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CROSS-COMPLIANCE ASSESSMENT TOOL

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Scientific support to policies SSP**

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Executive summary

Impact analysis of EU regulations being part of the cross compliance package requires regional disaggregation in order to account for regional heterogeneity in compliance levels and cost of compliance. The rate of compliance with standards is likely to vary with regional heterogeneity. Since only (poor) compliance estimates at MS level are available, indirect procedures are required to downscale compliance levels to regions. This report therefore presents a downscale procedure using secondary farm and regional characteristics information and plausibility-reasoning. As a first step the approach is applied to the Nitrates Directive and the Animal registration Directives.

This document therefore presents a framework that allows for determining best estimates of compliance and costs of compliance at a disaggregated regional level (Nuts 2). This is done on the one hand using the information available at member state level from former studies and on the other hand using information about regional farm structure and management (farm types, product mix, intensity), zoning restrictions (NVZ, Natura 2000, etc.), as well as physical conditions (slope and erosion) in order to identify risk groups. These risk groups are characterized by having a higher chance of not being compliant with the EU-regulations. The challenge is then to identify these risk groups and estimate their (higher) non-compliance level correctly.

The overall regional estimates of compliance levels and costs show that the non-compliance rates with the Nitrate and Animal registration Directives are relatively low and so are the cost implications. From simulations with the first prototype of the CCAT tool it turns out that in order to achieve the 2005 reference level of compliance, agriculture faces an annual costs of about 4.3 billion €, which is equivalent with about 1.5 per cent of total costs of production. In order to achieve full compliance another 1.5 billion € would have to be spent. However, results can significantly differ by region. This emphasizes the relevance of not relying on average numbers, but go for a regional disaggregation. Compliance with standards has not only an impact on costs, thereby reducing farmers net income, but there is also a slight effect on market prices. The increasing market prices partially compensate for the cost increase effect. As regards the evaluated measures the Nitrate Directive (requirement 4) accounts for major cost effects (especially manure storage and transport). As regards sectors, intensive (land independent) animal production systems have to cover relative significant cost. Relating the impacts of the evaluated standards to the additional incentive created by cross compliance (e.g. potential reductions in single farm payments) it turns out that the cost of compliance balance with the range of premium cuts in case of violation.

1 Introduction

Cross compliance was introduced as part of the CAP Reform of 2003 with Regulation 1782/2003. It involves member states making receipt of the direct payment aid, called the Single Payment, conditional on farmers meeting two sets of standards. The first, called Statutory Management Requirements (SMRs), relate to 19 pieces of EU environmental, public, animal and plant health and animal welfare legislation. These are listed in Annex III of the Regulation. The second set, referred to as standards of Good Agricultural and Environmental Condition (GAEC), relate to the appropriate management of soils and the minimum maintenance of agricultural land and features found on that land. The framework for GAEC is outlined by Annex IV of the Regulation. These SMRs and GAEC standards apply to all farmers who claim the Single Payment, and apply to the entire farm holding. Member State authorities must undertake inspections on at least one per cent of farms claiming the Single Payment to ensure that the standards are met and those found not to meet the required standards may face reductions or total withdrawal of the Single Payment. The level of this deduction depends on the severity of the identified infringement but also varies per country and region.

The SMRs all reflect pre-existing legislation and the only thing cross-compliance changed with respect to this is that it introduced an additional enforcement incentive to comply alongside the already legal sanctioning scheme (see also Figure 1). The GAEC standards and the permanent pasture clause reflect newly introduced EU legislation. As such these are usually seen as directly being part of cross-compliance, which for example implies that the behavioural changes (and associated costs and benefits) that these standards induce can be attributed to the direct impacts of cross-compliance¹.

In order to assess the impacts of cross compliance, insight into the compliance levels as well as the costs of compliance is needed. More in particular, one would also be able to detect changes in compliance rate over time in order to determine whether cross-compliance was successful in increasing the level of compliance with EU regulations. Unfortunately, only limited information about compliance and its costs is currently publically available. Examples of recent EU wide studies that provide compliance estimates are the Cross-compliance project and the study by the Alliance Environment prepared for DG-Agriculture (also referred to as the IEEP project). But even these studies, only provide estimates at member state level. Since the impact of compliance to regulation is likely to vary between different locations (depending on type of farming, area designated as a Nitrate Vulnerable Zone or Natura 2000 area, etc), still a further disaggregation of these estimates is crucial. Moreover, the estimates are provided at the regulation level. Therewith it lacks detail with respect to the different specific sub-requirements belonging to such a regulation. For a more detailed impact analysis one would like to have compliance estimates at sub requirement level rather than an overall measure for a SMR or GAEC as a whole. In addition it would be useful to have information on the performance of different farm types.

¹ Conceptually, following Figure 1.1. also with respect to the GAECs there could be made a distinction between standards or requirements and standard-enforcement mechanisms just like with the SMRs.

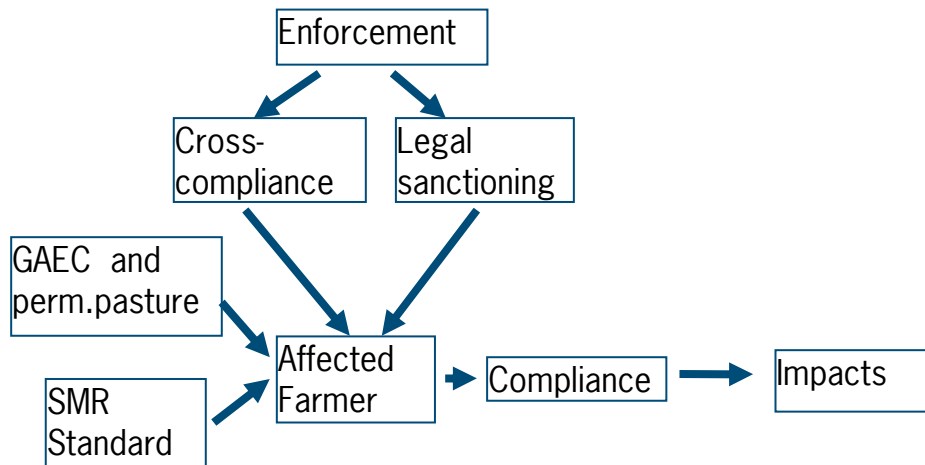


Figure 1: Standards, enforcement, compliance and benefits and costs

Source: Jongeneel et al (2008)

The aim of this document is to present a framework that allows for determining best estimates of compliance and costs of compliance at a disaggregated regional level (Nuts 2). This is done by on the one hand using the information available at member state level from former studies (e.g. the two aforementioned studies) and on the other hand using information about regional farm structure and management (farm types, product mix, intensity), zoning restrictions (NVZ, Natura 2000, etc.), as well as physical conditions (slope and erosion) in order to identify risk groups. These risk groups are characterized by having a higher chance of not being compliant with the EU-regulations. The challenge is then to identify these risk groups and estimate their (higher) non-compliance level correctly.

This document is structured as follows. Section 2 discusses the general approach chosen for desaggregation of compliance rates. Moreover it summarizes the main results available at aggregate or member state level. Section 3 provides a detailed account of the used calculation procedure. Section 4 presents the estimated compliance rates for a selected number of measures, notably the Nitrate Directive, ... etc. and further discusses the obtained results. Section 5 closes with some concluding and qualifying remarks.

2 Methodology and member state compliance rates

2.1 Compliance and farm categorization

As was shown in Figure 1 that regulations aim to direct farmer's behaviour in such a way that certain (minimum) standards are respected. A farmer has the option to either comply or not comply. In the latter case (s)he faces the risk to be detected as a non-compliant. If this is the case, as a consequence of the cross-compliance punishment scheme, part of the direct payments might be withdrawn (depending on the significance of the violation). Figure 2 provides a more refined scheme of the link between a regulatory requirement and compliance. The basic idea is to classify farmers with respect to their likelihood to comply (as such an approach quite similar to that of the risk-based sampling in case of monitoring and inspection is followed). A regulation may or may not affect a farmer. For example, animal welfare regulations will not affect a specialized arable farm, which has no animals. If a farm is affected by the regulation there are two possibilities. The farm structure and/or management is already well adapted to the regulation and no adjustment is needed. In that case the farm already complies, without having to make any further compliance costs. Alternatively, a farmer may need to make adjustments in his behaviour and maybe in the farm facilities in order to comply with the requirement. Here the farmer has to choose between making or not making these adjustments. If he does not he will be non-compliant (and subject to sanctions).

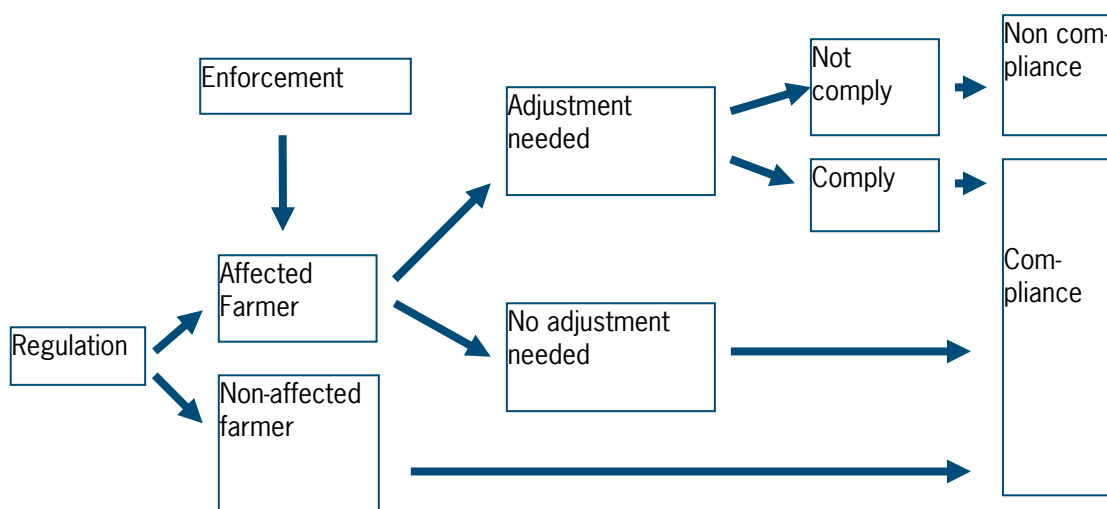


Figure 2 Farm affectedness, farmer adjustment and compliance

As Figure 2 makes clear, already by characterizing farms in being affected or non-affected by an obligation may help to get more insight into the compliance issue. Further on if indicator variables are available which could help to identify which part of the affected farms is likely to need to make adjustments, this further informs about which part of the farming population is most likely to have lower levels of compliance. As Figure 2 shows, there are three categories of farms which have a large

probability to be compliant: non-affected farms, affected farms but already exceeding EU standards, and affected farms which take action in such a way as to become compliant. Here the non-affected farms can be said to be compliant by definition. With respect to the affected farms, useful indicator variables may be available which help to identify the groups most likely to have higher levels of non-compliant farms. For, example, a dairy farm located in a nitrate vulnerable zone area, is clearly to be considered an affected farm in terms of the Nitrate Directive. However, if its stocking density is below a the norm that leads to a 170 kg organic manure per hectare as specified in the sub standard of the Nitrate Directive, this farm is unlikely to have problems with compliance.

In order to come to an estimation of compliance levels per region for the different requirements included in Cross Compliance the above described approach can be further extended:

1) to define a lower bound of the rate of compliance. One option to define this would be to aggregate the non-affected and affected-but no change needed-farms together and divide them by the total number of farms in the considered region.

2) Alongside the lower bound a best estimate could be made by aggregating all farm categories multiplied by their expected category-specific compliance rates. In that case the rate of compliance of the affected farms which need to make changes to satisfy the regulatory requirements could be based on the estimate available at member state level.

3) Finally, an upper bound estimate could be made by doing the same as in the previous step but apply the best-practice compliance rate found in a member state (although theoretically this can be 100 percent, in practice this number is likely to be lower), and apply it to the farms in the risk category of affected farms which are the ones for which it is clear that they have to make adjustments to satisfy the requirement.

2.2 Compliance estimates for N- and I&R Directives at member state level

The information available with respect to compliance to SMRs and GAECs is rather limited, incomplete and often also not in the form necessary for this project. There is the IEEP-project, which did an inventory for the EU as a whole, and the CC-project which reports best-estimates for a selection of old member states. Only one set of such estimates is given, implying that no information about the evolution of compliance over time can be extracted from these studies. Moreover, both studies report compliance rates at regulation-level. This means that in general no information is available how the final score at regulation level is related to breaches associated with the various sub requirements a regulation consists of. Whereas in this project the level of analysis is that of a specific sub requirement (rather than the aggregated regulation), this means that the reported compliance estimates have to be decomposed into compliance rates at sub requirement level.

Table 1 provides an overview of the available information with respect to the Nitrate Directive, where the first column represents the percentage of breaches as reported in the IEEP study. Using this number an associated estimate of the compliance rate is made (using the rule: compliance rate is 100 percent minus percentage of detected

breaches in sample; see 2nd column). As more than one breach might be detected at the same inspection at an inspected farm, the actual rate of compliance might be higher, and from that perspective the estimate used here is likely to be a conservative one. But there are more aspects to consider. The results are based on a specific kind of sampling (except for Denmark which inspects the whole population). Different member states use different risk-based sampling strategies. A member state which succeeds in well-identifying the risk factors and base its sampling procedure on this, might end up in detecting a relatively large number of breaches. However, the percentage of breaches found in this way, may not be generalized to the population in a linear way. Doing this will lead to under-estimate the final compliance level, since groups of farms which are not or less at risk are then implicitly assumed to have a similar high non-compliance rate as the farms identified to be at risk.

Table 1 further shows the best-estimates of compliance based on the CC project, which is only available for a selected number of (old) member states (see 3rd column). This info is based on other sources than that of the IEEP project, and includes among others expert information and own survey work (see Jongeneel et al, 2008 for further details). In general the reported CC estimates are lower than those of the IEEP project.

Table 2.1 Estimates of compliance levels with Nitrate Directive and use of this information for estimating number of farms, agricultural area and livestock numbers compliant and non-compliant

Country	IEEP estimates (percentage of breaches)	Estimated IEEP consistent compliance rate	Cross Compliance-project derived estimates	Indicator function (help)	final estimate for medium risk farm group (90, 80, 70)	final estimate for High risk farm group (60,50,40)
Austria	5.5	0.95	0.00	0.95	90	60
Belgium (F)	0.2	1.00		1.00	90	60
Belgium (W)	4.7	0.95		0.95	90	60
Bulgaria	n.i.				70	40
Cyprus	n.i.				70	40
Czech Republic	n.i.				70	40
Denmark	1.2	0.99		0.99	90	60
Estonia	n.i.				70	40
Finland	24.7	0.75		0.75	70	40
France	9.7	0.90	0.70	0.80	80	50
Germany	8.3	0.92	0.85	0.88	80	50
Greece	n/a				70	40
Hungary	n.i.				70	40
Italy	3.4	0.97	0.65	0.81	80	50
Ireland	n.i.				80	50
Latvia	n.i.				70	40
Lithuania	n.i.				70	40
Luxembourg	20.0	0.80		0.80	80	50
Malta	n.i.				70	40
Netherlands	0.2	1.00	0.80	0.90	80	50
Poland	n.i.		0.65	0.33	70	40
Portugal	3.0	0.97		0.97	90	60
Romania	n.i.				70	40
Slovakia	n.i.				70	40
Slovenia	25.5	0.75		0.75	70	40
Spain	11.6	0.88	0.90	0.89	80	50
Sweden	3.0	0.97		0.97	90	60
UK		1.00	0.96	0.98	90	60
England	0.8	0.99	0.96	0.98	90	60
Wales	6.0	0.94	0.96	0.95	90	60
Scotland	26.4	0.74	0.96	0.85	80	50
Northern Ireland	0.0	1.00	0.96	0.98	90	60

Given all the issues mentioned above (lacking information, different studies reporting different estimates, uncertainty about risk sampling, etc.), it was decided within the project team to further combine the different compliance estimates and come to a final figure to be further used in the Compliance level calculations for CCAT discussed in

this paper. Table 1 shows how this is done for the manure application requirements of the Nitrate Directive.

In our analysis we could detect our own classification of farms at risk. Note that in this study we are less constrained than monitoring and inspection agencies, which have to simultaneously consider various risk-based criteria, and also have a minimum share of their sample to be selected at random. Since our risk selection can be more targeted to the specific requirement we study (the manure application requirement), we estimated that the likely non-compliance rates are higher than those found by the monitoring and inspection agencies. In order to refine the analysis farms at risk were subdivided into three categories (no risk, medium-risk, high-risk), based on the calculated manure excretion of the total livestock population expressed per hectare of agricultural land. As regards the medium risk farm class it was assumed that these farms could have a rate of compliance of 90, 80 or 70 percent. For the high risk farms non-compliance rates were specified to be 30 percent lower than the ones for medium-risk farms, *viz.* 60, 50 or 40 percent respectively. The final choice for one of the three pairs (90, 60), (80, 50) and (70,40) was made dependent on the outcome of an indicator function (see 4th column of Table 1). This indicator function takes the average of the compliance information of the two studies (if both studies report an estimate), or the IEEP-estimate (if the CC study reports no estimate). If the indicator value reported a compliance rate of 90 percent or more the pair (90, 60) was selected. If the estimate was 80 percent or higher, but lower than 90 percent, the pair (80,50) was selected. When the indicator variable reported a lower compliance rate the pair (70-40) was chosen. Note that implicitly it is assumed that the estimated compliance rates at regulation level also implied a breach of the manure application standard. Since this is considered to be the most difficult sub-requirement a farmer has to satisfy within this regulation and the lack of any further information it was thought plausible to make this assumption.

For the estimation of the non-compliance rates with the Animal Identification and Registration Directives a simpler approach was chosen. As Table 2.2 shows compliance rates vary by animal type, with bovine animal having the lowest non-compliance rates (see Average row). This difference was detected already in the Cross Compliance project and the IEEP study, and can therefore also be used as a starting point in CCAT. However, in all cases the rates of non-compliance are significant. In a number of cases information is lacking, this in particular holds with respect to pigs. For some countries only for some regions information was available (Belgium, UK). For other countries only aggregate numbers were provided (Finland, Malta, UK Scotland). In the latter case the average rate has been applied to all animal categories.

In order to come to an estimate of non-compliance rates for the Animal Identification and Registration Directives the non-compliance rates in Table 2.2 are combined with relative occurrence of the different animal types in every Nuts 2 region as is discussed further in Chapter 4 (Section 4.1).

Table 2.2 Non-compliance information for the Identification and Registration of animal Directives.

Member State	Bovines	Sheep&Goat	Pigs
Austria	24.0	30.0	16.0
Belgium (F)			
Belgium (W)	29.0	85.0	
Denmark	0.0	0.0	0.0
Finland	40.0	40.0	40.0
France	9.7	30.0	48.0
Germany	30.0	27.0	20.0
Greece	18.6	49.0	
Italy	2.8	0.4	
Ireland	7.0	10.0	29.0
Luxembourg	26.0	62.5	87.0
Malta	20.0	20.0	20.0
Netherlands	6.1	3.0	
Portugal	25.0	25.0	25.0
Spain	11.7	4.8	
Sweden	4.1	4.1	
UK England			
UK Wales	39.4	12.0	17.0
UK Scotland	47.0	47.0	47.0
Average	20.0	26.5	31.7

Source: information based on assessment of IEEP study

3 Compliance rate determination and costs for Nitrate Directive

3.1 Overall approach to calculation of compliance levels with Nitrate and animal registration Directives

The Nitrate Directive is a complex Directive, which contains several sub requirements. In the following the general empirical procedure to determine the compliance rate levels for the various sub-requirements at a regional (NUTS2) level will be discussed stepwise. Central in this approach is the identification and analysis of information that helps to classify farms as low, medium or high risk of non-compliance. It is assumed that depending on the risk classification compliance rates are likely to differ. Alongside the degree of compliance also a procedure to estimate the costs of compliance is discussed.

3.1.1 Overall design of approach to estimating compliance rates with Nitrate Directive

The procedure to calculate regional compliance rates was developed in two steps. First the empirical approach was developed and refined for estimating the compliance levels at regional level. Once this phase was executed the real implementation of the calculation procedure took place. In the following first the steps taken to come to the general empirical approach are discussed. This phase exists of 3 steps:

- obtain a best-estimate of the compliance rate and the number of breaches at member state level, preferably measured at requirement level rather than at the encompassing regulation level. This information was obtained for CCAT from a national survey on compliance levels with CC requirements conducted by IEEP for DG-Agri and the Cross Compliance (CC) research project (See Chapter 2 and Table 2.1 more specifically).
- analyse the characteristics of farms, preferably per individual farm or farm group (NOT at the level of the total farm population) at regional level. Such information can be obtained from for example the Farm structure survey (FSS) data, per sectoral group, and other data sources describing farm activities at NUTS2 level (but also Nitrate Vulnerable Zone (NVZ) etc.). This analysis helps to define the categories of affected and non-affected farms. Moreover, within the affected category it could provide indicators to estimate which part of the affected farms is likely to make adjustments (e.g. farming practice, create provisions for handling manure, etc.) in order to become compliant.
- Develop a procedure which links the non-compliance rate or the reported number of breaches at member state level to the farm activity characteristics at regional level in order to obtain best-estimates of compliance at regional level.

The case considered is the 170kg N manure application and the record keeping standards of the Nitrate Directive. In this study the main source of information is the IEEP inventory and estimates of the CC project. They provide initial best estimates of compliance at member state level. Unfortunately the data from these 2 studies only provide information at the level of the whole Nitrate Directive, while it actually exists

of 9 sub-requirements. This means that this average estimate needs to be decomposed over these sub-requirements. Moreover, a correction might be needed with respect to translating the member state level estimate to the estimate for a specific group of farms at risk. In general the latter estimate of non-compliance will be higher than the average for the population.

The second step involves the analysis of regional farming characteristics that provide an indication on the chance that a farm is compliant or not with the Nitrate Directive sub-requirements. This information is obtained from several data sources and specifies this information at various sub-sectoral farm groups per region, such as specialized dairy, grazing and livestock and arable farms, etc. (see Section 3.2). Also an estimate is made of which part of the agricultural area is to be considered nitrate vulnerable zone (NVZ) and which part can be considered arable and grassland. If the share of NVZ is below 100 percent an estimate is made of the number of farms and animals located within and outside this zone, and thus of the ones obliged to follow the Nitrate Directive specifications and those that are not subject to it. In Section 3.2 the final analysis approve farm characteristics and the resulted grouping of farms at risk will be discussed. It will involve the livestock density factors and the nitrate excretion factors per animal type. Whereas in principle all farms keeping animals are affected by this nitrate Directive, it are in particular the ones with a high livestock density, which are critical to look at. In the analysis of farms we try to determine the number of farms, hectares and animals which fall in both a NVZ and exceed the 170 kg Nitrate per hectare.

The last step the overall rough compliance information at member state level is combined with the information about the regional farm structure to create best regional compliance estimates. Here the following logic is followed:

- Farms which are not affected by a regulation (e.g. because they are located outside a NVZ) can reasonably be assumed to comply with or satisfy the standard.
- Farms which are affected but have identifiable characteristics (for example a below 170 kg N per hectare excretion) and therefore unlikely to be in need to adjust their farming practice or farm facilities, may also be assumed to fully comply.

Based on these estimates a region-specific lower bound compliance rate can be estimated. This estimate can be made in terms of the number of farms, hectares and animals out of their respective totals.

- Farms which are affected and likely to make changes in farming practices, provisions, investments, etc. have a choice either to comply or not comply. Here we assume that this group will only partially comply with the requirements, where the rate of compliance is based on the member state level estimates. Here the latter are translated/transformed into compliance rates at the level of this group (cf. risk-based sampling).

Combining the information of the three distinguished categories (not affected, affected but change/adjustment not likely to be necessary, affected and required to make changes) a best estimate of the actual level of compliance is made.

3.1.2 Estimating costs of compliance: the Nitrate Directive manure application requirement case

As turned out from the CC project, in a lot of cases the costs of compliance are likely to be limited. This is likely to also hold at sector level since the fraction of farms that have to make additional costs (because they are not yet compliant, even though the legal requirement often is already there for years) is significantly below 1. So only a limited part of the total number of farms are faced with adjustment costs, leading to a low average cost per farm at sector level. Depending on the extent to which they are affected, at individual farm level significant costs might have to be made however in order to become fully compliant. According to information from the CC project, the Nitrate Directive is one of the standards to which this specifically applies. Significant costs at farm level can thus be expected. In the following we would like to focus on this Directive (leaving the other ones for a later treatment). Unfortunately, in general systematic information about these compliance costs is lacking. For that reason an approximate costs calculation procedure is developed, which fits in with the approach to estimate the regional degrees of compliance to be discussed in detail in Section 3.2.

Compliance costs with the Nitrate Directive can come from several directions. It includes operational costs (transportation, handling and spreading costs of surplus manure, labor cost associated with proper registration and record keeping of manure applications) and costs associated with investments that might have to be made (sufficient manure storage capacity, manure transport and spreading equipment). As farmers may partly outsource manure surplus handling to third parties the per unit handling costs of such firms might provide a good estimate of the operational and fixed (capital) costs associated with surplus handling. The missing category is investment costs associated with the creation of sufficient storage capacity. At this moment it seems impossible to get any reliable information about the latter investment costs. In the subsequent analysis therefore these costs will be ignored.

As regards the manure surplus handling costs, De Roest (2007) provides an estimate of the costs associated with transportation, handling and spreading of manure and sludge of about €0.30 per cubic meter-kilometer. How the additional labor costs are accounted for in this figure is not clear. For the Netherlands estimates varying from €5-€10/ton of surplus manure are reported (Veerman2004²) but no information about the distance is provided. Using rough transport estimates a figure varying between €0.10-€0.20 per ton-kilometer can be deduced. Since this estimate is based on outsourcing it can be assumed to include the actual labor costs the third party has to make.

The per unit-kilometer cost estimates provided above have to be multiplied with the amount of surplus and the transportation distance between the surplus area where the surplus originates from at the nearest deficit or destination area where the surplus can be placed.

- The amount of surplus can be estimated by using information on the manure surplus per hectare and the number of hectares for which this holds. Here the surplus per hectare depends on the amount per hectare that is produced less maximum application level associated with standard (e.g. equivalent with

² LNV, Kenmerk: DL. 2004/3854, datum: 13-12-2004; subject: Motie Van der Vlies c.s. inzake mestbewerking en mestverwerking TRC 2004/8438

170kg.N/ha in case no derogation applies³). Note that this information can be determined at the level of a specific subsector or farm type. So costs can be determined at a rather disaggregate farm activity level.

- The transportation distance between surplus and nearest deficit area is generally unknown. For this reason an approximate calculation was developed, relying on the following categorization:
 - o If there is no surplus, the transportation costs will be zero (although there might in reality be some manure transportation this is assumed to be part of normal costs).
 - o If a specific sector has a surplus, but the region as a whole has no surplus, the surplus is assumed to be disposed off in the region. The transportation distance is approximated by 0.5 times the radius. (The radius, which is equal to the square root of the surface of the region divided by pi, is used as a within-region distance proxy).
 - o If a sector has a surplus and also the region as a whole is facing a surplus, the surplus manure has to be get rid off outside the region. It is assumed that the distance in that case is equal to 1.25 times the radius.

In the latter case the procedure could be refined by making use of more detailed information about the manure surpluses in adjacent regions to the one reconsidered. The current approach does not account for this. This might lead to an underestimation of the distance in particular for regions in the heart of extended Nitrate Vulnerable Zone areas.

Alongside the maximum manure N application standard of 170 kg N per ha in Nitrate Vulnerable Zones (except where a derogation applies) (SMR0402) (see discussion above), the Nitrate Directive includes 8 other requirements. These additional requirements are:

- balanced N fertilizer application standard (SMR0401);
- No fertilizer and manure application in winter and wet periods (SMR0403);
- Limitation to fertilizer application on steeply sloping grounds (SMR0404);
- Enough manure storage capacity (on field and farm) complying with standards with minimum risk on runoff and seepage (SMR0405);
- Appropriate fertilizer and manure application techniques, including split application of N (SMR0406);
- Prevention of leaching to water courses riparian zones buffer zones (only in NVZ) (SMR0407);
- Growing winter crops (maintain vegetation cover during rainy periods) (SMR0408);
- Obligatory establishment of fertilizer plans on a farm-by-farm basis and the keeping of records on fertilizer use. (Only in NVZ) (SMR0409)

The balanced fertilizer standard requires planning, calculation (manure and nutrient accounting), soil sampling, manure application record keeping and registration of manure transport to other farms or destinations. The costs associated with these requirements can be best approximated by a fix amount per hectare, mainly reflecting

³ For non-vulnerable zones the allowance is 340kgN/ha.

labor time (estimated to be 0.2-1.0 hour/hectare). The monetary equivalent is estimated to be €2 - €10 per hectare.

Restrictions on application during winter time and wet periods will induce the need for greater storage capacity. The investment costs associated with this are costs associated with satisfying this requirement (the annual costs include interest payment, depreciation, maintenance, etc.). However, information is lacking about the additional investments in storage capacity that were necessary to satisfy the specific Nitrate Directive standard. For that reason it is proposed to ignore these costs.

As regards leaching prevention the requirement of buffer zones may have a negative impact on crop yields from these zones. Until recently the buffer zones were often included in the area of land that anyway had to be idled because of the set-aside constraint. Now the set-aside policy has been revised, with the set-aside rate put to zero, the buffer zones requirement may again act as an independent restriction. The implementation of this requirement differs over member states but comes roughly down to 3 percent (at maximum) of the cultivated area of arable land⁴. For grassland or permanent pasture the impact seems negligible. The costs associated with the buffer zone requirement can be approximated by a yield reduction for arable crops (forgone benefit) and lower fertilizer application costs (avoided costs). The yield reduction is likely to be significantly less than the buffer zone percentage, since the land designated as a buffer zone through its natural and physical conditions is likely to already have a below average crop yield.

The requirement to apply soil coverage may give rise to additional costs, only as far as it exceeds what farmers already do voluntarily irrespective of any standards. As regards such voluntary action (which is estimated to play a significant role) it can be assumed that the costs involved in this are more than compensated by additional gains achieved (if not profitable farmers would not have done it). Moreover, there is an interaction of this requirement with the organic matter requirement and erosion combating measures as specified in the GAEC standards. So there is some debate possible about the allocation of costs to specific requirements (i.e. the Nitrate Directive or the GAEC standards). The costs associated with a green cover crop (seeds, seeding and tillage, cover destruction by plough) are estimated to be about €90/hectare. However the uncertainty is as to whatshare of the land this should be applied (the part of arable land in NVZs that would not have been voluntarily covered with green coverage).

⁴ France specified a rate of 3 percent. For other member states a rate half as large might be also a reasonable estimate.

3.2 A more detailed account of the calculation steps

3.3.1 Obtaining best estimates of compliance rates with Nitrate Directive

In this section a detailed description is given of the final calculation of compliance levels for the 9 Nitrate Directive sub-requirements (SMR0401-SMR0409). Overall it follows the steps already discussed in section 3.1.

The input information used for calculating the final compliance is given in Table 3.2 underneath.

Table 3.2 Input used for calculating 2005 compliance levels of the Nitrate Directive at Nuts 2 level

Data source	Description	Used for
Elaborated estimates of Compliance levels per country derived from IEEP and Cross Compliance projects as given in Table 2.1 in this report.	Estimation of paired compliance levels for the farms that were identified as being in the medium and high risk groups for not complying with the ND. The estimates are divided over three pairs of compliance classes: 90, 60 - 80, 50 and 70,40	The paired compliance levels are applied to all farms in a total farm population per Nuts 2 region that have been allocated to the medium and high risk group for not complying with the ND.
FSS (Eurostat) 2005 figures per sectoral farm group per Nuts 2 on number of livestock divided over detailed livestock types and number of hectares divided over detailed cropping groups.	See Annex 1, Tables 1-3	Estimating per sectoral farm group per region which share of the holdings, UAA, and livestock population can be allocated to the medium and high risk groups for not complying with the ND.
GAINS-MITERRA nitrate excretion factors per country per animal group	See Annex 1, Table 4	Calculating per sectoral farm type group total Nitrate excretion per hectare from manure
Map of Nitrate vulnerable zones	Detailed spatial distribution of NVZ in EU (See Annex 2)	Calculate per Nuts 2 the total NVZ share of the total UAA
Corine land Cover map 2005	Detailed spatial distribution (250 meter grid) of main land cover classes in Europe (See Annex 2)	Calculate per Nuts 2 the total share of arable, grass and other agricultural land present in a NVZ. This share is needed to allocate the land use of the different sectoral farm type groups to the NVZ area and estimate their land use

		share present in a NVZ.
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For the identification of these high risk farms we took for most sub-requirements the average animal nitrogen balance per hectare. However, for three sub-requirements also other risk characteristics were taken as is specified in underneath Table 3.3. See right column of Table 3.3 in particular where the high risk group is further detailed (3.2).

Table 3.3 The Nitrate Directive sub-requirements and criteria used for estimating medium and high risk groups of non-compliance.

	Description of sub-requirement	Higher risk of non-compliance
SMR0401	Balanced N fertilizer application	Sectoral farms groups per Nuts 2 with an average animal N-balance >170 kg N/ha located in NVZ.
SMR0402	Maximum manure N application standard of 170 kg N per ha (except where a derogation applies) (in Nitrate vulnerable zones).	Sectoral farms groups per Nuts 2 with an average animal N-balance >170 kg N/ha located in NVZ.
SMR0403	No fertilizer and manure application in winter and wet periods	Sectoral farms groups per Nuts 2 with an average animal N-balance >170 kg N/ha located in NVZ.
SMR0404	Limitation to fertilizer application on steeply sloping grounds	All farmland (or farms with farmland) in NVZ in slopy land (>2% slope) is in risk group
SMR0405	Enough manure storage capacity (on field and farm) complying with standards with minimum risk on runoff and seepage	The same estimates as for SMR0401 but for countries like Denmark, Finland, and Netherlands we assume 100% compliance since this level was already estimated in Miterra ⁵ for 2000 situation at 100%.
SMR0406	Appropriate fertilizer and manure application techniques, including split application of N	Sectoral farms groups per Nuts 2 with an average animal N-balance >170 kg N/ha located in NVZ. But for countries like Denmark, Finland, and Netherlands we assume 100% compliance since this was already estimated in Miterra ⁵ for 2000 situation at 100%.
SMR0407	Prevention of leaching to water courses riparian zones buffer zones	Sectoral farms groups per Nuts 2 with an average animal N-balance >170 kg N/ha located in NVZ.
SMR0408	Growing winter crops (maintain vegetation cover during rainy periods)	1) Share of cropping land in total UAA 2) Number of farms with cropping land+cropping land in total UAA.
SMR0409	Obligatory establishment of fertiliser plans on a farm-by-farm basis and the keeping of records on fertiliser use;	Sectoral farms groups per Nuts 2 with an average animal N-balance >170 kg N/ha located in NVZ.

⁵ Velthof, G.L, Oudendag, D.A & Oenema, O (2007), Development and application of the integrated nitrogen model MITERRA-EUROPE, Service contract "Integrated measures in agriculture to reduce ammonia emissions" Contract number 070501/2005/422822/MAR/C1.

So the calculation of the animal nitrogen balance is the most important factor to determine in order to come to a risk estimate. This factor was calculated per sectoral farm type per Nitrate Vulnerable zone within every Nuts 2 region in the following way using the input data given in Table 3.2.

Firstly, FSS data were collected and processed. Per farm type data were collected on:

- 1) total number of holdings
- 2) the number and type of animals (in heads)
- 3) the number of hectares per crop and total utilized agricultural area (UAA)

Secondly, an estimate was made of the agricultural area of every sectoral farm type group located within and outside a NVZ. This estimation was made by first overlaying the NVZ with Corine land cover information and determining the percentage of agricultural land, grassland, arable land and other agricultural land located in and outside NVZ (see result of overlay per Nuts 2 region in Annex 2). These land type shares were then used as weighting factors to distribute the different sectoral types over NVZ. Depending on the land use pattern per farm type it was determined which weighting factor was used (e.g. farms with a dominant grassland area used the grassland area share as a weighting factor, while dominant arable farms used the arable land share). The result was then a distribution of total farm population, total Utilised Agricultural area and total livestock population over NVZ and non-NVZ per Nuts 2.

Thirdly, per sectoral farm type group in every NVZ a calculation was then made of the total Nitrogen production by livestock. This was calculated by multiplying the total heads of an animal type with the related N-excretion factor as determined in Gains per Nuts 2 region (see Annex 1). The total animal N-production per farm type was then determined combining the total N-production of all animals occurring in one sectoral farm type group.

Fourthly, the final animal N-production per hectare was then calculated by dividing the total N-production per sectoral farm type in every NVZ by the total UAA belonging to this farm. This resulted in a grouping of farms in compliance with the 170 kg N/ha and exceeding this level.

Fifthly, the total animal N production above the 170 kg N/ha was calculated per sectoral farm type in every NVZ. This was necessary to also make an estimation of the costs related to getting rid of the excessive manure in order to become compliant. A calculation was therefore made of the total animal N production allowed per sectoral farm type by multiplying the total UAA*170 kg N. This figure was then subtracted from the real total N production per sectoral farm type. The excess N-production could then be determined. This figure was then used as a basis to calculate further costs to be made to become compliant (see Section 3.2.2).

Sixthly, for the compliance level estimates for the sub-requirement on growing winter crops (SMR0408) the risk factor taken was not the above 170 kg N application, but the share of arable land in the total UAA.

Lastly, in order to calculate the share of farms, their agricultural area and livestock population that is compliant or non-compliant the estimates of non-compliance in the high risk farm group as provided in the last column of Table 2.1 (Chapter 2) were used. This means that for example of all farm types in all Nuts 2 regions of Austria where the 170 kg N production was exceeded 40% was expected to be non-compliant, while this figure was a 60% in Finland and at 50% in France. The resulting calculations of compliance levels are given in Annex 3, expressed as agricultural area shares.

For the calculation of the compliance level for the sub-requirement 8 on growing winter crops (SMR0408) the share of arable land in the total UAA was taken. This figure was then multiplied by the expected non-compliant level from Table 2.1.

For the new Member States compliance levels were also calculated in spite of the fact that the Nitrate Directive is not part of Cross Compliance. However, the Nitrate Directive is a legal standard in these countries, so in that sense a compliance level with this requirement could still be calculated.

3.2.2 Obtaining best estimates of costs of compliance for Nitrate Directive

As regards costs it is important to make a distinction between costs associated with cross compliance and those associated with specific standards. Cross-compliance is an additional enforcement mechanism, aimed at improving compliance with standards. From the perspective of cross-compliance, additional costs (not related to the standards but to CC) can only come from new requirements that were added by the introduction of obligatory CC to existing standards (e.g. some record keeping activities with the Nitrate Directive, or increased monitoring requirements) or from new standards that were specified as part of CC. These latter standards can only refer to the GAEC conditions, since all other standards (SMRs) reflect pre-existing EU legislation. So, from a cross-compliance perspective the SMRs in general will not lead to additional costs since CC made only minimal additions to the pre-existing SMRs.

We start by calculating the cost (COST_max) that would occur in case there was a violation of CC. We get e.g. 100€ per LU in regionA

- These costs depend on:
 - the manure output per LU(tons);
 - the transport and handling unit costs per unit of distance (€/ton.km);
 - the transportation distance bridging origin and disposal destination (km);
- Irrespective whether they are classified as medium or high-risk, non-compliant farms will face additional costs associated with an improvement of the general compliance level. Since then it are these farms with have to make costly adjustments.

For each farm we know the voluntary (minimal) degree (DG_min) of compliance and the level of compliance in the reference year (DG_ref) (where obviously $DG_{min} \leq DG_{ref} \leq 100$).

As regards the costs associated with specific standards, two cost concepts are distinguished here: current costs of compliance and additional costs of compliance. Current costs (COST_cur) of compliance represent the costs a farmer has to make in order to each year satisfy the standard (this will mainly reflect operational costs)⁶. Additional costs (COST_add) of compliance are associated with an increase in the degree of compliance in simulation (DG_sim).

Current cost can be calculated as

$$\text{COST_cur} = (\text{DG_ref} - \text{DG_min}) * \text{COST_max}$$

Additional cost can be calculated as

$$\text{COST_add} = \text{MAX}(0, \text{DG_sim} - \text{DG_ref}) * \text{COST_max}$$

Several possibilities have to be considered (see also Table 3.4):

- Farms that are not affected can be assumed to not have to make any adjustments in farming practice, nor investment in facilities. So their costs with satisfying the standard are zero. Since they are considered to be fully compliant they don't face any additional costs associated with an improved degree of compliance with the standard;
- Also farms that are affected but voluntary compliant do not have to make adjustments in farming practices because their behaviour in the past was already in line with regulations. So their current costs with satisfying the standard are zero and they will not face any additional costs associated with an improved degree of compliance with the standard;
- Farms that are affected and compliant are likely to face current costs in order to ensure that it satisfies the standard. However they do not have to cover additional cost in order to improve the degree of compliance;
- Farms that are affected and non compliant are likely to face no current costs in order to ensure that it satisfies the standard. However they do have to cover additional cost in order to improve the degree of compliance.

⁶ We would like to distinguish current costs (alongside additional costs), because farms at different locations (e.g. inside and outside an NVZ area) will have different current costs levels due to the considered standards. The question is still to be answered to which extent this can be interpreted to be already (implicitly) incorporated into the data.

Table 3.4 Summary on Regulations, compliance level and cost impacts

		current cost (covered in reference situation)	additional cost (to become compliant)
not affected	standarts cannot be applied to the farm, e.g. the farms located outside NVZ and hence Nitrate driective is not applied.	NO	NO
voluntary compliant	standarts are not binding for the farm, e.g. located inside NVZ but no animal keeping .	NO	NO
compliant	already made investments to comply, e.g. manure is transported to other regions	YES	NO
non compliant	violating standartds, investments are necessary to become compliant	NO	YES

What makes things complicated is that economic simulations are done at the resolution of regionally aggregated production activities, not at the level of farms. Following the compliance observations made at farm or farm type level that have to be aggregated to regional compliance for each production activity. At the level of activities “not affected” and “voluntary compliant” are seen as equal since in both cases neither current nor additional cost occur (see as an illustration Figure 3.1 first column). For some regulations a farm could become compliant simply by reducing the production level of an activity. For example a pig farm producing more than 170kg Nitrogen/ha could become compliant by lowering the number of animals until full compliance is achieved. Or, alternatively it could make provisions (e.g. rent land, invest in additional storage) which makes the farm compliant. If a farm has made adequate provisions which make it fully compliant, all animals at this farm are considered to be compliant (see as an illustration Figure 3.1, second column). Farms can also be non-compliant (see Figure 3.1 column 3), but in that case usually not all, but only part of their animals will be non-compliant.

In general in the calculations the number of animal exactly meeting the standard are interpreted as being voluntary compliant. These animals can come from farms that are voluntary compliant, or that have become compliant by adjusting their stock, as well as from farms which are not fully compliant. In the latter case the number of animals corresponding with the estimated degree of compliance are considered to be compliant. The remaining animals are considered to be non-compliant and are the basis of the calculated surplus manure and associated costs. For example, if a farm has 100 animals and a degree of compliance with the N-application subrequirement of the Nitrate Directive of 80 per cent, then 20 animals are considered to be non compliant. So only the additional animals are non compliant and receive additional cost (see Figure 3.1). In contrast when current costs are calculated, this calculation is based only on the number of animals that are calculated to be compliant. Average current and additional cost per production activity and region are calculated from regional shares and total cost that have to be covered in case of violation.

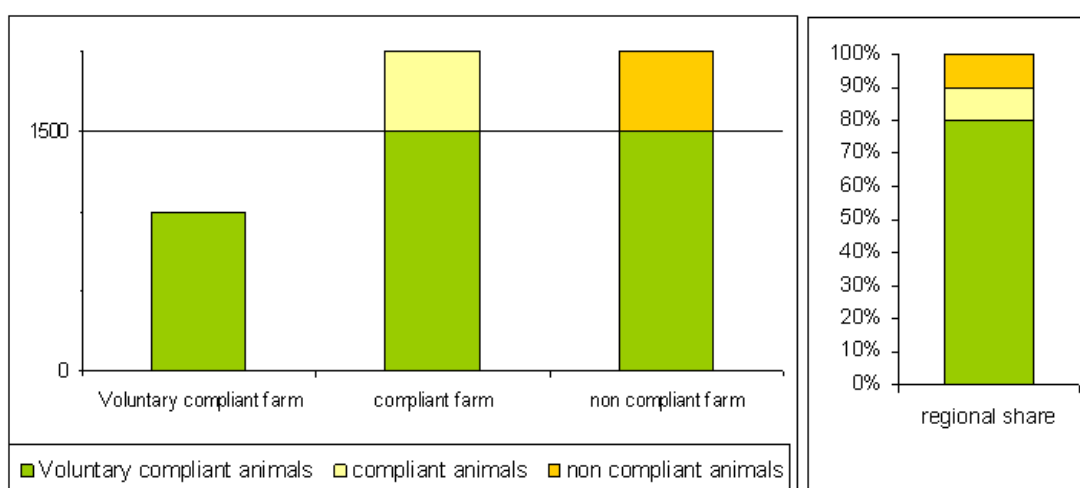


Figure 3.1 Graphic illustration of compliance issues at farm and regional level

In the previous section costs of compliance were related to the amount of surplus, the estimated degree of compliance and the distance associated with surplus disposal. As to the calculation of the surplus it was already explained in the former section that per sectoral farm type per Nuts 2-NVZ combination a calculation was made of the total animal N production allowed by multiplying the total UAA*170 kg N. This figure was then subtracted from the real total N production per sectoral farm type. The excess N-production could then be determined. This excessive N-production was then multiplied with a conversion rate (see Table 3.5) to convert it into the total amount of manure.

Table 3.5 Rates used to convert animal manure into Nitrogen.

Animal type	Dairy cow	Other cows	Sheep&goats	Pigs	lay hens	Other poultry	Equidea (horses...)	Rabbits and Fur animals
Class code	J/07	J/08	J/09, J/10	J/11/13	J/15	J/14-J/16	J/01	J/17
Kg N / 1000kg manure	4.7	4.7	4.7	6.1	13.2	13.2	4.7	4.7

Two possibilities are considered with respect to the distance factor. In case the surplus can be placed within the same region a distance of 0.5* radius is used. If the surplus has to be get rid of outside the region 1.2 * radius is used (see also previous section).

The final cost calculation is done within CAPRI. External information used is the calculated compliance rates and manure surpluses, a per unit costs-distance estimate, and distance information (radius). The multiplication factor for the radius will depend

on the neighborhood situation (could manure surplus be placed inside or outside the region?), and will be accounted for in the CAPRI model.

4 The Identification and registration Directive

4.1 Determination of compliance rates

Just like in the case of the Nitrate Directive there the challenge is to translate non-compliance at farm level to the number of animals that are non-compliant. This translation is necessary to arrive not only at a realistic estimate of compliance, but also of related costs to become compliant. The estimate of the number of animals that are non-compliant, in case a farm is detected to be non-compliant, has to be based on certain assumptions, since no direct information is available. Non-compliance has to do with incomplete or false record keeping as well as with violating the requirement that each animal should be identified by a double eartag. With respect to these eartags loss rates up to 40% were observed, with the loss rate depending on the farming system used and the type of animal (SOURCE). Assuming an average loss rate of about 20 percent means that each month about 2 percent of the animals losses(one of) its eartags. Assuming that the farmer only replaces the eartags once a month, within a month 2 percent of the animals can be detected in case of inspection as not properly identified.

For estimating the rates of non-compliance again the starting point is the identification of risk groups, i.e. groups with lower and higher risks for loss of eartags. The IEEP and CC projects already showed that non-compliance rates for different animal categories differs significantly. In Chapter 2, Table 2.2 this was already shown. For estimating the regional compliance rates the following steps were taken:

Step 1: Collection of risk data: For every Nuts 2 region the total number (in heads) of cattle, sheep and goats and pigs was extracted from the Eurostat FSS data source. At the same time the number of these three animal categories per sectoral farm type group was registered.

Step 2; Estimation of non-compliance rates: For every animal type group and every sectoral farm type group the average non-compliance rate as specified in Table 2.2 was applied. Results of this calculation are specified in Annex 4 per animal groups per Nuts 2 region. For all regions a minimal level of 10% of non-compliance was always assumed even though the figures in Table 2.2, as estimated in the IEEP study, indicated to a lower level. The results have onl been calculated for the old Member States, since in 2005 the Animal registration Directives were not yet implemented in most of the new Member States. From the figures provided in Annex 4 an average eartage loss cost could be estimated as is discussed in the next Section.

4.2 Determination of compliance costs

It is assumed that the costs of replacing an eartag vary per animal. Based on observations made in the Cross-Compliance project the costs per bovine and caprine

or ovine animals are estimated to be €5 and €4 per animal respectively (this includes an estimated animal treatment time of 7 minutes per animal).

The additional costs associated with achieving full compliance are then equal to:

- the rate of non compliance at farm level (CR)
- the total number of farms (T)
- the average number of animals per farm (herdsize HS)
- the estimated loss-rate per animal (LR)
- costs per animal for I&R (C-IR)

The estimated costs are then equal to:

$$\text{Total Costs} = (1-A) * T * LR/12 * HS * C-IR$$

Which is equal to the total number of animals T * HS times a corrected non-compliance rate (1-A)*LR/12, and the per animal costs of I&R.

Table 4.1 Loss rates and I&R costs

Animal type	Loss rate	Per unit I&R costs	
		Direct (costs eartags and animal treatment time)	Indirect (movement registration, passports)
Bovines	15%	€5.00/animal ⁷	€1.00/animal
Ovine & caprine	30%	€4.00/animal	€0.50/animal
Pigs	10%	€0.25/animal	€0.25/animal

Source: best-estimates based on information derived from CC-project.

⁷ Note that since each animal has to be identified also the number of born animals (which are not included in the stock because of slaughtering) has to be accounted for (think of male calves and male lambs).

5 Conclusions and generalisation of approach to final CCAT integrated assessment tool

5.1 Conclusions

Impact analysis of EU regulations being part of the cross compliance package requires regional disaggregation in order to account for regional heterogeneity in compliance levels and cost of compliance. The rate of compliance with standards is likely to vary with regional heterogeneity. Since only (poor) compliance estimates at MS level are available, indirect procedures are required to downscale compliance levels to regions. This report therefore presented a downscale procedure using secondary farm and regional characteristics information and plausibility-reasoning. The approach was applied to the Nitrates Directive and the Animal registration Directives.

This document therefore presents a framework that allows for determining best estimates of compliance and costs of compliance at a disaggregated regional level (Nuts 2). This is done on the one hand using the information available at member state level from former studies and on the other hand using information about regional farm structure and management (farm types, product mix, intensity), zoning restrictions (NVZ, Natura 2000, etc.), as well as physical conditions (slope and erosion) in order to identify risk groups. These risk groups are characterized by having a higher chance of not being compliant with the EU-regulations. The challenge is then to identify these risk groups and estimate their (higher) non-compliance level correctly.

The overall regional estimates of compliance levels and costs show that the non-compliance rates with the Nitrate and Animal registration Directives are relatively low and so are the cost implications. However, it is recommended to validate the downscaling procedure with case study information.

The following part gives an overview on economic effects as calculated by the CCAT tool. Table 5-1 gives information on income details for the agricultural sector in EU27, comparing the reference situation in 2005 with hypothetical scenarios of full and zero compliance. Already in the reference situation the agricultural sector has to cover cost of 4.3 billion € each year related to measures that are also part of CC. These represent about 2% of the total production cost. In order to become fully compliant an additional 1.5 billion € will have to be spent in the future. The CCAT tool allows to analyze details on cost implications in various ways. Following results per directive, production activity and region are presented.

Table 5-1: Agricultural Income in EU27

		Zero Compliance	Reference 2005	Full compliance
Agricultural Income	[Mio €]	167647	165094	163814
	[% diff]		-1.5%	-2.3%
Premiums	[Mio €]	37548	37496	37487
Total Output Value	[Mio €]	348179	348467	348866
	[% diff]		0.1%	0.2%
Total Input Value	[Mio €]	218081	220870	222540
	[% diff]		1.3%	2.0%
of which related to CC		4376	5873	

Source: Own calculations

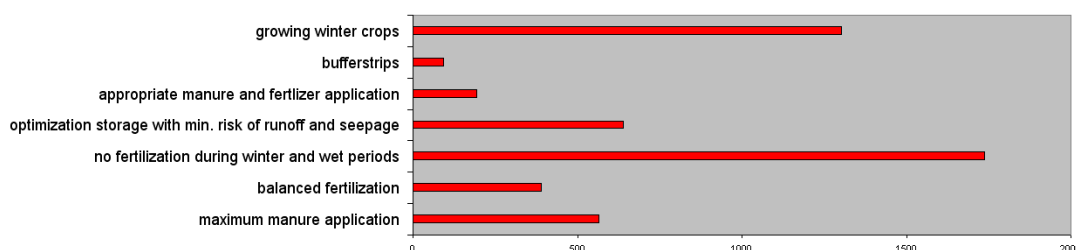
The numbers presented under the heading “zero compliance” of Table 5.2 indicate by how much the costs could be reduced if farmers would not face the obligatory standards. Implicitly this gives a costs estimate of the costs that were made already in the past to reach the 2005 Reference level (see second column of table 5.2). As Table 5.2 shows the major part of the identified costs relate to the Nitrate Directive (3.5 billion €). Animal Registration accounts for approximately 800 million €. Further dividing in sub regulation shows that major costs are related to improvement and extension of manure storage. More storing facilities are needed to avoid application during winter and wet periods.

Table 5-2: Cost implications of CC measures

Cost of compliance in Agriculture (EU27)

	Zero Compliance			Reference 2005			Full Compliance		
	Total	Directive 4: Nitrate	Directive 6: animal registration	Total	Directive 4: Nitrate	Directive 6: animal registration	Total	Directive 4: Nitrate	Directive 6: animal registration
	[Mio €]	[Mio €]	[Mio €]	[Mio €]	[Mio €]	[Mio €]	[Mio €]	[Mio €]	[Mio €]
Total cost of compliance				4285	3485	800	5760	4924	836
Additional cost of compliance	-4376	-3560	-816	0	0		1496	1458	39

Directive 4: Cost implication per (sub-)regulation



Source: Own calculations

Agricultural production activities are unequally affected by the considered standards (see Table 5.3). For most activities additional spending will only lower income by up to 3.5%. Mayor cost have to be covered by pigs and poultry farms. These activities

face increasing production cost of 5 – 15% of the income. At the same time the contribution of premium payments to the income is expected to be low or negligible (depending on degree of specialization). Consequently the sanctioning system of CC alone is not a strong incentive for specialized pig and poultry to comply with the directives. Nonetheless the estimated degree of compliance in these farm types does not differ significantly from other farm types. This reveals that other mechanisms, e.g. national controls or federal certification schemes, enforce compliance.

Table 5.3 Cost implications desaggregated at sector level

Results for Full Compliance Scenario

		Income	Premium	average cost of compliance	additional cost of compliance	marginal cost of compliance
Cereals	€/ha	375.41	279.53	13.06	3.26	40.55
	% of income		74.5%	3.5%	0.9%	10.8%
Other arable crops	€/ha	1390.24	220.84	28.45	11.72	77.5
	% of income		15.9%	2.0%	0.8%	5.6%
Vegetables and Permanent crops	€/ha	3901.78	253.4	13.36	3.12	62.95
	% of income		6.5%	0.3%	0.1%	1.6%
Fodder activities	€/ha	1)	69.65	4.3	1.3	29.58
	% of income		1)	1)	1)	1)
Set aside and fallow land	€/ha	25.86	93.35	0.23	0.03	2.11
	% of income		361.0%	0.9%	0.1%	8.2%
Dairy Cows	€/ha	995.71	35.07	31.95	10.47	157.33
	% of income		3.5%	3.2%	1.1%	15.8%
Male adult cattle	€/ha	275.38	151.75	9.52	3.38	49.73
	% of income		55.1%	3.5%	1.2%	18.1%
Pork	€/ha	37.57	0.09	3.16	0.8	8.36
	% of income		0.2%	8.4%	2.1%	22.3%
Pig Breeding	€/ha	125.83	2.49	17.83	4.98	52.76
	% of income		2.0%	14.2%	4.0%	41.9%
Poultry fattening	€/ha	541.59	2.18	36.97	11.89	159.99
	% of income		0.4%	6.8%	2.2%	29.5%

1) not applicable - only used on farm / no trade

Source: own calculations.

Regional heterogeneity of cost implication can be analyzed at the Nuts2 level. All regions have to cover additional cost to be compliant with the directives. However this differs among regions depending on the production systems.

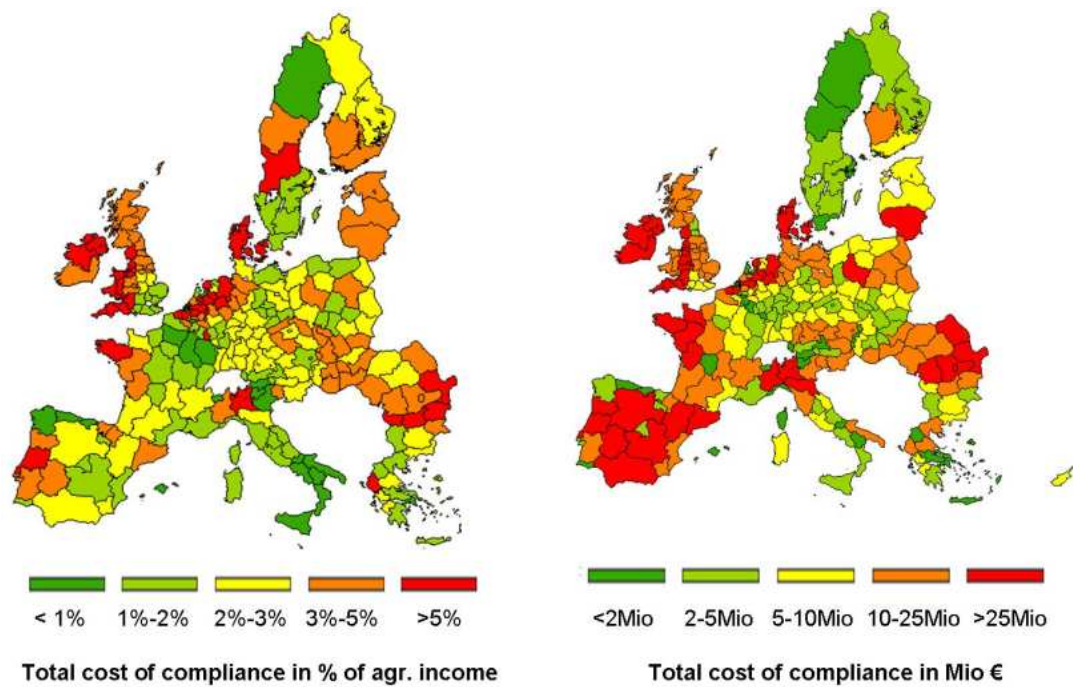


Figure 5.1 Regional distribution of costs of compliance

The findings can be summarized as follows:

- Overall income decreases
- Increasing market prices can partially compensate additional cost
- Directive 4 (Nitrate) accounts for major cost effects (especially manure storage and transport)
- Intensive (land independent) animal production systems have to cover significant cost
- Cost of compliance are in the range of premium cuts in case of violation

5.2 Approach to estimating compliance levels and costs in final CCAT integrated assessment tool

In this report an overall methodology is presented on estimating regional compliance levels and costs with EU-regulations being part of the Cross Compliance package. The methodology has been implemented for the Nitrates and Animal Registration Directives and shows plausible results. The core of the approach is to combine rough national estimates of (non-)compliance with estimates of farm and animal groups with a higher and lower risk of non-compliance.

For the final CCAT tool this methodology will be applied to a much larger number of SMRs and GAECs being part of the CC package. For every requirement and sub-requirement risk factors will be determined according to which farms (animal populations) can be categorized in higher and lower risk groups for non-compliance per region. To these groups different levels of nationally estimated compliance levels will be applied based as much as possible on already collected information in other studies.

For the costs a similar procedure is applied allowing for estimating regionally specific cost levels, building as much as possible on regional specific structural characteristics of the farming sector. Huge data bases on regional farming conditions are available from the CAPRI data base and FSS. Whenever possible we intend to specify regional cost related to the regional data. E.g. when a directive requires to extend the housing space for animals this is related to the investment cost of buildings. These cost differ naturally depending for example on climatic conditions and regional distinctions . The depreciation of buildings can be found in the CAPRI data. A straightforward procedure would be to calculate the percentage cost increase in some sample regions and apply this factor to all similar regions (e.g. Mediterranean regions, Eastern Europe, Scandinavia etc.). In the easiest case a European wide coefficient can be calculated, but also Nuts2 specific numbers can be processed depending on the complexity and the importance of an directive. Future CCAT applications will comprise a user-friendly excel sheet to enter cost calculation factors in the modeling system.

Annex 1 FSS farm structural data used for calculating compliance levels

Table 1 Sectoral farm groups used

Farm types

13	arable, specialist cereals, oilseeds and protein
14	arable, general fieldcropping
20	Horticulture
31	Permanent crops, specialist vineyards
32	Permanent crops, specialist fruit and citrus fruit
33	Permanent crops, specialist olives
34	Permanent crops, various crops combined
41	Specialist dairying
42	Specialist cattle rearing and fattening
43	Cattle-dairying with rearing and fattening
44	Sheep, goats and other grazing livestock
50	Specialist granivours
60	mixed cropping
71	Mixed livestock, mainly grazing
72	Mixed livestock, mainly granivours
81	Field crops-grazing livestock combined
82	various crops and livestock combined
90	Non classified

Table 2 Livestock groups used to characterize the livestock population composition and estimate the manure excretion rates per sectoral farm type group

Indicator	Description
j	Livestock
j01	Equidae
j02_08	Cattle
j02	Bovine <1 year old - total
j03	Bovine 1-<2 years - males
j04	Bovine 1-<2 years - females
j05	Bovine 2 years and older - males
j06	Heifers, 2 years and older
j07	Dairy cows
j08	Other cows, bovine 2 years old and over
j09	Sheep
j10	Goats
j11_13	Pigs
j14_16	Poultry (1000 heads)
j17	Rabbits (breeding females)
J18_19	Other livestock

Table 3 Crop groups used to characterize the land use mix and estimate the share of sectoral farm type groups located in and outside NVZ

Indicator	Description
agrarea	Utilised agricultural area
D	Arable land
d01_08	Cereals
d09	Pulses – total
d10	Potatoes
d11	Sugar beet
d12	Fodder roots and brassicas
d13	Industrial plants
d14_15	Fresh vegetables, melons, strawberries
d16	Outdoor:Flowers and ornamental plants
d17	Under glass:Flowers and ornamental plants
d18	Forage plants – total
d18a	Forage plants - temporary grass
d18b	Total:Other green fodder:Forage plants
d19_20	Other crops
d21	Fallow land without subsidies
E	Kitchen gardens
F	Total:Permanent grassland and meadow
G	Permanent crops
H_I	Other land

Table 4 Livestock and country-specific excretion factors used (source GAINS-MITERRA)

AT000000	DAICOW_L	89.39
AT000000	DAICOW_S	89.39
AT000000	FURANI	4.1
AT000000	HORSES	47.9
AT000000	LAYHENS	0.73
AT000000	OCOW_L	45.84
AT000000	OCOW_s	45.84
AT000000	OPOUL	0.4
AT000000	ORANI	1
AT000000	PIGS_L	9.03
AT000000	PIGS_S	9.03
AT000000	SHEGOA	13
BG000000	DAICOW_L	66.54
BG000000	DAICOW_S	66.54
BG000000	FURANI	1.5
BG000000	HORSES	50
BG000000	LAYHENS	0.8
BG000000	OCOW_L	45
BG000000	OCOW_s	45
BG000000	OPOUL	0.7
BG000000	ORANI	1
BG000000	PIGS_L	12.4

BG000000	PIGS_S	12.4
BG000000	SHEGOA	12
BL000000	DAICOW_L	108
BL000000	DAICOW_S	108
BL000000	FURANI	4.1
BL000000	HORSES	50
BL000000	LAYHENS	0.7
BL000000	OCOW_L	50
BL000000	OCOW_s	50
BL000000	OPOUL	0.46
BL000000	ORANI	1
BL000000	PIGS_L	11.05
BL000000	PIGS_S	11.05
BL000000	SHEGOA	7.4
CR000000	DAICOW_L	55
CR000000	DAICOW_S	55
CR000000	FURANI	4.1
CR000000	HORSES	50
CR000000	LAYHENS	0.8
CR000000	OCOW_L	45
CR000000	OCOW_s	45
CR000000	OPOUL	0.7
CR000000	ORANI	1
CR000000	PIGS_L	12.4
CR000000	PIGS_S	12.4
CR000000	SHEGOA	12
CY000000	DAICOW_L	107.62
CY000000	DAICOW_S	107.62
CY000000	FURANI	4.1
CY000000	HORSES	50
CY000000	LAYHENS	0.8
CY000000	OCOW_L	40
CY000000	OCOW_s	40
CY000000	OPOUL	0.7
CY000000	ORANI	1
CY000000	PIGS_L	12.38
CY000000	PIGS_S	12.38
CY000000	SHEGOA	12
CZ000000	DAICOW_L	100.28
CZ000000	DAICOW_S	100.28
CZ000000	FURANI	4.1
CZ000000	HORSES	50
CZ000000	LAYHENS	0.8
CZ000000	OCOW_L	45
CZ000000	OCOW_s	45
CZ000000	OPOUL	0.61
CZ000000	ORANI	1
CZ000000	PIGS_L	12.38
CZ000000	PIGS_S	12.38
CZ000000	SHEGOA	12
DE000000	DAICOW_L	113.9
DE000000	DAICOW_S	113.9

DE000000	FURANI	4.1
DE000000	HORSES	64
DE000000	LAYHENS	0.73
DE000000	OCOW_L	41
DE000000	OCOW_s	41
DE000000	OPOUL	0.54
DE000000	ORANI	1
DE000000	PIGS_L	11.91
DE000000	PIGS_S	11.91
DE000000	SHEGOA	13
DK000000	DAICOW_L	125.31
DK000000	DAICOW_S	125.31
DK000000	FURANI	4.63
DK000000	HORSES	43.31
DK000000	LAYHENS	0.71
DK000000	OCOW_L	37.15
DK000000	OCOW_s	37.15
DK000000	OPOUL	0.51
DK000000	ORANI	1
DK000000	PIGS_L	9.63
DK000000	PIGS_S	9.63
DK000000	SHEGOA	16.95
EE000000	DAICOW_L	91
EE000000	DAICOW_S	91
EE000000	FURANI	4.1
EE000000	HORSES	50
EE000000	LAYHENS	0.8
EE000000	OCOW_L	45
EE000000	OCOW_s	45
EE000000	OPOUL	0.5
EE000000	ORANI	1
EE000000	PIGS_L	12.38
EE000000	PIGS_S	12.38
EE000000	SHEGOA	14
EL000000	DAICOW_L	63.38
EL000000	DAICOW_S	63.38
EL000000	FURANI	4.1
EL000000	HORSES	50
EL000000	LAYHENS	0.8
EL000000	OCOW_L	45
EL000000	OCOW_s	45
EL000000	OPOUL	0.7
EL000000	ORANI	1
EL000000	PIGS_L	11.51
EL000000	PIGS_S	11.51
EL000000	SHEGOA	12
ES000000	DAICOW_L	96.18
ES000000	DAICOW_S	96.18
ES000000	FURANI	4.1
ES000000	HORSES	50
ES000000	LAYHENS	0.78
ES000000	OCOW_L	35.47

ES000000	OCOW_s	35.47
ES000000	OPOUL	0.59
ES000000	ORANI	1
ES000000	PIGS_L	9.63
ES000000	PIGS_S	9.63
ES000000	SHEGOA	8.55
FI000000	DAICOW_L	99.32
FI000000	DAICOW_S	99.32
FI000000	FURANI	1.9
FI000000	HORSES	50
FI000000	LAYHENS	0.8
FI000000	OCOW_L	53
FI000000	OCOW_s	53
FI000000	OPOUL	0.4
FI000000	ORANI	1
FI000000	PIGS_L	10.14
FI000000	PIGS_S	10.14
FI000000	SHEGOA	16
FR000000	DAICOW_L	100
FR000000	DAICOW_S	100
FR000000	FURANI	4.1
FR000000	HORSES	50
FR000000	LAYHENS	0.8
FR000000	OCOW_L	50
FR000000	OCOW_s	50
FR000000	OPOUL	0.88
FR000000	ORANI	1
FR000000	PIGS_L	12.17
FR000000	PIGS_S	12.17
FR000000	SHEGOA	12
HU000000	DAICOW_L	121
HU000000	DAICOW_S	121
HU000000	FURANI	4.1
HU000000	HORSES	50
HU000000	LAYHENS	1.5
HU000000	OCOW_L	45
HU000000	OCOW_s	45
HU000000	OPOUL	1.45
HU000000	ORANI	1
HU000000	PIGS_L	8.94
HU000000	PIGS_S	8.94
HU000000	SHEGOA	12
IR000000	DAICOW_L	85
IR000000	DAICOW_S	85
IR000000	FURANI	4.1
IR000000	HORSES	50
IR000000	LAYHENS	0.84
IR000000	OCOW_L	45
IR000000	OCOW_s	45
IR000000	OPOUL	0.51
IR000000	ORANI	1
IR000000	PIGS_L	11.12

IR000000	PIGS_S	11.12
IR000000	SHEGOA	8
IT000000	DAICOW_L	108.81
IT000000	DAICOW_S	108.81
IT000000	FURANI	4.1
IT000000	HORSES	50
IT000000	LAYHENS	0.66
IT000000	OCOW_L	46.89
IT000000	OCOW_s	46.89
IT000000	OPOUL	0.51
IT000000	ORANI	1
IT000000	PIGS_L	11.52
IT000000	PIGS_S	11.52
IT000000	SHEGOA	16.2
LT000000	DAICOW_L	70
LT000000	DAICOW_S	70
LT000000	FURANI	4.1
LT000000	HORSES	50
LT000000	LAYHENS	0.8
LT000000	OCOW_L	50
LT000000	OCOW_s	50
LT000000	OPOUL	0.5
LT000000	ORANI	1
LT000000	PIGS_L	12.38
LT000000	PIGS_S	12.38
LT000000	SHEGOA	12
LU000000	DAICOW_L	107.58
LU000000	DAICOW_S	107.58
LU000000	FURANI	4.1
LU000000	HORSES	50
LU000000	LAYHENS	0.8
LU000000	OCOW_L	42
LU000000	OCOW_s	42
LU000000	OPOUL	0.7
LU000000	ORANI	1
LU000000	PIGS_L	9.91
LU000000	PIGS_S	9.91
LU000000	SHEGOA	12
LV000000	DAICOW_L	71
LV000000	DAICOW_S	71
LV000000	FURANI	4.1
LV000000	HORSES	51
LV000000	LAYHENS	0.9
LV000000	OCOW_L	51
LV000000	OCOW_s	51
LV000000	OPOUL	0.9
LV000000	ORANI	1
LV000000	PIGS_L	10.01
LV000000	PIGS_S	10.01
LV000000	SHEGOA	6.95
MT000000	DAICOW_L	99.35
MT000000	DAICOW_S	99.38

MT000000	FURANI	4.1
MT000000	HORSES	50
MT000000	LAYHENS	0.8
MT000000	OCOW_L	40
MT000000	OCOW_s	40
MT000000	OPOUL	0.7
MT000000	ORANI	1
MT000000	PIGS_L	12.38
MT000000	PIGS_S	12.38
MT000000	SHEGOA	12
NL000000	DAICOW_L	126.2
NL000000	DAICOW_S	126.2
NL000000	FURANI	2.2
NL000000	HORSES	50
NL000000	LAYHENS	0.67
NL000000	OCOW_L	40
NL000000	OCOW_s	40
NL000000	OPOUL	0.62
NL000000	ORANI	1
NL000000	PIGS_L	9.18
NL000000	PIGS_S	9.18
NL000000	SHEGOA	11.54
PL000000	DAICOW_L	75.9
PL000000	DAICOW_S	75.9
PL000000	FURANI	4.1
PL000000	HORSES	50
PL000000	LAYHENS	0.7
PL000000	OCOW_L	35
PL000000	OCOW_s	35
PL000000	OPOUL	0.63
PL000000	ORANI	1
PL000000	PIGS_L	11.13
PL000000	PIGS_S	11.13
PL000000	SHEGOA	13.73
PT000000	DAICOW_L	87.6
PT000000	DAICOW_S	87.6
PT000000	FURANI	0.7
PT000000	HORSES	60
PT000000	LAYHENS	0.6
PT000000	OCOW_L	49.9
PT000000	OCOW_s	49.9
PT000000	OPOUL	0.94
PT000000	ORANI	1
PT000000	PIGS_L	9.14
PT000000	PIGS_S	9.14
PT000000	SHEGOA	7
RO000000	DAICOW_L	55
RO000000	DAICOW_S	55
RO000000	FURANI	4.1
RO000000	HORSES	50
RO000000	LAYHENS	0.8
RO000000	OCOW_L	45

RO000000	OCOW_s	45
RO000000	OPOUL	0.7
RO000000	ORANI	1
RO000000	PIGS_L	12.4
RO000000	PIGS_S	12.4
RO000000	SHEGOA	12
SE000000	DAICOW_L	120
SE000000	DAICOW_S	120
SE000000	FURANI	4.1
SE000000	HORSES	50
SE000000	LAYHENS	0.64
SE000000	OCOW_L	39
SE000000	OCOW_s	39
SE000000	OPOUL	0.33
SE000000	ORANI	1
SE000000	PIGS_L	11
SE000000	PIGS_S	11
SE000000	SHEGOA	6.1
SI000000	DAICOW_L	105
SI000000	DAICOW_S	105
SI000000	FURANI	4.1
SI000000	HORSES	50
SI000000	LAYHENS	0.71
SI000000	OCOW_L	40.1
SI000000	OCOW_s	40.1
SI000000	OPOUL	0.52
SI000000	ORANI	1
SI000000	PIGS_L	11.94
SI000000	PIGS_S	11.94
SI000000	SHEGOA	11.3
SK000000	DAICOW_L	81.94
SK000000	DAICOW_S	81.94
SK000000	FURANI	4.1
SK000000	HORSES	50
SK000000	LAYHENS	0.8
SK000000	OCOW_L	45
SK000000	OCOW_s	45
SK000000	OPOUL	0.7
SK000000	ORANI	1
SK000000	PIGS_L	12.38
SK000000	PIGS_S	12.38
SK000000	SHEGOA	12
TK000000	DAICOW_L	55
TK000000	DAICOW_S	55
TK000000	FURANI	4.1
TK000000	HORSES	50
TK000000	LAYHENS	0.8
TK000000	OCOW_L	45
TK000000	OCOW_s	45
TK000000	OPOUL	0.7
TK000000	ORANI	1
TK000000	PIGS_L	12.4

TK000000	PIGS_S	12.4
TK000000	SHEGOA	12
UK000000	DAICOW_L	106
UK000000	DAICOW_S	106
UK000000	FURANI	4.1
UK000000	HORSES	50
UK000000	LAYHENS	0.85
UK000000	OCOW_L	49
UK000000	OCOW_s	49
UK000000	OPOUL	0.75
UK000000	ORANI	1
UK000000	PIGS_L	12.41
UK000000	PIGS_S	12.41
UK000000	SHEGOA	6.42

Explanation of acronyms for animal categories:

DAICOW_L "Dairy cows liquid"

DAICOW_S "Dairy cows solid"

OCOW_L "Other cows liquid"

OCOW_S "Other cows solid"

PIGS_L "Pigs liquid"

PIGS_S "Pigs solid"

LAYHENS

OPOUL "Other poultry"

SHEGOA "sheep and goats"

HORSES

FURANI "Fur animals"

ORANI "Other animals"

Annex 2 NVZ area and farm shares per Nuts 2

TSL_II	NUTSname	Total holdings	Total UAA	Total LU	NVZ_Total holdings	NVZ_Total UAA	NVZ_Total LU	%AGRI in NVZ	%GRASS in NVZ	%ARAB in NVZ	% other AGRI in NVZ
1	Burgenland (A)	10280	189102	43640	10280	189102	43640	100%	100%	100%	100%
2	Niederösterreich	41780	940949	588350	41780	940949	588350	100%	100%	100%	100%
3	Wien	460	8390	430	460	8390	430	100%	100%	100%	100%
1	Kärnten	15780	305963	203280	15780	305963	203280	100%	100%	100%	100%
2	Steiermark	39640	463934	516870	39640	463934	516870	100%	100%	100%	100%
1	Oberösterreich	33990	565075	754090	33990	565075	754090	100%	100%	100%	100%
2	Salzburg	9360	267042	137820	9360	267042	137820	100%	100%	100%	100%
3	Tirol	15270	419074	155550	15270	419074	155550	100%	100%	100%	100%
4	Vorarlberg	4080	106751	53710	4080	106751	53710	100%	100%	100%	100%
_2	Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest and Vlaams Gewest	34430	350	2754743	15681	161	1353108	76%	34%	42%	0%
1	Prov. Antwerpen	5440	90529	537769	2626	43419	266318	67%	33%	33%	0%
2	Prov. Limburg (B)	4470	85519	259219	1826	36040	122159	62%	22%	37%	2%
3	Prov. Oost-Vlaanderen	9000	153109	591998	4099	70349	290785	76%	34%	42%	0%
4	Prov. Vlaams Brabant	4340	88049	133450	1485	32883	62060	50%	12%	37%	1%
5	Prov. West-Vlaanderen	11160	212478	1232017	4257	86081	592678	83%	25%	58%	0%
1	Prov. Brabant Wallon	1290	63460	55610	359	20904	25940	61%	6%	54%	0%
2	Prov. Hainaut	5180	220598	317259	1626	78371	149381	73%	13%	60%	0%
3	Prov. Liège	4390	159189	255219	1000	46351	116379	75%	1%	73%	1%
4	Prov. Luxembourg (B)	3170	147459	284959	1625	74054	142913	34%	19%	15%	0%
5	Prov. Namur	3080	164829	216749	1227	68867	104965	62%	20%	41%	0%
1	Severozapaden	96710	535424	203862	0	0	0	0%	0%	0%	0%
2	Severen tsentralen	72470	576714	242892	0	0	0	0%	0%	0%	0%
3	Severoiztochen	64420	640465	205652	0	0	0	0%	0%	0%	0%
4	Yugoiztochen	78050	537714	231842	0	0	0	0%	0%	0%	0%
1	Yugozapaden	85510	138271	149951	0	0	0	0%	0%	0%	0%

2	Yuzhen tsentralen	137460	300822	292822	0	0	0	0%	0%	0%	0%
0	Cyprus	45095	151470	243560	12218	57615	114093	66%	12%	46%	9%
1	Praha	330	34310	31160	136	14169	13402	56%	2%	49%	5%
2	Strední Cechy	4730	549880	279653	1934	225163	118928	68%	5%	56%	7%
3	Jihozápad	6740	750270	484085	2954	333686	222262	61%	10%	48%	3%
4	Severozápad	2690	312670	111931	1091	127390	47122	75%	9%	57%	9%
5	Severovýchod	6620	558760	362783	2888	245905	165982	66%	5%	59%	2%
6	Jihovýchod	12710	740060	470605	5586	328072	217163	70%	5%	63%	2%
7	Strední Morava	5330	392350	219522	2353	174404	101890	72%	2%	69%	1%
8	Moravskoslezsko	3090	219470	114671	1392	100080	54391	66%	6%	60%	0%
	Baden-Württemberg	59316	1446651	1464699	59316	1446651	1464699	100%	100%	100%	100%
	Bayern	126801	3264732	3687058	126801	3264732	3687058	100%	100%	100%	100%
5_6	Berlin, Bremen, Hamburg	1340	24790	17760	1340	24790	17760	100%	100%	100%	100%
	Brandenburg	6640	1346821	747420	6640	1346821	747420	100%	100%	100%	100%
	Hessen	23418	769080	619120	23418	769080	619120	100%	100%	100%	100%
	Mecklenburg-Vorpommern	5120	1349211	668900	5120	1349211	668900	100%	100%	100%	100%
	Niedersachsen	53396	2626472	4517628	53396	2626472	4517628	100%	100%	100%	100%
	Nordrhein-Westfalen	50376	1523751	2875848	50376	1523751	2875848	100%	100%	100%	100%
	Rheinland-Pfalz	26328	713760	419880	26328	713760	419880	100%	100%	100%	100%
	Saarland	1590	77450	50670	1590	77450	50670	100%	100%	100%	100%
	Sachsen	7789	912521	647800	7789	912521	647800	100%	100%	100%	100%
	Sachsen-Anhalt	4770	1171971	624440	4770	1171971	624440	100%	100%	100%	100%
	Schleswig-Holstein	17789	1008601	1288219	17789	1008601	1288219	100%	100%	100%	100%
	Thüringen	5170	799440	519730	5170	799440	519730	100%	100%	100%	100%
1	Hovedstaden	2629	101700	102840	2629	101700	102840	100%	100%	100%	100%
2	Sjælland	8687	491478	445550	8687	491478	445550	100%	100%	100%	100%
3	Syddanmark	14825	809397	1484980	14825	809397	1484980	100%	100%	100%	100%
4	Midtjylland	16025	821607	1557010	16025	821607	1557010	100%	100%	100%	100%
5	Nordjylland	9477	483498	975170	9477	483498	975170	100%	100%	100%	100%
0	Estonia	27780	828900	316060	11134	358728	126213	56%	15%	41%	0%
1	Galicia	91860	732760	1284182	0	0	0	0%	0%	0%	0%

2	Principado de Asturias	30930	393150	356730	0	0	0	0%	0%	0%	0%
3	Cantabria	12490	282680	259180	0	0	0	0%	0%	0%	0%
1	Pais Vasco	21780	239780	191690	5969	106066	106491	89%	1%	88%	0%
2	Comunidad Foral de Navarra	17790	588750	348380	4865	258744	191424	90%	1%	89%	1%
3	La Rioja	11780	242230	97350	3745	87381	37882	97%	24%	48%	24%
4	Aragón	51380	2382550	1620662	15329	1015912	850297	73%	7%	63%	3%
0	Comunidad de Madrid	8900	344740	125220	2252	140134	59882	70%	0%	60%	10%
1	Castilla y León	100310	5449900	2263903	29744	2382052	1238030	60%	5%	55%	0%
2	Castilla-la Mancha	137120	4403180	1165542	39454	1660338	489774	79%	11%	51%	17%
3	Extremadura	71700	2769380	1334642	18831	1172805	687114	94%	0%	87%	7%
1	Cataluña	57500	1162230	2622154	16938	463236	1221854	67%	9%	49%	9%
2	Comunidad Valenciana	143140	697800	508281	33569	188117	96277	63%	9%	14%	40%
3	Illes Balears	13560	206020	90990	2880	62274	23256	78%	3%	33%	42%
1	Andalucía	258480	4502640	1555632	68470	1724914	669571	77%	5%	55%	16%
1_63_64	Andalucía, Ceuta, Melilla	258480	4502640	1555632	0	0	0	0%	0%	0%	0%
2	Región de Murcia	34940	397150	526541	9551	145984	209986	80%	9%	50%	21%
3	Ciudad Autónoma de Ceuta (ES)	0	0	0	0	0	0	0%	0%	0%	0%
4	Ciudad Autónoma de Melilla (ES)	0	0	0	0	0	0	0%	0%	0%	0%
0	Canarias (ES)	15740	60160	101290	0	0	0	0%	0%	0%	0%
3	Itä-Suomi	12364	336451	210960	12364	336451	210960	100%	100%	100%	100%
3	Etelä-Suomi	21677	811304	309930	21677	811304	309930	100%	100%	100%	100%
3_2	Etelä-Suomi, Åland	22307	825944	316160	22307	825944	316160	100%	100%	100%	100%
9	Länsi-Suomi	26389	784463	449270	26389	784463	449270	100%	100%	100%	100%
1	Pohjois-Suomi	9573	316711	181150	9573	316711	181150	100%	100%	100%	100%
0	Åland	630	14640	6230	630	14640	6230	100%	100%	100%	100%
0	Île de France	5590	568190	50020	5590	568190	50020	100%	100%	100%	100%
1	Champagne-Ardenne	24560	1560769	547020	7427	640132	194650	69%	11%	56%	3%
2	Picardie	14530	1314080	501480	4329	546518	178633	74%	10%	63%	1%
3	Haute-Normandie	12850	786980	580590	12850	786980	580590	100%	100%	100%	100%
4	Centre	27630	2322589	697340	7473	945334	233246	80%	6%	72%	1%
5	Basse-Normandie	26940	1228140	1450821	13644	589882	753820	87%	49%	38%	0%

5	Bourgogne	22360	1764149	1017900	7932	760444	406558	69%	17%	50%	1%
0	Nord - Pas-de-Calais	15050	818930	717930	15050	818930	717930	100%	100%	100%	100%
1	Lorraine	13440	1127600	749910	5124	498731	316341	62%	19%	43%	0%
2	Alsace	12740	330020	175690	3618	129710	58901	57%	7%	45%	4%
3	Franche-Comté	10580	662360	502270	3338	281257	186716	63%	10%	53%	0%
1	Pays de la Loire	42870	2168739	3502292	18693	978102	1612184	88%	37%	48%	3%
2	Bretagne	40630	1668239	4613322	40630	1668239	4613322	100%	100%	100%	100%
3	Poitou-Charentes	29630	1743319	956410	10065	707653	360122	82%	20%	54%	7%
1	Aquitaine	46130	1429359	1133940	14825	583706	415682	50%	10%	37%	3%
2	Midi-Pyrénées	50900	2340249	1457961	17750	969058	563543	72%	19%	48%	5%
3	Limousin	15370	855500	887330	0	0	0	0%	0%	0%	0%
1	Rhône-Alpes	45870	1497219	1205761	17256	641158	495711	66%	20%	42%	3%
2	Auvergne	25560	1496119	1328401	11431	692719	629304	81%	36%	46%	0%
1	Languedoc-Roussillon	35830	958640	221690	7004	242928	45470	63%	7%	27%	29%
2	Provence-Alpes-Côte d'Azur	23620	670820	183620	11656	283904	88267	70%	42%	15%	13%
3	Corse	2650	157680	69690	0	0	0	0%	0%	0%	0%
	French overseas departments (FR)	21790	121250	151730	0	0	0	0%	0%	0%	0%
1	Guadeloupe (FR)	9490	35530	49500	0	0	0	0%	0%	0%	0%
2	Martinique (FR)	3760	26030	24310	0	0	0	0%	0%	0%	0%
3	Guyane (FR)	1280	16050	10880	0	0	0	0%	0%	0%	0%
4	Reunion (FR)	7260	43640	67040	0	0	0	0%	0%	0%	0%
1	Anatoliki Makedonia, Thraki	65392	397879	222900	23228	161568	86528	91%	29%	62%	0%
2	Kentriki Makedonia	117773	701278	404890	45285	310701	105196	70%	4%	64%	2%
3	Dytiki Makedonia	30391	233449	125270	0	0	0	0%	0%	0%	0%
4	Thessalia	80172	440289	311700	30844	195559	81572	78%	5%	72%	1%
1	Ipeiros	43321	123380	261870	15722	48095	70063	52%	8%	33%	11%
2	Ionia Nisia	31881	95920	40280	0	0	0	0%	0%	0%	0%
3	Dytiki Ellada	94762	371579	307610	35048	150572	79820	91%	11%	66%	15%
4	Sterea Ellada	81182	387109	176840	31265	169925	42594	58%	2%	52%	4%
5	Peloponnisos	105883	402399	163580	36211	118838	21567	74%	5%	16%	53%
0	Attiki	26651	57290	44720	0	0	0	0%	0%	0%	0%

1	Voreio Aigaio	33801	192290	72250	0	0	0	0%	0%	0%	0%
2	Notio Aigaio	24341	128440	85550	0	0	0	0%	0%	0%	0%
3	Kriti	98062	452489	262190	0	0	0	0%	0%	0%	0%
0	Közép-Magyarország	66411	296670	168529	38829	174240	94799	49%	9%	38%	2%
1	Közép-Dunántúl	65311	471580	309869	37960	275369	172832	56%	10%	43%	3%
2	Nyugat-Dunántúl	78892	514020	305569	47917	313820	176974	61%	9%	50%	2%
3	Dél-Dunántúl	92432	610210	347559	55662	369424	198947	62%	8%	51%	3%
1	Észak-Magyarország	91422	438280	162949	49496	238263	85118	55%	11%	39%	5%
2	Észak-Alföld	169723	926470	588548	96431	528865	320336	73%	12%	55%	5%
3	Dél-Alföld	150613	1009310	619058	95090	641037	368423	79%	7%	70%	3%
1	Border, Midlands and Western	69994	1868959	2647354	69994	1868959	2647354	100%	100%	100%	100%
2	Southern and Eastern	62645	2350441	3573016	62645	2350441	3573016	100%	100%	100%	100%
	Piemonte	76503	1029189	930190	25679	428083	423566	84%	8%	76%	0%
	Valle d'Aosta/Vallée d'Aoste	4650	68390	31930	0	0	0	0%	0%	0%	0%
	Liguria	23121	49080	17370	9615	19483	8588	33%	17%	17%	0%
	Lombardia	57422	978669	2606370	18802	409856	1179775	79%	4%	74%	0%
	Provincia Autonoma Bolzano-Bozen	20631	255670	131530	0	0	0	0%	0%	0%	0%
	Provincia Autonoma Trento	23291	145410	56920	0	0	0	0%	0%	0%	0%
	Veneto	143025	797569	1293670	45480	324552	553117	82%	4%	74%	5%
	Friuli-Venezia Giulia	23841	224520	203880	7882	92380	90649	45%	4%	40%	1%
	Emilia-Romagna	81483	1029919	1301280	26911	420703	572594	85%	8%	74%	3%
	Toscana	81843	809489	211290	25984	330396	90627	81%	3%	74%	4%
	Umbria	39351	337920	171870	12610	141542	76817	88%	2%	86%	1%
	Marche	53322	497140	157000	18542	203488	71554	88%	15%	72%	2%
	Lazio	107284	684939	342380	34522	288335	154453	81%	2%	80%	0%
	Abruzzo	60912	425180	137200	20449	177474	62773	82%	7%	75%	0%
	Molise	25031	212610	113090	0	0	0	0%	0%	0%	0%
	Campania	157015	563670	417830	49910	209920	157643	67%	10%	44%	13%
	Puglia	249338	1216919	181730	0	0	0	0%	0%	0%	0%
	Basilicata	59922	553590	164410	17433	189641	51215	78%	9%	42%	27%
	Calabria	122854	514340	141620	30934	159872	32975	82%	4%	37%	41%

	Sicilia	249038	1250699	345630	58570	349417	59903	89%	6%	25%	57%
2	Sardegna	68732	1062939	606530	23919	433145	274961	80%	14%	64%	2%
0	Lithuania	252939	2792050	1290460	252939	2792050	1290460	100%	100%	100%	100%
0	Luxembourg (Grand-Duché)	2450	129110	157760	2450	129110	157760	100%	100%	100%	100%
0	Latvia	128670	1701670	456260	53891	812586	184136	51%	12%	39%	0%
00	Malta	11111	10260	46130	11111	10260	46130	100%	100%	100%	100%
1	Groningen	3651	167151	234330	3651	167151	234330	100%	100%	100%	100%
2	Friesland (NL)	6292	239311	513021	6292	239311	513021	100%	100%	100%	100%
3	Drenthe	4201	157451	287550	4201	157451	287550	100%	100%	100%	100%
1	Overijssel	9874	214021	868421	9874	214021	868421	100%	100%	100%	100%
2	Gelderland	14025	246331	1267912	14025	246331	1267912	100%	100%	100%	100%
3	Flevoland	2121	91360	85320	2121	91360	85320	100%	100%	100%	100%
1	Utrecht	3251	70570	243320	3251	70570	243320	100%	100%	100%	100%
2	Noord-Holland	5862	137881	169280	5862	137881	169280	100%	100%	100%	100%
3	Zuid-Holland	8833	143121	218820	8833	143121	218820	100%	100%	100%	100%
4	Zeeland	3621	121701	81420	3621	121701	81420	100%	100%	100%	100%
1	Noord-Brabant	14525	263541	1782173	14525	263541	1782173	100%	100%	100%	100%
2	Limburg (NL)	5612	105621	636541	5612	105621	636541	100%	100%	100%	100%
1	Łódzkie	182470	1031899	841059	0	0	0	0%	0%	0%	0%
2	Mazowieckie	314180	1952309	1448139	153354	976291	733663	97%	2%	95%	0%
1	Malopolskie	315030	648480	485380	0	0	0	0%	0%	0%	0%
2	Slaskie	182710	413830	300090	88244	202296	149533	21%	4%	17%	0%
1	Lubelskie	281180	1437659	825479	0	0	0	0%	0%	0%	0%
2	Podkarpackie	274170	650750	374640	0	0	0	0%	0%	0%	0%
3	Swietokrzyskie	133710	525610	376480	0	0	0	0%	0%	0%	0%
4	Podlaskie	111370	1058309	860459	54136	492025	421145	67%	67%	0%	0%
1	Wielkopolskie	178610	1695739	1823718	84263	815530	889309	82%	8%	72%	3%
2	Zachodniopomorskie	55510	861449	381330	27049	425646	191964	76%	13%	63%	0%
3	Lubuskie	45090	414680	203600	21966	200569	101517	67%	32%	35%	0%
1	Dolnoslaskie	114910	905719	308440	53623	426739	148044	62%	14%	45%	3%
2	Opolskie	59950	506880	316160	0	0	0	0%	0%	0%	0%

1	Kujawsko-Pomorskie	101540	1019309	904489	46394	476380	427002	91%	5%	80%	6%
2	Warmińsko-Mazurskie	64260	933849	665889	31368	467524	337542	33%	0%	33%	0%
3	Pomorskie	61780	698400	449390	0	0	0	0%	0%	0%	0%
1	Norte	114335	705784	377135	35560	170791	79434	46%	6%	15%	25%
5	Algarve	14719	106229	25840	4606	25676	5607	89%	11%	31%	47%
6	Centro (PT)	119165	658035	665250	42545	144617	236056	70%	4%	60%	6%
7	Lisboa	8860	102589	94539	3228	20286	34795	95%	0%	94%	1%
8	Alentejo	39948	1979684	707490	13554	454437	212148	83%	7%	55%	22%
0	Região Autónoma dos Açores (PT)	15279	122779	186287	0	0	0	0%	0%	0%	0%
0	Região Autónoma da Madeira (PT)	11590	4460	13220	0	0	0	0%	0%	0%	0%
1	Nord-Vest	591512	1941421	925639	0	0	0	0%	0%	0%	0%
2	Centru	440711	1743231	844609	0	0	0	0%	0%	0%	0%
1	Nord-Est	854872	2032951	1250168	0	0	0	0%	0%	0%	0%
2	Sud-Est	532152	2151212	935279	0	0	0	0%	0%	0%	0%
1	Sud – Muntenia	847562	2325762	1136788	0	0	0	0%	0%	0%	0%
2	Bucuresti – Ilfov	63860	177820	111040	0	0	0	0%	0%	0%	0%
1	Sud-Vest Oltenia	608162	1782601	805059	0	0	0	0%	0%	0%	0%
2	Vest	317331	1751711	594169	0	0	0	0%	0%	0%	0%
1	Stockholm	2011	100581	30250	2011	100581	30250	100%	100%	100%	100%
2	Östra Mellansverige	13366	821785	345038	4388	349669	97702	37%	2%	29%	6%
1	Småland med öarna	11565	529823	382888	4936	268703	149394	35%	7%	28%	0%
2	Sydsverige	11195	558784	378588	11195	558784	378588	100%	100%	100%	100%
3	Västsverige	18859	675624	452708	7629	344716	161177	33%	4%	30%	0%
1	Norra Mellansverige	9474	275022	122569	0	0	0	0%	0%	0%	0%
2	Mellersta Norrland	4742	114801	59250	0	0	0	0%	0%	0%	0%
3	Övre Norrland	4642	116041	63710	0	0	0	0%	0%	0%	0%
1	Vzhodna Slovenija	54910	343960	384177	54910	343960	384177	100%	100%	100%	100%
2	Zahodna Slovenija	22260	141470	139343	22260	141470	139343	100%	100%	100%	100%
1	Bratislavský kraj	2220	77410	23800	1007	29285	7920	73%	3%	58%	12%
2	Západné Slovensko	28015	805564	403050	14356	340806	148670	84%	1%	78%	4%
3	Stredné Slovensko	19977	460412	188090	10553	203299	73145	75%	3%	71%	1%

4	Východné Slovensko	18267	536103	167790	9723	238637	65803	81%	4%	77%	1%
1	Tees Valley and Durham	3510	179590	179140	962	65461	57422	87%	14%	73%	0%
2	Northumberland, Tyne and Wear	3130	377870	262440	903	141318	87331	86%	15%	71%	0%
1	Cumbria	7990	449879	576720	5822	288567	399991	91%	80%	11%	0%
2	Cheshire	5550	160920	242490	3752	98076	157726	88%	69%	18%	0%
3	Greater Manchester	1760	38570	41550	1136	22788	25980	46%	34%	12%	0%
4	Lancashire	6870	213350	304970	4463	126595	191741	75%	56%	19%	0%
5	Merseyside	520	16570	12140	168	6541	4380	73%	17%	56%	0%
1	East Yorkshire and Northern Lincolnshire	4180	270960	283280	990	90805	81137	93%	10%	80%	3%
2	North Yorkshire	10811	609739	688890	2918	214603	214762	90%	14%	70%	5%
3	South Yorkshire	1910	83560	55030	678	33990	21088	57%	17%	38%	2%
4	West Yorkshire	4420	94940	105560	2402	49799	56939	58%	34%	23%	1%
1	Derbyshire and Nottinghamshire	7750	315840	321930	3382	145563	145627	75%	31%	42%	1%
2	Leicestershire, Rutland and Northants	6340	361750	273830	6340	361750	273830	100%	100%	100%	100%
3	Lincolnshire	6620	489969	268190	1354	154819	69758	94%	5%	86%	3%
1	Herefordshire, Worcestershire and Warks	11991	429979	455000	4367	180041	179310	86%	26%	60%	1%
2	Shropshire and Staffordshire	13261	459229	610360	7097	240358	326370	83%	47%	35%	0%
3	West Midlands	610	14220	12680	610	14220	12680	100%	100%	100%	100%
1	East Anglia	15491	935719	704850	3475	313125	197291	90%	7%	83%	0%
2	Bedfordshire, Hertfordshire	3070	176080	55400	3070	176080	55400	100%	100%	100%	100%
3	Essex	4360	240710	87190	891	77572	22969	87%	4%	83%	0%
1	Inner London	30	90	110	0	0	0	0%	0%	0%	0%
2	Outer London	470	10790	8390	224	5273	4090	52%	25%	27%	0%
1	Berkshire, Bucks and Oxfordshire	6370	356580	254660	1895	135226	86566	83%	16%	67%	0%
2	Surrey, East and West Sussex	8380	265630	202480	3820	126341	95143	55%	25%	31%	0%
3	Hampshire and Isle of Wight	5080	213010	154390	1393	77725	49525	79%	12%	66%	0%
4	Kent	5730	220910	130940	1722	81990	44142	74%	16%	55%	4%
1	Gloucestershire, Wiltshire and Bristol/Bath area	12181	521959	460130	4815	229001	193347	86%	30%	56%	0%
2	Dorset and Somerset	12761	453309	544340	5278	203963	236916	82%	31%	51%	0%
3	Cornwall and Isles of Scilly	9070	269890	334810	5239	148345	190756	82%	52%	30%	0%

4	Devon	15711	485329	663530	10746	298136	435910	88%	71%	17%	0%
1	West Wales and The Valleys	24771	873309	1182400	15360	502546	714821	87%	61%	26%	0%
2	East Wales	12201	515469	792440	8892	330693	549720	82%	72%	10%	0%
n2	Eastern Scotland	6630	1255428	693230	2371	522157	269900	80%	23%	57%	0%
n3	South Western Scotland	5740	770949	810630	4346	507845	581136	84%	78%	7%	0%
n5	North Eastern Scotland	4150	450029	354930	2411	248294	203215	44%	28%	16%	0%
n6	Highlands and Islands	10281	2360887	536690	0	0	0	0%	0%	0%	0%
0	Northern Ireland	27061	1013959	1664560	27061	1013959	1664560	100%	100%	100%	100%

Annex 3 Detailed Tables with Regionalized Compliance level Results (figures show the expected compliance level for the total agricultural area of a Nuts 2 region)

NUTSI_II	NUTSname	Balanced fertilisation	Maximum manure application (<=170 kg N)	No application in winter & wet periods	Limited application on steeply sloping land	Manure storage capacity	Appropriate application techniques	Prevention of leaching/ no buffer strip application	Growing of winter crops	Fertiliser plans
at11	Burgenland (A)	100.0	100.0	100.0	87.4	100.0	100.0	100.0	66.9	100.0
at12	Niederösterreich	100.0	100.0	100.0	80.2	100.0	100.0	100.0	70.0	100.0
at13	Wien	100.0	100.0	100.0	90.0	100.0	100.0	100.0	72.7	100.0
at21	Kärnten	100.0	100.0	100.0	67.0	100.0	100.0	100.0	91.1	100.0
at22	Steiermark	98.5	98.5	98.5	66.8	98.5	98.5	98.5	87.2	98.5
at31	Oberösterreich	98.5	98.5	98.5	72.0	98.5	98.5	98.5	78.8	98.5
at32	Salzburg	100.0	100.0	100.0	67.3	100.0	100.0	100.0	99.0	100.0
at33	Tirol	100.0	100.0	100.0	63.7	100.0	100.0	100.0	98.9	100.0
at34	Vorarlberg	100.0	100.0	100.0	70.7	100.0	100.0	100.0	98.7	100.0
be1_2	Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest and Vlaams Gewest	60.0	60.0	60.0	100.0	60.0	60.0	60.0	76.0	60.0
be21	Prov. Antwerpen	86.9	86.9	86.9	100.0	86.9	86.9	86.9	76.0	86.9
be22	Prov. Limburg (B)	95.7	95.7	95.7	99.9	95.7	95.7	95.7	72.0	95.7
be23	Prov. Oost-Vlaanderen	88.2	88.2	88.2	99.4	88.2	88.2	88.2	68.0	88.2
be24	Prov. Vlaams Brabant	95.2	95.2	95.2	99.3	95.2	95.2	95.2	64.0	95.2
be25	Prov. West-Vlaanderen	94.8	94.8	94.8	99.8	94.8	94.8	94.8	68.0	94.8
be31	Prov. Brabant Wallon	100.0	100.0	100.0	96.3	100.0	100.0	100.0	64.0	100.0
be32	Prov. Hainaut	97.7	97.7	97.7	99.6	97.7	97.7	97.7	64.0	97.7
be33	Prov. Liège	91.3	91.3	91.3	99.8	91.3	91.3	91.3	80.0	91.3
be34	Prov. Luxembourg (B)	100.0	100.0	100.0	99.7	100.0	100.0	100.0	84.0	100.0
be35	Prov. Namur	100.0	100.0	100.0	93.7	100.0	100.0	100.0	76.0	100.0

bg31	Severozapaden	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
bg32	Severen tsentralen	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
bg33	Severoiztochen	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
bg34	Yugoiztochen	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
bg41	Yugozapaden	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
bg42	Yuzhen tsentralen	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
cy00	Cyprus	99.5	99.5	99.5	99.2	99.5	99.5	99.5	46.0	99.5
cz01	Praha	99.4	99.4	99.4	95.6	99.4	99.4	99.4	52.0	99.4
cz02	Strední Cechy	99.6	99.6	99.6	89.1	99.6	99.6	99.6	46.0	99.6
cz03	Jihozápad	99.3	99.3	99.3	85.0	99.3	99.3	99.3	46.0	99.3
cz04	Severozápad	99.6	99.6	99.6	91.3	99.6	99.6	99.6	64.0	99.6
cz05	Severovýchod	99.6	99.6	99.6	91.9	99.6	99.6	99.6	58.0	99.6
cz06	Jihovýchod	99.5	99.5	99.5	84.5	99.5	99.5	99.5	46.0	99.5
cz07	Strední Morava	99.6	99.6	99.6	93.9	99.6	99.6	99.6	58.0	99.6
cz08	Moravskoslezsko	99.5	99.5	99.5	91.4	99.5	99.5	99.5	58.0	99.5
de1	Baden-Württemberg	99.1	99.1	99.1	75.2	99.1	99.1	99.1	76.8	99.1
de2	Bayern	99.1	99.1	99.1	77.7	99.1	99.1	99.1	74.4	99.1
de3_5_6	Berlin, Bremen, Hamburg	98.1	98.1	98.1	99.7	98.1	98.1	98.1	86.1	98.1
de4	Brandenburg	100.0	100.0	100.0	99.1	100.0	100.0	100.0	68.9	100.0
de7	Hessen	99.3	99.3	99.3	72.9	99.3	99.3	99.3	74.8	99.3
de8	Mecklenburg-Vorpommern	100.0	100.0	100.0	99.0	100.0	100.0	100.0	68.0	100.0
de9	Niedersachsen	95.4	95.4	95.4	97.1	95.4	95.4	95.4	71.8	95.4
dea	Nordrhein-Westfalen	95.4	95.4	95.4	89.6	95.4	95.4	95.4	71.7	95.4
deb	Rheinland-Pfalz	100.0	100.0	100.0	70.6	100.0	100.0	100.0	77.8	100.0
dec	Saarland	100.0	100.0	100.0	90.4	100.0	100.0	100.0	100.0	100.0
ded	Sachsen	100.0	100.0	100.0	86.2	100.0	100.0	100.0	68.4	100.0
dee	Sachsen-Anhalt	99.3	99.3	99.3	96.4	99.3	99.3	99.3	65.8	99.3
def	Schleswig-Holstein	99.3	99.3	99.3	99.4	99.3	99.3	99.3	74.2	99.3
deg	Thüringen	99.3	99.3	99.3	79.7	99.3	99.3	99.3	69.2	99.3
dk01	Hovedstaden	97.6	97.6	97.6	98.7	100.0	100.0	97.6	64.4	97.6
dk02	Sjælland	96.9	96.9	96.9	99.5	100.0	100.0	96.9	62.2	96.9

dk03	Syddanmark	90.0	90.0	90.0	99.4	100.0	100.0	90.0	63.1	90.0
dk04	Midtjylland	96.7	96.7	96.7	98.3	100.0	100.0	96.7	63.0	96.7
dk05	Nordjylland	90.0	90.0	90.0	98.8	100.0	100.0	90.0	63.7	90.0
ee00	Estonia	99.9	99.9	99.9	100.0	99.9	99.9	99.9	58.0	99.9
es11	Galicia	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
es12	Principado de Asturias	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
es13	Cantabria	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
es21	Pais Vasco	98.5	98.5	98.5	98.8	98.5	98.5	98.5	85.0	98.5
es22	Comunidad Foral de Navarra	97.9	97.9	97.9	100.0	97.9	97.9	97.9	75.0	97.9
es23	La Rioja	99.1	99.1	99.1	99.8	99.1	99.1	99.1	83.5	99.1
es24	Aragón	99.2	99.2	99.2	97.9	99.2	99.2	99.2	70.0	99.2
es30	Comunidad de Madrid	100.0	100.0	100.0	99.9	100.0	100.0	100.0	80.0	100.0
es41	Castilla y León	99.2	99.2	99.2	100.0	99.2	99.2	99.2	75.0	99.2
es42	Castilla-la Mancha	100.0	100.0	100.0	95.0	100.0	100.0	100.0	65.0	100.0
es43	Extremadura	99.2	99.2	99.2	100.0	99.2	99.2	99.2	87.5	99.2
es51	Cataluña	96.8	96.8	96.8	92.5	96.8	96.8	96.8	75.0	96.8
es52	Comunidad Valenciana	99.0	99.0	99.0	95.6	99.0	99.0	99.0	90.0	99.0
es53	Illes Balears	99.1	99.1	99.1	99.1	99.1	99.1	99.1	65.0	99.1
es61	Andalucía	99.1	99.1	99.1	96.9	99.1	99.1	99.1	80.0	99.1
es62	Región de Murcia	99.1	99.1	99.1	99.7	99.1	99.1	99.1	77.5	99.1
fi13	Itä-Suomi	100.0	100.0	100.0	100.0	100.0	100.0	100.0	41.1	100.0
fi18	Etelä-Suomi	100.0	100.0	100.0	100.0	100.0	100.0	100.0	40.7	100.0
fi18_2	Etelä-Suomi, Åland	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
fi19	Länsi-Suomi	100.0	100.0	100.0	100.0	100.0	100.0	100.0	40.5	100.0
fi1a	Pohjois-Suomi	100.0	100.0	100.0	100.0	100.0	100.0	100.0	41.2	100.0
fi20	Åland	100.0	100.0	100.0	100.0	100.0	100.0	100.0	44.7	100.0
fr10	Île de France	99.5	99.5	99.5	92.5	99.5	99.5	99.5	51.5	99.5
fr21	Champagne-Ardenne	100.0	100.0	100.0	88.0	100.0	100.0	100.0	60.0	100.0
fr22	Picardie	95.8	95.8	95.8	89.3	95.8	95.8	95.8	55.0	95.8
fr23	Haute-Normandie	100.0	100.0	100.0	88.6	100.0	100.0	100.0	63.1	100.0
fr24	Centre	100.0	100.0	100.0	99.1	100.0	100.0	100.0	55.0	100.0

fr25	Basse-Normandie	100.0	100.0	100.0	92.0	100.0	100.0	100.0	75.0	100.0
fr26	Bourgogne	99.5	99.5	99.5	93.3	99.5	99.5	99.5	70.0	99.5
fr30	Nord - Pas-de-Calais	100.0	100.0	100.0	92.6	100.0	100.0	100.0	60.2	100.0
fr41	Lorraine	99.5	99.5	99.5	90.2	99.5	99.5	99.5	70.0	99.5
fr42	Alsace	100.0	100.0	100.0	91.7	100.0	100.0	100.0	62.5	100.0
fr43	Franche-Comté	99.5	99.5	99.5	97.9	99.5	99.5	99.5	75.0	99.5
fr51	Pays de la Loire	100.0	100.0	100.0	95.8	100.0	100.0	100.0	60.0	100.0
fr52	Bretagne	99.6	99.6	99.6	87.1	99.6	99.6	99.6	54.5	99.6
fr53	Poitou-Charentes	100.0	100.0	100.0	95.7	100.0	100.0	100.0	55.0	100.0
fr61	Aquitaine	99.0	99.0	99.0	95.6	99.0	99.0	99.0	65.0	99.0
fr62	Midi-Pyrénées	93.8	93.8	93.8	85.5	93.8	93.8	93.8	65.0	93.8
fr63	Limousin	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
fr71	Rhône-Alpes	99.5	99.5	99.5	93.9	99.5	99.5	99.5	75.0	99.5
fr72	Auvergne	100.0	100.0	100.0	98.8	100.0	100.0	100.0	80.0	100.0
fr81	Languedoc-Roussillon	100.0	100.0	100.0	97.7	100.0	100.0	100.0	85.0	100.0
fr82	Provence-Alpes-Côte d'Azur	99.6	99.6	99.6	99.2	99.6	99.6	99.6	85.0	99.6
fr83	Corse	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
gr11	Anatoliki Makedonia, Thraki	100.0	100.0	100.0	99.8	100.0	100.0	100.0	52.5	100.0
gr12	Kentriki Makedonia	100.0	100.0	100.0	93.1	100.0	100.0	100.0	55.0	100.0
gr13	Dytiki Makedonia	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
gr14	Thessalia	98.6	98.6	98.6	96.5	98.6	98.6	98.6	55.0	98.6
gr21	Ipeiros	99.6	99.6	99.6	95.8	99.6	99.6	99.6	75.0	99.6
gr22	Ionian Islands	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
gr23	Dytiki Ellada	90.5	90.5	90.5	99.8	90.5	90.5	90.5	77.5	90.5
gr24	Sterea Ellada	83.0	83.0	83.0	95.4	83.0	83.0	83.0	65.0	83.0
gr25	Peloponnisos	99.9	99.9	99.9	99.3	99.9	99.9	99.9	90.0	99.9
gr30	Attiki	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
gr41	Voreio Aigaio	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
gr42	Notio Aigaio	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
gr43	Kriti	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
hu10	Közép-Magyarország	99.2	99.2	99.2	94.8	99.2	99.2	99.2	52.0	99.2

hu21	Közép-Dunántúl	93.4	93.4	93.4	91.4	93.4	93.4	93.4	46.0	93.4
hu22	Nyugat-Dunántúl	96.0	96.0	96.0	94.6	96.0	96.0	96.0	52.0	96.0
hu23	Dél-Dunántúl	99.1	99.1	99.1	94.1	99.1	99.1	99.1	43.0	99.1
hu31	Észak-Magyarország	99.3	99.3	99.3	92.8	99.3	99.3	99.3	58.0	99.3
hu32	Észak-Alföld	99.4	99.4	99.4	100.0	99.4	99.4	99.4	58.0	99.4
hu33	Dél-Alföld	99.1	99.1	99.1	100.0	99.1	99.1	99.1	46.0	99.1
ie01	Border, Midlands and Western	100.0	100.0	100.0	88.9	100.0	100.0	100.0	89.1	100.0
ie02	Southern and Eastern	99.8	99.8	99.8	83.0	99.8	99.8	99.8	84.2	99.8
itc1	Piemonte	99.2	99.2	99.2	99.1	99.2	99.2	99.2	75.0	99.2
itc2	Valle d'Aosta/Vallée d'Aoste	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
itc3	Liguria	98.8	98.8	98.8	99.9	98.8	98.8	98.8	85.0	98.8
itc4	Lombardia	97.3	97.3	97.3	99.5	97.3	97.3	97.3	65.0	97.3
itd1	Provincia Autonoma Bolzano-Bozen	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
itd2	Provincia Autonoma Trento	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
itd3	Veneto	96.3	96.3	96.3	99.7	96.3	96.3	96.3	60.0	96.3
itd4	Friuli-Venezia Giulia	97.5	97.5	97.5	99.9	97.5	97.5	97.5	60.0	97.5
itd5	Emilia-Romagna	96.5	96.5	96.5	98.8	96.5	96.5	96.5	60.0	96.5
ite1	Toscana	95.2	95.2	95.2	99.1	95.2	95.2	95.2	65.0	95.2
ite2	Umbria	96.1	96.1	96.1	99.8	96.1	96.1	96.1	65.0	96.1
ite3	Marche	95.0	95.0	95.0	94.8	95.0	95.0	95.0	60.0	95.0
ite4	Lazio	99.4	99.4	99.4	99.9	99.4	99.4	99.4	75.0	99.4
itf1	Abruzzo	99.3	99.3	99.3	99.5	99.3	99.3	99.3	75.0	99.3
itf2	Molise	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
itf3	Campania	96.8	96.8	96.8	98.7	96.8	96.8	96.8	70.0	96.8
itf4	Puglia	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
itf5	Basilicata	99.3	99.3	99.3	97.7	99.3	99.3	99.3	65.0	99.3
itf6	Calabria	95.6	95.6	95.6	96.6	95.6	95.6	95.6	85.0	95.6
itg1	Sicilia	100.0	100.0	100.0	98.5	100.0	100.0	100.0	75.0	100.0
itg2	Sardegna	100.0	100.0	100.0	100.0	100.0	100.0	100.0	77.5	100.0
lt00	Lithuania	100.0	100.0	100.0	98.9	100.0	100.0	100.0	59.8	100.0

lu00	Luxembourg (Grand-Duché)	100.0	100.0	100.0	69.8	100.0	100.0	100.0	81.4	100.0
lv00	Latvia	93.1	93.1	93.1	100.0	93.1	93.1	93.1	58.0	93.1
mt00	Malta	98.7	98.7	98.7	66.8	98.7	98.7	98.7	52.0	98.7
nl11	Groningen	98.9	98.9	98.9	100.0	100.0	100.0	98.9	73.2	98.9
nl12	Friesland (NL)	98.9	98.9	98.9	100.0	100.0	100.0	98.9	89.6	98.9
nl13	Drenthe	67.9	67.9	67.9	100.0	100.0	100.0	67.9	73.0	67.9
nl21	Overijssel	98.9	98.9	98.9	100.0	100.0	100.0	98.9	82.9	98.9
nl22	Gelderland	76.2	76.2	76.2	99.8	100.0	100.0	76.2	83.3	76.2
nl23	Flevoland	98.0	98.0	98.0	100.0	100.0	100.0	98.0	63.0	98.0
nl31	Utrecht	74.9	74.9	74.9	100.0	100.0	100.0	74.9	92.1	74.9
nl32	Noord-Holland	74.9	74.9	74.9	100.0	100.0	100.0	74.9	76.5	74.9
nl33	Zuid-Holland	100.0	100.0	100.0	100.0	100.0	100.0	100.0	81.0	100.0
nl34	Zeeland	75.9	75.9	75.9	100.0	100.0	100.0	75.9	65.5	75.9
nl41	Noord-Brabant	100.0	100.0	100.0	100.0	100.0	100.0	100.0	68.3	100.0
nl42	Limburg (NL)	76.5	76.5	76.5	96.7	100.0	100.0	76.5	69.3	76.5
pl11	Lódzkie	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
pl12	Mazowieckie	78.2	78.2	78.2	100.0	78.2	78.2	78.2	71.0	78.2
pl21	Malopolskie	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
pl22	Slaskie	100.0	100.0	100.0	100.0	100.0	100.0	100.0	52.0	100.0
pl31	Lubelskie	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
pl32	Podkarpackie	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
pl33	Swietokrzyskie	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
pl34	Podlaskie	100.0	100.0	100.0	100.0	100.0	100.0	100.0	70.0	100.0
pl41	Wielkopolskie	100.0	100.0	100.0	100.0	100.0	100.0	100.0	46.0	100.0
pl42	Zachodniopomorskie	100.0	100.0	100.0	99.9	100.0	100.0	100.0	49.0	100.0
pl43	Lubuskie	100.0	100.0	100.0	100.0	100.0	100.0	100.0	58.0	100.0
pl51	Dolnoslaskie	97.0	97.0	97.0	100.0	97.0	97.0	97.0	52.0	97.0
pl52	Opolskie	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
pl61	Kujawsko-Pomorskie	100.0	100.0	100.0	99.9	100.0	100.0	100.0	46.0	100.0
pl62	Warminsko-Mazurskie	100.0	100.0	100.0	100.0	100.0	100.0	100.0	52.0	100.0
pl63	Pomorskie	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

pt11	Norte	100.0	100.0	100.0	99.8	100.0	100.0	100.0	80.0	100.0
pt15	Algarve	100.0	100.0	100.0	99.7	100.0	100.0	100.0	80.0	100.0
pt16	Centro (PT)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	75.0	100.0
pt17	Lisboa	97.9	97.9	97.9	100.0	97.9	97.9	97.9	81.5	97.9
pt18	Alentejo	99.7	99.7	99.7	99.6	99.7	99.7	99.7	80.0	99.7
ro11	Nord-Vest	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
ro12	Centru	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
ro21	Nord-Est	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
ro22	Sud-Est	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
ro31	Sud - Muntenia	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
ro32	Bucuresti - Ilfov	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
ro41	Sud-Vest Oltenia	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
ro42	Vest	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
se11	Stockholm	99.4	99.4	99.4	100.0	99.4	99.4	99.4	65.9	99.4
se12	Östra Mellansverige	99.3	99.3	99.3	100.0	99.3	99.3	99.3	64.0	99.3
se21	Småland med öarna	99.2	99.2	99.2	100.0	99.2	99.2	99.2	68.0	99.2
se22	Sydsverige	100.0	100.0	100.0	100.0	100.0	100.0	100.0	65.3	100.0
se23	Västsverige	100.0	100.0	100.0	99.8	100.0	100.0	100.0	68.0	100.0
se31	Norra Mellansverige	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
se32	Mellersta Norrland	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
se33	Övre Norrland	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
si01	Vzhodna Slovenija	100.0	100.0	100.0	57.5	100.0	100.0	100.0	74.9	100.0
si02	Zahodna Slovenija	100.0	100.0	100.0	55.9	100.0	100.0	100.0	87.3	100.0
sk01	Bratislavský kraj	100.0	100.0	100.0	98.4	100.0	100.0	100.0	46.0	100.0
sk02	Západné Slovensko	99.8	99.8	99.8	89.3	99.8	99.8	99.8	43.0	99.8
sk03	Stredné Slovensko	99.8	99.8	99.8	90.5	99.8	99.8	99.8	70.0	99.8
sk04	Východné Slovensko	99.9	99.9	99.9	94.4	99.9	99.9	99.9	64.0	99.9
ukc1	Tees Valley and Durham	99.5	99.5	99.5	98.1	99.5	99.5	99.5	84.0	99.5
ukc2	Northumberland, Tyne and Wear	99.5	99.5	99.5	99.5	99.5	99.5	99.5	86.0	99.5
ukd1	Cumbria	99.7	99.7	99.7	99.4	99.7	99.7	99.7	96.0	99.7
ukd2	Cheshire	99.6	99.6	99.6	97.1	99.6	99.6	99.6	84.0	99.6

ukd3	Greater Manchester	100.0	100.0	100.0	96.0	100.0	100.0	100.0	96.0	100.0
ukd4	Lancashire	95.4	95.4	95.4	92.4	95.4	95.4	95.4	92.0	95.4
ukd5	Merseyside	95.7	95.7	95.7	99.8	95.7	95.7	95.7	68.0	95.7
uke1	East Yorkshire and Northern Lincolnshire	95.5	95.5	95.5	97.0	95.5	95.5	95.5	64.0	95.5
uke2	North Yorkshire	95.5	95.5	95.5	98.0	95.5	95.5	95.5	80.0	95.5
uke3	South Yorkshire	99.6	99.6	99.6	86.5	99.6	99.6	99.6	72.0	99.6
uke4	West Yorkshire	99.2	99.2	99.2	84.4	99.2	99.2	99.2	84.0	99.2
ukf1	Derbyshire and Nottinghamshire	99.2	99.2	99.2	87.7	99.2	99.2	99.2	76.0	99.2
ukf2	Leicestershire, Rutland and Northants	99.4	99.4	99.4	95.4	99.4	99.4	99.4	72.7	99.4
ukf3	Lincolnshire	99.2	99.2	99.2	98.2	99.2	99.2	99.2	64.0	99.2
ukg1	Herefordshire, Worcestershire and Warks	99.7	99.7	99.7	94.7	99.7	99.7	99.7	76.0	99.7
ukg2	Shropshire and Staffordshire	99.8	99.8	99.8	93.7	99.8	99.8	99.8	84.0	99.8
ukg3	West Midlands	99.7	99.7	99.7	98.4	99.7	99.7	99.7	77.6	99.7
ukh1	East Anglia	99.6	99.6	99.6	99.6	99.6	99.6	99.6	64.0	99.6
ukh2	Bedfordshire, Hertfordshire	95.5	95.5	95.5	95.7	95.5	95.5	95.5	67.4	95.5
ukh3	Essex	99.6	99.6	99.6	99.1	99.6	99.6	99.6	64.0	99.6
uki1	Inner London	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
uki2	Outer London	99.7	99.7	99.7	97.5	99.7	99.7	99.7	80.0	99.7
ukj1	Berkshire, Bucks and Oxfordshire	99.7	99.7	99.7	93.5	99.7	99.7	99.7	72.0	99.7
ukj2	Surrey, East and West Sussex	99.1	99.1	99.1	95.5	99.1	99.1	99.1	76.0	99.1
ukj3	Hampshire and Isle of Wight	99.6	99.6	99.6	93.4	99.6	99.6	99.6	68.0	99.6
ukj4	Kent	99.7	99.7	99.7	95.1	99.7	99.7	99.7	72.0	99.7
ukk1	Gloucestershire, Wiltshire and Bristol/Bath area	99.7	99.7	99.7	91.1	99.7	99.7	99.7	80.0	99.7
ukk2	Dorset and Somerset	99.6	99.6	99.6	94.9	99.6	99.6	99.6	80.0	99.6
ukk3	Cornwall and Isles of Scilly	100.0	100.0	100.0	97.2	100.0	100.0	100.0	88.0	100.0
ukk4	Devon	95.4	95.4	95.4	92.1	95.4	95.4	95.4	88.0	95.4
ukl1	West Wales and The Valleys	95.2	95.2	95.2	99.9	95.2	95.2	95.2	96.0	95.2
ukl2	East Wales	95.2	95.2	95.2	99.6	95.2	95.2	95.2	96.0	95.2

ukm2	Eastern Scotland	95.4	95.4	95.4	85.8	95.4	95.4	95.4	85.0	95.4
ukm3	South Western Scotland	95.2	95.2	95.2	97.6	95.2	95.2	95.2	95.0	95.2
ukm5	North Eastern Scotland	100.0	100.0	100.0	99.8	100.0	100.0	100.0	80.0	100.0
ukm6	Highlands and Islands	100.0	100.0	100.0	94.4	100.0	100.0	100.0	100.0	100.0
ukn0	Northern Ireland	94.7	94.7	94.7	84.3	94.7	94.7	94.7	92.6	94.7

Annex 4 Compliance rates with Animal Registration Directives

		Non-compliant				Compliant			
		%	%	%	%	%	%	%	%
		cattle	sheep	goats	pigs	cattle	sheep	goats	pigs
at11	Burgenland (A)	4.8	6.0	6.0	3.2	95.2	94.0	94.0	96.8
at12	Niederösterreich	4.8	6.0	6.0	3.2	95.2	94.0	94.0	96.8
at13	Wien	0.0	6.0	0.0	0.0	100.0	94.0	100.0	100.0
at21	Kärnten	4.8	6.0	6.0	3.2	95.2	94.0	94.0	96.8
at22	Steiermark	4.8	6.0	6.0	3.2	95.2	94.0	94.0	96.8
at31	Oberösterreich	4.8	6.0	6.0	3.2	95.2	94.0	94.0	96.8
at32	Salzburg	4.8	6.0	6.0	3.2	95.2	94.0	94.0	96.8
at33	Tirol	4.8	6.0	6.0	3.2	95.2	94.0	94.0	96.8
at34	Vorarlberg	4.8	6.0	6.0	3.2	95.2	94.0	94.0	96.8
be10	Région de Bruxelles-Capitale/Brussels Hoofdstedelijk Gewest	0.0	0.0	0.0	0.0	100.0	100.0	100.0	100.0
be21	Prov. Antwerpen	5.8	17.0	17.0	3.7	94.2	83.0	83.0	96.3
be22	Prov. Limburg (B)	5.8	17.0	17.0	3.7	94.2	83.0	83.0	96.3
be23	Prov. Oost-Vlaanderen	5.8	17.0	17.0	3.7	94.2	83.0	83.0	96.3
be24	Prov. Vlaams Brabant	5.8	17.0	17.0	3.7	94.2	83.0	83.0	96.3
be25	Prov. West-Vlaanderen	5.8	17.0	17.0	3.7	94.2	83.0	83.0	96.3
be31	Prov. Brabant Wallon	5.8	17.0	17.0	3.7	94.2	83.0	83.0	96.3
be32	Prov. Hainaut	5.8	17.0	17.0	3.7	94.2	83.0	83.0	96.3
be33	Prov. Liège	5.8	17.0	17.0	3.7	94.2	83.0	83.0	96.3
be34	Prov. Luxembourg (B)	5.8	17.0	17.0	3.7	94.2	83.0	83.0	96.3
be35	Prov. Namur	5.8	17.0	17.0	3.7	94.2	83.0	83.0	96.3
de1	Baden-Württemberg	6.0	5.4	0.0	4.0	94.0	94.6	0.0	96.0
de2	Bayern	6.0	5.4	0.0	4.0	94.0	94.6	0.0	96.0
de3_5_6	Berlin, Bremen, Hamburg	6.0	5.4	0.0	4.0	94.0	94.6	0.0	96.0
de4	Brandenburg	6.0	5.4	0.0	4.0	94.0	94.6	0.0	96.0
de7	Hessen	6.0	5.4	0.0	4.0	94.0	94.6	0.0	96.0
de8	Mecklenburg-Vorpommern	6.0	5.4	0.0	4.0	94.0	94.6	0.0	96.0
de9	Niedersachsen	6.0	5.4	0.0	4.0	94.0	94.6	0.0	96.0
dea	Nordrhein-Westfalen	6.0	5.4	0.0	4.0	94.0	94.6	0.0	96.0
deb	Rheinland-Pfalz	6.0	5.4	0.0	4.0	94.0	94.6	0.0	96.0
dec	Saarland	6.0	5.4	0.0	4.0	94.0	94.6	0.0	96.0
ded	Sachsen	6.0	5.4	0.0	4.0	94.0	94.6	0.0	96.0
dee	Sachsen-Anhalt	6.0	5.4	0.0	4.0	94.0	94.6	0.0	96.0
def	Schleswig-	6.0	5.4	0.0	4.0	94.0	94.6	0.0	96.0

	Holstein								
deg	Thüringen	6.0	5.4	0.0	4.0	94.0	94.6	0.0	96.0
dk01	Hovedstaden	3.8	4.5	6.0	3.7	96.2	95.5	94.0	96.3
dk02	Sjælland	3.8	4.5	6.0	3.7	96.2	95.5	0.0	96.3
dk03	Syddanmark	3.8	4.5	6.0	3.7	96.2	95.5	94.0	96.3
dk04	Midtjylland	3.8	4.5	6.0	3.7	96.2	95.5	94.0	96.3
dk05	Nordjylland	3.8	4.5	6.0	3.7	96.2	95.5	94.0	96.3
es11	Galicia	2.3	2.0	6.0	3.7	97.7	98.0	94.0	96.3
es12	Principado de Asturias	2.3	2.0	6.0	3.7	97.7	98.0	94.0	96.3
es13	Cantabria	2.3	2.0	6.0	3.7	97.7	98.0	94.0	96.3
es21	Pais Vasco	2.3	2.0	6.0	3.7	97.7	98.0	94.0	96.3
es22	Comunidad Foral de Navarra	2.3	2.0	6.0	3.7	97.7	98.0	94.0	96.3
es23	La Rioja	2.3	2.0	6.0	3.7	97.7	98.0	94.0	96.3
es24	Aragón	2.3	2.0	6.0	3.7	97.7	98.0	94.0	96.3
es30	Comunidad de Madrid	2.3	2.0	6.0	3.7	97.7	98.0	94.0	96.3
es41	Castilla y León	2.3	2.0	6.0	3.7	97.7	98.0	94.0	96.3
es42	Castilla-la Mancha	2.3	2.0	6.0	3.7	97.7	98.0	94.0	96.3
es43	Extremadura	2.3	2.0	6.0	3.7	97.7	98.0	94.0	96.3
es51	Cataluña	2.3	2.0	6.0	3.7	97.7	98.0	94.0	96.3
es52	Comunidad Valenciana	2.3	2.0	6.0	3.7	97.7	98.0	94.0	96.3
es53	Illes Balears	2.3	2.0	6.0	3.7	97.7	98.0	94.0	96.3
es61	Andalucia	2.3	2.0	6.0	3.7	97.7	98.0	94.0	96.3
es62	Región de Murcia	2.3	2.0	6.0	3.7	97.7	98.0	94.0	96.3
fi13	Itä-Suomi	2.0	6.0	6.0	9.6	98.0	94.0	0.0	90.4
fi18	Etelä-Suomi	2.0	6.0	6.0	9.6	98.0	94.0	0.0	90.4
fi18_2	Etelä-Suomi, Åland	0.0	0.0	0.0	0.0	100.0	100.0	100.0	100.0
fi19	Länsi-Suomi	2.0	6.0	6.0	9.6	98.0	94.0	0.0	90.4
fi1a	Pohjois-Suomi	2.0	6.0	6.0	9.6	98.0	94.0	94.0	90.4
fi20	Åland	2.0	6.0	0.0	0.0	98.0	94.0	100.0	100.0
fr10	Île de France	2.0	6.0	6.0	9.6	98.0	94.0	94.0	90.4
fr21	Champagne-Ardenne	2.0	6.0	6.0	9.6	98.0	94.0	94.0	90.4
fr22	Picardie	2.0	6.0	6.0	9.6	98.0	94.0	94.0	90.4
fr23	Haute-Normandie	2.0	6.0	6.0	9.6	98.0	94.0	94.0	90.4
fr24	Centre	2.0	6.0	6.0	9.6	98.0	94.0	94.0	90.4
fr25	Basse-Normandie	2.0	6.0	6.0	9.6	98.0	94.0	94.0	90.4
fr26	Bourgogne	2.0	6.0	6.0	9.6	98.0	94.0	94.0	90.4
fr30	Nord - Pas-de-Calais	2.0	6.0	6.0	9.6	98.0	94.0	94.0	90.4
fr41	Lorraine	2.0	6.0	6.0	9.6	98.0	94.0	94.0	90.4
fr42	Alsace	2.0	6.0	6.0	9.6	98.0	94.0	94.0	90.4
fr43	Franche-Comté	2.0	6.0	6.0	9.6	98.0	94.0	94.0	90.4
fr51	Pays de la Loire	2.0	6.0	6.0	9.6	98.0	94.0	94.0	90.4
fr52	Bretagne	2.0	6.0	6.0	9.6	98.0	94.0	94.0	90.4
fr53	Poitou-Charentes	2.0	6.0	6.0	9.6	98.0	94.0	94.0	90.4
fr61	Aquitaine	2.0	6.0	6.0	9.6	98.0	94.0	94.0	90.4
fr62	Midi-Pyrénées	2.0	6.0	6.0	9.6	98.0	94.0	94.0	90.4
fr63	Limousin	2.0	6.0	6.0	9.6	98.0	94.0	94.0	90.4

fr71	Rhône-Alpes	2.0	6.0	6.0	9.6	98.0	94.0	94.0	90.4
fr72	Auvergne	2.0	6.0	6.0	9.6	98.0	94.0	94.0	90.4
fr81	Languedoc-Roussillon	2.0	6.0	6.0	9.6	98.0	94.0	94.0	90.4
fr82	Provence-Alpes-Côte d'Azur	2.0	6.0	6.0	9.6	98.0	94.0	94.0	90.4
fr83	Corse	2.0	6.0	6.0	9.6	98.0	94.0	94.0	90.4
gr11	Anatoliki Makedonia, Thraki	3.7	9.8	6.0	3.7	96.3	90.2	94.0	96.3
gr12	Kentriki Makedonia	3.7	9.8	6.0	3.7	96.3	90.2	94.0	96.3
gr13	Dytiki Makedonia	3.7	9.8	6.0	3.7	96.3	90.2	94.0	96.3
gr14	Thessalia	3.7	9.8	6.0	3.7	96.3	90.2	94.0	96.3
gr21	Ipeiros	3.7	9.8	6.0	3.7	96.3	90.2	94.0	96.3
gr22	Ionia Nisia	3.7	9.8	6.0	3.7	96.3	90.2	94.0	96.3
gr23	Dytiki Ellada	3.7	9.8	6.0	3.7	96.3	90.2	94.0	96.3
gr24	Stereia Ellada	3.7	9.8	6.0	3.7	96.3	90.2	94.0	96.3
gr25	Peloponnisos	3.7	9.8	6.0	3.7	96.3	90.2	94.0	96.3
gr30	Attiki	3.7	9.8	6.0	3.7	96.3	90.2	94.0	96.3
gr41	Voreio Aigaio	3.7	9.8	6.0	3.7	96.3	90.2	94.0	96.3
gr42	Notio Aigaio	3.7	9.8	6.0	3.7	96.3	90.2	94.0	96.3
gr43	Kriti	3.7	9.8	6.0	3.7	96.3	90.2	94.0	96.3
ie01	Border, Midlands and Western	2.0	2.0	6.0	5.8	98.0	98.0	94.0	94.2
ie02	Southern and Eastern	2.0	2.0	6.0	5.8	98.0	98.0	94.0	94.2
itc1	Piemonte	3.8	4.5	6.0	2.0	96.2	95.5	94.0	98.0
itc2	Valle d'Aosta/Vallée d'Aoste	3.8	4.5	6.0	2.0	96.2	95.5	94.0	98.0
itc3	Liguria	3.8	4.5	6.0	2.0	96.2	95.5	94.0	98.0
itc4	Lombardia	3.8	4.5	6.0	2.0	96.2	95.5	94.0	98.0
itd1	Provincia Autonoma Bolzano-Bozen	3.8	4.5	6.0	2.0	96.2	95.5	94.0	98.0
itd2	Provincia Autonoma Trento	3.8	4.5	6.0	2.0	96.2	95.5	94.0	98.0
itd3	Veneto	3.8	4.5	6.0	2.0	96.2	95.5	94.0	98.0
itd4	Friuli-Venezia Giulia	3.8	4.5	6.0	2.0	96.2	95.5	94.0	98.0
itd5	Emilia-Romagna	3.8	4.5	6.0	2.0	96.2	95.5	94.0	98.0
ite1	Toscana	3.8	4.5	6.0	2.0	96.2	95.5	94.0	98.0
ite2	Umbria	3.8	4.5	6.0	2.0	96.2	95.5	94.0	98.0
ite3	Marche	3.8	4.5	6.0	2.0	96.2	95.5	94.0	98.0
ite4	Lazio	3.8	4.5	6.0	2.0	96.2	95.5	94.0	98.0
itf1	Abruzzo	3.8	4.5	6.0	2.0	96.2	95.5	94.0	98.0
itf2	Molise	3.8	4.5	6.0	2.0	96.2	95.5	94.0	98.0
itf3	Campania	3.8	4.5	6.0	2.0	96.2	95.5	94.0	98.0
itf4	Puglia	3.8	4.5	6.0	2.0	96.2	95.5	94.0	98.0
itf5	Basilicata	3.8	4.5	6.0	2.0	96.2	95.5	94.0	98.0
itf6	Calabria	3.8	4.5	6.0	2.0	96.2	95.5	94.0	98.0
itg1	Sicilia	3.8	4.5	6.0	2.0	96.2	95.5	94.0	98.0
itg2	Sardegna	3.8	4.5	6.0	2.0	96.2	95.5	94.0	98.0

lu00	Luxembourg (Grand-Duché)	5.2	12.5	6.0	17.4	94.8	87.5	94.0	82.6
nl11	Groningen	2.0	2.0	6.0	3.7	98.0	98.0	94.0	96.3
nl12	Friesland (NL)	2.0	2.0	6.0	3.7	98.0	98.0	94.0	96.3
nl13	Drenthe	2.0	2.0	6.0	3.7	98.0	98.0	94.0	96.3
nl21	Overijssel	2.0	2.0	6.0	3.7	98.0	98.0	94.0	96.3
nl22	Gelderland	2.0	2.0	6.0	3.7	98.0	98.0	94.0	96.3
nl23	Flevoland	2.0	2.0	6.0	3.7	98.0	98.0	94.0	96.3
nl31	Utrecht	2.0	2.0	6.0	3.7	98.0	98.0	94.0	96.3
nl32	Noord-Holland	2.0	2.0	6.0	3.7	98.0	98.0	94.0	96.3
nl33	Zuid-Holland	2.0	2.0	6.0	3.7	98.0	98.0	94.0	96.3
nl34	Zeeland	2.0	2.0	6.0	3.7	98.0	98.0	94.0	96.3
nl41	Noord-Brabant	2.0	2.0	6.0	3.7	98.0	98.0	94.0	96.3
nl42	Limburg (NL)	2.0	2.0	6.0	3.7	98.0	98.0	94.0	96.3
pt11	Norte	5.0	5.0	6.0	5.0	95.0	95.0	94.0	95.0
pt15	Algarve	5.0	5.0	6.0	5.0	95.0	95.0	94.0	95.0
pt16	Centro (PT)	5.0	5.0	6.0	5.0	95.0	95.0	94.0	95.0
pt17	Lisboa	5.0	5.0	6.0	5.0	95.0	95.0	94.0	95.0
pt18	Alentejo	5.0	5.0	6.0	5.0	95.0	95.0	94.0	95.0
se11	Stockholm	2.0	2.0	0.0	3.7	98.0	98.0	100.0	96.3
se12	Östra Mellansverige	2.0	2.0	0.0	3.7	98.0	98.0	100.0	96.3
se21	Småland med öarna	2.0	2.0	0.0	3.7	98.0	98.0	100.0	96.3
se22	Sydsverige	2.0	2.0	0.0	3.7	98.0	98.0	100.0	96.3
se23	Västsverige	2.0	2.0	0.0	3.7	98.0	98.0	100.0	96.3
se31	Norra Mellansverige	2.0	2.0	0.0	3.7	98.0	98.0	100.0	96.3
se32	Mellersta Norrland	2.0	2.0	0.0	3.7	98.0	98.0	100.0	96.3
se33	Övre Norrland	2.0	2.0	0.0	3.7	98.0	98.0	100.0	96.3
ukc1	Tees Valley and Durham	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukc2	Northumberland, Tyne and Wear	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukd1	Cumbria	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukd2	Cheshire	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukd3	Greater Manchester	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukd4	Lancashire	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukd5	Merseyside	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
uke1	East Yorkshire and Northern Lincolnshire	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
uke2	North Yorkshire	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
uke3	South Yorkshire	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
uke4	West Yorkshire	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukf1	Derbyshire and Nottinghamshire	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukf2	Leicestershire, Rutland and Northants	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukf3	Lincolnshire	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6

ukg1	Herefordshire, Worcestershire and Warks	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukg2	Shropshire and Staffordshire	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukg3	West Midlands	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukh1	East Anglia	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukh2	Bedfordshire, Hertfordshire	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukh3	Essex	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
uki1	Inner London	0.0	0.0	6.0	3.4	100.0	100.0	94.0	96.6
uki2	Outer London	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukj1	Berkshire, Bucks and Oxfordshire	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukj2	Surrey, East and West Sussex	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukj3	Hampshire and Isle of Wight	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukj4	Kent	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukk1	Gloucestershire, Wiltshire and Bristol/Bath area	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukk2	Dorset and Somerset	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukk3	Cornwall and Isles of Scilly	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukk4	Devon	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukl1	West Wales and The Valleys	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukl2	East Wales	7.9	2.4	6.0	3.4	92.1	97.6	94.0	96.6
ukm2	Eastern Scotland	9.4	9.4	6.0	9.4	90.6	90.6	94.0	90.6
ukm3	South Western Scotland	9.4	9.4	6.0	9.4	90.6	90.6	94.0	90.6
ukm5	North Eastern Scotland	9.4	9.4	6.0	9.4	90.6	90.6	94.0	90.6
ukm6	Highlands and Islands	9.4	9.4	6.0	9.4	90.6	90.6	94.0	90.6
ukn0	Northern Ireland	9.4	9.4	6.0	9.4	90.6	90.6	94.0	90.6

