. As an example of the degree of participation, in Ontario about 20% of the land participated in the Land Stewardship Programme. In the programmes a lot of attention goes to communicate best management practices (including buffer strips, erosion control structures like grass waterways, stabilization of streambanks, livestock fencing and crossing, fragile or marginal land retirement, residue management, adjusted crop rotations, strip cropping, etc.).

As regards the identification and registration of animals, Canada has its own national identification programme (introduced in 2001) for cattle and bison, managed by the Canadian Cattle Identification Agency, which is an industry-led non-profit organisation. The background of this programme was the wish to eliminate any sources of disease and food safety problems, which could threaten public health, animal health, or consumer confidence. An electronic database has been developed to track the herd from origin from tags. Every bovine animal has to be identified with an official eartag before leaving the herd of origin or co-mingling with cattle of other owners (rule

includes some exemptions). Barcode tags as well as electronic tags are used. Relative to the Canadian system, the EU's system is more comprehensive since it not only regulates identification, but also registration at birth and movements. In the Canadian system there are no mandatory rules for registration at birth, although recently a (voluntary) age verification programme was started. Moreover, producers are not required to maintain their own management records for bovine animals (for ovine animals they have to keep record), and replace lost eartags within a limited time. The use of double eartags is not required; a single tag suffices.

Only pesticides that are registered for use under the Pest Control Products Act may be imported, sold or used in Canada. Provinces and territories may further regulate the sale, use (can even locally prohibit nationally allowed pesticides), storage, transportation and disposal.

The core of the Canadian food safety system is the federal Food and Drugs Act (FDA) and the federal Department of Health. The latter sets standards and policies, carries out food-borne disease surveillance activities that provide a system of early protection. The various levels of governments collaborate with non-governmental organisations, consumers and industry to ensure the integrity and comprehensiveness of the food-safety system.

The use of hormonal and thyrostatic action substances and beta-antagonists is also regulated under the FDA. There are six approved hormonal growth promoters, which have been approved for use in beef cattle only.

Notification of diseases is regulated under the Reportable Disease Regulation, which requires all suspect cases of Bluetongue, swine vesicular disease, foot and mouth disease, and Bovine Spongiform Encephalopathy (BSE) to be immediately reported to the authorities. This regulation seems rather similar to the relevant EU SMRs on disease notification. Canada has been free of foot and mouth disease since 1952. Since 2003 three cases of BSE have been found.

As regards animal welfare voluntary farm animal guidelines are stipulated in National Codes of Practice in the Care and Handling of Farm Animals. There also is federal and provincial legislation. The codes are often incorporated in the bylaws of municipalities, and hence they play an important role in ensuring that animal welfare standards are met. Stakeholders in the animal food industry also promote animal welfare issues by connecting animal care with quality product. Included in the standards are minimum housing requirements for calves and pigs. In general the minimum space requirements for pigs are somewhat smaller than those specified in the EU regulation.

6.4 New Zealand

New Zealand's situation is special in that farming has played and still plays an influential role and is still part of the 'backbone' of New Zealand's economy. The country has a specialized natural advantage for agriculture, in particular for pastoral farming, horticulture, forestry, seafood. About 85% of New Zealand's production is currently exported, with agricultural, horticultural and forestry products earning over 60% of its total export income. The large agricultural sector is operating with almost no government support.

Although farming is in general less intensive than in the EU, in some areas New Zealand faces significant soil erosion problems, resulting from the removal of natural forest cover for pastoral farming. The resulting sediment along with nutrient run-off and discharge of agricultural wastes has also contributed to an increasing concern about water quality. With respect to the management of issues of eutrophication, nitrate, and reduced clearness, New Zealand's current system, which mainly relies on consents and voluntary approaches and non-regulatory rules, seems not satisfactory to reach full compliance of all dairy farmers with the environmental management requirements.

The main tool for managing natural resources and safeguarding the life carrying capacity of air, water, soil and eco-systems is the Resource Management Act (RMA, 1991). This RMA involves several key concepts, among which the development of comprehensive effects-based legislation, the desirability of intervening only where required and clearly justified, the requirement of clearly focused outcomes (targets) where intervention is justified, and the need to use appropriate policy instruments in order to achieve cost-effective solutions. The standards set by the RMA authorities can differ from region to region depending on differences in environmental issues and situations.

The restrictions imposed by the RMA are often specified in district plans, made up by territorial authorities. Requirements include effects of land use and subdivision, controlling noise, protection the surface of lakes and rivers, pollution and discharges, and hazardous substances. Consent is required only if such plan's explicitly require this. Discharges to water and the management of water quality is usually delegated to Regional Councils, whereas the RMA empowers local authorities to control land use in order to achieve a number of sustainable management objectives (restricting expansion of potentially damaging activities to vulnerable land and amenity concerns like dust and odour). Moreover, alongside the provision of advice to

landowners, these local authorities may also impose regulations enabling improvement of the sustainability of the farmer's land management practices. Central government has as yet not specified any national policy statements on specific resources.

Regional and district councils have developed policies and rules to address the effects of sustainable land use. Each rule outlines whether an activity is permitted (no resource consent required), controlled (subject to consent, which has to be granted as long as the applicant can demonstrate that the activity will comply with any concerned standards, or has only minor or acceptable negative effects), restricted discretionary (subject to consent where the council can decide not to grant the allowance, or can impose additional conditions), discretionary (must apply for consent and regional council can exercise broad discretion), non-complying (usually no resource consent will be granted), or prohibited (no consent can be granted).

Changes in New Zealand's landscape have been dramatic, approximately 63% of its area has been converted from native forest, wetland and tussock land to farm, exotic forests, settlements and roads. As a consequence the country experienced a decline in indigenous biodiversity, which since the 1980s and 1990s has induced a response from the government to 'turn the tide' by among others the adoption of a national biodiversity strategy. Changes in legislation and administration have brought about significant improvements; still some mechanisms which were developed during the last decade are still not fully effective. As an example, freshwater systems continue to degrade, a process exacerbated by land use intensification. Similarly, halting the biodiversity loss remains a huge challenge.

Whereas New Zealand has nothing comparable to the EU's Bird Directive, it pays attention to natural habitat preservation. At present the majority of policies and objectives encourage the voluntary protection of land, identified as recommended areas of protection (RAPs) or significant natural areas (SNAs).

With regard to the issues covered by the EU's Groundwater Directive, the disposal of transmission oils on land is not allowed and there exists a voluntary take-back system for used oils. However, most farmers keep them and use them for burning or oiling dirt roads. Pesticide containers can be buried after triple rinsing them and cutting them up. Several programmes provide free of charge collection of unwanted chemicals. Direct discharges of heavy metals, organohalogenes, organophosphorous and organotin compounds is regulated and also the application of pesticides and insecticides is a strictly controlled activity.

Sewage sludge disposal on land is considered a discretionary activity. Thus, consent is required, which specifies a list of requirements regarding location, ingredients, treatment type, etc. In general sewage sludge should not be used in production of crops where it can enter into the food cycle.

Regarding the EU's Nitrate Directive in New Zealand effluent from the farm is to be disposed on the land (after ponding) and fertilizer applications should follow a Code of Good Practice. The latter states manure discharge to be a controlled activity, where the rate of application may not exceed 150kg N per ha annually (and no more than 50 kg ha within a period of 24 hours), buffer zones should be respected and runoff and ponding of effluent should be avoided. Because the issue of nutrients derived from intensive farming has become a big concern a private-public partnership tries to come up with self-regulation (partnership includes nationwide dairy cooperative Fonterra as well as regional councils).

With respect to the identification and registration of animals a multiple of private registration systems currently exist. There is no unique nationwide public system, although efforts are made to come to a more coordinated system (see also box 6.1). The use of hormonal growth promotants is strictly regulated and can be only used in beef production. Implanted animals are all registered on a national database.

With respect to food safety (tracking and tracing) New Zealand lacks a system comparable to the EU's. The Directives regarding animal diseases (foot and mouth, swine vesicular disease and bluetongue) regulation is irrelevant in New Zealand since these diseases are at current not present.

Animal welfare is regulated by a code which provides minimum standards for different holding systems. The current industry is estimated to largely comply with these minimum standards, which are in place for more than 10 years already, allowing most farmers to anticipate the standards when making new investments (buildings).

As regards the GAECs in the EU there is also no comparable system in New Zealand. As already mentioned before, Regional Councils have regulative power and have specified different rules which vary with regional circumstances. Many of them operate extension services on resource management issues and may provide financial assistance for farm erosion schemes. Most of the management of erosion prone land is through control on vegetation clearance and soil disturbance. In some region (Eastern Region) rather strict requirements are formulated, which are expected to raise the cost of farming.

Given the difference of the regulations (less intensive, and more relying on voluntary action rather than obligatory actions, as compared to the EU) issues of compliance and costs are also different. Generally speaking 'compliance' is estimated to be often high and costs are expected to be rather low.

Since New Zealand relies mainly on a consent system, compliance with regulation can be reduced to farmer compliance with consent. For the year 2004/05 some data are available about the degree of compliance of farmers with dairy effluent resource consents. Over the 12 regions the degree of compliance was on average 67% with 9% as a minimum and 97% as a maximum. Significant non-compliance was 16% of the farms in the worst region, but most other regions only have 7% or less with significant non-compliance. In general it was found that most non-compliance was quickly addressed by the farmer once notification takes place. Nothing is known about the existence and severity of the sanctioning system.

Box 6.1 Dairy farmer compliance in New Zealand

6.5 Comparative assessment

In this section a comparative assessment of Cross compliance with similar regulations in the US, Canada and New Zealand is made. As was already argued in the previous sections the regulations in the US, Canada and New Zealand differ substantially from those in the EU, although at the same time in most cases there exist regulations addressing the same issues. But it is not only differences in regulations which complicates a comparative analysis. Also the local contexts are rather different. This regards in particular intensities in production, which can be very different, both at national and local scales. A similar remark could be made with respect to the institutional structure. Whereas in the EU there is tendency to unification in legislation in particular where it regards minimum requirements, in other countries the structure of legislative responsibilities allows for more differentiation over the national territory. Although this reduces general transparency, it has the potential advantage to better address local issues.

The difference in contexts is reflected in the main problems that are addressed with the standards similar or corresponding to those included in the EU's cross compliance package. Figure 6.1 provides an indicative overview the main problems that are addressed. For reasons of comparison the EU's

effects are added at the most right column.¹ As can be seen from figure 6.1 the main issue of biodiversity is the preservation or prevention from degradation of habitats. As regards the environment the preservation of water quality is central. Whereas in the EU nitrate contamination of ground water is a key issue, also in Canada and New Zealand this issue is of growing importance. With respect to health guaranteeing food safety is a primary goal. Included under this heading are more or less strict regulations about the use of hormone growth promoters. This is in particular an issue in the EU, but it indirectly also affects the EU's trading partners. Another key issue is the monitoring and surveillance of contagious animal diseases, where New Zealand has a special position since it is still free from some main animal diseases (partly related to its relatively isolated location). For the EU's competitors animal welfare issues are mainly consumer and/or market driven, whereas in the US long-distance transportation gets specific attention. The main theme covered by regulations on good farming practices is erosion, although the scope in the EU is somewhat broader.

As already became clear in the previous paragraphs of this chapter, the US, Canada and New Zealand don't have a cross compliance policy similar to the EU's one. However, all the themes addressed under the EU's cross compliance are also the subject of policy attention in the other countries. Figure 6.2 provides a summary of the main differences in the policy approaches followed in the various countries.

As will be clear from figure 6.2 the type of policy instruments used have consequences for the interpretation of a concept like 'degree of compliance'. For voluntary schemes, for example, the degree of compliance does not make sense in a direct way, or it should an expression indicating too which extent one adheres to the rules when one participates in such a scheme. However, for reasons of comparison it would be interesting to know too what extent farmers participate in such schemes and what share of the total land area is covered with such a voluntary scheme.²

¹ See the underlying country reports for more details about the selected specific which were taken into account.

² The underlying country reports provide some anecdotic information on this, but generally for the non-EU countries this information remains limited.

Theme	US	Canada	New Zealand	EU
Biodiversity	No specifics	Protection of habitats	Decline in indigenous biodiversity; habitat preservation	Protection and preservation of habitats
Environment	Water quality; environmental pressure from Concentrated Animal Feeding Operations	Pesticide use, water (save drinking wells, increasing importance of nitrate contamination, and air quality (odour)	Degrading water quality; increasing importance of nitrate contamination	Nitrate, heavy metals, water quality
Health	Food safety	Food safety; hormone growth promoter products use; animal disease surveillance	Food safety; hormone growth promoter products use;	Food safety; hormone growth promoter products use; registration and traceability of animals; contagious animal diseases; use of plant protection products;
Animal welfare	Long-distance transportation	Minimum housing requirements; intensive livestock farming practices; humane transportation and slaughter	Minimum requirements, dry sow stall	Minimum space, and minimum requirements regarding other animal 'needs'
Good agricultural and environmental practice	Mainly erosion	Erosion, and soil quality (has improved already)	Erosion and sustainable land use (vegetation clearance and soil disturbance)	Erosion, organic matter content, soil structure

Figure 6.1 Main problems addressed

Policy instrument	US	Canada	New Zealand	EU
Direct regulation	In particular applied for regulation food safety, plant protection products	In particular applied for regulation food safety, plant protection products	In particular applied for regulation food safety, plant protection products	Dominant kind or regulation applied
Cross compliance	Compliance only required for cost-sharing assistance with best management practices	Farmers can receive payments if they comply with standards embodied in a voluntary codes of practice	Instrument not used	Obligatory cross compliance since Luxembourg agreement (2003) covering biodiversity, environment, health and animal welfare
Taxes and subsidies	Financial incentives linked to voluntary conservation programmes	Financial incentives linked to specific 'good' agricultural practices	Some financial assistance for farm erosion schemes	Selectively used to encourage collection of used transmission oil, a.o.; implicit subsidisation of farm assistance (see below)
Technical assistance	Plays an important role, in particular regarding environment and good farming practices	Plays an important role, in particular regarding environment and good farming practices	Plays an important role, in particular regarding environment and good farming practices	Farm advisory service complementary to cross compliance, will be in place in 2007
Contracts and voluntary schemes	Play an important role in particular regarding environment, animal welfare, registration of animals	Play an important role in particular regarding environment, animal welfare, registration of animals	Play an important role in particular regarding environment, animal welfare, registration of animals	No use of voluntary schemes for achieving minimum standards as in the CC package, instrument only used for achieving 'services' going beyond minimum standards

Figure 6.2 Policy approaches

Figure 6.3 summarizes some main results and puts them in an EU perspective. Alongside the contextual information already presented in figures 6.1 and 6.2 additionally some information is given about production intensities. It should be noted that intensity here only provides an (per country) average indication. Production intensities not only vary over countries, but also may strongly vary within countries. Whereas intensity of production helps to put the need for regulation into perspective, it needs careful interpretation. Whereas, for example, the average production intensities in Canada and New Zealand are lower than in the EU, also these countries are now faced with growing problems regarding the nitrate contamination of groundwater. In general, however, relatively high production intensity is likely to create a high pressure on environment, animal health and welfare issues, which create an increased need for regulation in order to ensure sustainability¹.

Figure 6.3 is based on a comparison of the regulations as described in the underlying country reports. A provisional draft was discussed within the consortium, which leads to several revisions and where necessary additional expert information was used to further increase precision. The table compares the regulatory efforts from the key competitors with that of the EU (reference level). Three aspects are considered: intensity of regulation, degree of compliance and costs of compliance. The estimates have (necessarily) a qualitative character.

With respect to the intensity of regulation, the EU level (as included in the SMRs and GAECs) is taken as a reference. So, if in the cell of Biodiversity for Canada there is 1 minus sign, this should be read as that the intensity of regulation (the restrictiveness of the requirements) is a bit less than the level of biodiversity regulation prevailing in the EU due to the Birds and Habitat directives. More minus signs would indicate less restrictive regulation, whereas a plus sign indicates a more restrictive regulation than in the reference case.

The degree of compliance is categorized as 'very high' (rate of compliance >95%), 'high' (90 - 95%), 'not high' (80 - 90%), 'low' (70 - 80%), 'very low' (40 - 70%) and 'extremely low' (<40%). The level of compliance for the EU is an average based on the results obtained for the selected member states (excluding Poland). Compliance in this case is

¹ Within the scope of the project it was not possible to calculate detailed location and regulation specific production intensity estimates.

understood as compliance to the local national regulations. If a certain field is not regulated, or left completely to voluntary action, then in the degree of compliance cell the 'not relevant' code is provided.

The costs of compliance also need to be related to a country's own regulations. Costs are categorized as 'negligible', 'low', 'moderate', 'significant', and 'high'. It is worth emphasizing that costs here need to be understood as all costs involved in satisfying the regulation and is not limited to the 'additional costs' raised by cross compliance. Where there is financial assistance or a cost sharing mechanism, attempts are made to adjust the cost of compliance. If schemes are voluntary, it is assumed that these side payments will exactly match the additional costs. This implies that the net costs of compliance will then be zero or 'negligible'.

There are some relationships expected between the various columns. A low degree of compliance is likely to be correlated with a low (observed) cost of compliance. A similar relationship is expected regarding the intensity of regulation: a low intensity of regulation implies requirements that are likely to be satisfied at relatively low costs.

Where no information is available the table 6.3 shows also the gaps in the knowledge.

Field	EU			Canada			New-Zealand			United States	
	degree of compliance	costs of compliance	intensity	degree of compliance	costs of compliance	intensity	degree of compliance	costs of compliance	intensity	degree of compliance	costs of compliance
average production intensity	High			Low to medium			Medium			Medium	
SMRs											
Biodiversity (birds & habitat directives)	moderate	low	-/+	not relevant	negligible	--	not relevant	negligible	---	unknown	low
Protection of groundwater	high	low	-/+	unknown	low	-	moderate	low	--	high	low
Sewage sludge Nitrate	high moderate	negligible significant-high	-/+ -	high moderate	low unknown	-/+ --	high low	low unknown-significant	-- ---	high high	low low
I&R of bovine animals	moderate-high	low-significant	-/+	high	low	-			---	high	low
I&R of ovine and caprine animals	moderate-high	low-significant	-	high	low	-	moderate-high	low	---	high	low
Plant protection products	high	low	-/+	high	low	-	moderate-high	low	-	unknown	low
Food traceability and safety	unknown	unknown	-	unknown	unknown	--	unknown	low	--	unknown	unknown
Hormones and beta antagonists	high	low	-	high	low	-	high	unknown	-	unknown	low
Notification of diseases	high	low	-/+	high	low	not relevant	not relevant	not relevant	-/+	high	not relevant
Housing of calves	unknown	significant	-	unknown	unknown	-	high	low	not relevant	not relevant	not relevant

Housing of pigs	unknown	significant	-	unknown	unknown	-	high	low	not relevant		
GAECs											
Soil erosion control	unknown	unknown	-	not relevant	low	-	unknown	low-significant	not relevant	not relevant	negligible
Maintain soil organic matter	unknown	unknown	-	not relevant	negligible	--	not relevant	negligible	not relevant	not relevant	negligible
Soil structure	unknown	unknown	-	not relevant	negligible	--	not relevant	negligible	not relevant	not relevant	negligible
Minimum level of maintenance	unknown	unknown	-	not relevant	negligible	---	not relevant	negligible	not relevant	not relevant	negligible

Figure 6.3 Comparative overview of regulations: the EU, US, Canada and New Zealand

Source: Based on factual information as can be found in the country reports underlying this document and complementary expert judgements. Cost of compliance are additional costs of compliance in case of previous non-compliance.

6.6 Conclusions

The regulations in the US, Canada and New Zealand clearly differ from those in the EU. A comparative analysis covering all the themes addressed in the SMRs and GAECs shows that in general the intensity of regulation is less in these countries as compared to the EU. As figure 6.1 shows, the production intensity in these countries is also lower than those in the EU. This might partly explain the lower felt need for environmental regulation. A lower intensity of regulations does not necessarily imply a higher level of environmental degradation, biodiversity loss, or harm to animal welfare.

All three non-EU countries have a rather similar approach to control the environmental effects of farming, which relies relatively much on voluntary action. This action is facilitated and encouraged by financial incentive and assistance schemes. The financial incentives include cross compliance mechanisms (e.g. Canada, where participating in voluntary schemes is sometimes a side condition for the receiving of specific direct payments).

In a comparative sense, the regulatory intensities in Canada and New Zealand seem to be rather comparable. The US seems to be least restrictive when comparing requirements over the considered countries. The legislation there is usually least restrictive and when existent often not applied to the farm level. This could be because either agriculture is exempted or because the monitoring costs of non-point pollution are felt to be too high to take monitoring and inspection serious. In comparison to the US, Canada and New Zealand rely to a relatively high degree on exports of sensitive products. This has led, in those countries, to a particular focus on market risk effects such as food safety, and surveillance systems on animal diseases.

7. Conclusions and outlook

As was already indicated in the introduction, this research focuses on a selected number of EU countries (France, Germany, Italy, Netherlands, UK, Spain and Poland). Within these countries the focus was further narrowed down to a limited number of products. Several methods were employed to generate the required information (focus groups, expert information, desk research, consultation of farmers unions, survey among farmers, exploitation of inspection records, etc.). A common framework was developed for determining compliance and the calculation of costs of compliance.. This exercise was successful in generating new insights into the cross compliance policy, its impacts and effectiveness. However, at the same time it has to be acknowledged that this study, given its limitations as mentioned before, does not generate a generic and definitive answer on cross compliance issues for the EU as a whole.

In what follows some preliminary conclusions are drawn and listed. The following aspects are distinguished: national implementation, degree of compliance, improvement of compliance, costs of compliance and comparison with key competitors.

National implementation

- A number of countries (Italy, Germany, The Netherlands) had difficulties with implementing the Nitrate Directive and faced infringement procedures. As regards the Birds and Habitat Directives most countries still have to define the required management plans, but some also have to complete the designation of Natura 2000 zones.
- As regards the GAECs, there is a lot of variation across countries when comparing the post-harvest measures as well as the 'other measures'. GAECs differ in part due to member states implementing such measures taking into account biophysical and geological conditions, as well as farm types and structures. Partly this will be due to differences in national circumstances. The Netherlands, for example, has only a limited region where slopy soils are important. In this country there was already a requirement that farmers are should take action (and show this in a plan) to control erosion. For other countries sloping areas play a much

- more important role. The differences in standards are likely not to only reflect differences in local soil conditions and cropping practices, but also past local efforts and standards used to cope with erosion problems.
- Within the GAEC framework soil organic matter requirements are used to a limited extent only. This might be due to an already adequate treatment of this issue in the regular crop rotation schemes. However, there are some signals (see later), that in this area more could have been done.
 - A number of requirements are formulated with regard to preserving soil structure. These might pose difficulties with respect to monitoring compliance, because certain actions have to be taken only at a specific time and difficult to detect outside this observation-period.
 - Only a few countries apply stocking density regulations as part of the GAEC requirements. However, this issue is likely to be dealt with indirectly by the requirements on manure use (Nitrate Directive). So, there are SMRs which are indirectly contributing to the objectives formulated in the GAECs.

Degree of compliance

- Compliance was found to be generally high. This holds for the SMRs as well as for the GAECs, with as two main exceptions the Nitrate Directive and the Identification and Registration requirements.
- With regard to the non-compliance rates found for the Nitrate Directive, this could be partly related to the problems some member states have with compliance at macro-level. As national legislation is further adjusted to EU standards the restrictions at farm level further tighten, which may negatively affect, at least temporarily, the degree of compliance at farm level.
- Compliance with the Identification and Registration requirements was hampered by a significant loss of eartags, which need in time replacement. The experience with electronic systems outside the EU suggests that cheaper and more robust identification systems might be possible.

Improvement of compliance

- Where compliance is already high (groundwater protection, sewage sludge, notification of diseases) cross compliance has limited potential to create increased compliance 'benefits'.

- Where there is substantial non-compliance, cross compliance is expected to be most effective in increasing compliance.
- There is clear evidence (based on interviews, review of the literature and questionnaires among farmers) that cross compliance has increased the awareness of farmers of the SMRs and GAECs. Moreover farmers signalled that the sanctions and inspections are taken serious. A Dutch survey suggested that a significant amount of farmers took actions to improve their farming practice in order to keep it up to standards.
- A precise determination of the impact of cross compliance on the degree of compliance was impossible, because lack of data on the *with-* and *without-*situations. Nevertheless there was evidence that cross compliance will lead to an improvement of compliance. Anecdotal evidence suggested that improvements in compliance of more than 20% are possible (see discussion in box 4.2).

Costs of compliance

- The additional costs associated with cross compliance are mainly related to the GAECs, which was the main new element introduced with cross compliance. The SMRs which are part of cross compliance are all pre-existing legislation, and costs associated with complying should be primarily attributed to this legislation and not to cross compliance. (Additional) costs are expected to be minimal unless measures need to be taken to comply with SMR standards that were previously (partly) ignored.
- The (additional) costs of cross compliance associated with the GAECs is found to be rather low. A lot of farms (animal holdings) will probably face no costs at all, where others (arable farms) might face some costs, in particular costs associated with maintenance activities (soil cover, erosion control). These will be generally low, and often wholly or partly offset by additional returns.
- Ordinary costs of compliance with the SMRs can be significant. In particular the costs associated with the Nitrate Directive and Animal Welfare requirements could have serious impacts. Farms previously non-complying may be faced with costs amounting several thousand euros per farm.

Comparison with key competitors

- The regulations in the US, Canada and New Zealand clearly differ from those in the EU. A comparative analysis covering all the themes

addressed in the SMRs and GAECs showed that in general the intensity of regulation is less in these countries as compared to the EU. Also the production intensity in these countries is lower than the EU, which might partly explain the lower need for regulation. Lower regulation intensity however, does not necessarily imply a higher level of environmental degradation, biodiversity loss, or harm to animal welfare.

- All three non-EU countries have a rather similar approach on measures to control the environment, which relies relatively much on voluntary action. This action is facilitated and encouraged by financial incentive and assistance schemes. The financial incentives include cross compliance mechanisms (e.g. Canada, where participating in voluntary schemes is sometimes a side condition for receiving of specific direct payments).
- In a comparative sense, the regulatory intensities in Canada and New Zealand seem to be rather comparable. The US presents the lower end of regulation spectrum. The legislation there is usually less restrictive and when existent often not applied to the farm level. This could be because either agriculture is exempted or because the monitoring costs of non-point pollution are felt to be too high to take monitoring and inspection serious. As compared to the US, Canada and New Zealand rely to a relatively high degree on exports of sensitive products. This has likely caused a great focus on issue which relate to market risk such as food safety, surveillance systems on animal diseases).

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Appendix 1. Statutory Management Requirements

The Statutory Management Requirements require compliance with a number of articles from 19 EC Directives/Regulations which address environmental, public, animal and plant health and animal welfare. 9 of these will apply for cross compliance purposes in 2005, a further 7 from 2006, with the remaining 3 being applied from 2007.

- Applicable from 1.1.2005: Environment; Public and animal health: Identification and registration of animals.
- Applicable from 1.1.2006: Public, animal and plant health; notification of diseases.
- Applicable from 1.1.2007: Animal welfare.

Issues on environment, public and animal health, identification and registration of animals, public, animal and plant health; notification of diseases and animal welfare are provided in the following table.

Table A1 Statutory management requirements referred to in article 3 and 4 of Regulation 1782/2003 (amended by Reg 21/2004) ---+gfdnm,,nbb/

Directives	Articles
<i>Environment</i>	
Council Directive 79/404/EEC of 2 April 1979 on the conservation of wild birds (OJ L 103, 25.4.1979, p. 1)	Articles 3, 4 (1), (2), (4), 5, 7 and 8
Council Directive 80/68/EEC of 17 December 1979 on the protection of groundwater against pollution by certain dangerous substances (OJ L 20, 26.1.1980, p. 43.)	Articles 4 and 5
Council Directive 86/278/EEC of 12 June 1986 on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture (OJ L 181, 4.7.1986, p. 6)	Article 3
Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources (OJ L 375, 31.12.1991, p. 1)	Articles 4 and 5
Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild flora and fauna (OJ L 206, 22.7.1992, p. 7)	Articles 6, 13, 15, and 22(b)
<i>Public and animal health; Identification and registration of animals</i>	
Council Directive 92/102/EEC of 27 November 1992 on identification and registration of animals (OJ L 355, 5.12.1992, p. 32)	Articles 3, 4 and 5
Commission Regulation (EC) No 2629/97 of 29 December 1997 laying down detailed rules for the implementation of Council	Articles 6 and 8

Regulation (EC) No 820/97 as regards ear tags, holding registers and passports in the framework of the system for the identification and registration of bovine animals (OJ L354, 30.12.1997, p. 19)	
Regulation (EC) No 1760/2000 of the European Parliament and of the Council of 17 July 2000 establishing a system for the identification and registration of bovine animals and regarding the labelling of beef and beef products and repealing Council Regulation (EC) No 820(97) (OJ L 204, 11.8.2000, p. 1)	Articles 4 and 7
Council Regulation (EC) No 21/ 2004 of 17 December 2003 establishing a system for the identification and registration of ovine and caprine animals and amending Regulation (EC) No 1782/2003 and Directives 92/102/EEC and 64/432/EEC (OJ L 5, 9.1.2004, p. 8).	Articles 3,4 and 5
<i>Public, animal and plant health</i>	
Council Directive 91/414/EEC of 15 July 1991 concerning the placing of plant protection products on the market (OJ L 230, 19.8.1991, p. 1)	Article 3
Council Directive 96/22/EC of 29 April 1996 concerning the prohibition on the use in stockfarming of certain substances having a hormonal or thyrostatic action and of beta-agonists, and repealing Directives 81/602/EEC, 88/146/EEC and 88/299/EEC (OJ L 125, 23.5.1996, p. 3)	Articles 3, 4, 5 and 7
Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety (OJ L 31, 1.2.2002, p. 1)	Articles 14, 15, 17(1), 18, 19 and 20
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 transmissible spongiform encephalopathies (OJ L 147, 31.5.2001, p. 1)	Articles 7, 11, 12, 13 and 15
<i>Notification of diseases</i>	
Council Directive 85/511/EEC of 18 November 1985 introducing Community measures for the control of foot-and-mouth disease (OJ L 315, 26.11.1985, p. 11)	Article 3
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)	Article 3
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)	Article 3
<i>Animal welfare</i>	
Council Directive 91/629/EEC of 19 November 1991 laying down minimum standards for the protection of calves (OJ L 340, 11.12.1991, p. 28)	Articles 3 and 4

Council Directive 91/630/EEC of 19 November 1991 laying down minimum standards for the protection of pigs (OJ L 340, 11.12.1991, p. 33)	Articles 3 and 4(1)
Council Directive 98/58/EC of 20 July 1998 concerning the protection of animals kept for farming purposes (OJ L 221, 8.8.1998, p. 23)	Article 4

Table A2 Annex IV Good agricultural and environmental condition (referred to in Article 5 Regulation 1782/2003 (amended by Reg 21/2004))

Issue	Standards
Soil erosion: Protect soil through appropriate measures	<ul style="list-style-type: none"> - Minimum soil cover - Minimum land management reflecting site-specific conditions - Retain terraces
Soil organic matter: Maintain soil organic matter levels through appropriate practices	<ul style="list-style-type: none"> - Standards for crop rotations where possible - Arable stubble management
Soil structure: Maintain soil structure through appropriate measures	<ul style="list-style-type: none"> - Appropriate machinery use
Minimum level of maintenance: Ensure a minimum level of maintenance and avoid the deterioration of habitats	<ul style="list-style-type: none"> - Minimum livestock stocking rates or/and appropriate regimes - Protection of permanent pasture - Retention of landscape features - Avoiding the encroachment of unwanted vegetation on agricultural land