AGRIGRID

Methodological grids for payment calculations in rural development measures in the EU

(Project Reference: SSPE-CT-2006-044403)

Specific Targeted Research Project under priority 8.1 Sustainable management of Europe's natural resources:

8.1.B.1.1 Modernisation and sustainability of agriculture and forestry, including their multifunctional role in order to ensure the sustainable development and promotion of rural areas

Task 14 New methods for calculating premiums in the rural development measures

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Deliverable D2
Summary report on review of payment calculations for rural development measures

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This document was produced under the terms and conditions of Contract SSPE-CT-2006 044403 for the European Commission.

This document presents results obtained within the EU project SSPE-CT-2006-044403 on Methodological grids for payment calculations in rural development measures in the EU (http://www.macaulay.ac.uk/agrigrid/). It does not necessary reflect the view of the European Union and in no way anticipates the commission's future policy in this area.

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The Macaulay Land Use Research Institute	MLURI	Scotland
Federal Agricultural Research Centre	FAL	Germany
Agricultural University of Athens	AUA	Greece
Research Institute of Agricultural Economics	VUZE	Czech Republic
Lithuanian Institute of Agrarian Economics	LAEI	Lithuania
MTT Agrifood Research Finland	MTT	Finland
National Institute of Agricultural Economics	INEA	Italy
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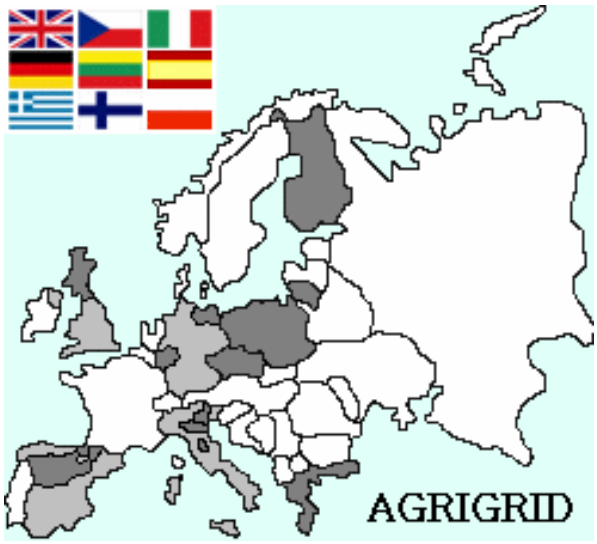

Executive summary and recommendations for policy makers

The main purpose of this report is to review the different approaches used to calculate payments in EU rural development measures. The review covers mainly area-based RD measures and includes agri-environmental measures, natural handicap payments, Natura 2000 measures, forestry measures, meeting standards and animal welfare measures. Data collection covered nine EU member states: Czech Republic (CZ), Germany (DE), Finland (FI), Greece (GR), Italy (IT), Lithuania (LT), Scotland (SCO) Poland (PL) and Spain (ES). Although not all of these measures are implemented in each of the selected countries, the coverage (and amount of data) is sufficient for a meaningful synthesis in the context of the AGRIGRID project.

Methodology

At the start of this research the general framework for the review was developed and based on that, six questionnaires concerning particular investigated RD measures were devised. Two ways of obtaining data on different approaches for payment calculation were defined. The first one was collecting data from accessible literature and from RDPs and the second was conducting interviews with persons responsible for payment calculations. As expected, some of the information either did not exist in some countries / regions or was not relevant because at the time of the research most of the RDPs had not been approved by the European Commission, yet, and data could be changed.

Agri-environmental measures

AEMs, as an obligatory RD measure, are implemented in all investigated countries and regions. Within this measure, there are a variety of submeasures and schemes offered to farmer across the EU and this is why the only one common submeasure (organic farming) in all countries and two specific submeasures per country are selected for further analysis.

The payment differentiations are based on crop / animal type, farm structural characteristics and spatial dimensions, in addition to the main factor represents various management prescriptions applied in order to achieve the environmental objectives.

Considering the calculation components, the income foregone is estimated mainly through GMs or by direct calculation considering yield reductions. Subsidies lost are the third element of the income. Additional costs included in the calculation vary across countries / regions but among the main items are labour and machinery costs. However, the main problem lies with the calculation of transaction costs and the classification of certain cost items either as additional costs incurred or transaction costs. Three approaches are applied across countries to determine TCs: detailed calculation; simple reference of the certain amount; and non-involvement at all.

For the calculation three types of methodology were used. In cases where an appropriate database was available, direct comparison of existing samples of participants and non-participating farms was conducted. When such data was unavailable or inadequate (in terms of coverage and representativeness), a transformation procedure was selected using non-participating farms as a reference situation and applying transformation coefficients where appropriate; the respective participant figures were then calculated. The third methodology applied, in cases of extreme lack of data, an ad hoc selection of income and / or cost items and the sum of these was defined as the amount to be paid. Hybrid methods combining elements from the above methodologies were also used. The selection of the method was data driven.

Natural handicap payments

Although some common themes exist, the payment levels and structures of natural handicap payment schemes vary significantly among the reviewed states and regions. In a way, this is not surprising, since natural conditions in Europe also vary noticeably and there is no robust measure of natural handicaps or generally acknowledged reference level for payment calculations.

Almost all reviewed states and regions differentiate natural handicap payments and these differentiations are closely related to LFAs delimitation covering a wide range of parameters. This allows policy-makers to address regional and local variation better in the levels of natural handicaps, but it also makes it possible to promote other objectives which may not be in line with the objectives mentioned in the EC Reg. 1698/2005. Consequently, the complexity of natural handicap payment schemes combined with multi-level goal-setting may jeopardise the transparency of payment calculations and their EU-wide distribution in a just and equitable way.

The most commonly-used approach in measuring natural and other handicaps is to provide a comparison of revenues and costs (gross profit) of a farm located in LFAs with the corresponding data of a non-LFA farm. However, it also seems that the implementation of natural handicap payments is not only dependent on natural conditions but also on economic, political and administrative conditions of the state or region. Therefore, the significance of natural handicap payments in national agricultural policy settings varies considerably. In the future, more attention should be paid to the interplay between natural handicap payments and other rural and agricultural policy measures. In addition, some stricter environmental requirements should be included as a condition for natural handicap payments in order to make them more effective.

Natura 2000 measures

The research has confirmed large variation in commitments and consequently in approaches used for Natura 2000 payment calculations depending on natural and other country-specific conditions. The only factor of Natura 2000 payment differentiation is according to various management commitments applied in Natura 2000 areas. Among the most frequent commitments applied are: limitation of fertilization, stocking density, grazing and mowing and ploughing up grassland in Natura 2000 on agricultural land or preservation of required composition of tree species, prohibition of clear cutting, exclusion from final felling and maintenance of old and dead trees on forestry land.

The amount of Natura 2000 payments is generated from basic components like income foregone and additional costs, whereas additional income and transaction costs are added in the case of Natura 2000 on agricultural land in Poland since submeasures focused on Natura 2000 areas are implemented for the present within AEMs. Income foregone is determined mostly on a basis of GM difference and loss of value of timber volume or interest rate foregone in case of forestry Natura 2000. However, other approaches such as net margin, replacement costs of yield reductions, NVA difference or average felling increments difference are used as well. Greater similarity exists within the determination of additional costs where the increase in labour costs and feeding costs dominate. Additional income, considered in Poland, arises from a possibility to realize fattening on grassland. Finally TCs cover costs of documentation preparation for ornithological and natural habitats.

Considering the wide range of commitments and calculation approaches, the list of data sources used is very heterogeneous. Each country use data from different sources, particularly for Natura 2000 on forestry areas where no common database exists.

Forestry measures

The expected large differences in payment differentiations and calculations within a measure across the countries and between the different forestry measures were confirmed. Applied payment differentiations vary from simple uniform payments only considering RDR requirements to rather complex differentiations depending on tree or forest types, topography but also on agricultural parameters such as production systems or land type and quality.

While eligibility criteria and scheme commitments are often similar across countries, the level of details in the calculations varies between the different implementations. Taking the establishment payments for afforestation as an example, the standard cost approach can be as simple as using an aggregated figure for establishment costs or can include a number of different cost components for a range of required forest activities. Similarly, approaches used to quantify the different components vary from using expert studies or opinions to more detailed modelling exercises. However, the findings of the review seem to suggest that information on the quantification of cost components in forestry payments is rather limited, in particular in comparison to other RD measures such as agri-environment and Natura 2000 measures. Lack of suitable data often implies that simple calculation methods based on expert studies and opinions have to be used to estimate standard costs for forestry payments.

Meeting standards and animal welfare measures

The meeting standards measure is implemented only in two of the nine investigated countries (Greece and Italy), and is thus the least applied measure of all. Animal welfare payments are provided in six countries. The exceptions are the Czech Republic, Lithuania and Poland.

The meeting standards measure determines a wide range of options and complexity of payments calculations. Scheme commitments applied depend directly on the obligations or restrictions imposed by the new standard (i.e. implemented regulation) as well as particular components of payment calculation. Some common issues in the process of payment calculations can be identified: payment is fixed for five years and is proportionally decreasing annually; the range is given by a fixed maximum amount of payment in the first year up to fixed minimum amount of payment in the fifth year. Another key issue is the limitation of the maximum payment per farm and the complexity of setting up the commitments for a high number of farms.

Animal welfare payments are differentiated according to animal species, applied husbandry conditions and farm systems. The calculation process is on the basis of standard costs with regard to standard assumptions of additional costs, income foregone and transaction cost. However, two additional elements reducing the payment amount are identified, i.e. savings resulting from expected lower veterinary costs and savings and additional income due to increasing animal health and output. The transaction costs are calculated in two different ways: as a percentage of total amounts of income foregone and additional costs; and as a constant amount added to the payment. The animal welfare measure is newly introduced in most of the investigated countries; therefore the fact that there was no reference model to follow made the whole process of calculating payments more complicated.

Payment differentiation

Payment differentiation is a key issue for the development of methodological grids. Overall, the main factor of payment differentiation among the different measures is, obviously, the various management prescriptions applied in order to achieve the objectives of particular RD measures. The different management commitments as a basis of several submeasures are the only factor of differentiation in Natura 2000 and meeting standards measures. AE payment differentiations are based on a much wider range of factors like land use / animal type with some cases of more detailed specification (i.e. crop / variety / breed), farm structural characteristics (e.g. intensity of farming practices, farm size or farming period in case of organic farming) and spatial dimension (e.g. administrative / regional / territorial differentiation or specific land attributes). The key factor of natural handicap payment differentiation is geographic regions delimited according to a wide range of additional criteria such as productivity of soil (determined by indexes or stocking density), demographic indicators (e.g. population density, farm population share), farm income and size, farmer characteristics, remoteness etc. Within the scope of the forestry measures, applied payment differentiations vary from simple uniform payments only considering RDR requirements to rather complex differentiations depending on tree or forestry types, purpose of woodland, topography but also agricultural parameters such as production systems or land type and quality. In addition, the various commitments, animal types (even. breeds), production systems and husbandry conditions have been identified as the main factors of animal welfare payment differentiation. The identified key parameters of payment differentiation represent one of the important inputs to the development of the grids, which should harmonise the approach to payment calculations.

Discussion

Considering the wide range of commitments and calculation approaches, the list of used data sources is very heterogeneous. Various combinations of different data sources such as legal acts, statistical data, scientific literature, handbooks, and experts' recommendations were used for payment calculations within all of the measures. In fact, lack of suitable and current data is one of the identified key problems. In order to overcome this, case studies, surveys and expert consultation were used. However, long-term research enabling suitable data availability and different data sources which are currently missing is required. Other remaining issues, in addition to the above-mentioned problem of data availability, which should be taken into account in future payment calculation, are as follows: the limitation of standard cost approaches, constraints resulting from the RDR guidelines, missing opportunity to test efficiency of more differentiated approach and finally large variation in implementation of RD measures and hence in approaches used to calculate payments. Furthermore, lack of methodological experiences and skills of ministry staff is identified in some cases. More attention should thus be paid to an improvement of methodological experiences.

Moreover, the summary of remaining key issues takes into account the results of the first project workshop with governmental representatives and their feedback on key issues for future payment calculations has been incorporated. From the Commission's point of view, the methods for payment calculation should bear in mind administrative costs but have to be provided in sufficient detail to enable their applications under a wider range of circumstances. From the point of view of national and regional policy administrations, the most important thing is to keep the payment calculation process as simple and workable as much as possible. Integrating the main findings from the review with the feedback from government representatives, the following general and measure-specific key issues for future payment calculations can be summarised as follows:

General key issues:

- complexity of payment calculations and justifications versus simplicity:
    - balance between scientific approaches and political acceptability of calculations
    - balance between juridical requirements and their effects
- development of suitable incentives at the farm level
- lack of suitable and current technical, economic, and regional data
- differentiation of the issues in relation to implementation and justification of payments and measures
- need to test efficiency (gains) of more differentiated approaches
- lack of methodological experiences (considerable uncertainties in relation to some specific parameter values used for calculation, mainly transaction costs)
- rigidity of RDR requirements and the WTO framework does not allow to consider payments for environmental benefits and differences between intensive and extensive farming.

Measure-specific key issues:

- stakeholder interests affect payment design and calculation through consultation process (AEM, forestry measures)
- fixed costs can not be considered in payment calculation (AEM, AWM)
- payment calculations are not flexible because of Commission guidelines which are, at least in some cases, not effective (AEM, forestry measures)
- difficulties in payment calculations hinder innovation in application of new measures (AEM, Natura 2000 payments)
- definition and calculation of baseline requirements (AEM, LFA, AWM)
- implementations and payment calculations are driven by different objectives (LFA)
- changes in the policy and economic environment, e.g. market developments, are not considered in payment calculations (AEM, LFA)
- uncertainty in relation to transaction costs (AEM, AWM).

In addition, payment levels are not only determined by the methods of calculation used, but to a large extent by external factors such as objectives of other European and national policies, financial considerations, stakeholder influences and payment levels from previous RDPs ("path dependency"). Most of above mentioned problems and issues within payment calculations confirm that sufficient and long-term research, enabling innovation, using more variations of payment calculation method and data sources, is at present missing. More attention should be paid to such research within the future design of RD measures and RDPs overall (e.g. within the support of technical assistance actions provided through the EAFRD).

From a practical point of view concerning the planned development of methodological grids for the payment calculations, the differences in payment calculations between the investigated countries and regions emphasise one of the main challenges in developing such grids: trying to create a harmonized method for payment calculations which, at the same time, allows consideration of regional circumstances and maintains relatively low administration costs. The different methods of payment calculation are only one of the reasons for difference of payment levels within the RD measure. The other identified challenges for creation of common harmonised grids across member states include mainly:

- large variation in applied eligibility criteria and commitments
- range of payment differentiation

- difference in suitable and detailed data availability, their reliability, data sources and reference period of used data
- different definition and calculation of baseline requirements
- different time of providing of the payment (mainly in forestry measures: one-off payments, payments for 5, 7 or up to 20 year period)
- different degree of transparency of payment calculation.

However, the review has also shown that certain similarities can be found across countries and some harmonisation of payment calculation processes in the form of common methodological grids is feasible, but only on the assumption that some simplification and selection of the most common commitments and payment components will be adopted.

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List of abbreviations

AE	Agri-Environmental
AEM	Agri-Environmental Measure
AES	Agri-Environmental Scheme
AFI	Average Felling Increment
AHWM	Animal Health and Welfare Management
AOPK	Agency for Nature Conservation and Landscape Protection
ARWS	Ameliorative and Reinforcing Wood Species
AWM	Animal Welfare Measure
BAT	Best available techniques
CAP	Common Agricultural Policy
C-C	Cross-Compliance
CF	Conventional Farming
CRPA	Centre for the Research in Livestock Breeding
CZK	Czech National Currency - Czech Crown
dt	quintal (weight unit)
EAFRD	European Agricultural Fund for Rural Development
EC	European Council
EEC	European Economic Community
ERDF	European Regional Development Fund
EU	European Union
EUR	European Union Currency - Euro
FADN	Farm Accountancy Data Network
FFH	Flora Fauna Habitat
FU	Forage Unit
GAEC	Good Agricultural and Environmental Conditions
GBP	British National Currency - Great Britain Pound
GFI	Gross Farm Income
GM	Gross Margin
ha	hectare
HNV	High Nature Value
HUA	Highly Unfavourable Area
IACS	Integrated Administrative and Control System
IP	Integrated production
IPPC	Integrated Pollution Prevention and Control
kg	kilogram (weight unit)
KTBL	Curator ship for technique and architecture within agriculture
LFA	Less Favoured Area
LISS	Low-impact silvicultural systems
LTL	Lithuanian National Currency – Litas
LU	Livestock Unit
LUA	Less Unfavourable Area
LVZ	Farm specific scoring points (*Landwirtschaftliche Vergleichszahl*)
m²	square meter (area unit)
m^3	cubic meter (volume unit)
MJ NEL	Mega joule Net-Energy-Lactation (energy unit)
MoA	Ministry of Agriculture
MoE	Ministry of Environment

MS	Member state/s
n.a.	Not applicable
n.d.	No data available
N / NPK	Nitrogen - Phosphorus - Potassium
NVA	Net Value Added
NP	National Park
OF	Organic farming
PLA	Protected Landscape Area
PLN	Polish National Currency - Polish zloty
RD	Rural Development
RDP	Rural Development Plan
RDR	Rural Development Regulation
Reg.	Regulation
SEERAD	Scottish Executive Environment and Rural Affairs Department
SFGS	Scottish Forestry Grant Scheme
SMRs	Statutory Management Requirements
SPA	Special Protected Areas
t	ton (weight unit)
TCs	Transaction Costs
UAA	Utilized Agricultural Area
UK	United Kingdom
WFD	Water Framework Directive
WKH	Woodland key habitat
WTO	World Trade Organization

Partner countries/regions

CZ	Czech Republic
DE_{NRW}	Germany – North Rhine-Westphalia
DE_{MWP}	Germany - Mecklenburg West-Pomerania
ES_{BC}	Spain – Basque Country
ES_{CL}	Spain – Castilla and Leon region
ES_{N}	Spain - Navarra region
FI	Finland
GR	Greece
IT_{ER}	Italy – Emilia Romagna region
IT_{UMB}	Italy - Umbria region
IT_{VE}	Italy - Veneto region
LT	Lithuania
PL	Poland
SCO	Scotland

1 Introduction

The current EU rural development policy acting in member states through the new Rural Development Regulation (EC Reg. 1698/2005) is no longer based on agriculture alone but covers a much wider range of measures contributing to sustainable rural development. Support provided under the RDR focuses on an improvement in three areas: the competitiveness of agricultural and forestry activities; environmental protection; and quality of life in rural areas. Member states implement RD policy through preparation of either a single RDP for its entire territory or a set of regional RDPs financed now by EAFRD consolidating previous financial instruments into one single framework.

The AGRIGRID project aims to develop methodological grids for the calculation of payments in RD measures in the EU member states. The project cover a representative set of EU member states with regional case studies in selected countries.

Regarding the different priorities set in particular RDPs and the wide range of possible RD measures, the project and consequently this report is focused on selected, mostly area-based, RD measures included in Axis 2 of the new RDR "Improving the environment and the countryside". The analysed measures include natural handicap payments, Natura 2000 payments, agri-environment payments, animal welfare payments and forestry payments such as forest-environment and payments for first afforestation of agricultural and non-agricultural land. In addition, support under the new meeting standard measure included in Axis 1 is added.

Table 1-1Scope of investigated RD measures

RD measure	Measure code
Meeting standards	131
Natural handicap payments in mountain areas	211
Natural handicap payments in other than mountain areas	212
Natura 2000 payments on agricultural land	213
Agri-environmental payments	214
Animal welfare payments	215
First afforestation of agricultural land	221
First afforestation of agro forestry systems	222
First afforestation of non-agricultural land	223
Natura 2000 payments on forest land	224
Forest-environmental payments	225
Restoration-prevention in forestry	226

The data collection was held in seven partner countries (respectively selected regions): the Czech Republic (CZ), Germany (DE), Finland (FI), Greece (GR), Italy (IT), Lithuania (LT), Scotland (SCO) and in two sub-contractor states Poland (PL) and Spain (ES). In all countries (except of Germany, Italy and Spain), the methods of payment calculations were analysed within the whole country approach. In those three other countries, due to the administrative structure, regions were chosen according to diversity and data availability: Mecklenburg West-Pomerania (DE_{MWP}) and North Rhine-Westphalia (DE_{NRW}) in Germany, Navarra (ES_N), Castilla and Leon (ES_{CL}) and Basque Country (ES_{BC}) in Spain and Emilia Romagna (IT_{ER}), Umbria (IT_{UMB}) and Veneto (IT_{VEN}) in Italy.

These countries and regions cover a range of natural and agronomic conditions from intensive

farming with good soil and favourable climatic conditions, to extensive livestock systems in marginal areas with unfavourable natural conditions isolated from markets. Table 1-2 summarises the investigated measures in the particular countries and shows the differences in the extent of implementing measures in the RDPs of the partner countries.

Table 1-2Investigated measures by partner country / region

Code	CZ	DE	DE_{MWP}	DE_{NRW}	ES	ES_{BC}	ES_{CL}	ES_{N}	FI	GR	IT_{ER}	IT_{UMB}	IT_{VEN}	LT	PL	SCO
Meeting standards																
131	-	x	-	-	x	-	-	-	-	✓	x	x	✓	-	-	-
Natural handicap payments																
211	✓	x	x	✓	✓	x	x	x	✓	✓	x	✓	x	-	✓	-
212	✓	x	x	✓	✓	x	x	x	✓	✓	x	✓	x	✓	✓	✓
Natura 2000 on agricultural land																
213	✓	x	x	✓	x	-	x	✓	-	-	x	✓	x	✓	✓	-
Agri-environmental measures																
214	✓	✓	✓	✓	x	✓	x	✓	✓	✓	x	x	✓	✓	✓	✓
Animal welfare																
215	-	✓	x	x	x	-	✓	-	✓	✓	✓	x	x	-	-	✓
Forestry measures																
221	✓	x	-	x	x	✓	x	✓	✓	✓	x	✓	x	✓	✓	✓
222	-	x	-	x	x	-	x	-	-	✓	x	✓	x	-	-	-
223	-	x	-	x	x	-	x	-	-	✓	x	✓	x	✓	✓	✓
224	✓	x	x	✓	x	-	x	-	-	✓	x	✓	x	✓	-	-
225	✓	x	✓	x	x	✓	x	-	-	✓	x	✓	x	✓	-	✓
226	✓	x	-	x	x	✓	x	✓	-	✓	x	✓	x	✓	✓	-

✓= implemented, - = not implemented, x = not investigated

The level of payment of the selected set of RD measures is generally calculated on the basis of standard costs' model[1] containing additional costs, income foregone and eventually transaction costs. The methods / approaches for calculation vary among the member states and consequently payment levels can differ for the same commitment significantly. In addition the degree of details covered in payment calculation process and usage of payment differentiation is different, with the consequence of possible occurrence of over or under-compensation in individual circumstances. These reasons give rise to a challenge to develop a harmonised methodology for payment calculation applied EU-wide but at the same time taking into account specific regional circumstances.

Developing methodological grids for the payment calculation in different RD measures requires a detailed knowledge of existing methods for payment calculations in RD measures and their impacts on that structure. This will provide the basis for identifying new methods for payment calculations and the development of grids. A key issue in the grid development is also the evaluation of data requirements and availability. The proposed methodological grids should contribute to policy makers and governmental agencies by providing a new harmonised and flexible method of payment calculations increasing the efficiency of governmental spending.

The main objectives of this report are to carry out a comparison of the methods applied by the member states and their regions for calculating the payments in their current RDPs, grouped by selected RD measure. For this aim the comparative analysis will be used.

[1] A methodology developed to provide systematic measurement of the administrative costs of regulation

The report presents the outcomes of RD measure-specific reviews carried out during the 1st project phase and provides synthesis across selected member states / regions and RD measures. Following an outline of the methodologies used in this review in chapter 2, the synthesis of the main outcomes of the review is structured in following chapters:
3. Basic data about RD measures covering information about their existence across the partner countries and about applied payment differentiation
4. Methodology of the payment calculation describing comparison of eligible criteria, scheme commitments, approaches for payment calculation and impact of other factors at the payment rate (baseline requirements, payment limits and interrelations between the RD measures and other measures)
5. Data sources and administrative structure involved in payment calculation
6. Problems identified during payment calculation and their solutions.

Within the first two sections, the same structure for each RD measure is retained. The report broadly follows the structure designed in the general framework and aims at answering the following key questions considered to be the most interested areas for investigation.

List of key questions:

- What kinds of measures exist in the partner countries?
- What kind of payment differentiations exist in the partner countries?
- What differences exist in eligible criteria and commitments?
- What cost components are considered in the calculations?
- What approaches are used to quantify the different cost components?
- What types of data are used in the calculations and what sources are used?
- What problems are identified in the calculation and how are these dealt with?

Three types of supplementary information are presented as annexes to the main report. They are meant to help the reader to get a deeper insight into the results mentioned in this report. The annex is divided into three parts:

- measure specific overviews presenting the whole structure of investigated RD measures, level of payments for single schemes, submeasures or categories, the percentage level of confirmed payment compared with calculated payment and changes with respect to the last programming period
- examples of payment calculations including tables describing the payment calculation methods and approaches grouped by particular RD measure in detail and complementing the chapter “Payment calculation process”
- the final form of general framework for the idea generation about key investigated areas considered as the most important within the payment calculation process. The structure of the general framework was a basis both for six RD measure-specific questionnaires and summary reviews of payment calculation methods.

2 Methodology and data sources

Data collection for this report was carried out by the partner teams and subcontractors in each of partner countries.

Two approaches for data collection which have been variously combined in each country were advised:

- the literature reviews of key policy documents (e.g. RDPs, national governmental statements and regulations, EU regulations), research studies and specialised literature dealing with payment calculation issues as well as relevant grey literature and relevant statistical data
- semi-structured interviews with key representatives of government agencies and organisations responsible for payment calculations in each specific field (with possibility to add own experts opinions).

The extent of the contribution of each of the approaches is left to the partners according to the different potentials of each approach in the different countries for contributing to the description of the current methods of payment calculations in the selected RD measures.

The data collection process and further analysis is based on a general methodological framework for data collection across partner countries designed to provide a pattern for six RD measure-specific questionnaires (namely for AEMs, natural handicap payments, Natura 2000 payments, forestry measures, animal welfare and meeting standards measures). This framework was completed with a guideline on how to create and fulfil particular questionnaires and provide semi-structured interviews. At the same time, the framework determines the basic structure for six RD measure-specific summary reviews of methods for payment calculations delivered by responsible teams. These reviews are structured according to key issues during payment calculation. The general framework is designed to enable a realisation of comparative analysis across countries at the end.

Although the main attention was paid to the payment calculation methods applied in the new RDPs valid for programming period 2007 – 2013, some information (e.g. statistical data or development of payment rate) is based on earlier RDPs.

In line with procedures adopted for the whole project, the authors firstly developed the general methodological framework (see annex C) which was circulated among all project partners and subcontractors for feedback. Any comments were taken into account when finalising the framework and guidelines for further creation and fulfilment of RD measure-specific questionnaires. Six questionnaires were developed in the same way, each for a particular selected RD measure. The circulation of the draft questionnaires among all partners ensured their adjustment according to national differences and made them more suitable by the completion of country-specific questions. In addition, each team responsible for the data collection of a particular RD measure prepared an example of a completed questionnaire with data for its own country to help other partners with complete the questionnaire correctly. Consequently, each partner / subcontractor provided data collection and reviews of existing payment calculation methods in their own country for all six selected RD measures (i.e. completed six questionnaires) by using the literature and / or interviews. These data have been sent back to responsible teams for further analyses and RD measure-specific reviews of payment calculation methods. First outcomes of the comparative analyses were presented in the 2nd project meeting to be discussed, assessed and verified. All drafts of RD measure-specific

reviews were again revised and comments taken into account. The final step of the data collection process and comparative analysis is to publish six RD measure-specific reviews on project website and complete summary report on review of payment calculation for selected six RD measures (for better description see Figure 2-1 below).

Data collection and semi-structured interviews were held between April and June 2007 when most of the RDPs were not finished or approved by the European Commission. That is why some of the data published in this report might have been subject to change.

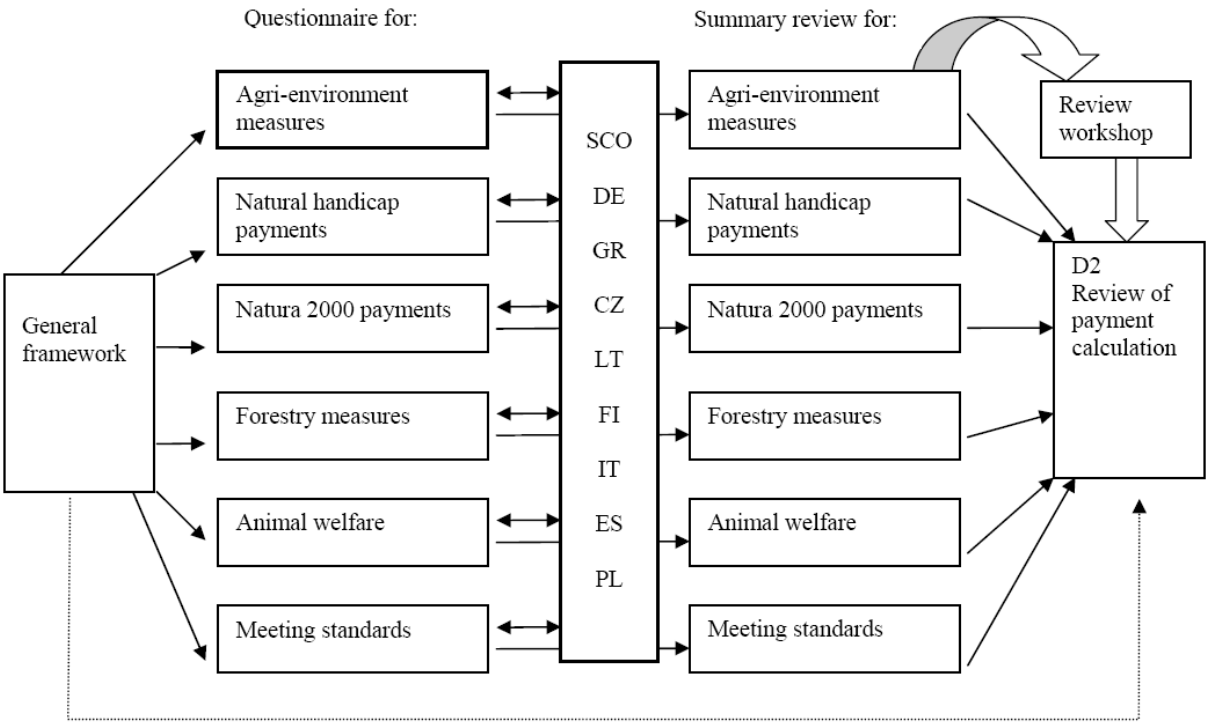

Figure 2-1Process of data collection

Proposed structure of the framework for data collection:

I. Basic data about the RD measure (AEM, LFA, Natura 2000 etc.)
- overview of RD measure structure (a list of all submeasures, level of payments, targeting, payment differentiation)

II. Information about the methodology of the payment calculation
- information about the methodology of payment calculation (relevant commitments, used approaches with identification of income foregone, additional costs and transaction costs)
- baseline impacts, limits of payments, interrelations between RD measures and others measures in and out RDPs, problems with payment calculation and their solutions

III. Information about the data sources
- type of used data sources and their availability

IV. Contextual information
- list of institutions involved in payment calculation
- statistical and other interesting data, remarks

The proposed framework is structured in four parts. The aim of the first part is to obtain basic information about the whole structure of the selected RD measure such as a list of all submeasures implemented, payment levels for single schemes, submeasures or categories, targeting, the existence of payment differentiation and payment changes with respect to the last programming period (2000/2004–2006).

The second part of the framework is focused mainly on obtaining information about the methodology and principles of how the actual payment levels of the RD measure have been determined. The objective is to compare eligible criteria and relevant commitments and identify their connection with components / items used in calculations. Detailed calculation description (i.e. used approach and methods) including identification of income foregone, additional costs and possible savings due to the participation in the RD measure is the most important area. Rules about who can not enter into payments, "baseline requirements", are investigated as well within this part. An investigation of the main problematic areas occurring during payment design and their solution is also included, along with additional information on maximum payment levels, applied limits, risks of over- and under-compensation.

The third part of the framework focuses on data sources which are used for payment calculation including an identification of missing data sources. The objective is to compare availability of data and to find out which data sources, their extent and for which purposes they are used.

The final part of the framework covers subsidiary information which makes it possible to provide a statistical comparison by using basic indicators of RD measures among countries. Aspects of payment administration are added in order to investigate administrative complexity of the payment calculations (i.e. how many institutions are involved in the calculation).

3 Basic data about RD measures and payment differentiation

This chapter describes the differences in the extent of implementing selected RD measures in the RDPs of the partner countries and existence of payment differentiation. Due to a large number of different submeasures within the selected RD measures, it was agreed that one common submeasure in all countries / regions and two specific submeasures per country / region are selected for further analysis. This approach is used mainly in the case of agri-environment measures where the support for organic farming has been chosen as the common measure implemented in all examined countries.

3.1 Agri-environmental measures

There was an authorisation or EU member states to introduce national schemes in order to compensate farmers for practices compatible with the requirements of conserving the natural habitat in environmental sensitive areas as early as in the EEC Reg. 797/85 on improving the efficiency of agricultural structures. Obligatory implementation of AEMs was made for member states in 1992. A lot of various AEMs were implemented covering around 20% of the UAA. The second generation of AEMs was initiated in 2000 through the EC Reg. 1257/1999 and the third through the EC Reg. 1698/2005. The payments shall be granted annually and shall cover additional costs and income forgone resulting from the commitment undertaken. They may cover also transaction costs where necessary.

There is an extremely great variety of measures, submeasures and schemes offered to farmers across the EU. In 12 countries / regions examined, there are 189 different types of contracts available to be signed as shown in the table below. A detailed list of all measures and submeasures can be found in the Annex A.

Table 3-1 Investigated AEMs and their extent by partner country

	CZ	DE*	DE_{MWP}*	DE_{NRW}*	ES_{BC}	ES_{N}	FI	GR	IT_{VEN}	LT	PL	SCO*
214	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Measures	3	13	3	6	n.a.	n.a.	3	16	7	4	8	3
Submeasures	19	15	3	9	24	4	34	22	15	12	38	9

✓= yes, - = no, n.a. = not applicable

* The list only includes those AE measures which were investigated in the review.

The AE measures are measures with the highest financial support within RDPs. The largest area involved in these measures is Finland where nearly the entire agricultural area is under contracts. This is valid for absolute as well as relative rates. On the other hand, the area supporting environment and landscape is the lowest in Greece and in Navarra (Spain). These two countries are followed by Mecklenburg West-Pomerania and Poland with share about 4% of UAA.

Table 3-2 Share of area under AEMs on total agricultural area in 2005

	CZ	DE_{MWP}	DE_{NRW}	ES_{N}	FI	GR*	IT_{VEN}	LT	PL	SCO
Total UAA (´000 ha)	4 259	1 341	1 512	557	2 267	9 163	831	2 590	17 737	6 115
AEMs area (´000 ha)	1 168	57	214	12	2 229	127	100	n.a.	800	1 119
Share of AEM on UAA (%)	**27.42**	**4.25**	**14.15**	**2.15**	**98.32**	**1.39**	**12.03**	**n.a.**	**4.51**	**18.30**

* 2003 data

In order to analyse the available AE submeasures, they were grouped according to their main

objectives based on the description provided in questionnaires. The issues that were included in the objectives were following:

a) Natural resources:

- water – there are two issues concerning water. One of them is water quality, having to do with pollution, contamination or salinisation of aquifers and the second is the management of water resources in terms of water extraction and use for irrigation, in the case of the southern member states and regions
- soil – soil erosion and the impacts of agricultural activities on soil quality (fertility etc.) are two main issues that AEMs deal with.

b) Biodiversity:

- genetic biodiversity either in the sense of protecting threatened animal breeds and cultivated plant species / varieties or promotion of mixed and multicultivation production systems through supporting crop rotation and avoidance of monoculture
- wildlife conservation and enhancement is another aspect while a specific set of practices were focusing on the protection, maintenance and enhancement of agro-ecosystems of High Nature Value
- finally landscape quality was the third issue to which a considerable amount of effort was dedicated.

Apart from the fact that a lot of measures or submeasures are multi-objective and hence are placed in both categories, some of the measures dealt with more **holistic approaches** such as organic farming and integrated farming either as a whole farm approach or by the promotion of precision agricultural methods. The following table was constructed by categorising 189 available contract types (measures or submeasures).

Table 3-3 AE schemes per environmental issue by country

	Holistic approaches		Natural Resources		Biodiversity			Landscape
	Organic	IP	Soil	Water	Genetic	Wild life	HNV agro-ecosystems	
CZ	4	3	2		1	1	11	3
DE	1		8	8		7	1	6
DE_{MWP}	1	1	2	3		3	1	2
DE_{NRW}	1		6	6	2	7	4	9
ES_{BC}	1	1	2	4	4	3	8	2
ES_{N}	2				1		2	
FI	2		4	23	3	3	4	3
GR	2	1	3	3	2	4	7	3
IT_{VE}	2		2	4	2	6	4	2
LT	1			5	1		6	9
PL	12		3	3	8	3	9	
SCO	4			1		1	3	
Total	**33**	**6**	**32**	**60**	**24**	**38**	**59**	**39**

One common AE scheme was decided to be selected across all countries / regions. It was organic farming and at least two country / region specific schemes. The measures were selected applying the following criteria:

- environmental issues concerned in relation to the importance of these in the local conditions,
- prevailing production systems,
- importance of the AE scheme in terms of acceptance,
- representation of a variety of farming systems as well as environmental issues.

The schemes selected are presented in Annex A. In the analysis there are 18 schemes which mainly deal with water quality and management issues, two combating soil erosion, ten schemes concerned with biodiversity and 19 focus towards the maintenance of HNV agro-ecosystems. Finally, ten schemes are aimed at landscape conservation.

3.1.1 Payment differentiations within agri-environment measures

The main factor of differentiation among payments is the various practices - methodologies applied in order to achieve the environmental objectives set by AE schemes.

Types of payment differentiation:

- land use / animal species
- crop / variety / breed
- intensity of farming practices
- farm size
- administrative / regional / territorial differentiation
- specific land attributes
- coincidence of two AES or RD payments
- converting or maintaining production

The first type of payment differentiation has to do with the crop or, more generally, the use of the land and / or the animal under the AES. The differentiation is:

a) across general categories of land use as arable land, grassland, permanent crops and vegetable applied in DE and CZ or pork, beef and dairy in organic livestock in GR
b) for a particular crop / variety / breed due to the specific importance as, for example, organic olives are treated separately in ES_N and GR; organic Txakoli vineyards in ES_{BC}; the various breeds in LT and ES_N.

The second type of payment differentiation still using farming system characteristics as the differentiation factor is the one used in the case of ES_{BC} where organic farming payments are differentiated according to the intensiveness of cultivation, within the same crop category i.e. extensive vs. intensive horticulture.

Farm size has been reported as a third variable for differentiation related to farming systems. In some cases, there is a scaling of payment according to the farm size; these are sustainable farming and organic farming payments in PL or organic farming in ES_N.

Another type of differentiation is the spatial differentiation with three dimensions. One dimension is the administrative when the payment differentiation is provided across different

regions or other administrative units. Such are the cases of DE where organic farming payment variations across the Länder is allowed or ES_{BC} where territorial differences of organic livestock payments are provided. However the differentiation is based on farm or natural elements specific for the different areas. The second dimension is defined by the specific land attributes. Examples of this kind of differentiation are the classification of land according to its fertility and/or soil quality in the Conversion of arable land into extensively-used grassland scheme (DE), and fodder capacity in Permanent meadows, pastures and meadow-pastures (IT_{VEN}). From the same scheme in IT_{VE} originates the third spatial differentiation variable that has to do with whether the area is characterised as less favoured or not.

The last type of payment differentiation concerns some 'internal' differentiation factors such as the coincidence of two AES or RD payments in one farm or area (e.g. Diversification of crop rotations in DE_{NRW} where farms' affiliation to an organic scheme differentiates payments). Finally a rather scheme-specific differentiation element is the one applying to organic farming schemes in DE_{NRW}, SCO, IT_{VE}, PL and integrated farming in DE_{MWP}, where farms converting to the specific type of production receive different amounts than the ones maintaining the type of production.

3.2 Natural handicap payments

The first official attempt to support farming in regions with unfavourable natural conditions for agricultural production was introduced in 1975. Current Natural handicap payments are in line with the new RDR; however most countries extend the LFA payment system established already under the EC Reg. 1257/1999 until 2009 and wait for new guidelines prepared by the EU Commission within LFA payment reform from 2010. Natural handicap payments schemes in mountain areas (211) and in other areas with handicaps (212) contribute, through continued use of agricultural land, to maintaining the countryside as well as promoting sustainable farming systems. These payments compensate for farmers' additional costs and income foregone related to permanent handicap for agricultural production in the area concerned.

Table 3-4 Investigated natural handicap measures by partner country

Measure	CZ	DE_{NRW}	ES	FI	GR	IT_{UMB}	LT	PL	SCO
211	✓	✓	✓	✓	✓	✓	-	✓	-
212	✓	✓	✓	✓	✓	✓	✓	✓	✓

✓= yes, - = no

Table 3-4 gives an overview of the implemented natural handicap measures in the partner countries. All examined states and regions have chosen to implement at least one natural handicap payment scheme. In Lithuania and Scotland, there are no natural handicap payments in mountain areas (measure 211) and only measure 212 is taken up. In Finland, mountain and other areas with natural handicaps can be identified, although natural handicap payments are not differentiated according to the classification of mountain and other areas with natural handicaps.

Mountain areas

States and regions (except Finland) classify mountain areas according to altitude and/or slope. High altitude results in a short growing season. At a lower altitude, farming may be hindered by steep slopes. On the whole, the classification of mountain areas uses clearly-defined criteria such as minimum altitude or minimum slope. In Finland, the mountain area classification is based on location north of the 62nd parallel and certain adjacent areas.

Other less favoured areas

Other LFAs exhibit all of the following handicaps: land of poor productivity, production which results from low productivity of the natural environment, and a low or dwindling population predominantly dependent on agricultural activity. Therefore, LFAs other than mountain areas may be classified according to the variables measuring the condition and productivity of agricultural land, economic performance and rural population issues. These include:

- indices of soil quality (CZ, FI, LT)
- quality of agricultural land measured by the LVZ indicator at the smaller scale than a parish (DE_{NRW})
- value of integrated coefficient (Agricultural Production Space Valuation Ratio) measuring soil quality, climate, location of the land and water relations (PL)
- stocking densities used as an indicator for the quality of land (SCO)
- yield of grain crops per hectare (LT)
- value of total agricultural production per capita employed in agriculture (LT)
- population density (CZ, LT, PL)
- share of the farm population (PL) / share of workforce in agriculture (CZ, LT),
- average annual population regression (LT).

The above criteria vary widely across the countries and regions. Furthermore, some criteria are nationally specific and not easily comparable across different countries.

Areas affected by specific handicaps

In addition, the Czech Republic, Poland and Spain classify their LFAs into three categories according to the EC Reg. 1257/1999, i.e. mountain areas, other less favoured areas and areas affected by specific handicaps. Areas affected by specific handicaps are areas where farming should be continued in order to conserve or improve the environment, maintain the countryside, and preserve the tourist potential of the areas, or in order to protect the coastline. Those areas are also found in Lithuania (extreme Karst zones and flooded parts of the river Neman).

The largest areas under natural handicap payments are found in Spain and Poland. The relative area under compensatory allowances is highest in Finland (95%) followed by Scotland (86%). More than 50% of the UAA received compensatory allowances also in Greece and Poland. The greatest proportion of farms receiving compensation payments (94%) is in Finland. On the contrary, the proportion is below 15% in the Mediterranean region (GR, ES and IT_{UMB}), where there are several small farms below the minimum eligibility size threshold. In addition, Finland allocates the largest budgetary share of RD funding through compensatory allowance schemes (59%) compared to 10% in North Rhine-Westphalia (Germany), 8% in Spain and 4% in Umbria (Italy).

Table 3-5 Share of less favoured areas on total agricultural area in 2005

	CZ	DE_{NRW}	ES	FI	GR	IT_{UMB}	LT	PL	SCO
Total UAA (´000 ha)	4 259	1 512	24 855	2 267	9 163	361	2 590	17 737	6 115
LFAs (´000 ha)	706	176	7 222	2 163	5 167	45	991	9 933	5 250
Share of LFAs on UAA (%)	**16.58**	**11.64**	**29.06**	**95.41**	**56.39**	**12.47**	**38.26**	**56.00**	**85.85**

3.2.1 Natural handicap payment rates and levels

The number of per hectare natural handicap payment rates varies from two in Lithuania and in Umbria (Italy) to nine in Greece. In North Rhine-Westphalia (Germany) only maximum payment levels per land quality class are defined and the actual payment varies within a given

range depending on budgetary conditions. Hence there are five payment rates in DE_{NRW}. The levels of payment vary significantly between and within states and regions. The highest natural handicap payments (EUR150 – 210/ha) are paid in Finland. The range between the minimum (EUR100/ha) and the maximum (EUR200/ha) payment levels is largest in Umbria (Italy).

In three partner countries (FI, GR and LT), natural handicap payments remained at the same levels when moving from the previous programming period to the programming period 2007 – 2013. Spain raised base payments in mountain areas by 25% and in depopulated areas by 27%. In the Czech Republic and Poland, increases in payments (by 6 – 7% and by 24%, respectively) are caused by the exchange rate changes. The payments in CZK and PLN remained at the same levels. Payments in some categories have increased and some have decreased in Scotland and Umbria (Italy). In contrast, there has been a significant decrease (20 – 39%) in payment rates in North Rhine-Westphalia (Germany) because of changes in support for grassland following the 2003 CAP reform and due to budgetary reasons.

3.2.2 Payment differentiation within natural handicap measure

All examined states and regions, except the region of Umbria (Italy), differentiate natural handicap payments. In Umbria, payments are no longer differentiated according to annual and permanent crops vs. other land uses as they were in the previous programming period (2000/2004 – 2006). The differentiation of natural handicap payments is widespread, because it enables authorities to pursue national or regional objectives and pay enhanced payments in areas with more severe natural handicaps. Payment differentiation methods are summarised in following table.

Table 3-6 Existence of payment differentiation within natural handicap payments

	CZ	DE_{NRW}	ES	FI	GR	IT_{UMB}	LT	PL	SCO
Geographic regions	✓	-	✓	✓	✓	-	✓	✓	✓
Soil quality/land productivity (at municipality level)	✓	(✓)	-	✓	-	-	✓	✓	✓
Soil quality/land productivity (at farm level)	-	✓	✓	-	-	-	-	-	✓
Grazing categories	-	-	-	-	-	-	-	-	✓
Farm size	-	-	✓	-	-	-	✓	✓	-
Farm income	-	-	✓	✓	-	-	✓	-	-
Agricultural land use	✓	✓	✓	-	✓	-	-	-	-
Farmer characteristics	-	-	-	-	✓	-	-	-	-
Island/peripheral location	-	-	-	✓	✓	-	-	-	✓
Population density	✓	-	-	-	-	-	-	✓	-
Farm population share	✓	-	-	-	-	-	✓	✓	-
Socio-economic factors	-	-	-	✓	✓	-	-	-	-

=✓ yes, - = no

In one way or other, geographic regions at different scales are utilised in payment differentiation almost everywhere. For example in Finland, several environmental and socio-economic indicators have been utilised to determine three coherent geographic regions which cover the whole country. In contrast in North Rhine-Westphalia (Germany), payments are differentiated at farm level, in so far as for each field of the farm, the payment is determined depending on the location of the field in a specific Gemarkung, each of which has been assigned an LVZ value.

The difference in productivity of soil between areas at municipality level is used in the Czech

payment calculations. Also in Lithuania, soil productivity index is utilised as a device to differentiate payments at municipality level. In Poland, the Agricultural Production Space Valuation Ratio measuring of soil quality, climate, location of the land, and water relations is utilised. In North Rhine-Westphalia (Germany) payments are differentiated at farm level using the LVZ indicator which measures natural production conditions. In Scotland, stocking densities are used to define grazing categories which reflect the land quality.

Key payment differentiation criteria:
- geographic regions,
- soil quality or land productivity,
- agricultural use.

Spain differentiates payments at farm level according to farm size, farm income and land use (forage and crop areas). Land exceeding the first 100 hectares on the holding is excluded in the payment calculations. Payment differentiation is related to farm size also in Poland and Lithuania. In Poland, natural handicap payments are not paid for farms larger than 300 hectares. In Lithuania, per hectare payments are smaller for larger farms. Favouring smaller farms by excluding large farms or variation in payments is based on the assumption that smaller farms will contribute to the environmental quality and the viability of rural communities better than larger ones. In Greece, payments are differentiated in favour of trained (green certificated) and young farmers or successors of early retired farmers. The level of payment depends also on the crop choice. Island and/or peripheral location is seen as a disadvantage and a basis for payment differentiation in Greece and Scotland, and population density and the share of population related to agriculture are used to differentiate the LFAs and also the compensatory allowances in the Czech Republic, Lithuania and Poland.

In-house discussions concerning differentiation of payments
Possibilities of natural handicap payments degression (i.e. reduction in per hectare payment according to farm size) have been discussed in-house in the Czech Republic. The Finns have considered the differentiation of natural handicap payments according to plant species or production lines. In Scotland, it has been discussed if and how to completely decouple natural handicap payments from livestock numbers and agricultural production to address the WTO Green Box concerns.

Moreover, it is likely that the national and regional administrations are anticipating that the EU Commission will take the first step and set the guidelines for the 2010 natural handicap payment scheme reform. Therefore, administrations may be reluctant to reveal their thoughts, which would explain why there have not been any reported in-house discussions about the subject.

3.3 Natura 2000 payments

The objective of the Natura 2000 network is to promote the conservation of natural habitats and the habitats of wild fauna and flora while taking into account the economic, social and cultural requirements and specific regional and local characteristics of each member state which is supporting proper rural management to provide that. This principle is anchored in EU legislation under the Birds Directive (79/409/EEC) and the Habitats Directive (92/43/EEC). Support under the Natura 2000 measure is divided into two measures: payment on agricultural land (213) and on forestry land (224). Their different purpose leads to different management requirements to preserve natural values and therefore also to different support payments.

Table 3-7 Investigated Natura 2000 measures by partner country

Measure	CZ	DE_{NRW}	ES_N	FI	GR	IT_{UMB}	LT	PL	SCO
213	✓	✓	✓	-	-	✓	✓	✓	-
224	✓	✓	-	-	✓	✓	✓	-	-

✓= yes, - = no

Separate Natura 2000 payment measures are not implemented for agricultural or forest land in two of nine partner countries at all (FI and SCO). Support for Natura 2000 areas in these countries is covered by AE payments. In Navarra (Spain), the measure 224, Natura 2000 on forestry land, is not applied although forestry conservation in Natura 2000 areas is a priority within the National Framework. In Greece, the measure 213, Natura 2000 on agricultural land, has been excluded during a final RDP preparation and conservation will be ensured by AEMs. Poland supports Natura 2000 on agricultural land within AEMs as a one-off package containing ten submeasures focused specially on Natura 2000 areas. The Natura 2000 payments could not be introduced as a separate measure due to formal reasons (not prepared on time). The measure 224 is not implemented because forests in Poland are generally owned by the state and as such are managed by General Directorate for State Forests.

Some of the partner countries (CZ, DE_{NRW}, ES_N and LT) have already used, for a similar purpose, the compensatory allowances intended for areas with environmental restrictions according to the Article 16 of the EC Reg. 1257/1999. In the case of Natura 2000 payments on forestry land, this measure represents an entirely new type of support in all partner countries.

Considering that the Natura 2000 payments have been introduced by the EC Reg. 1698/2005 and are going to be implemented since 2007 for the first time, the only indicator of Natura 2000 areas share on total area of partner country or region can be compared across examined countries. For the time being, the largest absolute areas delimited as Natura 2000 are in Finland and Poland. With respect to Natura 2000 areas share on total area, Navarra (Spain) followed by Scotland and Greece have the highest, around 20%, shares.

Table 3-8 Share of Natura 2000 areas on total area in 2005

	CZ	DE_{NRW}	ES_N	FI	GR	IT_{UMB}	LT	PL	SCO
Total area (´000 ha)	7 887	3 406	1 039	33 703	13 196	845	6 530	32 258	7 878
Natura 2000 areas (´000 ha)	1 046	300	252	4 900	2 534	120	783	4 194	1 593
Share of Natura 2000 areas on total area (%)	**13.27**	**8.81**	**24.24**	**14.54**	**19.20**	**14.22**	**11.99**	**13.50**	**20.22**

All countries which are implementing Natura 2000 payments (CZ, DE_{NRW}, ES_N, GR, IT_{UMB}, LT and PL) use a horizontal approach, except CZ and ES_N in case of Natura 2000 on agricultural land. The Czech Republic provides support only to farmers in Natura 2000 areas and at the same time in the first zones of NPs and PLAs. In Navarra (Spain), specific management is used according to particular sites of SPAs.

3.3.1 Natura 2000 payment rates and levels

In five countries (CZ, DE_{NRW}, ES_N, IT_{UMB} and LT) applying Natura 2000 payments on agricultural land, the payment levels range from EUR30 to 188/ha with the most frequent amount around EUR40 per hectare. Both extreme levels occur in Navarra (Spain). In Poland,

since Natura 2000 on agricultural land is included in AEMs, the payment levels range from EUR147 to 371 per hectare and keep limits valid for AEMs set by the RDR.

By Natura 2000 on forest land, the payment levels keep minimum and maximum amounts (from EUR40 to 200/ha) allowed by the RDR with the exception of Greece where the RD Management Authority proposes payments up to EUR300 per hectare in specific justified circumstances.

In two countries (DE_{NRW} and IT_{UMB}) the proposed payment levels differ from the calculated amount. In the case of North Rhine-Westphalia (Germany), the budget restrictions result in lower payment levels on agricultural land than calculated. In Umbria (Italy) the decrease of proposed payment levels are caused by the necessity to keep upper payment limits equal to EUR200/ha set in the RDR.

3.3.2 Payment differentiation within Natura 2000 payments

The main and only factor of Natura 2000 payments differentiation is various managements / practices applied in Natura 2000 areas, with some more detailed differentiation provided in North Rhine-Westphalia (Germany) and Navarra (Spain).

In all partner countries, except the Czech Republic, the Natura 2000 payments are differentiated into several submeasures according to different managements (see Table 3-9 and Table 3-10). North Rhine-Westphalia (Germany) differentiates Natura 2000 payments for both agricultural and forest land according to the level of conservation obligations which leads to different degrees of designated administrative protection status of considered areas. Only Navarra (Spain) differentiates the payment level within one submeasure into more optional contracts and adapts management more to real conditions. The payment calculation contains a prohibited grazing period element which is determined by the Management Plan for each of Natura 2000 sites and has an impact on the final level of payment.

Some form of payment differentiation will be applied also in Greece. According to the first available information, Greek forest managers should provide the forestry service with an implementation plan detailing all the commitments. Separate calculation exercises will be conducted for each of the commitments undertaken.

Table 3-9 Existence of payment differentiation for Natura 2000 on agricultural land

	CZ	DE_{NRW}	ES_N	IT_{UMB}	LT	PL
implemented in current RDP	-	✓	✓	-	-	✓
not implemented but existed in past	-	-	-	n.a.	-	n.a.
not implemented but discussed	✓	-	-	-	-	n.a.

✓= yes, - = no, n.a. = not applicable

Table 3-10 Existence of payment differentiation for Natura 2000 on forest land

	CZ	DE_{NRW}	GR	IT_{UMB}	LT
implemented in current RDP	-	✓	n.d.	✓	✓
not implemented but existed in past	n.a.	n.a.	n.a.	n.a.	n.a.
not implemented but discussed	✓	-	n.d.	-	-

✓= yes, - = no, n.a. = not applicable, n.d. = no data available

Natura 2000 payments can be considered as a new type of support, so differentiated approaches were not applied in any of the partner countries in the previous programming period and in the case of Natura 2000 on forest land the similar measure did not exist before the year 2007 at all.

In-house discussions concerning differentiation of payments
During payment calculation, differentiated approaches were not discussed in-house in any of the countries, except the Czech Republic in both cases. In the case of Natura 2000 payments on agricultural land, the "contract approach" was discussed and consisted of designing special management plans for farms in selected Natura 2000 areas as a local measure. This idea was assumed from Austria. In the end this approach has not been accepted by MoA due to high administrative costs, no experience with implementation and lack of experts for such plan preparation. In case of Natura 2000 payments on forestry land, the more differentiated payment according to particular main tree species was discussed but not implemented due to efforts to decrease administration of all forestry measures as a new tool in the Czech RDP.

3.4 Forestry measures

The forestry measures are targeting the sustainable use of forest land and countryside, improving both production and environmental qualities of forestry. They include first afforestation of agricultural land (221), first establishment of agri-forestry systems on agricultural land (222), first afforestation of non-agricultural land (223), forest-environment payments (225), and restoring forestry potential and introducing prevention action (226).

As is evident from Table 3-11, there is a high degree of variation in the extent to which forestry measures are implemented in the different partner countries. The range varies from countries such as Greece, where all measures are implemented, to Finland, where no new measures and commitments are implemented. In addition to the difference in the implementation of forestry measures between the partner countries, this table also shows that first afforestation of agricultural land (221) and the newly introduced forest-environment payments (225) are the most popular measures, at least for the nine investigated countries.

Table 3-11 Investigated forestry measures by partner country

Measure	CZ	DE_{MWP}	$ES_{N/BC}$	FI*	GR	IT_{UMB}	LT	PL	SCO
221	✓	-	✓	✓	✓	✓	✓	✓	✓
222	-	-	-	-	✓	✓	-	-	-
223	-	-	-	-	✓	✓	✓	✓	✓
225	✓	✓	✓	-	✓	✓	✓	-	✓
226	✓	-	✓	-	✓	✓	✓	✓	-

✓= yes, - = no
* No new schemes for the afforestation of agricultural land will be supported during the programming period 2007-2013. Only commitments made in the programming period 1995 – 1999 will remain in force until the original

commitment ends. The payments for these commitments are estimated at EUR10 million during the programming period 2007 – 2013.

3.4.1 Forestry payment rates and levels

The measure afforestation of agricultural land (221) is implemented horizontally in all investigated countries and regions, where this measure exists. As shown in the Annex A (Table A5), DE_{MWP} has not taken up the option, but it is important to point out that other German regions have implemented this measure. In most cases, standardised payments are provided for woodland establishment, maintenance and agricultural income foregone. There are, however, a few exemptions. In Greece, support for establishment and maintenance is provided on the basis of a percentage share of the actual cost incurred applying RDR payment rates. In Finland, only previously existing commitments with respect to agricultural income foregone payments are fulfilled, while Scotland implemented a specific submeasure for small woodlands with only one aggregated payment instead of three payment components. As can be expected, payment levels per hectare vary significantly with, for example, agricultural income foregone payments set between EUR54 and 450 per hectare. However, the forestry payments in all countries and regions conform with the maximum payment limits defined in the RDR and no case has been identified in the questionnaires where suggested payments were above those limits.

The agro-forestry measure (222) has only been taken up in Umbria (Italy) and Greece. Three different agro-forestry submeasures for row plantations on arable land, plantations of uniformly distributed trees on arable land and plantations of wooded pastures are implemented horizontally in Umbria. In Greece, on the other hand, the agro-forestry measure is targeted to the Greek mainland only and excludes the islands. Similarly to measure 221, there are no standardised payments under this measure in Greece. Instead, 80% of eligible costs in specifically designated areas (LFAs, Natura 2000 and WFD areas) and 70% of eligible costs in other areas are paid. Payments in Umbria are from EUR280 to 1 580 per hectare.

The measure afforestation of non-agricultural land (223) is very similar to measure 221 and in most cases calculations for establishment and maintenance payments are carried out in the same way. As this measure is targeted towards non-agricultural land, no agricultural income foregone payments are included. Although similar to 221, a smaller number of investigated countries and regions have taken up this measure.

Forest-environment payments (225) are a new measure introduced through the current RDR for the period 2007–2013. These payments are provided in seven of the nine investigated countries and regions. Only Finland and Poland decided not to implement the measure 225 in their RDPs. While few countries and regions such as Mecklenburg West-Pomerania (Germany) target this measure towards specific designated areas (i.e. Natura 2000 areas or special protection areas pursuant to federal state law), most of the other investigated countries and regions are applying this measure horizontally. Payment levels vary between the full range of the allowed minimum (EUR40) and maximum (EUR200) payments per hectare. For example, Scotland provides a payment of EUR40 per hectare while in other cases such as Mecklenburg West-Pomerania (Germany) and Greece payment levels can be as high as the allowed maximum payment depending on the content of the specific contracts or commitments.

The measure restoring forestry potential and introducing prevention action (226) is rather different in design and implementation. Instead of per hectare payments based on a standard cost approach, real costs are reimbursed under this measure on a project by project basis.

3.4.2 Payment differentiation within forestry measures

To review the payment calculations in the forestry measures in the different countries and regions, it is important to compare to what extent existing payments in these measures are differentiated. This comparison is done in two main steps: firstly, a simple overview is provided in which countries and regions payments are differentiated; then, secondly, a more detailed comparison is carried out to identify what parameters have been used in the payment differentiation. Table 3-12 summarises which countries and regions have implemented differentiated payments under the different measures but, at this stage, does not identify different types of differentiation. As explained above, financial support under measure 226 is based on actual costs on a project by project basis. Thus, the comparison of payment differentiations does not apply and this measure is not included in the table below.

Table 3-12 Existence of payment differentiation within forestry measures

	CZ	DE_{MWP}	$ES_{N/BC}$	FI	GR	IT_{UMB}	LT	PL	SCO
Measure 221									
implemented in RDP	✓	n.a.	✓	✓	✓	✓	✓	✓	✓
not implemented but existed in past	-	n.a.	-	-	✓	-	-	-	-
not implemented but discussed	-	n.a.	-	-	-	-	-	-	-
Measure 222									
implemented in RDP	n.a.	n.a.	n.a.	n.a.	✓	✓	n.a.	n.a.	n.a.
not implemented but existed in past	n.a.	n.a.	n.a.	n.a.	-	-	n.a.	n.a.	n.a.
not implemented but discussed	n.a.	n.a.	n.a.	n.a.	-	-	n.a.	n.a.	n.a.
Measure 223									
implemented in RDP	n.a.	n.a.	n.a.	n.a.	✓	✓	✓	✓	✓
not implemented but existed in past	n.a.	n.a.	n.a.	n.a.	-	-	-	-	-
not implemented but discussed	n.a.	n.a.	n.a.	n.a.	-	-	-	-	-
Measure 225									
implemented in RDP	✓	✓	✓	n.a.	-	✓	-	n.a.	-
not implemented but existed in past	-	-	-	n.a.	-	-	-	n.a.	-
not implemented but discussed	✓	-	-	n.a.	n.a.	-	-	n.a.	-

✓= yes, - = no, n.a. = not applicable

Table 3-12 shows that if measures are taken up in the RDPs, associated payments have in most cases some kind of differentiation. Only forest-environment payments are implemented without any differentiation in three cases, i.e. in Greece, Lithuania and Scotland. Furthermore, the outcome of the questionnaires suggests that only in one case, Greece, previous payment differentiations have changed and not been taken up in the current programme period. Similarly, in the vast majority of the cases payment differentiations, other than those implemented, were not discussed. The exception is the Czech Republic, where payment differentiations more suitable for farmers according to their real commitments have been discussed, but expected administration difficulties led to the implementation of a simplified approach.

3.4.3 Payment differentiation within forestry measures – more detailed comparison

3.4.3.1 First afforestation of agricultural and non-agricultural land

Going into more detail concerning the different approaches and types of payment differentiation in the forestry measures, Figure 3-1 depicts a schematic representation of the payment differentiations identified in measure 221 across the investigated countries and regions. Basically, this figure summarises the different types of parameters, the main payment (cost) elements and the RDR requirements. The left part of the figure (establishment and maintenance

costs) also applies to measure 223.

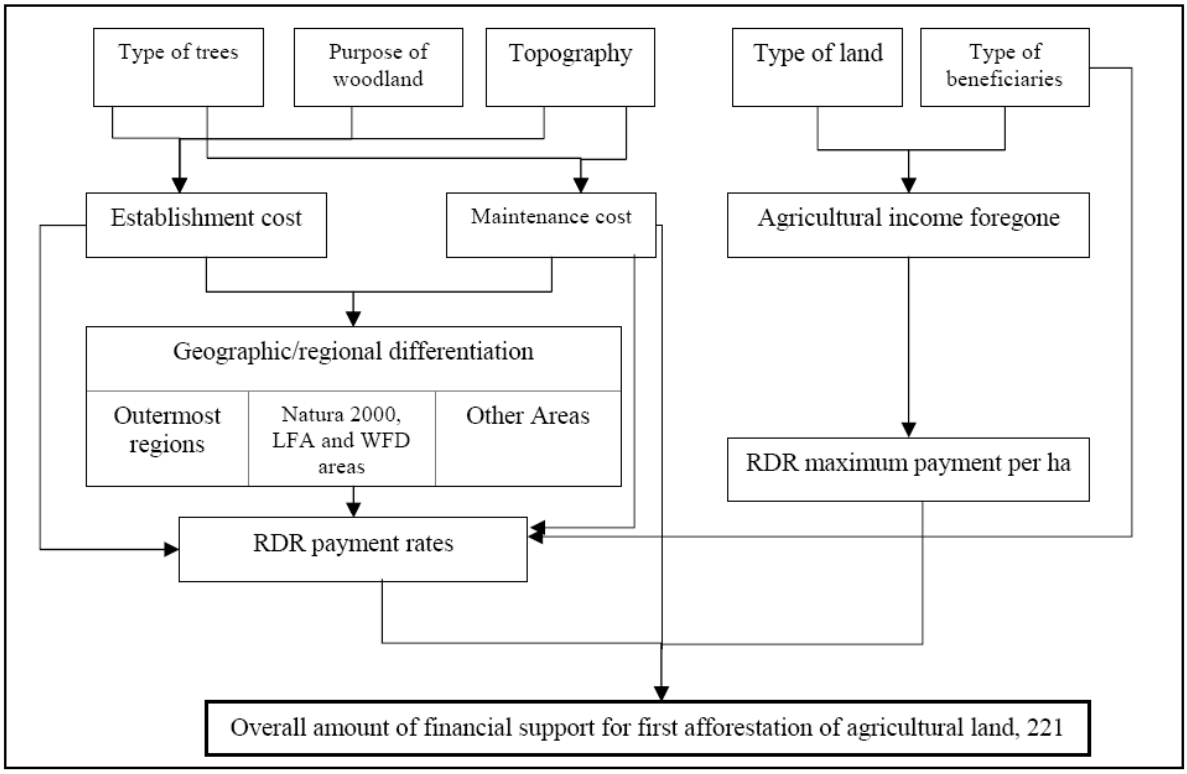

Figure 3-1 Logic representation of payment differentiation in the afforestation measure 221 (& 223)

The top of the figure shows different types or groups of parameters which affect the calculation of the three main payment (cost) elements. In other words, the calculations of establishment costs are differentiated by the type of trees, purpose of woodland or/and topography of the land. Maintenance cost calculations are differentiated by the type of trees and/or topography while the calculations of agricultural income foregone depend on the type of land and/or type of beneficiaries.

Payments for woodland establishment then have to take into account the RDR payment rates, either applying a uniform payment rate across the country or different rates differentiated by three regions (outermost regions, Natura 2000, LFA and WFD areas, and other areas). It is important to note that the application of RDR payment rates also depends on the type of beneficiaries as these rates only apply to farmers, other natural persons and private law bodies. Payments for maintenance costs do not need to apply the RDR payment rates but, in some cases, e.g. Scotland (see below), the RDR payment rates are applied and support for maintenance costs reduced accordingly. On the other hand, agricultural income foregone payments have to conform to the given RDR maximum payment per hectare. Finally, the sum of all three payment elements is the overall amount of financial support provided in this measure.

To make the logic of the payment differentiation in forestry measures more evident, Figure 3-2 and Figure 3-3 provide examples for the Scottish and Polish afforestation of agricultural land measures (221). All text boxes and arrows in bold are relevant for the payment differentiation

and calculation and affect the overall amount of support provided.

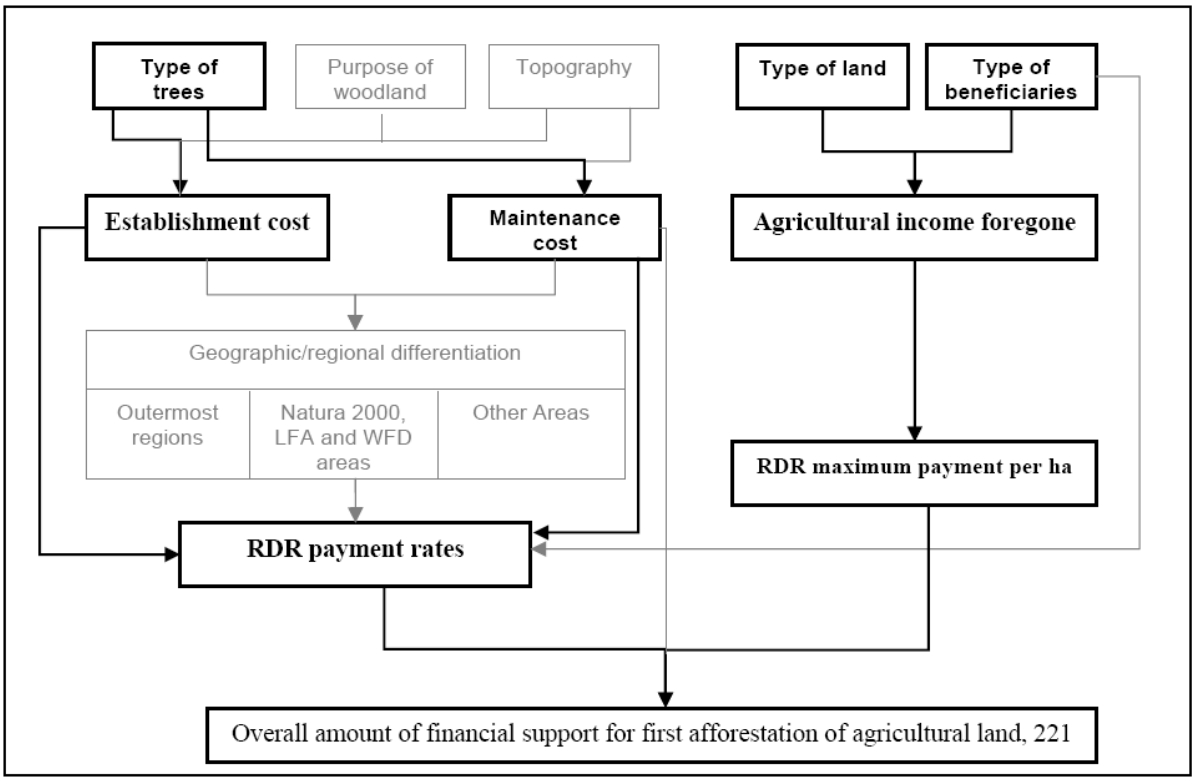

Figure 3-2 Schematic representation of payment differentiation in the afforestation measure 221 (& 223) – The Scottish example

In Scotland, the calculation of establishment and maintenance costs is differentiated by the type of trees and for both main cost elements RDR payment rates are applied. However, a uniform payment rate of 70% is applied without regional or geographic differentiation. The agricultural income foregone payment is differentiated by the types of land and beneficiaries taking into account the RDR maximum payment rate per hectare.

In Poland, the calculation of establishment costs differentiates between different types of trees and different topographical characteristics, while maintenance costs are only differentiated by topography. Similarly to Scotland, a uniform RDR payment rate of 70% is then applied for payments for establishment costs but maintenance cost payments are not affected by the RDR payment rates. There is no differentiation with respect to the agricultural income foregone payment. Only the RDR maximum payment requirements are considered.

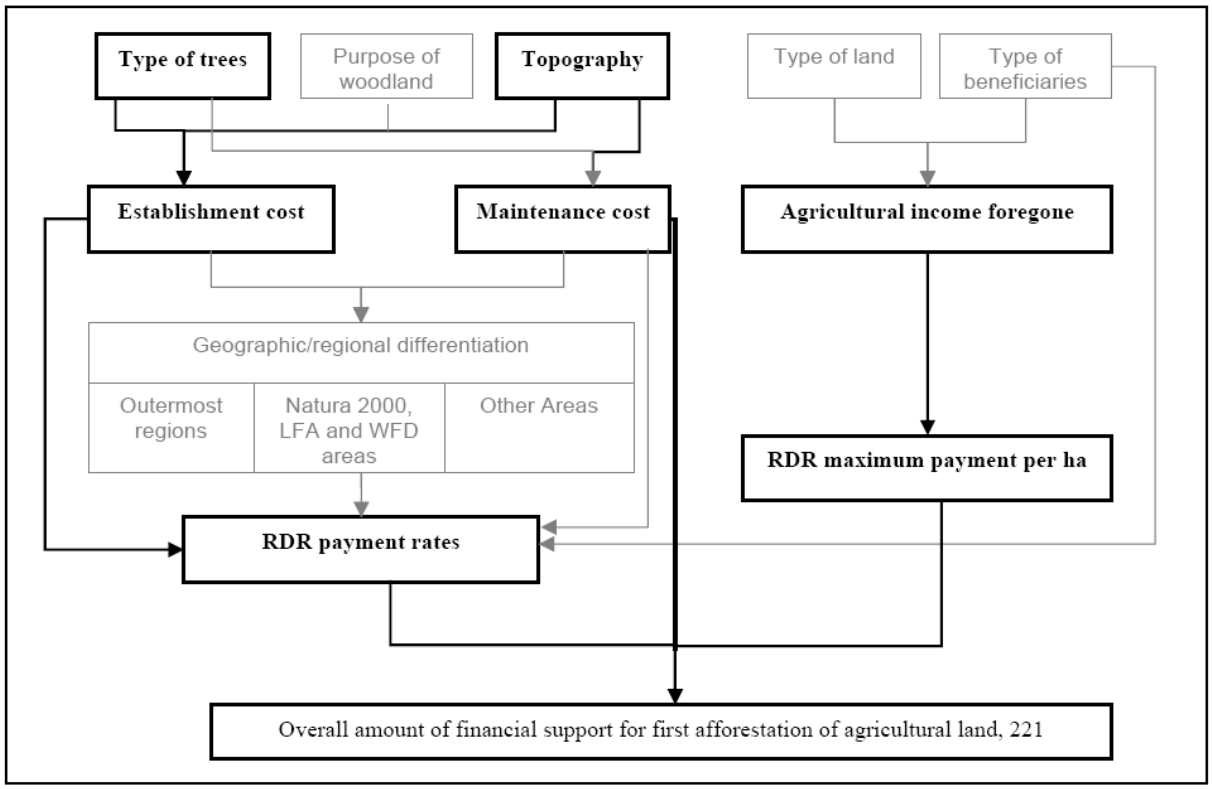

Figure 3-3 Schematic representation of payment differentiation in the afforestation measure 221 (& 223) – The Polish example

3.4.3.2 First establishment of agro-forestry systems on agricultural land

The payment differentiation in agro-forestry measures is less complex. Three groups or types of parameters are considered in the payment differentiation:

Type of parameters used for payment differentiation in measure 222:

- type of agricultural land
- type of plants set
- regional differentiation of payment rates according to RDR requirements.

The first two parameter groups are only applied in Umbria (Italy). In Umbria, payments differentiate between plantations on arable land and pastures and, in addition, payments for plantings with plants of small dimensions differ from payments for striplings. The third type of differentiation is applied in both case, Umbria and Greece, with payment rates of 80% for LFA, Natura 2000 and WFD areas and 70% for other areas.

3.4.3.3 Forest-environment payments

As shown in Table 3-12, forest environment payments are the only measure which is in some cases implemented without payment differentiation. While in all other forestry measures payments are all always differentiated in the investigated countries and regions, there is only one payment level per hectare in forest environment payments in Greece and Lithuania. Also in Scotland there is no payment differentiation as such but additional payments are provided under

specific circumstances.

Forest environment payments are differentiated in the Czech Republic, Mecklenburg West-Pomerania (Germany), Umbria (Italy) and the Basque Country (Spain). Parameters used for the differentiation of standardised forest environment payments can be synthesised into the following two groups:

Type of parameters used for payment differentiation in measure 225:
- type of forest
- specific tree species and their proportions in the woodland / forest.

A rather simple differentiation between mixed forests and other forests is applied in Umbria (Italy). Forest environment payments in the Basque Country (Spain) are differentiated between different forest types such as native woodlands and riparian forests and, in addition, also differentiate between different tree species in the calculation of income foregone due to required limitations in afforestation. In the case of the Czech Republic, payments to improve the species composition of forests are differentiated by the proportion of ameliorative and reinforcing wood species and are set in four percentage categories.

In Mecklenburg West-Pomerania (Germany) the object of agreement of each measure is locally determined by allocation authorities and the applicant (nature conservation authorities are also involved in protected or designated areas). While the level of the payment granted for the renunciation of usage generally depends on the type of tree, the calculations also take into account the volume and quality of the individual trees involved in the agreement. Moreover, different economic potential of land defined by land rents is used to determine payments for temporal renunciation of conducting any forestry operations in designated forests to protect scarce species during brooding and rearing time.

3.4.3.4 Restoring forestry potential and introducing prevention actions

Payments in measure 226 in the Czech Republic, Lithuania, Poland and the Navarra region and Basque Country (Spain) are based on actual cost and are set on a project by project basis.

3.5 Meeting standards measure

The RD measure meeting standards based on Community legislation (131) is aiming to improve the quality of agricultural production and food products and it shall contribute partly to costs incurred and income foregone caused to farmers in the fields of the environmental protection, public health, animal and plant health, animal welfare and occupational safety. These standards must be newly introduced in national legislation implementing Community law and impose new obligations or restrictions to farming practice which have a significant impact on typical farm operating costs and concern a significant number of farmers.

Table 3-13 Investigated meeting standards measure by partner country

Measure	CZ	DE	ES_{CL}	FI	GR	IT_{VEN}	LT	PL	SCO
131	-	-	-	-	✓	✓	-	-	-

Only two of nine investigated countries are implementing meeting standards measure: Greece, where it is used for electronic marking of sheep and goats and Veneto (Italy), where two submeasures exist: Processing of information linked to management of zoo-technical refluents

and formulation of feed rations and Adaptation of environmental management systems.

Considering that the meeting standards measure was implemented only in Greece during the previous programming period, the share of animals entering this measure equal to 5.5% of total number of animals represents only possible uptake evaluation.

3.5.1 Meeting standards payment rates and levels

Both countries implementing meeting standards measure keep maximum amount EUR10 000 per holding allowed by the RDR, whereas in Greece the annual payment is provided per animal (i.e. sheep or goat) and in Veneto region (Italy) per holding. Moreover in Veneto (Italy), there are proposed both one-off contributions and digressive payments depending in some cases on presented invoices. More details about payment rates are in Annex A (Table A6).

In Greece, the maximum level of payment per holding and year provided during previous programming period was EUR3 000 thus the payment has increased 3.3 times. A reason for such increase is that all ear tag expenses were eligible in the previous version of the measure, while in this version only electronic is included.

3.5.2 Payment differentiation within meeting standards measure

Table 3-14 shows that Meeting standards payments are only differentiated in the Veneto region (Italy). Payments under the measure are not differentiated in previous or in the current programming period in Greece.

Table 3-14 Existence of payment differentiation within meeting standards measure

	GR	IT_{VEN}
Implemented in RDP	-	✓
Not implemented but existed in past	-	-
Not implemented but discussed	-	-

✓= yes, - = no

In Veneto (Italy), payments are differentiated according to different administrative costs for technical advice and for laboratory analysis stated in the National and Regional laws depending on dimensions of zoo-technical farm and nitrogen production of animals and to the adaptation of environmental management systems.

3.6 Animal welfare payments

Animal welfare payments (215) are targeting the sustainable use of agricultural land improving the environment and the countryside. The reference level for calculating income foregone and additional costs resulting from the commitments given shall be the relevant standards and requirements referred to Article 40 of the EC Reg. 1698/2005.

Six of the nine examined countries, Germany, Castilla and Leon (Spain), Finland, Greece, Emilia Romagna (Italy) and Scotland, are implementing animal welfare measure in their RDPs (see Table 3-15).

In all these countries, the animal welfare measure is implemented horizontally. The animal welfare measure was implemented during the previous programming period (2000/2004 – 2006) only in Germany and Scotland. Payments decrease in Germany and increase in Scotland compared to previous levels. For whole list of payment levels see Annex A (Table A7).

Table 3-15 Investigated Animal welfare measure by partner country

Measure	CZ	DE	ES_{CL}	FI	GR	IT_{ER}	LT	PL	SCO
215	-	✓	✓	✓	✓	✓	-	-	✓

✓= yes, - = no

3.6.1 Payment differentiation within animal welfare measure

There are different measures and submeasures in analysed countries. Splitting into submeasures according to animal species and commitment typology is applied in Emilia Romagna (Italy). In Castilla and Leon (Spain), differentiation is by type of breed and production systems. In Finland, animal welfare payments are differentiated by animal species (bovine and pigs), and in Germany payments differ according to animal species (and indirectly via LU factors also according to the age of animals) and according to applied husbandry conditions. Payments per farm therefore vary depending on species and numbers of animals kept. The reason for differentiation between different animal species is the difference in the requirements and costs of welfare enhancing measures. The animal species are: bovines and pigs in Finland, dairy cattle, beef cattle, sheep, laying hens, broilers, and pigs in IT_{ER} and laying hens (battery hens, slatted-floor hens, free-range hens) and broilers (conventional production, extensive, open air) in ES_{CL}, where in addition to these also intensive breeding sows are supported. In DE differentiation according to applied husbandry conditions is in: Cattle on summer pasture, Cattle and pigs in loose housing stables (free stall barn) with grazing, Cattle and pigs in loose housing stables (free stall barn) on straw and Cattle and pigs in loose housing stables (free stall barn) on straw with outdoor run-outs.

Payment is not differentiated in Greece and in Scotland. In Scotland, the animal welfare measure differs from other mentioned countries and comprises two parts: compulsory actions (animal health and welfare management plan for treatments, vaccines and routine medications) and voluntary obligations (benchmarking, bio-security, fence maintenance, sampling and forage analysis).

During the preparation of animal welfare in Finland, there were discussions about including also poultry, horses, sheep, goats and fur animals into the animal welfare measure. Because the economic significance of those species is not as high as that of bovines and pigs, it was decided to exclude those animal groups and maybe include them later.

4 Methodology of the payment calculation

This section synthesises the different methods and approaches used for payment calculations of different RD measures. The comparison focuses on eligibility criteria, scheme commitments and different cost components which affect the payment calculations. The objective is to identify tools, variables and parameters used in calculations and provided detailed calculation descriptions including identification of additional costs and foregone income, and possible cost savings. Other factors influencing the payment rate as baseline requirements (i.e. the conditions resulting from national law and C-C), payment limits and interrelations between the RD measures and other measures are also introduced.

4.1 Agri-environmental payments

4.1.1 Eligibility criteria

In the scope of AEMs this chapter focuses mainly on eligibility criteria for organic farming. The

eligibility criteria can be divided into two sections. The first covers usual conditions such as e.g. registration in the national agricultural register and on the list of organic farmers (in-conversion process or already converted), to follow the rules for organic farming as stated in national and in European legislation and to sign contract and undertake particular obligations for five years.

In addition to the above, there are additional specific eligibility criteria for the participation in the organic farming scheme in some countries. A minimum size of a farm is applied in most of the investigated countries (e.g. 1 ha in LT, SCO and ITVEN, an interval from 0.25 to 5 ha according to land use in CZ). A minimum number of LU per farm is also a criterion within organic livestock production (2 LU in CZ and 1 LU in FI). Similarly, in the Veneto region (Italy) fodder crops are eligible for payment only if they are used on-farm as feed for cattle along with organic production methods and with a bond of ratio of at least 1 LU/ha. In PL a farmer should prepare a five-year agri-environmental protection plan including data about the farm and plans for its production. A certain amount of production sales should be presented in LT.

Payment degression is identified in Poland and in Scotland. The maximum area of land eligible for payment in SCO is 1 000 ha (of which up to 300 ha of arable land, fruit and vegetable land or improved grassland as a ceilings). In Poland, the farmer could obtain 100% payment for each hectare up to 100 ha, 50% payment up to 200 ha and 10% above 200 ha.

The basic commitment is defined by the EC Reg. 2092/1991. The applicants shall meet the conditions of this regulation on the entire area of farm holding included in the organic farming system during the five-year period of the commitment.

4.1.2 Payment calculation process

4.1.2.1 Cost components

Cost components of AEMs include income foregone, additional costs and transaction costs. In order to calculate income forgone, GM of the specific crop or average GMs of several crops/ breeds were used as an estimate for income forgone e.g. organic farming in SCO. In most other cases the yield differences were estimated and then multiplied by the price of the output which in some cases (organic farming) was also differentiated. The reduction of the yield would be the result of either reduction of unit productivity or because of limitations of land used or heads bred, provided these limitations were induced by participation to the AES. However, in the case of PL and the scheme for the buffer zones, area payments as well as LFA payments were reported as income forgone.

As far as the additional costs are concerned, the picture was slightly more complicated. The first differentiation was that in some cases costs incurred were referred to in generic terms, as direct costs or variable costs while in other cases it was more specified as to the source of cost change.

When one examines the breakout of the costs to categories, one can see that in terms of inputs usually cost savings are reported especially in the case of fertilisers and plant production products. It is the case in organic farming and land left uncultivated, with the exception of where more expensive inputs of specific quality have been necessary (i.e. selective pesticides, organic or rare seeds, special fertilisers, etc.). In the cases where gross margin was used as an estimate for income forgone, the cost savings associated were not calculated, since they should be included in the gross margin calculation as in the set aside sub-programme in the protection

of nitrate vulnerable areas (GR).

Increased labour costs as in the scheme "Cultivation of catch crops on arable land or cultivation of grass under permanent crops" (DE), machinery utilisation (and subsequently costs) as is the case of "Management of natural and semi-natural meadows" (LT) as well increased transportation costs (e.g. "Management of mountain pastures", ESBC) were reported in a lot of cases as the result of management changes. Rent for land was another cost item like in the Livestock extensification scheme (GR). Finally in some member states / regions, interest and depreciation were also included in the calculations (LT).

Transaction costs

A separate reference to the issue of transaction costs is essential in order to see the various approaches used.

The clarification and limitations imposed upon TC are given in the EC Reg. 1974/2006. Member states shall determine the need to provide compensation for TC within AEMs and animal welfare payments on the basis of objective criteria. TC shall mean cost related to letting the transaction take place and not directly attributable to the implementation cost of the commitment to which it relates. The transaction cost element shall be calculated over the length of the commitment period and shall not exceed 20 % of the income foregone and additional costs due to the commitment given.

Although clarified in the above passage, there it seems that there is still a problem of TC definition and three types of approach towards TC can be identified.

Types of approach towards transaction costs:

- no transaction cost was calculated
- simple reference of a certain amount per ha
- detailed calculations

The first type of approach is followed in CZ where no transaction costs were calculated. Even in the case that the hybrid method was used i.e. direct comparison between the average of participant and a non participant and additional cost elements were used, there was no reference to transaction costs, in some cases because there was no need recognised and in others because the maximum level was already reached.

The second type of approach is when a simple reference that a transaction cost was calculated, the elements included were generally referred to and it was a certain amount per hectare.

The third is the case where the calculation procedure was detailed. There was however some confusion as far as the elements included under the transaction cost and additional cost headings were concerned.

Technical assistance and advisory services sought by farmers are included within the additional costs incurred in the case of all schemes in GR as the preparation of nutrient management plans in the " Sustainable farming scheme" in PL. Similar costs like information-seeking, increased management efforts were considered as additional (no transaction costs) as is the case of SCO where 'additional management effort includes time for information and experience gathering,

planning and executing the organic farming process, marketing and sales management and administration.' In DE as well as SCO certification and marketing costs are part of additional costs. In other cases like FI seeking advice is considered as part of the transaction cost for the farmer in the case of organic farming and basic agri-environmental measures scheme.

On the other hand, book-keeping and monitoring is considered as another additional cost in the case of organic farming in FI and "Integrated farming" in DE_{MWP}, while in GR the time additional farmers have to spend for detailed book-keeping as well as participating in meetings with advisors or training are considered as transaction costs.

At this point we shall report on various cost items.

Transaction cost items:

- book-keeping as well as environmental record keeping i.e. personal observations recorded by the farmer-beneficiary
- monitoring either through personal observation by skilled workers or through analysis soil, water, foliar
- technical assistance taking some times the form of preparation of plans either partial or whole farm plans as in the case of integrated and organic farming.

Transaction costs items – organic farming:

- certification costs for organic farming
- management effort increased
- participation in organisations
- marketing costs

4.1.2.2 Process of payment calculation – agri-environmental measures

A comparative analysis of the various calculation methodologies used for the estimation of the AE payments resulted in three main approaches that were used and a fourth hybrid one. Detailed description of calculation process within organic farming is provided in Annex B.

Methodologies used on payment calculations:

- comparison of actual farm gross margins of participating and no participating farms
- use non participant farms as an starting point and change the appropriate cost and income elements
- ad hoc approach
- hybrid method

The first approach consists of the direct comparison, in a proper accounting exercise, of a sample of farms participating in a scheme with another sample of similar, in the sense of the cropping and breeding patterns, farms that did not participate in the specific AEM. In this case all income and cost elements were considered and GM was calculated for both samples. Any differences existing between the average values of the two samples in all income and cost elements, hence in the resulting GMs, have been attributed to their participation in the AEM under examination. The only case where a proper accounting exercise was used was the case of Organic farming in CZ. An example of the calculation approach is presented in Annex B.

The second approach used was also based on the calculation of either GMs or the calculated change in the difference between income and costs. In this case the starting point was a sample of non-participant farms with certain characteristics, matching the farming system and area targeted. On the average values of the non-participant farms and on the specific income and cost elements expected to be influenced by the participation to the AE scheme in examination, changes were made in the form of either a proportional or absolute value change. This is the most commonly used method. It was used by almost all examined regions / MS, e.g. the Czech pastures' management schemes, promotion of catch crops' cultivation in Germany and the Czech republic, organic farming in most of the cases.

The second approach used was also based on the calculation of either the GMs (Variant 1) or the calculated change in the difference between income and costs (Variant 2). In this case the starting point was a sample of non-participant farms of certain characteristics, matching the farming system and area targeted. On the average values of the non-participant farms and on the specific income and cost elements expected to be influenced by the participation to the AE scheme in examination, changes were made in the form of either a proportional or absolute value change. This is the most commonly used method. It was used by almost all examined countries / regions, e.g. the Czech pastures' management schemes, promotion of catch crop cultivation in DE and CZ, organic farming in most of the cases.

A third way of approaching the problem of calculation of the level of agri-environmental payments was an 'ad hoc' approach. The calculated level of payment, in these cases, was the result of the summing up of stated changes in concrete income and cost elements or general categories such as variable costs, other additional costs etc. An ad hoc approach was used in the case of the Italian scheme Preservation of wildlife populations within the measure Protection of semi-natural habitats and biodiversity or in Navarra (Spain) in the case of scheme Maintaining native rare breeds, where the payment is based on the income foregone for the decrease in meat production. The process of payment calculation is described in following tables.

Table 4-1 Concept of calculation of the income foregone for breed Betizu – ES_N

Concept	Beef cattle (EUR/LU)	Betizu (EUR/LU)	Difference (EUR/LU)
Gross product	1 259.55	853.00	406.55
Variable costs	579.66	330.00	249.66
Gross margin	679.90	523.00	156.89
Fixed costs	368.36	368.36	0.00
Net margin	311.54	154.64	156.89

Table 4-2 Proposed amount of payment within Maintaining native rare breeds – ES_N

Breeds	Loss in net margins (EUR/LU)	Proposed amount of payment (EUR/LU)
Betizu	156.89	140.00
Casta Navarra	155.53	140.00
Burguete	140.53	140.00
Jaca Navarra	183.53	180.00

Finally there is a hybrid approach used by the Czech authorities where the first approach was used but additional costs which were specific for the crop pattern (arable crops) and the AEM (organic farming) were added to the GM differences, and the result was the AE payment level (see Annex B).

4.2 Natural handicap payments

4.2.1 Eligibility criteria

An overview of applied eligibility criteria is presented in Table 4-3. Minimum farmed area eligible for natural handicap payments is at least 1 hectare in Lithuania, 1 hectare of grassland in the Czech Republic, 2 hectares of UAA in Greece, 2 hectares in Spain (except in Canary Islands where the eligibility threshold is 1 ha), 3 hectares in Finland and 3 hectares of eligible forage land in Scotland. In North Rhine-Westphalia (Germany) at least 3 hectares of the farm land must be located in a less favoured area.

Table 4-3 Overview of eligibility criteria for natural handicap payments

Criteria	CZ	DE_{NRW}	ES	FI	GR	IT_{UMB}	LT	PL	SCO
Minimum farmed area	✓	✓	✓	✓	✓	✓	✓	✓	✓
Continuous agricultural activity (for at least 5 years)	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cross-compliance	✓	✓	✓	✓	✓	✓	✓	✓	✓
Farmer's age	-	-	-	✓	✓	-	-	-	✓
Place of residence conditions	-	-	✓	-	✓	-	-	-	-
Targeted crop or land use (e.g. grassland etc.)	✓	✓	-	-	-	-	-	-	-
Some agricultural land use not eligible for payments	✓	✓	-	✓	-	-	-	-	-
Special requirements for the meadow or pasture support	-	-	-	-	-	-	✓	-	-
Stocking density requirements	-	-	✓	-	-	-	✓	-	✓

✓= yes, - = no

Farmers must also carry out an eligible agricultural activity on a continuous basis for at least five years. Scotland has included the requirement to keep livestock. In the region of Umbria (Italy), farmers must own land in natural handicap areas until 31 December 2009, and they are required to farm at least five years starting from the first natural handicap payment.

In the EU, natural handicap payments are subject to C-C which consists of two parts: SMRs and GAEC.

Key eligibility conditions:

- minimum farm size
- continuous agricultural activity
- cross-compliance
- farmer's age requirements
- residential requirements
- land use requirements/restrictions
- stocking density requirements

The eligibility rules in some member states include age requirements for farmers. Beneficiaries have to be adult individuals (GR). In Finland, the farmer or his/her spouse must be at least 18 years of age (16 in SCO) and Finnish farmers of over 65 years of age are not eligible to receive natural handicap payments.

In Greece, farmers have to be permanent residents of the intervention area, unless they have the status of semi-nomadic livestock producers. In Spain, beneficiaries must live in the municipality where the holding is situated or in the surrounding area.

There is a special eligibility criterion in North Rhine-Westphalia (Germany). Payments are exclusively granted to grassland, clover, leys, clover grass and lucernes. In the Czech Republic, natural handicap payments are paid only for grasslands. In Finland, wild pastures, wild meadows, and open grazing grounds are not accepted as eligible areas or areas under commitment, nor are areas covered by an undertaking to withdraw arable land permanently from agricultural production.

In Lithuania, in order to get support for meadows or pastures, the farmer has to fulfil at least one of the requirements below:

- to produce agricultural products for the market
- to have 0.2 LU/ha
- ⅓ of crops has to be on arable land.

In Spain, holdings must have a stocking density of 1 LU/forage ha or 2 LU/ha if the average rainfall is above 800 mm/year. The minimum stocking density is 0.2 LU/ha.

4.2.2 Scheme commitments

Natural handicap payment measures do not usually include any management requirements (with exception of CZ and SCO) and are only subject to C-C requirements.

In the Czech Republic, the farmer must ensure that grasslands are grazed or mowed at least twice a year (in justified cases once a year) within the stipulated time. The mowed biomass has to be removed from the plot. Furthermore in the Czech Republic, the farmer has to comply with the herbivorous livestock density limits on a set date. The density shall range from 0.2 LU/ha on grassland to 1.5 LU/ha on registered agricultural land farmed, provided that farming does not take place within the first degree protection zones which protect the yield or the surface or groundwater sources intended for drinking water supply.

In Scotland, the farmer must maintain the eligible activity for the majority of the calendar year, i.e. at least 183 days. These need not be consecutive days: breaks in eligible activity are acceptable, provided that the periods of activity amount to at least 183 days per year in total. To comply with the payment or scheme requirements, farmers must farm the area continuously for five years from the first payment. The farmer is expected to maintain the stocking density at a level which reflects the natural disadvantage of land to avoid either under or overgrazing.

4.2.3 Payment calculation process

The reviewed countries and regions use many kinds of methods in measuring the natural and other handicaps. For example in Finland and Spain, several different variables are utilised to measure natural and socio-economic handicaps and to define natural handicap payments at municipality and farm level, respectively. However, most often data on revenues and costs (gross profits) of a farm located in a less favoured area is compared to the corresponding data of a farm located in a non-least favoured area to define the differential for the basis of payment rate. This kind of approach is utilised in the most straightforward way in the Czech Republic and Lithuania, but also in Greece, Poland, and Umbria (Italy). Also in Scotland, the calculation of GM losses for less favoured area farms has been added to the calculation process. A short

description of payment calculation process in each country is presented below.

The Czech Republic

In the Czech Republic natural handicap payments are provided only for grassland. Payment rates are based on the difference in GFI between two farms situated outside and inside a LFA from which the production cost savings due to low intensity in the LFA are deducted. To determine the disadvantage (i.e. lower economic productivity), for example, in mountain areas, the GFI difference is calculated with the help of a percentage of lower economic production. The percentage is based on an agreed system of Land Point Value. The land point value is equal to 55.8 outside the LFA (i.e. in the non-less favoured area) and in mountain area it is 20.3, representing a 64% decrease. Hence, the GFI in mountain areas is equal to 0.64 × GFI outside the LFA.

Savings of factor costs (depreciation, smaller wages and rents) are determined for a particular LFA according to selected production areas within the FADN. For simplicity, one common percentage (40%) for all LFAs has been determined. Savings in factor costs due to the low intensity in the mountain area is 0.40 × 0.64 × GFI outside the LFA.

Next, the amount of savings in production costs is subtracted from the total disadvantage (decrease of GFI). The calculated per hectare payment for permanent grassland in mountain area is (0.64 × GFI outside LFA) – (0.40 × 0.64 × GFI outside LFA). Hence if the GFI outside the LFA is, for example, EUR326.16 per hectare (a three year average), the calculated amount of payment for permanent grassland in the mountain area is approximately EUR150 per hectare. For detailed calculation see Annex B (Table B20).

Germany (North Rhine-Westphalia)

In North Rhine-Westphalia compensatory allowance calculations are based on the replacement value of grassland yield reductions. The soil has been classified into five soil quality groups by LVZ indicator. For LVZ > 35 no allowances are granted. It is assumed that in the most disadvantaged group (LVZ ≤ 15) grassland yields are 25% lower compared with average yields. In the subsequent groups, yield losses are equal to 20%, 15% and 10%. As a final point, in the best soil quality group in which LVZ lies between 30 and 35, yield losses amount to 7%.

Farmers' net yield losses within each soil quality group are stated in terms of feed energy (MJ). In replacement costs calculations, purchases of wheat at EUR115/t have been assumed, which results in the cost of EUR0.153/10 MJ. Farmers' income losses (i.e. calculated payment levels) in each group are calculated by multiplying feed energy losses with this cost factor. The system is flexible so that the actual payment levels can be modified according to budgetary conditions. For more details see Annex B (Table B21).

Spain

In Spain (except in Navarra and Basque Country) the base payment rate is EUR94/ha in mountain areas, EUR57/ha in depopulated areas and EUR120/ha in areas affected by specific handicaps. When calculating the annual payment per holding, the four coefficients are taken into account and the methodology follows three steps:

- determination of area eligible for natural handicap payment by two coefficients:
  - coefficient C_i applied to the forage area receives values: 1.00 per hectare of permanent pasture, 0.50 per hectare of pasture grazable between 2 and 6 months and 0.15 per hectare of grazed stubble and fallow

- coefficient C_j applied to the crop area receives values along these lines: 1.00 per hectare of irrigation, 0.50 per hectare of extensive dry land crops and 0.30 per hectare of woodland and scrubland

- adjustment of the base payment by the coefficient C1 for the holding size with following values: first 5 ha = 1.00, from 5 to 25 ha = 0.75, from 25 to 50 ha = 0.50, from 50 to 100 ha = 0.25 and over 100 ha = 0.00 (i.e. land above the first 100 ha is excluded),
- adjustment of the base payment by the coefficient C2 according to the farm income (when the farm income is less than 50% of the reference income, the base payment is multiplied by 1.20).

The minimum annual payment per holding is at least EUR300. The final amount of payment is calculated utilising the formula:
Payment = [forage area × C_i + crop area × C_j] × [base payment rate × C1 × C2]

In the Basque Country system, there are no specific base payments for each area, but only the same base payment corrected by a coefficient based on the specific characteristics of the holding (holding coefficient) which includes both environmental and social factors. In Navarra, a combination of both systems is applied, with a base payment for each area modified by a holding coefficient.

Finland
In Finland, the natural handicap classification applies to the entire agricultural area. The regional classification of natural handicap payments is based on three geographical regions in accordance with the plan approved for the regional allocation of the support for arable crops. The following variables were used in the determination of the plan and thus also in the determination of the natural handicap payment areas:

- effective temperature sum
- taxable income subtracted by the most important regional supports
- taxable income in agriculture subtracted by the most important regional supports
- per hectare yield of barley
- quality of the field
- soil type
- potential accessibility
- unemployment rate
- net migration.

Although the above variables reflect differences among geographical regions in Finland, it is important to realise that other farming subsidies have also been taken into account when deciding the level of natural handicap payments within geographical regions. Therefore, natural handicap payments in Finland also compensate low CAP payments.

Greece
The payment rates in Greece vary between EUR65/ha and EUR160/ha. When determining the per hectare payment rates, the following have been considered:

- the economic impact of the handicaps on agricultural income in comparison to similar holdings in plain areas
- the reinforcement of the strategy towards the accomplishment of the objectives, especially those of the (long term) renewal of rural population and the promotion and encouragement of sustainable systems. The objectives will be achieved with the differentiation of natural

handicap payments giving priority to the Aegean islands (due to the additional isolation problem), young farmers (as a supplementary incentive for installation), extensive farming and agri-environmental schemes (e.g. organic farming, integrated production systems, etc.)
- on the other hand, there will be no support for intensive conventional production systems such as cotton, tobacco, vegetables and flowers, citrus fruits or sugar beet.

Italy (Umbria)
The payment calculation in Umbria (Italy) has been carried out by comparing costs, revenues and gross incomes of farms located in mountain areas (or in other LFAs) with those farms located in non-less favoured areas. The FADN database was used as the starting point. Additional costs consist of the difference between variable production costs. The difference in gross output measures foregone income.

Furthermore, per hectare calculations of additional costs and of income foregone must take into account all aspects that mountain areas (or other LFAs) bring on the whole farm structure as well as on the farm management costs, outputs and revenues. Therefore, payment calculation must be based on the comparison of the whole farm systems, not only for comparison of single productive activities (such as ground crops, tree crops, breeding).

Lithuania
In Lithuania, all LFAs are other than mountain areas. The amount of payments in Lithuania are determined as a difference between the economic indicators of farms operating in favourable areas (grain crops-rape, plant production farming), and in LFAs (dairy production, mixed plant production-grass-feeding animal husbandry).

As a basis for income losses and cost savings calculations, the gross profits on three areas (HUA, LUA and non-less favoured area) were calculated. After that, proposed natural handicap payments (i.e. gross profit differences between non-less favoured areas and highly and less unfavourable areas) were calculated. For detailed calculation see Annex B (Table B22).

Poland
The aim of natural handicap payments is to compensate for the difference in income obtained by holdings located within LFA compared to holdings located elsewhere. The differences in income result from lower yields and from the application of less demanding plants (rye, potatoes). The productivity of farms also differs on account of a lower level of fertilisation and the application of plant protection products in the farms located within the LFAs.

The payment calculations are based on the linear operational model of a farm for 210 production types of farms (considering soil quality, production structure, intensity), representing about 90% of farms and the same share of agricultural land in Poland. The FADN data and data from the Central Statistical Office are used for calculations.

In order to determine payment rates for lowland zones, the model farms were divided into three groups: a reference group, a group with smaller handicaps (zone I) and a group with significant handicaps (zone II). Similar methodology was applied in the case of the submontane zone. In order to calculate the payment rate for the mountain areas, extensive bovine farms on weak and medium soils were assumed as the basic type. The difference in income was obtained when compared to the zero level of agricultural income.

Due to limited budget and large agricultural land area in Poland, it is necessary to reduce the payment rates proposed to 60% of rates fully compensating for the handicaps.

Scotland
The calculation of the area based entitlements in Scotland depends on eligible forage hectares, livestock units and grazing categories, fragility categories of areas, and an environmental element such as the livestock mix maintained. The Scottish Executive has outlined a four-step procedure to calculate the entitlements:

- first the amount of eligible forage hectares is reduced by the ineligible dairy land (determined according to the equation = (total litres of milk quota ÷ 5 730) × 0.80) and if necessary minimum or maximum stocking densities are applied
- next the number of eligible hectares needs to be multiplied by the hectare values of the different grazing categories defined by stocking density to calculate the adjusted amount of eligible hectares
- if at least 10% of the LUs are cattle, the adjusted eligible hectares needs to be multiplied by an enterprise mix multiplier rewarding environmental and socio-economic benefits of keeping cattle in LFAs. The enterprise mix multiplier is 1.35, if between 10% and 50% of LUs are cattle and 1.70 if over 50% of LUs are cattle
- finally, the adjusted eligible hectares need to be multiplied by the appropriate payment rates depending on fragility markers (standard, fragile, very fragile) and on grazing categories (A-D) grouped into two categories More and Less Disadvantaged Land.

In addition to the above procedure, the calculation of GM losses from a comparison of LFA and non-less favoured area farming systems has been added to the calculation process to justify the payment rates, although no direct linkage between the calculation of the GM losses and the proposed payments exists.

4.2.4 Baseline requirements and payment constraints

4.2.4.1 Comparison of baseline requirements affecting payment calculations

In order to receive natural handicap payments, farmers have to fulfil GAECs and SMRs with their national laws and regulations. There is no evidence that these requirements have any impact on payment calculations in the partner countries.

4.2.4.2 Limitation of payment level

None of the reviewed states or regions provide any payments within the natural handicap payment scheme which exceed the maximum limits stated in the EC Reg. 1698/2005. National payment ceiling and other maximum and/or minimum criteria are reported in

Table 4-4.

Spain and Scotland apply minimum payments. Maximum criteria or systems in which payment per hectare decreases are applied in North Rhine-Westphalia (Germany), Spain, Lithuania and Poland. Payments are kept at the same per hectare rate regardless of the farm size in the Czech Republic, Finland, Greece, and in the region of Umbria, Italy.

Table 4-4 Overview of national payment ceilings and maximum/minimum criteria applied

Country	Minimum criteria	Maximum criteria
DE_{NRW}	-	EUR 12 271 per beneficiary
ES	EUR300 per holding	EUR 2 500 per holding
LT	-	up to 150 ha, the support is 100% from 151 to 250 ha, the support is 85% from 251 to 500 ha, the support is 70% from 501 ha support is 50% If the annual budget of the measure is exceeded, the amount of payments can be reduced proportionally for all applicants or the payment can be reduced annually by the difference of the basic direct payment in running and last year.
PL	-	1-50 ha – 100% of payment 50.01-100 ha – 50% of payment 100.01-300 ha – 25% of payment Farms larger than 300 ha lack of payments
SCO	EUR 577.50 per farm	-

4.2.4.3 Interrelations between natural handicap payment schemes and other RD measures

There are no such mechanisms in place in which would limit possible combinations of natural handicap payment schemes with the other RD measures in the reviewed states and regions. It was only mentioned that farmers receiving retirement pension (or similar payments) are not eligible for natural handicap payments.

In Spain, some specific RD measure payments (first afforestation of agricultural land) are increased by 10% if the holding is within a natural handicap area. Also in Lithuania, the priority points will be added if the afforestation is carried out in LFAs.

Furthermore, it has been discussed in Lithuania that the lower yields of organic farms in less favoured areas are possibly compensated twice: first time by organic farming payments and second time by natural handicap payments.

4.3 Natura 2000 payments

4.3.1 Eligibility criteria

Farmers and forest owners have to meet certain conditions to be eligible for Natura 2000 payments. The common eligibility criteria resulting from the EC Reg. 1698/2005 are: parcel in areas designated pursuant to Directives 79/409/EEC and 92/43/EEC (approved Natura 2000 areas), keeping C-C, support limitation only for forests and wooded areas owned by private owners or by their associations or by municipalities or their associations in the case of Natura 2000 on forestry land, requirement to sign contracts and undertake particular obligations for certain period (at least 5 up to 20 years) etc., some countries apply additional requirements which have to be observed to obtain the Natura 2000 payments.

The minimum size of farm as a basic criterion is required in CZ, LT and PL. Lithuania requires at least 1 ha as a minimum farm size in Natura 2000 on agricultural land and at least 0.5 ha in

Natura 2000 on forestry land. The Czech Republic uses 1 ha in case of Natura 2000 on agricultural land and 3 ha in case of Natura 2000 forest area. In addition, CZ applies a specific limitation since only areas included in Natura 2000 areas and at the same time in the first zones of NPs and PLAs are eligible for Natura 2000 payments (213).

Limitation of the Natura 2000 payments (213) only for grassland is used in all partner countries (CZ, DE_{NRW}, ES_N, IT_{UMB}, PL) except for Lithuania where the payment is provided for UAA.

Special eligibility criteria on the agricultural land are added in Navarra (Spain) where the farmer has to have flock and grazing rights established. To receive payment for reducing flock size, the farmer must demonstrate that flock size in the previous five years was over 700 heads. In the case of mountain grazing, the beneficiary must accept the management plan for the grazing area established by the owner of the land and approved by the Authorities. In Poland, the farmer has to, in addition, make a farm management plan based on crop rotation resulting from GAEC and maintain permanent grassland areas including ecological compensation areas (i.e. abandoned land as a wildlife refuge).

In CZ and DE_{NRW}, the Natura 2000 payments on forestry land are applicable only for specific tree species. Forests supported in CZ should be composed by fir, oak, beech, other broadleaved trees, poplar forests and coppices. In DE_{NRW} only deciduous forests are supported.

Additional eligibility criteria (an obligation to have own animal grazing in the forest or a contract leased out the forest to animal breeders drawn up before the 21st of October 2005) are established within one IT_{UMB} forestry submeasure.

Table 4-5 Overview of eligibility criteria for Natura 2000 agricultural land

Criteria	CZ	DE_{NRW}	ES_N	IT_{UMB}	LT	PL
Parcel in approved Natura 2000 area	✓*	✓	✓	✓	✓	✓
Keep C-C (GAEC and SMR)	✓	✓	✓	✓	✓	✓
Undertake commitments (for … years)	✓(5)	✓(5)	✓(5)	✓(5)	✓(5)	✓(5)
Minimum farm size	✓	-	-	-	✓	✓
Only grassland eligible	✓	✓	✓	✓	-	✓
Established flock and grazing rights	-	-	✓	-	-	✓
Flock over 700 heads in previous 5 years	-	-	✓	-	-	-
Farm management plan based on crop rotation	-	-	-	-	-	✓

✓= yes, - = no

* Natura 2000 area in the first zones of NPs and PLAs

Table 4-6 Overview of eligibility criteria for Natura 2000 forestry land

Criteria	CZ	DE_{NRW}	GR	IT_{UMB}	LT
Parcel in approved Natura 2000 area	✓	✓	✓	✓	✓
Private forest land owners or their associations eligible	✓	✓	✓	✓	✓
Undertake commitments (for … years)	✓(20)	✓(20)	✓(n.d.)	✓(5)	✓(7)
Minimum forest size	✓	-	-	-	✓
Specific tree species eligible	✓	✓	-	-	-
Own animal grazing in the forest	-	-	-	✓	-
Contract leased out forest for grazing	-	-	-	✓	-

✓= yes, - = no, n.d. = no data available

4.3.2 Scheme commitments

4.3.2.1 Natura 2000 on agricultural land

Specific commitments of the measure 213 can be summarised as follows:

- limitation of fertilisation (CZ, LT, PL)
- stocking density (ES_N, LT, PL)
- limitation of grazing and mowing (CZ, ES_N, IT_{UMB}, LT, PL)
- prohibition of ploughing up grassland (DE_{NRW}, LT)
- other country-specific commitments.

In the Czech Republic, Lithuania and Poland, fertilisation is limited and it is a basis of the payment.

In Navarra (Spain) the basis of payment is stocking density limitation for steppe areas and for mountain areas. In the case of steppe areas, the stocking limits have to be observed in certain areas at certain times and the flock size has to be reduced up to 700 heads at certain times. In the case of mountain areas, the stocking density has to be maintained from 0.1 to 1.4 LU/ha depending on the type of pasture and a grazing plan. In Lithuania, the restriction of livestock density maximally to 1 LU/ha is applied, and in Poland the limitation of livestock density is differentiated according to particular submeasure / activity undertaken (e.g. max. 0.2 LU/ha in the case of "Mosses", 0.5 – 1.0 LU/ha in "Halophytes" etc.).

The limitation of grazing or mowing, other than in the form of stocking density prescription, is applied in all countries except for DE_{NRW}. In CZ, the applicant shall assure that grasslands are grazed or moved at least twice a year within fixed deadlines. In Navarra (Spain), the grazing is prohibited in certain areas at certain time in compliance with limitations established by the Authorities. In Umbria (Italy), prohibition of using 20% of pastures under contract for grazing cattle is applied. Different grazing seasons are set for particular submeasure in Poland (e.g. within "Semi-natural wet hay meadows" grazing is allowed from June 20th to October 15th). In some cases all grazing is prohibited (i.e. "Moss" and "Meadows, moor-grass and selernicowe") or allowed only if grass is abundant ("Halophytes"). In the case of mowing, Lithuanians can not mow meadows before 15th of June. In Poland, different hay-making periods and the number per year are again set for particular submeasures (e.g. within "Semi-natural wet hay meadows" hay making is allowed only from June 15th to September 30th and not more than twice a year, in addition 5 – 10% of area should to be left uncut).

Among other commitments undertaken are renunciation of applying additional drainage methods (DE_{NRW}, LT), renunciation of afforestation (DE_{NRW}), preserving certain elements of value for flora and fauna (ES_N), etc.

4.3.2.2 Natura 2000 on forest land

Specific commitments of the measure 224 can be synthesised as follows:

- following management plan (CZ, GR, LT)
- composition of tree species (CZ, DE_{NRW})
- prohibition of clear cutting (DE_{NRW}, LT)
- exclusion from felling (GR, IT_{UMB}, LT)
- maintenance of old / dead trees (DE_{NRW}, GR, LT)
- other country-specific commitments.

Management plans which are based on Special Environmental Assessment (GR) or are notified and certified by a professional forest manager (CZ) must be followed in all countries where Natura 2000 is implemented, except DE_{NRW} and IT_{UMB}. The preservation of proposed composition of tree species in favour of deciduous species is obligated in CZ and in DE_{NRW}.

Within obligated commitments, some activities are prohibited or restricted. The most frequent are prohibition / limitation of clear cutting way, prohibition or postponement of final cutting of mature forest in LT or beech coppice-woods in GR and IT_{UMB} and further permanent exclusion from felling of certain number of living trees per ha (2 more in IT_{UMB}, 10 in LT).

The maintenance of old and deadwood proportion is also popular requirement implemented in DE_{NRW} and LT. Similarly in GR where the prohibition of all badly shaped, overblown and fallen trees removal is applied.

Other country-specific commitments are for example: prohibition of grazing in forest (IT_{UMB}), removal of undesirable regeneration or applying of biotope specific development activities (DE_{NRW}), introduction of coniferous trees in garrigues and oak woods or maintenance of some part of forest to be unmanaged (GR).

4.3.3 Payment calculation process

4.3.3.1 Cost components - Natura 2000 on agricultural land

The main structure of the formula for calculating the payment for Natura 2000 on agricultural land is formulated from the following components: income foregone, additional costs, additional income and transaction costs.

Table 4-7 Components of Natura 2000 payment – agricultural land

	CZ	DE_{NRW}	ES_N	IT_{UMB}	LT	PL
Income foregone						
Reduction of grass yield / GM	✓	✓	-	-	-	✓
Decrease of NVA	-	-	-	-	✓	-
Different productivities of pastures	-	-	✓	-	-	✓
Additional costs						
Increase of feeding costs	-	-	✓	✓	-	✓
Increase of labour costs	-	-	✓	-	-	✓
Increase of rent, management costs	-	-	-	✓	-	-
Additional income						
Income from fatten LU	-	-	-	-	-	✓
Transaction costs	-	-	-	✓	-	✓

✓= yes, - = no,

In the Czech Republic, North Rhine-Westphalia (Germany) and Poland the basis of payment is the reduction of grass yield; in CZ it is due to ban of fertilisation; in DE_{NRW} due to overall commitments undertaken (e.g. restriction of ploughing up grassland, applying additional drainage methods, etc.) and in PL due to extensiveness (e.g. limited usage of fertilisers and pesticides, limited hay making period and its frequency).

In addition, Poland is the only country where all payment components are used. Within the income foregone category, the lower productivity of pastures, caused by limited livestock

density and grazing period, is also compensated. The additional costs occur due to commitment to provide mowing and grazing of grassland and represent costs of hay making and transportation away, cutting biomass, bringing animals to pastures and eventually purchase of fodder. Additional income decreasing the final payment is considered in Poland in connection with a possibility to realise fattening on grassland. Since Natura 2000 on agricultural land in Poland is a part of AEMs, it is possible to include transaction costs in the payment as well. These TCs result from the need to prepare documentation of ornithological and natural habitats and include labour costs of experts.

In Navarra (Spain) within steppe lands, the higher feeding costs during periods of grazing prohibition and labour costs due to requirement of flock reduction are compensated. In the case of mountain areas, lower productivity on protected pastures and income reduction due to valuable elements preservation are the main components of payment.

In Umbria (Italy) it is prohibited to use 20% of pastures for cattle grazing in order to stop complete scrub clearing and stone removal. The compensation covers the increase of rent and management costs of new pastures and transaction cost which represents more likely additional administrative costs here. The second approach is based on compensation of feeding costs resulting from necessity of purchase of missing hay.

In Lithuania, there is a large range of commitments causing the income foregone in form of the decrease of net value added of such restricted farming compared to traditional farming.

4.3.3.2 Cost components - Natura 2000 on forest land

The payment for Natura 2000 on forestry land is generated from two components: income foregone and additional costs.

Table 4-8 Components of Natura 2000 payment – forest land

	CZ	DE_{NRW}	GR*	IT_{UMB}	LT
Income foregone					
Income reduction – species composition	✓	✓	-	-	-
Income losses – early/never/later cut/sale of trees	-	✓	-	✓	✓
Income losses – dry/dead trees	-	-	-	-	✓
Income losses – rents	-	-	-	✓	-
Additional costs					
Increase of labour costs – removing undesirable trees	-	✓	-	-	-
Increase of feeding costs	-	-	-	✓	-
Maintenance – dry/dead trees	-	✓	-	-	-
Biotope development	-	✓	-	-	-
Topographic location	-	-	-	✓	-

✓= yes, - = no

* The calculation process has not been finished yet.

Income foregone caused by lower income resulting from commitments to keep proposed species composition (i.e. preservation of deciduous tree proportion) is compensated in the Czech Republic and North-Rhine Westphalia (Germany).

Time limitation of cutting of trees reaching exploitable stages is compensated in North Rhine-Westphalia (Germany), Umbria (Italy) and Lithuania and in those countries interest foregone is involved in the payment calculation. It can be offered by prohibition of cutting (LT), by

prohibition of clear cutting way (LT, DE_{NRW}) or by premature usage of undesirable species (DE_{NRW}).

The compensation of wood / tree value lost is applied in Lithuania in the case of prohibition of cutting dry or dead wood and in Umbria (Italy) within permanent exclusion from felling of certain number / type of trees. In Umbria (Italy), the income loss in the form of non-obtained rents due to grazing prohibition in forest is used as one of the approaches.

Additional costs are included in the Natura 2000 payment only in two of five countries (DE_{NRW} and IT_{UMB}). In the case of North Rhine-Westphalia (Germany), the increased maintenance costs of old and deadwood proportions, labour costs of undesired species' removal and costs of biotope development are included. Amounts of all these costs are based on expenditures of previous periods. In Umbria (Italy), there are special additional costs for the topographic location of uncut trees and increase of feeding costs resulting from prohibition of grazing in forest and necessity to buy feed.

In Greece, the calculation is supposed to be totally different. There will be provided separate calculations for each commitment but the final form of payment calculation is not available yet.

4.3.3.3 Process of payment calculation - Natura 2000 on agricultural land

The process of payments calculation is presented separately for particular countries in following text and more detailed descriptions are provided in Annex B.

The Czech Republic

The amount of payment is determined as a compensation of income foregone due to reduced production caused by ban of fertilisation in the areas in question. Calculation is based on a difference of GMs between typical and extensive management on grassland in Natura 2000 areas (and at the same time 1st zones of protected areas where the use of fertilisation is prohibited). It means a decrease from 80 to 0 kg N/ha.

GM is calculated according to the economic principle as follows:
Gross Margin = total income (hay yield * sale price) - total variable costs (costs of seeds, fertilisers, crop protection, other direct material and other direct costs and services).

Germany – North Rhine-Westphalia

Premiums are calculated as a compensation of income foregone – based on the replacement costs of grass yield reductions expressed in MJ NEL caused by applied restrictions. For this purpose, average expected gross yields on grassland are reduced by expected yield reductions in respective areas. Subsequently, yield differences are multiplied by replacement costs. Yield reductions are estimated as 22%, 12% or 10% according to conservation obligations.

Spain – Navarra region

Depending on the submeasure, payments differ as follows:

I. Sheep grazing on Natura 2000 steppe lands

The amount of payment is based on compensating additional costs (i.e. increased feeding and labour costs) resulting from the extensive grazing with a flock of less than 700 animals and/or non-use of pastures during various periods according to particular Natura 2000 management plans. Six varieties of contracts are available and the final payment depends on number of days

(predefined periods) when grazing is prohibited or limited.

In the case of prohibited grazing period, the compensation is calculated as a multiple of daily feeding costs per animal (depending on the natural pastures production and the maximum animal nutrition need) and number of days when grazing is prohibited.

In the case of flock size reduction, the compensation is done by a multiple of daily labour cost per hectare (based on shepherd salary, size of herd which can be managed by one shepherd and number of sheep per hectare) and number of days when the herd has to be limited under 700 units. A limit of EUR3 000 per beneficiary is applied within the flock reduction action based on assumption of costs of employing extra labour to manage the second half of flock.

II. Mountain grazing in Natura 2000 areas
The system is based on compensating the income foregone caused by adapting livestock management to the pasture resources plans.

In the case of rough grazing and scrub, the difference of net margins of profitability between typical mountain pastures (weighted average of four most frequent types) and improved pastures is the first part of payment. The calculations of the average net margin are based on a study measuring the forage value of the different species represented in pastures, and the number of LU that can be grazed and days in the year, resulting on an average forage values, average profitability and average net margins. The second part of the payment represents a reduction of GM of typical mountain pastures by 4% as estimated share of the areas with specific elements of nature interest on Natura 2000 areas.

In case of permanent pastures and meadows, the calculation process is very similar only different types of pastures should be included and compared with the most common type of improved pastures.

Italy – Umbria region
Two different evaluation approaches have been used within payment calculation:
The first approach estimates additional costs for hay purchasing necessary to be realised due to prohibition of cattle grazing on 20% of pastures. First of all average yield of pastures in forage units has been identified, transformed into hay amount in tons and multiplied by price of mixed hay published regularly by Chambers of Commerce. Considering that the contractual obligations relates to 20% of pasture's area, payment represents 20% of additional costs.

The second approach estimates additional costs for renting a new pasture to ensure enough feed. The payment covers rent costs based on lease contrasts drawn up in the Umbria (Italy) in 2005, operational costs (e.g. mowing, turning hay, etc.) and transaction / administrative costs covering finding parcels, drawing up contract, applying to Natura 2000 scheme and submitting to controls. A final amount of payment is around EUR40/ha in both cases.

Lithuania
Natura 2000 payment on agricultural land is calculated as an average of income forgone caused by obligatory restrictions in farms according to land fertility points. The methodology of calculations is based on following principles:

- NVA of traditional farming and farming with restrictions is being compared
- five different groups of typical farm structure according to land fertility points is used with

the assumptions that in low land fertile areas dominate livestock farms, in high land fertile areas dominate crop production farms and in intermediate fertile areas are a combination
- direct payments were not included in the calculation
- total income foregone is calculated as an average of differences of NVA between traditional and restricted farming within these five groups.

Poland
The final payment is formed by four components and the same approach is used for all ten AE submeasures focused on Natura 2000 areas.

A decrease of GM from extensive compared to traditional farming represents income foregone. A further loss of GM from LU, calculated per hectare according to allowed livestock density, is also added due to prohibition of grazing within two submeasures. Additional costs (e.g. hay-making, moving cutting hay away from the field, bringing animals to pastures, cultivation activities) are calculated as a multiple of estimated working time and labour or mechanisation costs. Eventually they are determined as a multiple of hay price and purchased amount of fodder missing due to grazing prohibition. On the other hand, additional income is considered regarding a possibility to realise fattening on grassland and is calculated as GM from LU recalculated per hectare according to allowed livestock density. The last component, transaction costs, represent labour costs of experts preparing the required documentation of ornithological and natural habitats. TCs are paid as a one-off payment and maximum amount differs according to habitat area[2].

4.3.3.4 Process of payment calculation - Natura 2000 on forestry land

The process of payments calculation is presented separately for particular countries and more detailed descriptions are provided in Annex B.

The Czech Republic
In the case of the new forest management plan creation, the forest owner has the possibility to decide whether tree species with higher average felling increment (AFI) will be planted instead of trees with a favourable environmental impact but low AFI. This measure focuses on observation of existing environmentally suitable species composition of trees and is concerned with the following forest types: fir, oak, beech, other broadleaved trees, poplar forests and coppices. The payment is calculated as a weighted average of differences in AFI between forests with current and possible species composition of stands coming from five chosen typical types of forest within Natura 2000 areas.

The income reduction expressed by the lower AFI of forest with higher share of broadleaved trees is caused by lower volume production, lower prices and higher felling and skidding costs for broadleaved trees. AFI is calculated according to the formula:
AFI = (incomes in the year of harvest – costs in the year of harvest) / rotation period

The payment calculation has been performed according to the formula:
Payment = (AFI possible / rotation of possible stands – AFI current / rotation of current stands) * rotation of current stands / 20 as the period of payment
By reason of that, forest owners should obtain a payment in the amount equal to the difference

[2] Area to 1 ha (EUR131), from 1.01 to 5 ha (EUR263), from 5.01 to 20 ha (EUR526), from 20.01 to 50 ha (EUR790) and above 50 ha (EUR1 053)

between the possible and obliged AFI for a rotation as long as it is for the current stand. The payment is paid out for twenty-year period.

Germany – North Rhine-Westphalia
The Natura 2000 payment is created by a sum of compensation resulting from the first six obligations mentioned in the Annex B (Table B31).

- The first two restrictions are evaluated on a basis of previous period expenditures recalculated per respective areas (i.e. estimated area with trees older than 120 years and estimated area with particular biotopes). Resulting sums are broken down to total FFH-areas in private owned forest in North Rhine-Westphalia (Germany) (per 28 000 ha)
- Third obligation raises additional labour costs for maintenance and removal of undesired species which is necessary to be done every 10th year (i.e. twice over 20 year commitment)
- Fourth obligation causes an income reduction following from maintenance of deciduous forests depending on tree values and yields. The income reduction is calculated as a weighted average over different tree species (oak, beech, spruce). Considering that deciduous forests cover only 45% of FFH areas, payment represents 45% of the assumed income reduction.
- The prohibition / restriction of clear cutting represent a loss of interest income (interest rate 2.5%) due to a delay in usage of trees which reached exploitable stages
- In the case of premature usage of undesirable tree species, the economic losses are caused by usage of such trees before exploitable stages. Calculation methods are the same as for clear cuttings.

Calculated additional costs and income foregone for all different usage restrictions are summed up, and related to contract duration of 20 years. For the 2nd submeasure "FFH and EC-areas for bird preservation with moderate conservation obligations (landscape conservation areas)", the forestry guidelines are not as restrictive and allow a reduction of payment level by 20% compared with the payments for areas in nature conservation reserves.

Greece
In Greece, some basic information is available although the calculations for all RD measures within Axis 2 have not been finished yet. The forest manager candidate for Natura 2000 subsidies should provide the forestry service according to a technical implementation plan detailing all the commitments to be undertaken. A separate calculation exercise is to be conducted for each of the commitments undertaken. An analytical list of costs for forestry works provided regularly by MoE, Planning and Public Works will be used as a basis for Natura 2000 payment calculation.

Italy – Umbria region
As an example of the payment calculation, the submeasure "Permanent exclusion from felling of 2 more trees per ha" is described. Two evaluation criteria have been used for income foregone identification:

- firstly the mean volume of felled coppice woods was determined, valued by timber price per m3 and multiplied by 3 – 4% as an estimated share of non-felled volume per hectare due to the application of scheme
- secondly the mean volume of one tree was determined, valued again by timber price per m3 and multiplied by 2 since two more trees should stay non-felled.

The minimum and maximum amount of payment was divided by five years of contract to obtain

the annual Natura 2000 payment. In the end, additional costs of mapping the topographic location of trees determined by some forest workers associations are added.

Lithuania
Payments are calculated as an average value for stands of various tree-species and differentiated according to the restrictions to:

- Calculation of payment for compulsory preparation of forest management plan or correction of existing one is based on an assumption of an average forest holding in Lithuania (i.e. 4 ha) and costs of drafting of this plan for such holding. The final payment represents additional costs of the management plan design recalculated per one hectare and is provided as a one-off payment
- The second one-off payment is provided for the next submeasure since these trees will never be felled. An evaluation of one living tree by timber price decreased by costs of harvesting and logging is the basis for income foregone determination. The final payment is equal to a compensation for 10 living trees per hectare of clear cutting area
- Third and fourth submeasures are paid annually and are based on similar approaches: income foregone for forest owners is calculated by assessing the value of the forest stand left uncut. The annual payment is calculated as income foregone equal to interest rate loss realised by forest owner due to the postponement or restriction of final forest cutting or restriction of usage of clear cutting way. In the case of restriction of clear cutting, it is expected that 50% of thinned mature trees are left uncut in the forest stand. An assumption is that the forest owner put money, which he/she received from the forest cutting, into the bank and then he/she receives income (as interest) from a long term deposit. The evaluation of forest removal is based on mean volume of mature forest stands multiplied by timber price decreased by costs of harvesting and logging
- The last payment is based on an assumption that around 15 dying trees per hectare are usually felled within sanitary felling and the prohibition of their cutting caused income foregone equal the valuation of such non-felled tree volume by fuel wood price.

4.3.4 Baseline requirements and payment constraints

4.3.4.1 Comparison of baseline requirements affecting payment calculation

The purpose of Natura 2000 payments is to compensate additional costs and income foregone resulting from the restrictions arising from the implementation of Directives 79/409/EEC and 92/43/EEC. Baseline requirements mentioned within these directives and as well as in GAEC are defined very generally in most of the countries and as such do not affect directly the payment calculation. The Natura 2000 payments are mainly based on specific management requirements going beyond C-C restrictions and national legislation regulating protected areas and can be paid out in to full extent.

Table 4-9 Existence of baseline requirements affecting payment calculation

Baseline requirements	CZ	DE_{NRW}	ES_N	GR	IT_{UMB}	LT	PL
GAEC	-	-	-	✓	n.d.	-	-
SMRs	-	-	-	-	n.d.	-	-
Others	-	✓	-	-	✓	-	✓

✓= yes, - = no, n.d. = no data available

One condition with a possible impact on the payment calculation was identified within Greek GAEC. The condition contains a requirement to provide the necessary farming intervention in

the parcel in order to maintain it in good condition and avoid invasion of undesirable species[3].

In addition, the current C-C requirements relate to agricultural activities not for forestry and only a few partner countries have implemented analogous "Basic forestry standards" at present. Among such countries are North Rhine-Westphalia (Germany) where the forestry law defines proper forest management including the prohibition of clear cutting. However, this prohibition has a declamatory character and offences can not be fined under regulatory law, so this obligation can be covered by Natura 2000 payment. Similarly Scotland has its UK forestry standards containing basic requirements not possible to be paid out within RD measures. In Umbria (Italy), the regional regulation no 7/2002 on provisions for afforestation establishes baseline requirements for forestry. Its obligation according to article 10 setting an exclusion from felling for at least one tree per ha has an impact on Natura 2000 payments, especially more strict requirements should be proposed (i.e. permanent exclusion from felling of two more trees per ha of every tree species making up the forest). Baseline requirements have not been clearly defined in the RDP draft for Umbria region (Italy) yet.

4.3.4.2 Limitation of payment level

Exceeding the maximum limits laid down in the Annex of the EC Reg. 1698/2005 is not common within the Natura 2000 payment measures. Limits are exceeded only in Greece where support for the Natura 2000 on forestry land may be increased up to EUR300/ha in exceptional cases taking into account the specific circumstances. In addition, Poland has different limits valid for AEMs since Natura 2000 on agricultural land is implemented there as one of the packages within AEMs.

Only one of the nine partner countries applies the maximum amount per beneficiary. It is in Navarra (Spain) where the limit EUR3 000 per beneficiary per year is implemented for both existed submeasures (limitation of flock size on Natura 2000 steppe lands and grazing on Natura 2000 mountain areas).

4.3.4.3 Interrelations between Natura 2000 and other measures

The combination of Natura 2000 payments with other RD measures has been investigated to identify how possible over-compensation from parallel implementation of more than one RD measure is prevented.

Two of the nine partner countries apply restrictions on the implementation of Natura 2000 payments together with other RD measures on the same parcel. In DE_{NRW} the Natura 2000 measure is not combinable with measures related to allowances for non-productive investments pursuant to article 36 b) vii) EC Reg. 1698/2005. In LT applicants can not apply for support for the same area under the Landscape Stewardship Programme within AEMs and forest-environment payments.

Linkages or interdependencies between the Natura 2000 measure and other RD measures which would positively affect the payment level of Natura 2000 payments do not exist in any of the partner countries.

Other known supports / subsidies implemented in Natura 2000 areas focusing on similar purpose were investigated. Within their RDPs most of the countries ensure the biodiversity

[3] Farmers can remove the undesirable vegetation either by grazing or with mechanical weeding and removal

preservation through AEMs, forest-environment payments and non-productive investments both on agricultural and forestry land.

Specific AEMs only for Natura 2000 areas are provided in CZ, FI, GR and PL. However in the case of Poland, these AEMs focused on Natura 2000 areas are prepared to be transformed into Natura 2000 payments as site management plans are finished. In the Czech Republic the applicant farming in protected areas and Natura 2000 areas can choose schemes from a whole list[4] of grassland maintenance AE submeasures. If applicant is situated outside the above mentioned areas, he/she cannot choose higher value AEMs[5]. Among Finnish specific AEMs are "Management of traditional rural biotopes" and "Enhancing of biological and landscape diversity" which are connected with non-productive investment measure on agricultural land "Initial clearing and enclosing of valuable traditional rural biotopes". Two specific AEMs for Natura 2000 areas ("Protection of wetlands" and "Measure for the National Sea Park of Zakynthos") are used in Greece. Non-productive investments on forestry land (measure 227)[6] are used as an additional possible form of support for Natura 2000 areas also in Navarra (Spain) and provide investment support specific for SPAs and NPs included in their management plans.

Table 4-10 Relationship of the Natura 2000 measures with other measures (in or out of RDP)

Country	Incompatible RD measures (limitation)	Other supports focused on similar purpose
CZ	-	AEM specific for Natura 2000 areas; RD measure within Axis 1; state aid; indirect support
DE_{NRW}	Non-productive investments within forestry measures	State aid; RD measure within Axis 3
ES_N	-	Non-productive investments on forestry land; other funds (LIFE+, INTERREG)
FI	n.a.	AEM specific for Natura 2000 areas; non-productive investments on agricultural land; RD measure within Axis 3; state aid; other funds (ERDF, LIFE+)
GR	-	AEM specific for Natura 2000 areas; forest-environment measure specific for Natura 2000 areas; other funds
LT	Landscape Stewardship Programme within AEM; forest-environment payments	State aid; other funds (LIFE+)
PL	n.a.	AEM specific for Natura 2000 areas prepared for transformation into Natura 2000 payments
SCO	n.a.	AEM; Natural Care Schemes

The second most popular support used in Natura 2000 areas is state aid, namely national compensation for restrictions applied within national protection areas, used in CZ, DE_{NRW}, FI, LT and SCO. In the Czech Republic and Lithuania the national payments for restriction in protected areas are not combinable with Natura 2000 payments because they are closely related to the Natura 2000 measure and were the basis for Natura 2000 measure design. Czech state aid covers mainly the Program of Landscape Protection which is aimed to securing goals in

[4] Possible measures are: Meadows (basic management), Mesophilic and hygrophilic meadows, Mountain and xerophilous meadows, Permanently waterlogged and peatland meadows, Bird habitats on grassland – waders' nesting site and corncrake's nesting site, Pastures (basic management), Species rich pastures, Dry steppe grasslands and heathlands.

[5] Mesophilic and hygrophilic meadows, Mountain and xerophilous meadows, Species rich pastures

[6] The support for this measure can vary from 40% to 100%, in the case of SPAs it is always 100%.

landscape and nature protection which are not possible to reach by horizontal European programs and newly implemented Decrees provided financial compensation of disadvantages resulting from limitation of farming in agriculture and forestry as well. Similarly, Lithuanian national supports cover compensations for restrictions applied in protected areas and compensation according to national order on calculation of compensations for private forest owners. In North Rhine-Westphalia (Germany), the ability to combine Natura 2000 payments with nature conservation contracts is limited in the case of forest land but accumulative on agricultural land since the contracts compensating restrictions beyond Natura 2000 requirements. Measures taken in Natura 2000 forest areas are financed nationally in Finland under the Sustainable Forestry Financing Act. Natura 2000 support in Scotland was mainly provided through the national Natural Care Schemes in the past. However, as most of the prescriptions and activities targeted through the Natural Care Schemes are now included in AEMs in the new RD Contracts (former Land Management Contracts), Natural Care Schemes are expected to phase out.

Combinations of measures of other Axes within the EC Reg. 1698/2005 are also utilised. For example in the Czech Republic there are used "Investments in forests" under Axis 1 to increase the efficiency of forestry by increasing the economic value of forests[7]. Natura 2000 is not implemented in Finland in RDP, but "Conservation and upgrading of the rural heritage" (measure 323) under Axis 3 is used to support the preparation of conservation and management plans for Natura 2000 areas. The same measure (on agricultural land) is proposed to be used for investments associated with maintenance and development of high natural value sites also in North Rhine-Westphalia (Germany), but it is not exclusively concentrated in Natura 2000 areas.

Indirect support of Natura 2000 on forestry areas is used in the Czech Republic as occasional buy-outs of forests by the state.

Among other supports available for Natura 2000 areas are other funds (ESN, FI and LT), mainly the nature and biodiversity component of the LIFE+ funding programme supporting the implementation of the Community's nature and biodiversity policy and legislation (covering the Bird and Habitat Directive). Furthermore, environmental management and protection (also the management of Natura 2000 areas), the maintenance and development of cultural activities, and the conservation of the cultural heritage can be financed through the actions of the ERDF which are directed at urban areas.

4.4 Forestry measures

4.4.1 Eligibility criteria

Generally, the eligibility criteria are similar across the investigated countries and regions within the same forestry measure. This finding is not that surprising as many of the eligibility criteria are defined in the RDR and hence given for the member states.

4.4.1.1 First afforestation of agricultural land (measure 221)

For measure 221, afforestation of agricultural land, the eligibility criteria define that beneficiaries can be owners or tenants of agricultural land. Public authorities, however, can only

[7] The amount of support is in Natura 2000 areas 60% of expenditure for improving economic forest value compared to 50% in other than Natura 2000 areas.

receive payments for establishment costs. Moreover, this measure only applies for agricultural land with a continuous farming use during a certain amount of years (2 – 10 depending on country) before the application. Agricultural land includes arable land and permanent meadows and grassland, and set-aside land. One specific aspect with respect to eligible land worth mentioning from the Basque Country (Spain) is that land must be included in the "Basque Country Truffle Cultivation Plan 2007 – 2013". Farmers who are receiving support under the early retirement scheme are generally excluded from support under measure 221.

Eligibility criteria also define the minimum area which can be subject to an agreement. There are, however, differences in the defined minimum area between the countries and region. In Scotland, for example, a specific submeasure for the creation of small woodlands under measure 221 allows to sign up areas as small as 0.1 hectare, while Poland applies 0.5 hectare as a minimum area. A wide range of different tree species and woodland types such as broadleaves, conifers, mixed woodlands and other slow growing trees are eligible for planting. Planting of Christmas trees, however, is generally excluded from support.

4.4.1.2 First establishment of agro-forestry systems on agricultural land (measure 222)

In principle, this measure provides support for the establishment of silvo-agricultural and silvo-pastoral systems combining agricultural activities with tree planting and management. Required minimum areas vary between 0.5 hectare in Greece and 1 hectare in Umbria (Italy). The planting of Christmas trees and short term cultivations are excluded from this measure.

4.4.1.3 First Afforestation of non-agricultural land (measure 223)

Measure 223 provides the same kind of support as measure 221, but targets areas outside agricultural land use. Eligible areas include forests and other areas with non agricultural use, but also abandoned agricultural land. Interestingly in Umbria (Italy) and Greece, this measure focuses on afforestation for environmental reasons. Eligible beneficiaries include physical or legal persons who own land which classifies as eligible. Similarly to the previous measure, planting of Christmas trees and fast growing species is excluded from support.

4.4.1.4 Forest-environment payments (measure 225)

Eligible beneficiaries range from private owners and occupiers of forested land (for example Scotland) to including municipalities and communities owning and occupying forests (for example the Czech Republic, Mecklenburg West-Pomerania (Germany) and Greece). Moreover, in Mecklenburg West-Pomerania (Germany) forest areas have to be located within a) designated Natura 2000 areas or b) in special protection areas pursuant to federal state law.

The age of the forest and the size of the forest holding are applied by some countries as additional eligibility criteria. In the Czech Republic, the actual age of the forest inventory unit shall be in a range from 6 to 30 years. Scotland has defined minimum and maximum sizes of forest holdings of eligible beneficiaries. For forest environment payment for small woodlands the forest holding may not exceed 30 hectares, while for payments for other woodlands a minimum size of the forest holding of 1 hectare is required.

4.4.1.5 Restoring forestry potential and introducing prevention actions (measure 226)

This measure generally aims to reduce the extent of damage caused by natural disasters and reduce the risk of fire. Eligible areas for this measure include forests and other wooded areas. Beneficiaries vary between private owners and tenants of forests, legal persons representing private owners and all public forest administration authorities.

4.4.2 Scheme commitments

A number of standard commitments are in place for most forestry measures which have to be fulfilled by applicants in each country and region. In addition, a few more country-specific commitments are described.

4.4.2.1 First afforestation of agricultural and non-agricultural land (measures 221 and 223)

In measure 221 (and measure 223) standard commitments include the development and submission of a forest project plan and the applications need to approved by the relevant authorities. In addition, applicants have to maintain the forests according to defined national standards for 15 years. More specific commitments are defined in the investigated countries and regions in relation to:

- tree species (GR, IT_{UMB}, PL, SCO)
- stocking density ($ES_{N/BC}$, SCO)
- protection and other specific maintenance activities (GR, $ES_{N/BC}$).

Regarding the use of specific tree species, Umbria (Italy) and Poland defined that only native tree species should be used for afforestation. The same applies for small woodland creation in Scotland. In Greece the applicants have to plant tree species which are appropriate for the local conditions and can choose from a given list. Commitments with respect to specific stocking densities are defined in Spain and Scotland, where minimum stocking density needs to be fulfilled. The defined measure commitments in Greece include specific maintenance activities such as clearing of unwanted species, irrigation and pruning. Similar commitments are defined in Spain.

4.4.2.2 First establishment of agro forestry systems on agricultural land (measure 222)

As this measure is only implemented in two of the investigated countries and regions, the amount of information available is very limited. No specific commitments have been identified in Greece. In Umbria applicants can only use native species suitable to local environmental conditions and as defined in the regional regulation no 7/2002.

4.4.2.3 Forest-environment payments (measure 225)

Applicants applying for support under measure 225 have to sign up to long term commitments for up to 25 years. However, the duration of the commitments varies between the different countries and regions. Long durations of commitments between 20 and 25 years have been defined in Greece, the Czech Republic and Germany, while in Scotland commitments only exist for 10 years.

A standard commitment found in a number of investigated countries and regions is the development and submission of a forest plan. Examples here include the Czech Republic, Lithuania and Scotland. Furthermore, a few additional commitments are explicitly defined in relation to the required proportions of specific types of tree species in the Czech Republic and existing conservation plans in Mecklenburg West-Pomerania (Germany).

4.4.2.4 Restoring forestry potential and introducing prevention actions (measure 226)

Applicants have to submit a project plan which needs to be approved by the relevant authorities. The submitted project has also to take into account fire protection regulations. However, no other general contractual obligations or commitments are mentioned, as this measure operates on a project by project basis. In addition, a few specific commitments are defined, for example

in the case of Lithuania, that support for maintaining forest firebreaks through agricultural activities shall not be granted for areas benefiting from agri-environment support. Another example can be found in Umbria (Italy) where a commitment with respect to restoring forests damaged by fire and natural disasters defines that natural dynamics have to be restored in a way to shortly obtain the re-establishment of efficient forest stands.

4.4.3 Payment calculation process

4.4.3.1 Cost components

The synthesis of the cost components and their quantification in the next section focuses on the measures afforestation of agricultural land (221) and forest environment payments (225). As explained above in chapter 3, these two measures are the most commonly implemented forestry measures in the investigated countries and regions. On the other hand, the agro-forestry measure is only implemented in two of the investigated countries (Umbria (Italy) and Greece) and the afforestation measure of non-agricultural land (223) is similar to measure 221 in many aspects of the payment calculations. Finally, measure 226 does not employ the standard cost approach; instead actual costs are reimbursed under this measure.

First afforestation of agricultural land (measure 221)

Concerning measure 221 the review compared the different components explicitly used for the calculation of establishment payments, maintenance payments and payments for agricultural income foregone.

Cost components considered in the calculation of the establishment payments are the preparation of the afforestation (or project) plan, establishment costs as such, either as an aggregated component or disaggregated into various specific components, and design and expense allowances. The afforestation plan is only in two countries, Greece and Lithuania, explicitly considered in the payment calculation, while the additional allowances for the design of the plantation (calculated as percentage of total establishment costs) and the expenses (calculated as percentage of fee) are a specific characteristic of the calculations in Umbria (Italy) and are not included in any of the investigated examples. Key information provided by Table 4-11 is the difference in the level of detail provided in the calculation with respect to the different components of establishment costs. Greece, for example, only includes an aggregated figure of establishment costs in the payment calculation, while other countries, e.g. Lithuania, Poland and the investigated regions in Spain, differentiate between a range of different establishment cost components such as site preparation, cost of seedlings, labour costs for planting, replacing seedlings and protection of seedlings (including fencing costs).

Table 4-11 Establishment cost components in afforestation of agricultural land (221)

Cost component	CZ	$ES_{N/BC}$	GR	IT_{UMB}	LT	PL	SCO
Preparation of the afforestation project plan	-	-	✓	-	✓	-	-
Establishment costs	✓	✓	✓	✓	✓	✓	✓
Of which specified: Site preparation	✓	✓	-	-	✓	✓	✓
Costs of seedlings	✓	✓	-	✓	✓	✓	-
Labour costs for planting	✓	✓	-	-	✓	✓	-
Replacing seedlings	✓	✓	-	-	✓	✓	-
Protection of seedlings	-	✓	-	-	✓	✓	✓
Design and expense allowances	-	-	-	✓	-	-	-

✓= yes, - = no

Similarly, Table 4-12 summarises the different cost components for the calculation of maintenance payments. Again, the level of detail provided in the calculations varies significantly. Examples such as Umbria (Italy) and Scotland only provide an aggregated maintenance cost figure (Umbria) or differentiate between costs for protection and other maintenance costs (Scotland). On the other hand, the calculation of maintenance costs in Greece is rather detailed and includes components for weed control, pruning, replacements of plants and other work such as irrigation. However, in this context, it is important to note that Greece does not provide standardised maintenance payments, but reimburses a percentage of eligible costs, which partly explains the more detailed consideration of different (eligible) cost components.

Table 4-12 Maintenance cost components in afforestation of agricultural land (221)

Cost component	CZ	$ES_{N/BC}$	GR	IT_{UMB}	LT	PL	SCO
Maintenance costs	✓	✓	✓	✓	✓	✓	✓
Of which: Weed control	✓	✓	✓	-	-	✓	-
Pruning	-	✓	✓	-	-	-	-
Protection	✓	-	-	-	✓	✓	✓
Replacement costs	-	-	✓	-	✓	-	-
Other works	-	✓	✓	-	-	✓	-

✓= yes, - = no

The main component in the calculation of the payments for agricultural income foregone is the GM loss of agricultural activities. In addition, loss of direct payments (Poland and Finland) and GM gains of productive forestry plantations (Greece) are considered in the calculations. While each of the investigated countries and regions has based its calculation on agricultural GM losses, there are differences in the differentiation of GM from diverse agricultural land uses and enterprises. The calculation in the Czech Republic differentiates between GMs of arable land and grassland and, similarly, arable land, improved grassland and unimproved grassland are differentiated in Scotland. A more detailed differentiation can be found in the Greek calculations where a range of different production systems are considered, such as irrigated annual crops, vegetables, permanent crops, vineyards, corn, wheat, grassland etc.

Table 4-13 Agricultural income foregone components in afforestation of agricultural land (221)

Cost component	CZ	$ES_{N/BC}$	FI	GR	IT_{UMB}	LT	PL	SCO
Agricultural GM losses, agricultural activity	✓	✓	✓	✓	✓	✓	✓	✓
Loss of direct payments	-	-	✓	-	-	-	✓	-
GM of productive forestry plantations	-	-	-	✓	-	-	-	-

✓= yes, - = no

Forest-environment payments (measure 225)

Three main cost components are considered in the calculation of the forest environment payments. These include the preparation of a forest plan, which outlines the detailed management activities and commitments, the loss of income due to reduced or delayed forest exploitation, and additional forest management cost resulting from the uptake of this measure. Forest plans are considered in the payment calculations in the Basque Country (Spain), Greece, Lithuania and Scotland. The general basis for the payment calculation is the loss of income from forest exploitation with additional forest management costs being explicitly included in the payment calculations in five of the seven countries and regions. Additional management costs include, for example, specific protection measures such as preservation of ecological corridors

(Greece) and timber marking (Umbria (Italy)). Finally, additional felling and skidding costs are only included as a separate cost component in the Czech Republic.

Table 4-14 Cost components in forest environment payments (225)

Cost component	CZ	DE_{MWP}	$ES_{N/BC}$	GR	IT_{UMB}	LT	SCO
Preparation of forest plan	-	-	✓	✓	-	✓	✓
Loss of income from forest exploitation	✓	✓	✓	✓	✓	✓	✓
Additional forest management costs	✓	-	✓	✓	✓	-	✓
Additional forest management costs	✓	-	-	-	-	-	-

✓= yes, - = no

4.4.3.2 Detailed process of payment calculation

Similarly to the previous section, the focus of the synthesis of the different approaches used to quantify the standard costs in the payment calculations is on measures 221 (223) and 225.

First afforestation of agricultural land

A range of different approaches is applied to quantify standard costs for the establishment of first afforestations. These approaches include:

Approaches for quantification of establishment costs:
- national evaluation guidelines and Ministry decrees
- stakeholder evaluations
- expert studies
- modelling exercises of different planting models
- shift from detailed standard cost lists for different activities to a tariff systems.

National evaluation guidelines provide in Lithuania the methodological framework for accounting and valuation of seedlings, planting and afforestation works, and forest sanitation protection instructions. These guidelines form the basis for the calculation of the afforestation payments and provide information concerning estimated standard costs and suggested payments for establishment and maintenance. In Umbria (Italy), Ministry decrees set the values for design and expense allowances which can be included in the payment calculation.

Expert studies are widely used in payment calculations. For example, in calculations in the Czech Republic, expert studies are used to quantify standard costs for soil preparation, seedlings, transportation of seedlings and labour costs of planting based on data from the previous RDP. Expert studies and stakeholder evaluations have also been used in Scotland to quantify the standard costs for a wide range of different forestry activities for applications in the past and now only provide the basis for the new tariff system. An interesting development concerning the payment calculation has occurred in Scotland, where the payment system has changed from providing a detailed standard cost list for applicants to a simplified tariff system based on seven planting models.

Modelling exercises are conducted developing a set of different planting models which are differentiated by tree species and composition. For example, such modelling exercises are conducted in the Czech Republic, Poland and Scotland where six, four and seven, respectively,

different planting models are used to estimate payments. These planting models include assumptions on topography, stocking density, species composition, and amount of labour required for the different activities.

In addition to the standard cost approach, some countries, e.g. Greece, have chosen to reimburse a specific percentage (given by RDR) of the actual costs of afforestation as approved in the project plan.

A similar range of different approaches is applied to quantify standard costs for the maintenance of first afforestations but in many cases fewer cost details are available. Again, the applied approaches include national evaluation guidelines, stakeholder evaluations and expert studies, and planting models. In the context of maintenance costs, planting models include assumptions on required material and labour for different activities such as weeding and protection, and are in some cases differentiated by tree species. Again, the standard cost approach is not used in Greece to quantify maintenance costs; a percentage of the actual costs of afforestation as approved in the project plan is reimbursed.

Agricultural income foregone payments are calculated on the basis of GM losses and, in some cases, taking into account loss of direct payments and GM gains from forestry enterprise. The following approaches are widely used for the calculation of GM losses:

Approaches for quantification of gross margin losses:

- GM losses are calculated by using averages over a number of years (usually 3 years)
- expert estimates are used to derive cost of non-market goods
- standardised GM figures from expert studies
- GM figures from farm account surveys and databases
- detailed calculations of reductions in revenue and variable costs.

For example, in the Czech Republic agricultural income foregone payments for arable land are based on weighted average GMs from wheat, barley and rape seed which represent about 50% of the total arable land. On grassland, expert estimates are used to determine prices for hay based on costs of hay production (afforestation of grassland) for the calculation of GMs for meadows. In Greece, payments are based on the difference between average GM from the previously prevailing agricultural activity and the average GM from any profitable forest plantation (e.g. chestnut and walnut trees).

The loss of direct payments is included in the calculation in two countries and Poland applies a simple average for the subsidy loss over all production system, while Finland uses an average of all crop systems.

Forest-environment payments (measure 225)

The forest-environment payment is generally determined by calculating income foregone from reduced forest exploitation and higher management costs. However, the review could only find a limited amount of available information regarding the actual calculation process. Two more detailed examples exist from the Czech Republic and Mecklenburg West-Pomerania (Germany), which are outlined below.

The calculation of the forest-environment payment for “Improving the species composition of

forest stands" in the Czech Republic is based on the assumption of lower income due to lower average felling increment (AFI) in forests with a higher proportion of ameliorative and reinforcing wood species (ARWS). The different calculation steps are as follows:

Main calculation steps (example the Czech Republic):
1. calculation of AFI for stands with minimal rate of ARWS per rotation
2. calculation of AFI for stands with increased share of ARWS per rotation
3. calculation of AFI difference for whole rotation (multiply by rotation of stands with minimal ARWS)
4. total income foregone divided by payment duration of 20 years
5. calculation of annual payment weighted by forest type area

➢ Steps 1 to 4 are carried out for each of the six forest type models before the final payment is calculated as weighted average across all six forest model types.

The second example for the calculation of forest environment payments is "Measures to maintain and develop ecological valuable forest biotopes" in Mecklenburg West-Pomerania (Germany). The main components considered in the calculation process below are:

- foregone interest income due to renunciation of harvest
- value loss due to non-usage of trees over a period of 20 years
- incentive element of 1.1 (until 2006).

The calculation process contains the following three main steps:

Main calculation steps (example Mecklenburg West-Pomerania):
1. The calculation implements assumptions on interest rate, percentage value loss per year, fixed yield, net revenue and present value without exploitation costs
2. The sum of the interest and value losses is multiplied by the period of 20 years and discounted to the beginning of the period
3. A yearly annuity is calculated which gives the annual payment per tree.

➢ Taking into account the RDR maximum payment per hectare of EUR200, the maximum number of trees per hectare is determined and consequently the final payment per hectare.

4.4.4 Baseline requirements and payment constraints

4.4.4.1 Comparison of baseline requirements affecting payment calculation

GAEC and SMRs are not applied for forestry measures in most of the investigated countries and regions. An exemption is, for example, the Basque Country (Spain), where the compliance with C-C requirements is specifically established for the measures 221 and 225. In principle, however, C-C is also relevant for forest areas and thus in the future, once the exact requirements are defined in each country, some of the GAEC and SMR could apply for forestry measures. Potentially, GAEC requirements in relation to landscape features could limit the scope of afforestation measures. Moreover, there are examples (outside the geographic representation of

this project) where GAEC requirements directly address aspects such as tree felling and tree preservation.

Other EU regulations and statutory requirements which have to be taken into account include Fauna, Flora and Habitat Directive and Natura 2000 designations and management plans. In addition, there are a number of national laws and regulations which applicants have to take into account for forestry measures. Examples include UK forestry standards or federal state forestry laws and federal state law on nature conservation in Germany.

However, while forestry measures are designed considering forestry standards or other baseline requirements, there is little to no evidence available from the review that existing baseline requirements have been directly considered in the payment calculations.

4.4.4.2 Interrelations between forestry measures and other measures

In most cases no specific linkages or interdependencies between forestry measures and other RD measures have been identified. As a general rule (RDR requirement) support for afforestation of agricultural land cannot be combined with early retirement support. Moreover, mechanisms have to be in place in each country and region to avoid double funding of the same activities or commitments. For example, in the Basque Country (Spain), additional costs in some forestry measures are not taken into account for the final forestry payment calculation if the actions are already support from measures improvement of the economic value of forests (122), infrastructure related to the development and adaptation of agriculture and forestry (125) or non-productive investments (227).

4.5 Meeting standards measure

4.5.1 Eligibility criteria

Eligible criteria are different because of difference of standards which are going to be implemented.

For electronic marking of sheep and goats in Greece farmers have to be owners of sheep and/or goats, priority is given to holdings within Natura 2000 areas. In Veneto (Italy) the beneficiary can not increase number of animals and the number of places as a first criterion. Within the second criterion the beneficiary has to implement actions with meeting standards at least one of the following measures:

- 121 (Investments in agricultural holdings) farm investments (excluded structural and equipment investments)
- 114 (Use of advisory services) used by farmers and forest holders of advisory services
- 311 (Diversification) diversification to non-agricultural activities with special regard to the use of renewable energies.

4.5.2 Scheme commitments

If the measurement is not to be stood after 1st January 2008, the animals will not be eligible for support and farmers will have to deal with penalties for C-C in Greece. Additionally farmers will be required to:

- inform veterinary authorities upon starting up a holding with ovine / caprine or a relevant activity within an existing holding
- add ear tags to animals whether they stay, move to other holdings or are to be slaughtered,
- add ear tags to animals from third countries

- replace lost ear tags. Removal of ear tags without the permission of the veterinary service is forbidden
- keep records for all changes either they refer to animals or ear tag numbers and codes
- make an annual inventory on December of the livestock and inform the veterinary service
- keep a record of all papers relevant to changes in the holding
- when an animal is to be moved an approved animal health certificate should be issued and follow the animal.

Relevant commitments and contractual obligations in Veneto region (Italy) are as follows:

- carrying out a project/process for internal adaptation and reorganization of the farm, and notifying to the Province Administration Offices of "communication" with operating procedures for the agronomic management of zoo-technical effluents
- organising an innovative management of food rations, if an adjustment of production system is necessary
- adapting the productive systems to the IPPC (Integrated Pollution Prevention and Control) fixed by regulation in force.

4.5.3 Payment calculation process

Main points within payment calculation across countries are: the support is granted as a flat-rate, digressive aid on an annual basis, for a maximum duration of five years from the date the standard becomes mandatory. For the payment calculation, only additional costs element is used both in Veneto region (Italy) and Greece. Additional costs are basically made up from farm operating costs stemming from the obligations or restrictions imposed by the new standard.

Payment for meeting standards measure "Electronic marking of sheep and goats" in Greece is based on eartag expenses as additional costs. Annex B (Tables B43 and B44) shows details of payment calculation.

Payments for both meeting standards measures implemented in Veneto (Italy) are calculated on additional cost background where additional costs relate to particular required activities. The first measure 131/1 "Processing of information about management of zoo-technical dejections and formulation of feed rations" focuses on:

- 131/1a information and data gathering about business organisation and management of animal dejections for their agronomic utilisation
- 131/1b design and introduction of food rations management systems for a period of 5 years
- 131/1c company and management activities necessary to organize breeding management farming in compliance with the new regulation in force.

The second measure 131/2 supporting "Adaptation of new environmental management systems within an integrated business plan" includes:

- 131/2a design and introduction of BAT
- 131/2b introduction of environmental quality systems, which are required by the "Environmental Integrated Permit".

The additional costs are basically made up of fees for technical advice and for laboratory analysis, which must be documented by invoice. Their ex-ante quantification is very difficult because expenditures are influenced by the characteristics of each farm. Some indication about difficulty of costs calculation is stated in official documents and in scientific literature.

However, some minimum and maximum values (before taxes and others charges) can be indicated, for the compliance of submeasures 131/1a, 131/1b and 131/2a, on the basis of indications given by zoo-technical professionals. The technical advices required by submeasures 131/1c and 131/2b involve extremely various (and not ex-ante computable) costs, depending on each farm's characteristics. In fact, submeasure 131/1c concerns technical-management assistance related to the application of new regulations, while submeasure 131/2b regards expenditures for design costs related to the BAT. Therefore, those written in the calculation are maximum annual payments, decreasing of about EUR500/year for five years, (maximum duration of measure). For details in payment calculation in Veneto (Italy) see Annex B (Table B44).

There are some common issues in the payment calculations which have been identified in the comparison between the Veneto region (Italy) and Greece. Methodologically, the payment calculation for measures in Greece is identical to one submeasure in the Veneto region (Italy), i.e. "Introduction of quality environmental systems". The payment is fixed for five years and is proportionally decreasing annually: from a fixed maximum amount of payment in the first year up to a fixed minimum amount in the fifth year. In addition to the above methodology, one-off contributions are provided in the Veneto region (Italy) which means the payment is paid only once during the five years.

4.5.4 Baseline requirements and payment constraints

4.5.4.1 Comparison of baseline requirements affecting payment calculation

Baseline requirements which cover relevant GAEC and SMRs are used in Greece and Veneto region (Italy) as baseline requirements for payment calculation under the meeting standards measure and are not included in the payment calculation process. Any other regional, national or EU regulatory requirements are not mentioned by Greece and Veneto region (Italy).

Table 4-15 Existence of baseline requirements affecting payment calculation

Baseline requirements	GR	IT_{VEN}
GAEC	✓	✓
SMRs	✓	✓
Others	-	-

✓ = yes, - = no

In Veneto region (Italy) additional requirements which impact on payment calculations come from directives concerning the protection of waters against pollution caused by nitrates from agricultural sources and requirements for integrated pollution prevention and control. Meanwhile in Greece farmers will have to deal with additional SMRs related to identification and registration of animals, submitting of the special forms for the holding setup, approval of labelling, filling special forms concerning changes (including interruption of operation) that happen in the holding regarding ear tags, keeping passports and holding registers.

4.5.4.2 Limitation of payment level

Payments levels have only the maximum limit (EUR10 000/farm) imposed by the EC Reg. 1698/2005 in Greece and Veneto region (Italy).

4.5.4.3 Interrelations between the meeting standards measure and other measures

Article 26 of the EC Reg. 1974/2006 indicates that beneficiaries of Natura 2000 payments and

payments linked to Directive 2000/60/EC shall not be eligible for support pursuant to Meeting standards, as regards the implementation of Council Directives 79/409/EEC and 92/43/EEC. Any other interrelations between the Meeting standards measure and other measures (in or out RDP) were not identified in Veneto region (Italy) and Greece.

4.6 Animal welfare payments

4.6.1 Eligibility criteria

EU legislation provides a number of general for all the RDP and specific for animal welfare measure eligibility criteria what are predominant among the countries for animal welfare. Eligibility criteria implemented for animal welfare are presented in the table below.

Table 4-16 Overview of eligibility criteria for animal welfare payments

Criteria	DE	ES_{CL}	FI	GR	IT_{ER}	SCO
Necessity of registration	-	✓	-	-	✓	-
Age of applicant	-	-	✓	-	-	-
Minimum LUs / animals	-	✓	✓	-	✓	✓
Livestock production	-	-	✓	-	-	-
Regulations of animal welfare in force	✓	✓	✓	✓	✓	✓

✓= yes, - = no

* Excluding pigs and poultry

** The applicant must not have been found guilty of breaking welfare regulations

*** The applicant must not have been found guilty of breaking welfare regulations and must have an adequate system for management of animal waste.

The registration in the official agriculture register of holdings is applied as a eligible condition in two examined countries and regions, Castilla and Leon (Spain) and Emilia Romagna (Italy). Finland use age requirements for beneficiaries and the farmer or his/her spouse must be at least 18 but no more than 65 years old. Eligible rules in some countries include minimum LUs limitation. Farms with less than 6 LUs are left out of the contribution in Emilia Romagna (Italy); in Finland farmers must possess at least 10 LUs of bovine animals and finally in Scotland this limit is 4 LUs, whereas pigs and poultry are excluded from this measure. Holdings must comply with the regulations on animal welfare standards required by legislation in all countries. In addition, conditions as existence of adequate system for animal waste management and not guilty of breaking welfare regulations are namely stated within criteria in Castilla and Leon (Spain). In Scotland, actions to be supported under this measure can not relate to the control of notifiable diseases as these are already subject to statutory regimes.

4.6.2 Scheme commitments

The relevant commitment shall provide upgraded standards and could be divided into five groups as shown in Table 4-17.

Table 4-17 Relevant commitments for animal welfare measure in partner countries

Relevant commitments	DE_{MWP}	ES_{CL}	FI	GR	IT_{ER}	SCO
Prevention of pathologies mainly determined by farming practices or/and keeping conditions	-	✓	✓	✓	✓	✓
Housing conditions, such as space allowances, bedding, natural light	✓	✓	✓	✓	✓	-
Outdoor access	✓	✓	✓	✓	✓	✓
Water and feed closer to their natural needs	-	-	✓	✓	✓	✓
Absence of systematic mutilations, isolation or permanent tethering	-	-	✓	✓	✓	-

✓= yes, - = no

The country entering into the animal welfare has to keep up with at least one of the above mentioned relevant commitments. Contractual obligations appear different when countries set different bounds for implementation.

4.6.3 Payment calculation process

The calculation process for animal welfare payments includes three types of main elements: additional costs, income foregone and transaction costs. For some countries just additional costs are applicable and some use different combination of mentioned elements.

Table 4-18 Components of animal welfare payments

Cost components	DE_{MWP}	ES_{CL}	FI	GR	IT_{ER}	SCO
Additional costs	✓	✓	✓	✓	✓	✓
Income foregone	-	✓	✓	-	-	-
Additional income	-	-	✓	-	-	-
Savings	-	-	✓	-	✓	-
Transaction costs	-	✓	✓	-	✓	-

✓= yes, - = no

Additional costs are based mainly on labour costs (DE_{MWP}, IT_{ER}, SCO), material costs as food or litter (DE_{MWP}, IT_{ER}) and other service costs related to animal welfare (e.g. health care visit / agreement, feeding plans, veterinary services) applied mainly in FI and SCO. Income foregone, used in two countries covers lower income due to reduced number of animals in the farm (ES_{CL}) but also labour costs – the work time of the farmer spent on fulfilling requirements (FI).

In Finland, the payment calculation process also includes the so called "additional income", which describes the economic benefits of farms introducing the animal welfare measure compared to those farms which did not participate in this measure. It is expected that farms participating in the animal welfare measure can obtain additional benefits in the form of increased animal health and output. Furthermore, Finland has very detailed calculations including specific activities (see Annex B Table B46).

In Emilia Romagna (Italy), the payment calculation process, besides elements already mentioned, includes additional element, "savings", which include expected lower veterinary costs. Equally in Finland, these savings reduce the payment amount and they arise for example from reduced use of medicines and lower mortality rate of animals.

There are two different ways of calculating transaction costs:

- as a percentage of total amount of income foregone and additional costs (FI, ES_{CL})
- as a constant amount added to payment (IT_{ER}).

In Germany, the process of payment calculation is based on Standard GM[8]. Production benefits and production costs are considered, which differ within each submeasure, according to crop or animal production. In Castilla and Leon (Spain), in the process of payment calculation, the number of potential beneficiaries and available budget are also entered. In Emilia Romagna (Italy), the payment is calculated starting from the analysis of average milk production costs and consequently changes of costs due to new commitments has been estimated as follows: +5% for feeding costs, +15% for labour costs, +10% for energy costs, -15% for veterinary and sanitary costs. Moreover, EUR100 per farm have been considered as costs for acquisition and transfer of know-how, i.e. transaction costs. Calculated payments (maximum levels) must be finally reduced according to the different importance conferred to each improvement typology[9], so to define a "base premium" for each of them. For purpose of the payment calculations in Scotland, there are defined labour grades and categories (standard worker, skilled worker and farm management labour) with different labour rates.

Summarising the investigations results on animal welfare payment process, the following conclusion could be drawn – payment could comprise five elements: additional costs, savings, income foregone, additional income and transaction costs. For all available payment calculations of the animal welfare measure see Annex B (Tables B45 – B51).

4.6.4 Baseline requirements and payment constraints

4.6.4.1 Comparison of baseline requirements affecting payment calculation

GAEC and SMRs concerning animal welfare measures are defined in Scotland, Greece and Finland. In Mecklenburg West-Pomerania (Germany), these requirements may still be subject to changes. Finally in Emilia Romagna (Italy), baseline requirements have not been defined in the RDP draft yet for each single submeasure within the animal welfare payments.

In any of investigated countries, baseline requirements do not enter in the payment calculation process and do not have any impact on the premium level of animal welfare measure.

4.6.4.2 Limitation of payment level

The maximum amount for the animal welfare measure is EUR500/LU/year fixed by the RDR. There are no submeasures where payments exceed this limit in any of the investigated countries.

A limitation of payment levels is only applied in Finland, Emilia Romagna (Italy) and Scotland. In order to ensure sufficient funding to all farms entering voluntarily into animal welfare measure and to prevent overcompensation, the maximum limit of EUR5 000 per farm is applied in Finland. Due to budget concerns and the limited amount of money available to fund this measure, the annual payments for fence maintenance are restricted to a maximum of 3 000 metre per farm, which is equal to EUR450 per farm in Scotland. However, the maximum amount per farm is given by the sum of all six available options in the AHWM programme. Emilia Romagna (Italy) applied maximum levels of payments for each concerned animal

[8] Standard GM is the monetary value of production reduced by corresponding variable specific costs.

[9] Improvement of farm and private management; Improvement of breeding and stalling systems; Improvement of environmental monitoring; Improvement of feeding and watering; Improvement of cleanliness, health and behavioural aspects.

species, presented in Table 4-19 below.

In addition, specific payment limitation is implemented in Castilla and Leon (Spain), where total amount of payment is adjusted according to the correcting factor which depends on the number of animals in the holding. For example, the factor used within submeasure "Laying hens" and its category "Battery hens" has following values: 1.00 (up to 3 000 animals), 0.85 (up to 60 000 animals) and 0.70 (over 60 000 animals). Moreover, a minimum number of animals for the holding is stated to be eligible for support (e.g. 3 000 battery hens).

Table 4-19 Maximum level of animal welfare payments in Emilia Romagna (Italy)

Species	Ceilings (EUR/LU)
Dairy cattle:	
Production of Parmigiano-Reggiano in mountain areas	303.50
Production of Parmigiano-Reggiano in the plain	196.49
Production of Grana Padano / production of drinking milk	202.58
Beef cattle:	
Calves for fattening	75.85
Heifers for fattening	242.64
Breeding heifers	193.68
Sheep (dairy or fattening)	80.33
Laying hens	60.00
Broilers	23.33
Pigs	35.30

4.6.4.3 Interrelations between the animal welfare payments measure and other measures

Certain relationship of the animal welfare measure (submeasures) to other measures (in or out of RDP) is observed in Germany, Finland, Greece and Scotland.

Farm investment support programme within the National Framework Regulation in Germany is intended for investments which aim to fulfil specific requirements of improvement of animal welfare and animal hygiene. There exists the possibility to grant a payment of up to 30%.

Farms that have concluded a special AE contract for organic livestock production in Finland can not select the following additional conditions: cattle farms - "Grazing during the growing period and exercise during the winter" and pig farms – "Free farrowing for sows". This restriction may affect the payment level for organic farms. In Finland, animal welfare can also be promoted with other complementary RDP measures such as training, agricultural investments and related building instructions as well as measures of the rural network (e.g. production of advisory material and guides and training events). Animal health and welfare can also be promoted with nationally financed advisory services and measures related to the quality strategy.

Provision for complementarities with investment aid to livestock farms through the RDP measure 121 "Modernisation of agricultural holdings" are observed in Greece.

In Scotland, it is possible to combine support within animal welfare measure with support from HI Health Ltd. which is an accredited farmer-led organisation that offers Scottish livestock farmers the opportunity to participate in health planning and disease eradication and accreditation with the aim of improving the performance and profitability of their stock.

5 Data sources and administrative structure

5.1 Used data

A list of data sources used in the calculations across countries and regions is quite heterogeneous and can be differentiated into forestry and agricultural data. Among most common data sources are statistical data published regularly; however the importance of own surveys, expert estimation and academic literature is essential within the calculation process as well. The data sources used in payment calculation are summarised below separately for agricultural and forestry areas.

FADN and national and / or regional farm statistics provided by MoA, national statistical offices or research institutes are widely utilised in payment calculations for agricultural areas. In the case of forestry, where no common database exists, each country uses data from different sources.

Data used for calculation of payments on agricultural land:

- FADN
- farm statistics (including IACS)
- surveys and academic literature
- expert estimation and stakeholder evaluations
- legal acts.

Data used for calculation of payments on forest land:

- forest inventory and national and regional regulations
- analytical and price lists of costs for forestry works and products
- expert studies, advisory services and stakeholder evaluation
- IACS
- FADN (only in Lithuania)
- surveys and academic literature.

5.2 Missing data

Lack of suitable and up-to-date data is one of the identified key problems in relation to the payment calculation across all investigated RD measures. In particular, the lack of reliable silvicultural data including economic data and technical specifications for forestry has been emphasised in a number of cases. Moreover, the lack of FADN data for forestry land, monitoring data and more detailed spatial data has been pointed out.

In the case of Natural handicap payments, a more detailed land classification data for a creation of land quality database at holding level would be helpful to provide an improvement of natural disadvantages measuring. The need for additional data depends on the outcome of the review of Natural handicap payment schemes designation. A shortage of methodological experience with Natura 2000 payment calculation has been mentioned in Umbria region (Italy) and Lithuania. In the case of Animal welfare schemes, lack of data for specific commitments has been identified

and the potential future need for more detailed data with respect to existing and "new" (livestock) farming systems is expected depending on future policy developments.

Non-existence of regionalised data for the calculations of income foregone and additional costs was mentioned in Navarra (Spain) but such data absence is obvious in the rest of countries as well.

5.3 Administrative structure

Differences in the number and types of organisations involved in payment calculations in the investigated countries and regions are summarised in Table 5-1.

Although responsible organisations vary across countries, some similarities can be found. The most common are research institutes like VUZE (CZ), KTBL (DE), MTT (FI), INEA (IT) or LAEI (LT) and national / regional agencies and ministries (MoA and MoE).

Table 5-1 Administrative structure involved in payment calculation across RD measures and countries

Country / region	Institution name
CZ	- Research Institute of Agricultural Economics (VUZE) - Agency for nature conservation and landscape protection (AOPK) - MoA - MoE
DE	- Curator ship for technique and architecture within agriculture (KTLB)
DE_{NRW}	- Chamber of Agriculture NRW
DE_{MWP}	- Federal research institute for agriculture and fishery - Forestry Authority of Mecklenburg West-Pomerania
$ES_{N/BC/CL}$	- MoA - MoE
FI	- Agrifood Research Finland (MTT) - MoA
GR	- RD Management authority - General Directorate of Forestry in the MoA - Veterinary service in the MoA - Consulting firm
$IT_{UMB/VEN/ER}$	- Regional administration offices of Umbria/ Emilia Romagna/ Veneto region - National Institute of Agricultural Economics (INEA) - University of Perugia, University of Udine - Research Centre for Animal Production (CRPA)
LT	- Lithuanian Institute of Agrarian Economics (LAEI) - Lithuanian University of Agriculture - MoA - MoE
PL	- Institute of Agriculture and Food Economics (IAFE) - Institute of Architecture, Mechanization and Electrification of Agriculture - Institute for Land Reclamation and Grassland Farming - Institute of Soil Science and Plant Cultivation (IUNG) - Institute of Animal Breeding - Forest Research Institute in Warsaw - State Forests National Forest Holding - MoE / MoA
SCO	- Scottish Executive Environment and Rural Affairs Department (SEERAD) - Forestry Commission

6 Identified problems and their solutions

This section investigates problems with payment calculations and their potential solutions and identifies remaining key issues for future calculations.

Table 6-1 Problems and attempted solutions across RD measures and countries

Problem areas	Problems	Solutions
Data availability		
	Lack of reliable technical and economic data (mainly silvicultural data) and up-to-date data	- Usage of scientific literature and surveys to obtain required data - Usage of normative data instead of actual data - Simplified methods of calculation are applied which are less data intensive
	Lack of regional data enabling to provide calculation on smaller scale	
	Difficulties to define economic assumptions in calculations, e.g. inflation, interest rate	
Standard cost approaches and payment design		
	Standard costs do not take account of wide range of different circumstances and changes in economic data such as prices, interest rates fluctuation	- Establishment of management plans specifically for the holding as obligatory for receiving the forestry payments - The most frequently occurred farming system has been used as a reference level - Methodologies used are designed to deal with these problems - New evaluation methods were designed where necessary - New research projects have been commissioned to improve evidence - Some problems remain unsolved
	Discrepancies between payment periods and duration of commitments	
	Complexity in assessment of the usage restriction incidences and determination of payment components (e.g. income foregone, additional costs), difficulties to cover nature or landscape value	
	Difficulties to determine a typical farming system as a reference system (e.g. within the animal welfare)	
	Difficulties to find relevant indicators/ variables to measure the severity of nature handicaps	
Policy administration		
	Lack of methodological experience of payment administrations	- Advice and knowledge has been used from other organisations, both at national and international level - Former measures has been implemented with some adjustment - Closer cooperation with the Commission needed
	Lack of available time to develop a new scheme	
	Difficulties with spatial demarcation of eligible areas within forestry measures	
	Uncertainty of the Commission expectation on some RD measure (e.g. LFA and animal welfare measure)	
RDR requirements		
	Minimum and maximum amount of payments does not provide an adequate range of financial support (e.g. forest environment payments)	n.a.
	Low amount of calculated payment does not provide sufficient incentives for forest owners and can not be increased through an incentive element anymore	n.a.
	Low amount of handicap payments and their nation-wide usage have not sufficient influence on farmers decisions and can not achieve their objectives	- Preference is given to smaller holdings, as these are in most danger of abandonment
	- Difficulties in spreading the maximum amount of meeting standards payments per farm among different actions provided by the measure, - This maximum limit may lead to under-compensation and decrease of breeding activities due to strict requirements	- Design of common parameters for more homogenous application among different breeding typologies (e.g. cost per kg N)

The most commonly cited problem across all countries and RD measures was a lack of reliable technical and economic data, and existing data are not up-to-date. Furthermore, a lack of

regional data to enable calculation on smaller scale was mentioned with the context of over- and under-compensation issue. Moreover, the inflexibility of the standard cost approach was criticised for not taking into account different circumstances and changes in economic data such as prices, interest rates etc. and the impossibility of covering factors such as the value of landscape and nature in payment calculation. Payment restrictions in the RDR framework were also pointed out as constraints for defining adequate financial support mechanisms at the farm level.

Different solutions were employed by the responsible organisations to reduce or solve the outlined problems in the payment calculations, e.g. applying a simplified approach to calculate payments, designing of totally new evaluation methods and seeking advice on methodological issues from other organisations. However, a number of key problems remain unsolved and need to be taken into account in future payment calculations.

7 Summary and conclusion

The report provides the comparison of payment calculation methods within six groups of RD measures across nine EU member states and regions and aims to answer the set of key questions outlined in the introduction. The results of this report provide the basis for the development of methodological grids and the case study analysis of existing calculation methods and payment differentiations. Results of this report will feed to the second and main phase of the project starting with the definition of the general structure of methodological grids adapted to particular RD measures.

As is evident from chapter 3, there is a high degree of variation in the extent of the implemention of particular measures in different countries. AEMs (214) as an obligatory measure are applied in all investigated countries as well as the support for organic farming chosen as the one common AEM. Similarly, at least one natural handicap payment scheme (211, 212) has been implemented in all investigated countries. In Lithuania, there are no mountain areas and in Scotland no differentiation is made between the payment schemes of mountain areas and other than mountain areas. Natura 2000 payments (213, 224) are not implemented in Finland and Scotland. In these countries support for Natura 2000 areas is covered by AE payments. Besides, the measure 213 is excluded in Greece and the measure 224 does not exist in Navarra (Spain) and Poland. Within the forestry measures, the range varies from countries such as Greece where all measures are implemented, to Finland where no forestry measures are implemented, except existing commitments from the previous programming period. Among the most popular measures are first afforestation of agricultural land (221) and the newly introduced forest-environment payments (225). The meeting standards measure (131) is implemented only in two investigated countries (regions), in Greece and Veneto (Italy), and is the least applied measure. Animal welfare payments (215) are provided in six of the nine investigated countries, except the Czech Republic, Lithuania and Poland.

The main factor of payment differentiation among the different measures is, obviously, the various management prescriptions applied in order to achieve the objectives of particular RD measures. The different management commitments as a basis of several submeasures are the only factor of differentiation in Natura 2000 and meeting standards measures. AE payment differentiations are based on a much wider range of factors like land use / animal type with some cases of more detailed specification (i.e. crop / variety / breed), farm structural characteristics (e.g. intensity of farming practices, farm size or farming period in case of organic farming) and spatial dimension (e.g. administrative / regional / territorial differentiation or specific land attributes). The key factor of natural handicap payment differentiation is geographic regions delimited according to a wide range of additional criteria such as productivity of soil (determined by indexes in CZ, DE, LT, PL and stocking density in SCO), demographic indicators (e.g. population density, farm population share), farm income and size (i.e. digression of payment applied in ES, LT and PL), farmer characteristics used specially in Greece, remoteness etc. Within the scope of the forestry measures, applied payment differentiations vary from simple uniform payments only considering RDR requirements to rather complex differentiations depending on tree or forestry types, purpose of woodland, topography but also agricultural parameters such as production systems or land type and quality. In addition, the various commitments, animal types (even. breeds), production systems and husbandry conditions have been identified as the main factors of animal welfare payment differentiation. The identified key parameters of payment differentiation represent one of the

important inputs to the development of the grids, which should harmonise the approach to payment calculations.

The 4th chapter presents differences in eligibility criteria and commitments and in approaches / methods used in payment calculation across countries and RD measures. Generally, the eligibility criteria are similar across the investigated countries and regions within the same RD measures since most of them are defined in the RDR (e.g. observe C-C, sign the contracts and undertake the obligations for certain period, defining possible beneficiaries etc.). However, some countries apply additional requirements which have to be observed such as minimum size of farm or forest holding, eligible land use / tree species and woodland types, stocking density or minimal LU. Finally, some specific requirements as forest age, agricultural production, residential conditions, uptake of other RD measures etc are defined.

The investigated countries and regions apply a high number of different commitments varying significantly across countries and particular RD measures (mainly within AEMs, Natura 2000 and animal welfare payments) depending on natural and other country-specific conditions. However, some of the most frequent commitments can be identified as limitations of fertilisation, stocking density, grazing and mowing and ploughing up grassland in Natura 2000 agricultural areas or preservation of required composition of tree species, prohibition of clear cutting, exclusion from final felling and maintenance of old / dead trees in forest areas. Within the animal welfare measure, five groups of relevant commitments have been identified. These are prevention of pathologies, housing conditions, outdoor access, absence of systematic mutilations, isolation or permanent tethering and adjustment of water and feed availability according to natural needs. Contrary natural handicap payment measures do not include mostly any management requirements and are only subject to C-C requirements. Scheme commitments within forestry measures are often similar across countries including a number of standard requirements (e.g. development and submission of a forest plan, application approved by relevant authorities, maintenance of forest for certain period, usage of only native tree species etc.). But a few more country-specific commitments have been also described such as minimum stocking density, preservation of required proportion of specific tree species or provision of specific protection maintenance activities. Commitments of meeting standards measure depend directly on the newly implemented regulation.

Cost components considered in the calculations result from scheme commitments and vary within the particular RD measure mainly in the level of details covered in the calculations. The reviewed countries and regions use many kinds of methods to quantify miscellaneous cost components. However, the determination of payment rates is, in fact, based on a few basic approaches. In cases where an appropriate database was available, direct comparison of existing samples of participating and non-participating farms was conducted. When this kind of data was not available or not sufficient, the transformation procedure was selected using non-participating farms as an initial point and applying transformation coefficients where appropriate, the respective participant figures were calculated. The third methodology applied, in cases of extreme lack of data, an ad hoc selection of income and / or cost items and the sum of these was defined as the amount to be paid. The selection of the above mentioned approaches is influenced by data availability.

Furthermore, some similarities exist also in the determination of the two basic components, income foregone and additional costs across investigated measures and countries. Income foregone is estimated mostly on the basis of agricultural gross margin losses or direct calculation of yield reductions. In addition, subsidies losses and gross margin gains are

considered in a few cases. Additional costs are defined through either generic terms like direct or variable costs or more detailed categories covered mostly increased labour costs, machinery / transportation costs, feeding costs, rents, interests and additional specific management costs resulting from the uptake of the particular measure. Cost savings are also seldom reported in calculation. Transaction costs as third basic components, available only for agri-environment and animal welfare payments, compensate costs associated with administration like book-keeping, preparation of necessary documentation, technical assistance or implementation of monitoring. Uncertainty in relation to the concept of transaction costs is grounds for confusion between additional and transaction cost and certain cost items are classified within additional costs as well.

A list of data sources used in the calculations across countries and regions is quite heterogeneous, but FADN and national and / or regional farm statistics provided by MoA, national statistical offices or research institutes dominate in payment calculations for agricultural areas. For forestry measures, no common database exists and the list of data sources is more heterogenous including as national / regional regulations and guidelines, expert studies, advisory services and stakeholder evaluation. Lack of suitable and up-to-date data is one of the identified key problems in relation to the payment calculation across all investigated RD measures. In addition, non-existence of regionalised data enabling the calculation of income foregone and additional costs on smaller scale has been also emphasised in a number of cases with the context of the over- and under-compensation issue. That increases the importance of surveys, expert estimation and academic literature within the calculation process.

In addition to the above-mentioned problems concerning the availability of reliable technical, economic and regional data, the inflexibility of the standard cost approach was criticised for not taking into account different circumstances and changes in economic data such as prices, interest rates etc. and the impossibility of covering factors such as the value of landscape and nature into payment calculations. Lack of methodological experience of policy administration was also mentioned as a barrier for more detailed calculations. Finally, payment restrictions (e.g. limits of payments) in the RDR framework were pointed out as constraints for defining adequate financial support mechanisms at the farm level.

Different solutions were employed by the responsible organisations to reduce or solve the outlined problems but a number of key problems remain unsolved and need to be taken into account in future payment calculations. Based on the questionnaires, the other remaining key issues are, for example, lack of data and missing opportunity to test their reliability, the limitation of standard cost approaches, constraints resulting from RDR guidelines, missing opportunity to test efficiency of more differentiated approach and large variation in implementation of RD measures and in approaches used to calculate payments. Moreover, the summary of remaining key issues takes into account the results of the first project workshop with governmental representatives and their feedback on key issues for future payment calculations has been incorporated. From the Commission's point of view, the methods for payment calculation should bear in mind administrative costs but have to be provided in sufficient detail to enable their applications under a wider range of circumstances. From the point of view of national and regional policy administrations, the most important thing is to keep the payment calculation process as simple and workable as much as possible. Integrating the main findings from the review with the feedback from government representatives, the following general and measure-specific key issues for future payment calculations can be summarised as follows:

General key issues:

- complexity of calculations versus simplicity (balance between scientific approaches and political acceptability)
- development of suitable incentives at the farm level
- lack of suitable and current technical, economic, and regional data
- differentiation of the issues in relation to implementation and justification of payments and measures
- need to test efficiency (gains) of more differentiated approaches
- lack of methodological experiences (considerable uncertainties in relation to some specific parameter values used for calculation, mainly transaction costs)
- rigidity of RDR requirements and the WTO framework does not allow to consider payments for environmental benefits and differences between intensive and extensive farming.

Measure-specific key issues:

- stakeholder interests affect payment design and calculation through consultation process (AEM, forestry measures)
- fixed costs can not be considered in payment calculation (AEM, AWM)
- payment calculations are not flexible because of Commission guidelines which are, at least in some cases, not effective (AEM, forestry measures)
- difficulties in payment calculations hinder innovation in application of new measures (AEM, Natura 2000 payments)
- definition and calculation of baseline requirements (AEM, LFA, AWM)
- implementations and payment calculations are driven by different objectives (LFA)
- changes in the policy and economic environment, e.g. market developments, are not considered in payment calculations (AEM, LFA)
- uncertainty in relation to transaction costs (AEM, AWM).

In addition, payment levels are not only determined by the methods of calculation used but to a large extent by external factors such as European and national policy objectives, financial considerations, stakeholder influences and payment levels from previous RDPs ("path dependency"). Most of above mentioned problems and issues within payment calculations confirm that sufficient and long-term research, enabling innovation, using more variations of payment calculation method and data sources, is at present missing. More attention should be paid to such research within the future design of RD measures and RDPs overall.

From a practical point of view concerning the planned development of methodological grids for the payment calculations, the differences in payment calculations between the investigated countries and regions emphasise one of the main challenges in developing such grids: trying to create a harmonised method for payment calculations which, at the same time, allows consideration of regional circumstances and maintains relatively low administration costs. The different methods of payment calculation are only one of the reasons for difference of payment levels within the RD measure. The other identified challenges for creation of common harmonised grids across member states include mainly:

- large variation in applied eligibility criteria and commitments
- range of payment differentiation
- difference in suitable and detailed data availability, their reliability, data sources and reference period of used data
- different definition and calculation of baseline requirements
- different time of providing of the payment (mainly in forestry measures: one-off

payments, payments for 5, 7 or up to 20 year period)
- different degree of transparency of payment calculation.

However, the review has also shown that certain similarities can be found across countries and some harmonisation of payment calculation processes in the form of common methodological grids is feasible, but only on the assumption that some simplification and selection of the most common commitments and payment components will be adopted.

8 Annexes

Annex A - Overview of investigated measures

Explanatory notes:

- Exchange rates used for conversion of national currency into EUR in examined countries where EUR is not introduced yet are following (EUR1 =):

  CZK 29.7840
  LTL 3.4528
  PLN 3.8000
  GBP 1.5000

- The last column of the overview tables presents information if the measure, submeasure or single scheme exists before the year 2007 and change of its payment level in the new RDP. Symbols used have following meanings:

  0 The measure did not exist in the previous programming period.
  = The same level of payment as in the previous programming period.
  ↓ Decrease of the payment level compared to the previous programming period.
  ↑ Increase of the payment level compared to the previous programming period.

Table A1 Overview of AEMs focused on organic farming

Country	Name of submeasures of the AEMs	Level of payments		Previous existence of measures
		EUR/ha	% of calculated level of payment	
CZ	Organic farming:			↑
	arable land	**155**	100	+31%
	grassland	**71**	80	+91%
	permanent crops (orchards, vineyards)	**849**	62	+107%
	vegetables and special herbs	**564**	55	+52%
DE**	Introduction and maintenance of OF:			↓
	arable land/ grassland	**187 (137)**	100	-11% (-14%)
	vegetable	**440 (271)**		-8% (-10%)
	permanent crops/ tree nurseries	**840 (662)**		-12% (-14%)
DE_{NRW}**	Introduction and maintenance of OF:			↓
	arable land/ grassland	**262 (137)**		-36% (-10%)
	vegetable/ ornamental plants	**639 (271)**	100	-37% (+6%)
	permanent crops/ tree nurseries	**1 107 (662)**		-43% (-7%)
	green house vegetable	**5 500 (3 500)**		=
ES_{BC}	Organic farming			
	a) organic production	**341 – 2 007**	100	n.d.
	b) organic livestock	**n.d.**		
ES_N	Organic farming:			↑
	organic production	**70 – 600**	100	n.d.
	organic livestock	**200**		+25%
FI	Organic farming:			
	organic production	**141**	120	↑
	organic livestock	**267***	120	n.d.
GR	Organic farming:			n.d.
	organic production:			
	cereals and other non irrigated crops	**218 – 425**	100	
	maize	**600**	96 – 71	
	alfalfa	**439 – 600**	100 – 92	
	cotton	**600**	89 – 64	
	field vegetables	**237 – 432**	100	
	greenhouse vegetables	**900**	68	
	wine vineyards	**501 – 700**	100	
	table grape vineyards	**900**	70 – 63	
	olive groves	**578 – 792**	100	
	citrus and other fruit trees	**432 – 597**	100	
	nuts	**140 - 332**	100	
	organic livestock:			
	sheep	**186 – 395**	100	
	goats	**121 – 324**	100	
	dairy cows	**246 – 339**	100	
	other cattle	**160 – 251**	100	
IT_{VE}	Introduction and maintenance of OF:			↓
	arable land	**250/ 83**	98	-58%
	meadows and long-term grassland	**130/ 43**	96	n.a.
	pastures	**65/ 22**	93	n.a.
	horticulture	**600/ 200**	85	=
	grapevines	**400/ 133**	95	-56%
	orchards	**630/ 210**	100	-30%
LT	Organic farming:			↓↑
	grain crops	**215**	100	-48%
	perennial grass	**127**		+8%
	vegetables and potatoes	**439**		-20%

	herbs	**487**		+7%
	berries and gardens	**516**		-30%
PL	OF (a year before certification / with certificate):			
	agricultural crops	**210 (197)**	86 (94)	+18% (+25%)
	permanent grassland	**86 (68)**	81 (64)	=
	vegetable	**405 (342)**	80 (94)	+57% (+38%)
	herbal crops	**302 (276)**	99 (100)	0
	fruit and berry	**473 (405)**	38 (37)	=
	others fruit and berry growing	**210 (171)**	100 (100)	0
SCO	Introduction and maintenance of OF:			
	arable land and mixed conversion	**330 (90)**	79	
	improved grassland	**180 (90)**	84	=
	unimproved land and rough grazing	**7.5 (7.5)**	30	
	fruit and vegetable	**450 (90)**	53	

Table A2 Overview of other investigated agri-environmental measures

Country	Name of submeasures of the AEMs	Level of payments		Previous existence of measures
		EUR/ha	% of calculated level of payment	
CZ	Grassland maintenance: pastures (basic management) species rich pastures	 **112** **169**	 100	 ↑ +15%
	Landscape management - Growing of catch crops	**104**		↓ -32%
DE	Cultivation of catch crops on arable land or grass under permanent crops	**70 /45***	100	↓ -22% /-36%
	Construction of flowering areas or flowering resp. conservation strips: on set-aside and areas not used for agricultural production not set-aside and areas used for agricultural production	 **169 / 55 / 55** **540 / 452 / 372**		 n.a. ↓ -17/-27/-22%
	Conversion of arable land into extensively used grass land	**239**		↓ -23%
	Application of liquid manure with specific environmentally friendly application methods	**30**		=
DE_{NRW}	Diversification of crop rotations	**40 / 25***	100	↓ -20% / ↑ +50%
	Maintenance of extensively used grassland	**90**		↓ -41%
	Establishment of water-side strips	**480**		↓ -41%
DE_{MWP}	Introduction and maintenance of IP: fruit production vegetable production	 **368 (327)**** **197 (164)****	 31 (27) 32 (26)	↓ -20%
	Nature-conserving management on four type of grassland: basic support mowing under unfavourable conditions grazing manual-mowing	 **175** **225** **225** **450**	100	↑ +72% +10% ↓ -26% 0
ES_{BC}	Management of mountain pastures	**107.74**	100	↑ +50%
ES_N	Conservation of rare livestock breeds	**140 - 180**	100	↑ +17%–25%
FI	Basic measures for arable crop farms: environmental planning and monitoring of farm practices fertilization of arable crops headlands and filter strips maintenance of biodiversity and landscape	 **46.2** **12.5** **4.2** **30.6**	119	=
	Set-aside with plant cover	**39**	119	n.d.
GR	Set-side of irrigated land and reduction of fertiliser on the rest (corn / cotton): N. Greece W. Greece & Peloponnesus Thessaly C. Greece & Crete	 **499/ 431** **499/ 224** **600/ 525** **545/ 444**	 100/ 100 100/ 100 84/ 100 100/ 100	n.d.
GR	Dry crop rotation on irrigated land, uncultivated field margins and reduction of fertiliser on the rest (corn / cotton):			n.d.

	N. Greece W. Greece & Peloponnesus Thessaly C. Greece & Crete	**422/ 354** **392/ 117** **600/ 428** **464/ 362**	100/ 100 100/ 100 88/ 100 100/ 100	
GR	Nutrition and irrigation plans for special perennial crops: - arboriculture/ vineyards/ greenhouse	**219/ 366/ 528**	100	n.d.
GR	Livestock farming extensification by increasing pasture grazed (ewes/goats): N. Greece W. Greece & Peloponnesus Thessaly C. Greece & Crete	 **353/ 313** **391/ 371** **258/ 299** **278/ 299**	100	n.d.
GR	Livestock farming extensification by reduction of flock in insular areas (sheep/ goats): a) N. Greece b) W. Greece & Peloponnesus c) Thessaly d) C. Greece & Crete	 **403/ 363** **441/ 421** **308/ 349** **329/ 349**	100	n.d.
GR	Conservation of the traditional vineyard in Thira Island	**900**	100	n.d
IT_{VE}	Protection of semi-natural habitats and biodiversity - Preservation of wildlife populations: cover and catch crops conversion of small arable fields into meadows Improving value of edges of arable fields	 **600** **400** **100**	 74 98 28	↓ -52% -33% 0
	Permanent meadows, pastures and meadow-pastures: meadows in hills and mountain areas (slope <10%) meadows in hills and mountain areas (slope >10%) meadows in areas other than mountains and hills pastures and meadow-pastures (slope <10%) pastures and meadow-pastures (slope >10%)	 **150** **250** **200** **60** **120**	99 96 97 88 76	n.d.
LT	Landscape stewardship scheme: management of natural and semi-natural meadows management of wetland management of shore belts of water bodies in meadows protection of water bodies against pollution and soil erosion on the arable land stubbly field in winter season strips or plots of melliferous in the arable land management of the holding landscape elements management of protection shore belts and slopes of melioration ditches management of environment of small cultural elements	**92** **229** **100** **160** **145** **60** **20 (/10m^2)** **100** **100 - 120**	100	↑+4% = 0 0 0 0 0 0 0
	Rare breed scheme (EUR per head): horses cattle pigs sheep	 **178 – 198** **180** **65** **28**	100	↑+21% ↓- 45% = =

	geese	**3**		=
	Scheme for improving the status of water bodies at risk	**166**	100	0
PL	Sustainable farming	**94**	81	↑+125%
	Buffer zones (per 100 meters): Maintenance 2 /5 m buffer zones Maintenance 2 /5 m field strips	 **11/ 28** **10/ 26**	100	0
SCO	Species rich grassland: creation management management for corn bunting	 **340.5** **166.5** **166.5**	100	↓ -9% ↑ +11%
	Creation and management of water margin to: enhanced biodiversity interest reduce diffuse pollution	 **441** **441**	100	↓-27%

* The lower payment is applied for beneficiaries obtaining support for organic farming.

** Figures in brackets define payment amount for *maintenance* of integrated production.

Table A3 Overview of natural handicap payment measures

Country	Name of submeasures of the natural handicap measures	Level of payments		Previous existence of measures
		EUR/ha	% of calculated level of payment	
Measure 211 Natural handicap payments in mountain areas				
CZ	Mountain areas - H^A	**157**	105	=
	Mountain areas - H^B	**134**	90	=
DE_{NRW}	Mountain areas: LVZ ≤ 15	**≤ 115**	89.5	↓ -20%
	Mountain areas: 15 < LVZ ≤ 20	**≤ 90**	87.5	↓ -20%
	Mountain areas: 20 < LVZ ≤ 25	**≤ 60**	77.8	↓ -27%
	Mountain areas: 25 < LVZ ≤ 30	**≤ 35**	66.1	↓ -31%
	Mountain areas: 30 < LVZ ≤ 35	**≤ 25**	69.5	↓ -39%
ES	Mountain areas	**94**	n.a.	↑ +25%
GR	Young farmers with green certificate	**80 - 160**	n.a.	=
	Young farmers and/or successors of early retirement	**80 - 150**		
	Other beneficiaries - Aegean islands	**80 - 140**		
	Other beneficiaries - Other areas	**80 - 110**		
IT_{UMB}	Mountain areas (annual and permanent crops / other land uses)	**200**	89	= / ↑ +67%
PL	Mountain areas	**84.16**	60	=
Measure 212 Natural handicap payments in other than mountain areas				
CZ	Other less favoured areas - O^A	**117**	105	=
	Other less favoured areas - O^B	**94**	85	=
DE_{NRW}	Other less favoured areas: LVZ ≤ 15	**≤ 115**	89.5	↓ -20%
	Other less favoured areas: 15 < LVZ ≤ 20	**≤ 90**	87.5	↓ -20%
	Other less favoured areas: 20 < LVZ ≤ 25	**≤ 60**	77.8	↓ -27%
	Other less favoured areas: 25 < LVZ ≤ 30	**≤ 35**	66.1	↓ -31%
	Other less favoured areas: 30 < LVZ ≤ 35	**≤ 25**	69.5	↓ -39%
ES	Depopulated areas	**57**	n.a.	↑ +27%
GR	Young farmers with green certificate	**65 - 150**	n.a.	=
	Young farmers and/or successors of early retirement	**65 - 140**		
	Other beneficiaries - Aegean islands	**65 - 125**		
	Other beneficiaries - Other areas	**65 - 110**		
IT_{UMB}	Other less favoured areas (annual and permanent crops / other land uses)	**100**	54	= / ↑ -33%
LT	Highly unfavourable areas (HUA)	**75.30**	100	=
	Less unfavourable areas (LUA)	**56.50**		
PL	Other less favoured areas: Lowland zone I	**47.08**	60	=
	Other less favoured areas: Lowland zone II	**69.43**		
SCO	More disadvantaged land - Standard areas	**56.75**	n.a.	↓ -3%
	More disadvantaged land - Fragile areas	**57.50**		=
	More disadvantaged land - Very fragile areas	**77.55**		↓ +10%
	Less disadvantaged land -Standard areas	**48.75**		↓ -3%
	Less disadvantaged land -Fragile areas	**59.25**		=
	Less disadvantaged land - Very fragile areas	**68.47**		↑ +10%
Areas affected by specific handicaps				
CZ	Areas affected by specific handicaps – S / S^X	**114 / 91**	100 / 85	= / 0
ES	Areas affected by specific handicaps	**120**	n.a.	=
PL	Areas affected by specific handicaps	**69.43**	60	=
No differentiation between measures 211 and 212				
FI	Support area A	**150**	n.a.	=

	Support areas B1, B2 and C1	**200**		
	Support areas C2, C3 and C4	**210**		

Table A4 Overview of Natura 2000 measures

Country	Name of submeasures of the Natura 2000 measures	Level of payments		Previous existence of measures*
		EUR/ha	% of calculated level of payment	
Measure 213 Natura 2000 payments on agricultural land				
CZ	Natura 2000 payments on agricultural areas	**112**	100	↑+22%
DE_{NRW}	FFH and EC-areas for bird preservation with high conservation obligations	**98**	90.8	↓ -20%
	FFH and EC-areas for bird preservation with moderate conservation obligations	**48**	81.5	↓ -21%
	FFH and EC-areas for bird preservation with minimal conservation obligations	**36**	73.4	↓ -22%
ES_N	Sheep grazing on Natura 2000 steppe lands: a) Non-grazing period b) Flock of < 700 sheep	 **30** **40**	100	 = 0
	Mountain grazing on Natura 2000: a) Rough grazing and scrub b) Pastures and meadows	 **31** **188**	100	 0 0
IT_{UMB}	Natura 2000 payments on agricultural land	**40**	100	0
LT	Natura 2000 payments on agricultural land	**40**	100	↓ -55%
PL	1. Protecting habitats in bird's Ground nesting sites	**366**	100	0
	2. Moss	**371**		
	3. Rushes with tall sedge	**243**		
	4. Meadows moor-grass and selernicowe	**317**		
	5. Warm likes meadows	**368**		
	6. Semi natural wet – hay meadows	**224**		
	7. Semi natural meadows fresh habitats	**224**		
	8. Meadows rich species: sod of white bent grass (Nardus stricta)	**232**		
	9. Halophyte	**318**		
	10. Ecological compensation area	**147**		
Measure 224 Natura 2000 payments on forestry land				
CZ	Conservation of the forest management group from the previous production cycle	**60.44**	100	0
DE_{NRW}	FFH and EC-areas for bird preservation with high conservation obligations	**50**	99.1	0
	FFH and EC-areas for bird preservation with moderate conservation obligations	**40**	100	
GR	Natura 2000 payments on forest land	(max.) **300**	n.d.	0
IT_{UMB}	Permanent exclusion from felling of 2 more trees per ha of every tree species making forest	**40**	84	0
	Exclusion from felling of beech coppice-woods having reached the rotation age	**200**	79	
	Prohibition of grazing in forests located in specific habitats	**200**	98	
LT	Final forest cutting operations are forbidden or postponed	**170**	100	0
	Final forest cutting operations have to be carried out in non-clear cutting way	**85**	100	
	Additional number of living trees have to be preserved and left in clear cutting areas	**144**	100	
	Cutting of dry or dead wood is forbidden or restricted in forest stands 20 years old and over	**40**	97.5	
	Preparation or amendment of forest management plan (one-off payment)	**59**	100	

* The compensatory allowances intended for areas with environmental restrictions according to the Article

16 of the EC Reg. 1257/1999 is considered as previous measure for Natura 2000 on agricultural land.

Table A5 Overview of forestry measures

Country	Name of submeasures of forestry measures	Level of payments		Previous existence of measures
		EUR/ha	% of calculated level of payment	
Measure 221 First afforestation of agricultural land				
CZ	a) Establishment payment	**1 954.07 – 2 961.32**	70 - 80	↑ +12 - 20%
	b) Maintenance payment	**436.48**	100	↑ +8%
	c) Agricultural income foregone payment	**148.57 - 293.78**	50.6 - 100	↑ +2 - 5%
ES_{BC}	a) Establishment payment	(max.) **850**	70 - 80	
	b) Maintenance payment	**150**	100	n.d.
ES_{N}	a) Establishment payment	**2 394 – 4 558**	70 - 80	
	b) Maintenance payment	**114 - 470**	100	n.d.
	c) Agricultural income foregone payment	**65 - 600**	100	
FI	c) Agricultural income foregone payment	**100.91 – 327.97**	n.d.	=
GR	a) Establishment payment	**n.a.**	70 - 100	↓↑ = The previous was 80% for all cases
	b) Maintenance payment	**n.a.**	70 - 100	
	c) Agricultural income foregone payment	**150 - 700**	n.a.	↓ -3 - (-23)%
IT_{UMB}	a) Establishment payment:			
	- mixed plantings for arboriculture	**3 200**	70 - 100	↓ -33%
	- afforestation with mainly protective function	**5 500**	70 - 100	↑ +10%
	- mixed plantings for arboriculture in combination with fast growing species	**4 050**	70 - 100	0
	b) Maintenance payment	**420**	82 - 100	↓ -8%
	c) Agricultural income foregone payment	**396**	67	↓-13%
LT	a) Establishment payment	**1 050 – 3 600**	70 - 100	↑ +4 - 133%
	b) Maintenance payment	**1 500 – 2 500**	70 - 100	↑ +20 - 42%
	c) Agricultural income foregone payment	**25 - 113**	70 - 100	↑ +38% - ↓ - 23%
PL	a) Establishment payment – in areas with:			
	- a favourable configuration	**1 215 (1 378)[10]***		↑ +7%
	- slopes over 12°	**1 460 (1 639)***		↑ +11%
	- a favourable configuration with the use of mycorrhized seedlings with covered root systems	**1 505 (1 094)***	100	↑ +12%
	- slopes over 12° and with the use of mycorrhized seedlings with covered root systems	**1 647 (1 281)***		↑ +6%
	b) Maintenance payment - in areas with:			
	- a favourable configuration	**255**		↑ +130%
	- slopes over 12°	**357**		↑ +81%
	+ Protection of cultures from animals	**50 – 184**	100	0
	c) Agricultural income foregone payment	**415**	100	↑ +13%
SCO	1. Creation of small woodlands	**3 750**	70	0
	2. Creation of other woodlands:			
	a) Establishment payment	**945 – 2 362 ** **	70	↑↓****
	b) Maintenance payment	**525 – 1 207**	70	↑↓****
	c) Agricultural income foregone payment	**90 - 450**	100	=

[10] Figures in brackets define payment amount for broadleaf trees, first figures are for coniferous trees.

Measure 222 First establishment of agro-forestry systems on agricultural land				
GR	First installation of agro forestry systems in agricultural land	**n.a.**	70 - 80	0
IT_{UMB}	a) Row plantations on arable land	**480 – 1 580**	100	0
	b) Plantation of uniformly distributed trees on arable land	**280 – 1 320**		
	c) Plantation of wooded pastures			
Measure 223 First afforestation of non-agricultural land				
GR	a) Establishment payment	**n.a.**	70 - 100	n.d.
	b) Maintenance payment	**n.a.**		
IT_{UMB}	a) Establishment payment:			
	- mixed plantings for arboriculture	**3 200**	96	↓ -36%
	- afforestation with mainly protective function	**5 500**	97	↑ +10%
	- mixed plantings for arboriculture in combination with fast growing species	**4 050**	99	0
	- periurban afforestation	**5 500**	97	↑ +10%
	b) Maintenance payment	**420**	82 - 100	↓ -8% - 0
LT	a) Establishment payment	**1 050 – 3 600**	70 - 100	↑ +6 - 136%
	b) Maintenance payment	**1 500 – 2 500**		↑ +161 - 335%
PL	a) Establishment payment – in areas with:		100	0
	- a favourable configuration	**1 215 (1 378)***		
	- slopes over 12°	**1 460 (1 639)***		
	- a favourable configuration with the use of mycorrhized seedlings with covered root systems	**1 505 (1 094)***		
	- slopes over 12° and with the use of mycorrhized seedlings with covered root systems	**1 647 (1 281)***		
	- a favourable configuration in unfavourable conditions	**1 163 (1 326)***		
	- slopes over 12° in unfavourable conditions	**1 386 (1 568)***		
	- a favourable configuration using natural succession	**447 (471)***		
	- slopes over 12° using natural succession	**581 (607)***		
	b) Maintenance payment - in areas with:		100	0
	- a favourable configuration	**255**		
	- slopes over 12°	**357**		
	- a favourable configuration in unfavourable conditions	**384**		
	- slopes over 12° in unfavourable conditions	**539**		
	- a favourable configuration using natural succession	**328**		
	- slopes over 12° using natural succession	**460**		
	+ Protection of cultures from animals	**50 - 184**		
SCO	1. Creation of other woodlands			
	a) Establishment payment	**945 – 2 362****	70	↑↓****
	b) Maintenance payment	**525 - 1207**	70	↑↓****
Measure 225 Forest-environment payments				
CZ	Improving the species composition of forest: - proportion of ARWS up to 15%, 25%, 35% and more than 35%	**20.15 - 97.37**	25 - 100	0
DE_{MWP}	Measures to increase ecological stability of forests by support of contractually defined usage and cultivation agreements which: a) conduce to a sustainable conservation and improvement of protective and ecological roles of forests and b) go beyond the legal conservation requirements	**40 - 200**	100 (premium calculations are case-specific)	0
ES_{BC}	Forest-environment payment	**100 - 200**	100	0

GR	Forest-environment payment	**40 - 200**	n.a.	0
IT_{UMB}	Exclusion from every forest utilization of at least 10 metres wide strips on both sides of streams	**40 – 50**	85 – 77	0
	Maintenance of clearings and shrubs covered land	**150**	97	
	Creation of reserve areas not subject to felling inside productive forests, through application of group leave tree cutting methods	**60**	86	
	Removal of old fencings	**EUR90/100 m**	92	
	Exclusion of motorized machineries during yarding and hauling, and alternate use of animal labour force	**115-130**	98 – 98	
	Permanent exclusion from felling of 2 more trees per ha of every tree species making up the forest	**40**	84	
	Exclusion from felling of beech coppice-woods having reached the rotation age	**200**	79	
LT	Payments for not conducting final forest cutting operations in identified WKH	**170**	100	0
	Payments for non-clear forest cutting operations instead of clear ones	**85**		
SCO	1.a) Sustainable management of small woodlands	**41**	100	0
	1.b) Agricultural income foregone payment for livestock removal	**61.5**		
	2. Sustainable management of forests and woodlands	**42 (84) *****		
Measure 226 Restoring forestry potential and introducing prevention actions				
CZ	Restoring forestry potential after disasters and introducing preventive action	**no fixed level**	100	0
ES_{BC}	Restoring forestry potential and introducing preventive action	**no fixed level**	100	n.d.
ES_N	Restoring forestry potential and introducing preventive action	**no fixed level**	100	n.d.
GR	Restoring forestry potential and introducing preventive action	**no fixed level**	100	n.d.
IT_{UMB}	a) Restoring forests damaged by fire and natural disasters b) Establishment of adequate prevention systems c) Infrastructural interventions targeting prevention	**no fixed level**	100	=
LT	a) Restoring of forest affected by natural disaster and fires and prevention measure b) Improvement of the general state system of measures to prevent forest fires	**100 000** **400 000** (EUR/project)	80 - 100	=
PL	a) Support for areas damaged by natural catastrophe or disaster b) Introduction of preventive mechanisms in the areas classified as areas representing the two highest fire hazard categories	**no fixed level**	100	0

* In addition, a payment of EUR681/ha is provided for fencing.

** In addition a payment between EUR3 – 10.5 /m is provided for fencing.

*** There is no payment differentiation as such, but a top-up of another EUR 42/ha/year is provided, where areas of high level of public access overlap with native woodlands or areas of low-impact silvicultural systems (LISS).

**** Payment levels are difficult to compare as the payment system has changed from a list of standard costs for a wide range of eligible activities under establishment and maintenance to a tariff system. However, averages of previous payment levels indicate that payments have increased and decreased depending on the woodland models and applications.

Table A6 Overview of meeting standards measures

Country	Name of submeasures of meeting standards measures	Level of payments		Previous existence of measures
		EUR/holding	% of calculated level of payment	
IT_{VEN}	131/1 – Processing of information linked to management of zoo-technic refluents and formulation of feed rations			
	Cost for first sending in of:			
	- simple communication	**300**	30*	
	- complete communication	**800**	50*	
	- simple Agronomic Utilization Plan + complete communication	**1 500**	67*	
	- complete Agronomic Utilization Plan + complete communication	**2 000**	44*	0
	) Design and introduction of feed ration management system	**n.a.****	80 → 40	
	) Management activities related to the application of new regulation	**2 500 → 500*****	100	
	131/2 – Adaptation of environmental management systems			
	) Design and introduction of BAT (Best Available Techniques)	**2000**	44*	
	) Introduction of environmental quality system required by the Environmental Integrated Permit	**n.a.******	n.a.	0
GR	Meeting standards based on community legislation: electronic marking of sheep and goats	(max.) **10 000**	n.d.	↑ +330%

* Since in the RDP maximum payments are stated, the percentage refers to these maximum payments.

** Payment is for a maximum of 5 years with a proportional decrease from 80% (first year) to 40% (fifth year) of the eligible constant payment, which must be stated by invoice. Payment calculation shows that costs for the feeding plan equal from a minimum of EUR2 500 to a maximum of EUR4 500.

*** Payment is for a maximum of 5 years, decreasing from EUR2 500 (first year) to EUR500 (fifth year). These are maximum values; actual payments depend on bred live weight and cultivated area.

**** Payment is for a maximum of 5 years, decreasing from EUR4 500 (first year) to EUR500 (fifth year). In the RDP there is no information about minimum and/or maximum payment levels, so the only limit should be the maximum payment per farm (EUR10.000)

Table A7 Overview of animal welfare measures

Country	Name of submeasures of Animal welfare measures	Level of payments		Previous existence of measures
		EUR/LU	% of calculated level of payment	
DE	Support of environmental and animal-friendly husbandry:			
	E.1 Cattle on summer pasture	**n.d.**	n.d.	n.d.
	E.2 Cattle and pigs in loose housing stables with grazing	**n.d.**	n.d.	n.d.
	E.3 Cattle and pigs in loose housing stables on straw	**n.d.**	n.d.	n.d.
	E.4 Cattle and pigs in loose housing stables on straw with outdoor run-outs: - dairy cow - breeding cattle - beef cattle - fattening pig - breeding pig	 **54** **53** **183** **129** **158**	 99 – 100 (amounts are rounded)	 ↓ -10% ↓ -12% ↓ -6% ↓ -11% ↓ -4%
ES_{CL}	Laying hens	**40 – 50**	n.d.	0
	Broilers	**40 – 60**		
	Intensive breeding sows	**100**		
FI	Basic conditions - cattle farms - pig farms	 **17.50** **5.00**	120*	0
	Joint additional conditions – fire prevention and rescue plan in: - cattle farms - pig farms	 **3.58** **1.53**		
	Additional conditions concerning cattle farms - improvements of the conditions where the calves are kept (A) - improvements of the conditions where the calves are kept (B) - improvement of the opportunities of tethered bovines to move - improvement of the conditions where bovines over 6 months are kept - grazing during the growing period and exercise during the winter - stalls for sick animals and nursing and calving stalls	 **12.17** **9.92** **8.73** **21.06** **21.29** **12.35**		
	Additional conditions concerning pig farms: - grazing or exercise of dry sows and gilts - insemination of sows and gilts - space, lying areas of pregnant sows and gilts - free farrowing for sows - pens for sick animals - improvement of the pen conditions	 **11.03** **6.69** **3.07** **13.29** **8.84** **9.40**		
GR	Animal welfare	(max.) **500**	n.d.	-
IT_{ER}	Improvement of farm and private management - dairy cattle - beef cattle - sheep - laying hens - broilers - pigs	 **9.82 – 15.17** **3.80 – 12.13** **4.01** **3.00** **1.17** **1.76**	 100 100 100 100 n.d. 100	0

	Improvement of breeding and stalling systems - dairy cattle - beef cattle - sheep - laying hens - broilers - pigs	 **58.95 – 91.05** **22.75 – 72.79** **24.10** **18.00** **7.00** **10.58**	 100 100 100 100 n.d. 100	 0
	Improvement of environmental monitoring - dairy cattle - beef cattle - sheep - laying hens - broilers - pigs	 **49.12 – 75.87** **18.96 – 60.66** **20.08** **15.00** **5.83** **8.83**	 100 100 100 100 n.d. 100	 0
	Improvement of feeding and watering - dairy cattle - beef cattle - sheep - laying hens - broilers - pigs	 **29.48 – 45.52** **11.38 – 36.40** **12.06** **9.00** **3.50** **5.30**	 100 100 100 100 n.d. 100	 0
	Improvement of cleanliness, health and behavioural aspects - dairy cattle - beef cattle - sheep - laying hens - broilers - pigs	 **49.12 – 75.87** **18.96 – 60.66** **20.08** **15.00** **5.83** **8.83**	 100 100 100 100 n.d. 100	 0
SCO	Compulsory actions – AHWM Plan: - proactive scheme for treatments - proactive scheme for vaccines and routine medications	 **270**** **120****		 ↑+16% ↑+23%
	Voluntary options: - benchmarking - biosecurity plan - fence maintenance - sampling - forage analysis	 **615**** **75**** **0.15***** **255**** **195****	75	 ↑+28% ↑+67% = ↑+10% ↑+18%

* Transaction costs will be incurred for the farmer by the need to become acquainted with the animal welfare measure and its requirements

** EUR/farm

*** EUR/meter

Annex B – Examples of payment calculations

Annex B 1 – Agri-environmental measures – organic farming

Table B1 Process of payment calculation of AEM – Organic farming (grasslands) – CZ

Cost components	Conventional farming	Organic farming
Income foregone		
Weighted GMs average per 1 LU – 2001	376	242
Weighted GMs average per 1 LU – 2002	446	330
Weighted GMs average per 1 LU – 2003	424	236
Weighted GMs average per 1 LU – 2004	440	287
Average GM per 1 LU (2001-04)	421	274
Total income foregone (difference between GMs)		**148**
Total income foregone recalculated per ha (0,6 LU/ha)		**88**
Proposed amount of payment 80% (EUR/ha)		**70.5**

Table B2 Example of calculation of GM for diary cows in conventional farming (2004) – CZ

Cost components	EUR/LU /year
Costs of feed /bedding	623.62
Costs of medicinal means / disinfection	20.18
Other direct material	41.94
Others directs costs and services	165.29
Depreciation of animals	166.23
Total variable costs	**1 017.26**
Milk yield (litre/year)	197.39
Sale price of milk (CZK/litre)	0.30
Total income	**1 595.29**
GM for dairy cow (EUR/LU)	**578.03**

Table B3 Process of payment calculation of AEM – Organic farming (arable land) – CZ

Cost components	Conventional farming	Organic farming
Income foregone		
Weighted GMs average of main crops – 2001	311.5	172.8
Weighted GMs average of main crops – 2002	208.0	167.0
Weighted GMs average of main crops – 2003	x	114.1
Weighted GMs average of main crops – 2004	361.8	272.1
Average GM	293.8	181.5
Total income foregone (difference between GMs)		**112.3**
Additional costs		
Additional cost for catch crops		11.7
Costs for increase application of farmyard manures		31.1
Total additional costs		**42.8**
Proposed amount of payment (EUR/ha)		**155.1**

Table B4 Table: Process of payment calculation of AEM – Organic farming (arable land – introduction) - DE

Cost components	Conventional farming						Organic farming				
	Difference	Winter wheat	Winter barley	Winter rape	Set-aside area	Average	Winter wheat	Winter barley	Field bean	Set-aside area	Average
Ratio on agricultural area	0	30%	40%	20%	10%		22%	43%	15%	20%	
Income											
Yield (dt/ha)	-22	71.4	61.5	31.9	0.0		45.2	39.4	22.3	0.0	
Price (EUR/ha)	3.42	11.3	9.8	22.3	0.0		21.30	17.11	20.88	0.00	
Income (EUR/ha)	-53	804	601	712	0		962	674	466	0	
Area payment (EUR/ha)	0	0	0	0	0						
Total income (EUR/ha)	**-53**	**804**	**601**	**712**	**0**		**962**	**674**	**466**	**0**	
Costs											
Seeds (EUR/ha)	63	63	57	21	18		145	99	150	70	
Fertiliser (EUR/ha)	-88	120	96	142	0		20	20	18	0	
Pesticides (EUR/ha)	-95	117	101	99	0		0	0	0	0	
Variable machine costs + labour costs (EUR/ha)	48	132	132	123	44		213	213	141	44	
Miscellaneous (EUR/ha)	128	32	30	46	0		237	207	119	0	
Interest (EUR/ha)	2	14	12	13	2		18	16	13	3	
Sum variable costs (EUR/ha)	**58**	**478**	**428**	**444**	**64**		**634**	**555**	**441**	**117**	
Gross margin I (EUR/ha)	**-111**	**325**	**174**	**268**	**-64**	**214**	**329**	**119**	**25**	**-117**	**104**
Labour requirement (man hours/ha)	11.65	9.40	9.40	8.11	3.06	8.51	14.81	14.81	9.42	3.06	20.16
Labour costs (12,5 EUR/man hours)	**39**	118	118	101	38	106	185	185	118	38	146

Gross margin II (EUR/ha)	**-150**	**208**	**56**	**166**	**-102**	**108**	**144**	**-66**	**-93**	**-156**	**-42**
Following costs refer to 1 ha marketable area											
Income loss (EUR/ha)	**187**										
Transactions costs (EUR/ha)	**0**										
Proposed amount of payment (EUR/ha)	**187**										

Table B5 Process of payment calculation of AEM – Organic farming (arable land – maintenance) - DE

Cost components	Conventional farming						Organic farming				
	Difference	Winter wheat	Winter barley	Winter rape	Set-aside areas	Average	Winter wheat	Winter barley	Field bean	Set-aside areas	Average
Ratio on agricultural area	0	30%	40%	20%	10%		22%	43%	15%	20%	
Income											
Yield (dt/ha)	-29	71.4	61.5	31.9	0.9		34.8	30.8	17.4	0.0	
Price (EUR/ha)	7.91	11.3	9.8	22.3	0.0		28.00	22.00	27.00	0.00	
Income (EUR/ha)	-48	804	601	712	0		975	677	471	0	
Area payment (EUR/ha)	0										
Total income (EUR/ha)	**-48**	**804**	**601**	**712**	**0**		**975**	**677**	**471**	**0**	
Costs											
Seeds (EUR/ha)	63	63	57	21	18		145	99	150	70	
Fertiliser (EUR/ha)	-88	120	96	142	0		20	20	18	0	
Pesticides (EUR/ha)	-95	117	101	99	0		0	0	0	0	
Variable machine costs + labour costs (EUR/ha)	48	132	132	123	44		213	213	141	44	
Miscellaneous (EUR/ha)	94	32	30	46	0		184	163	94	0	
Interest (EUR/ha)	1	14	12	13	2		17	15	12	3	
Sum variable costs (EUR/ha)	**22**	**478**	**428**	**444**	**64**		**579**	**510**	**415**	**117**	
Gross margin I (EUR/ha)	**-70**	**325**	**174**	**268**	**-64**	**214**	**396**	**167**	**56**	**-117**	**144**
Labour requirement (man hours/ha)	3.14	9.40	9.40	8.11	3.06	8.51	14.81	14.81	9.42	3.06	11.65
Labour costs (12,5 EUR/man hours)	**39**	118	118	101	38	106	185	185	118	38	146

Gross margin II (EUR/ha)	**-110**	**208**	**56**	**166**	**-102**	**108**	**211**	**-18**	**-62**	**-156**	**-2**
Following costs refer to 1 ha marketable area											
Income loss (EUR/ha)	**137**										
Transactions costs (EUR/ha)	**0**										
Proposed amount of payment (EUR/ha)	**137**										

Table B6 Process of payment calculation of AEM – Organic farming (grasslands) – DE_{NRW}

Cost components	1st and 2nd year	As from 3rd year
Yield reductions	**-300**	**-237**
Cost savings		
- fertilisers	60	60
- variable machinery costs, miscellaneous	40	40
Total cost savings	**100**	**100**
Additional costs		
- conversion costs	-82	
Total balance	**-262**	**-137**
Proposed amount of payment (EUR/ha)	**262**	**137**

Table B7 Process of payment calculation of AEM – Organic farming (crop production) – ES_{BC}

	Additional costs	Yield decrease	Income foregone
Extensive crops	128.73	306.86	435.59
Extensive horticulture	302.90	314.26	617.16
Intensive horticulture	1 014.73	993.13	2 007.86
Txakoli Vine	227.18	898.68	1 125.86
Rioja Vine	227.18	835.75	1 062.93
Fruit trees	227.18	750.00	977.18
Olives trees	227.18	114.00	341.18

Table B8 Process of payment calculation of AEM – Organic farming (livestock) – ES_{BC}

Cost components	Organic farming	Conventional farming
Directs costs	863.27	1 098.29
Fixed costs	683.28	587.61
Market income	2 521.17	2 748.62
Net margin	974.62	1 062.72
Proposed amount of payment (EUR/ha)		**88.09**

Note: The payment can be increased by 20% for transaction costs.

Table B9 Process of payment calculation of AEM – Organic farming (olives) – ES_N

Cost components	Conventional farming	Organic farming	Difference
Additional costs			
Directs costs	385.62	978.50	-592.88
Machinery costs	952.70	890.40	62.30
Labour costs	387.00	447.00	-60.00
Other production costs	412.00	442.00	-30.00
Total costs	2 137.32	2 757.90	-620,58
Income foregone			
Market income	3 115.00	3 431.00	-316.00
Production payments	65.00	65.00	0.00
Total income	3 180.00	3 496.00	-316.00
Net margin	**1 042.68**	**738.10**	**304.58**

Table B10 Process of payment calculation of AEM – Organic farming (crop production) – FI

Cost components	EUR/ha
Difference in total incomes	198.3
Difference in costs	- 80.8
Transaction costs	23.5
Proposed amount of payment (EUR/ha)	**141**

Table B11 Process of payment calculation of AEM – Organic farming (livestock) – FI

Cost components	EUR/ha
Average additional cost to organic livestock production	105
Transaction costs	21
Additional costs and income losses of Organic farming	141
Proposed amount of payment (EUR/ha)	**267**

Table B12 Process of payment calculation of AEM – Organic farming (introduction) – IT_{VEN}

Submeasure	Income losses	Transaction costs	Proposed amount of payment (EUR/ha)
Arable land	233	22	**255**
Horticulture	684		**706**
Grapevines	398		**420**
Orchards	612		**633**
Meadows and long-term grassland	113		**135**
Pasture	48		**70**

Table B13 Process of payment calculation of AEM – Organic farming (cereals) – LT

Cost components	Traditional farming	Organic farming
Grain	266.9	201.1
Straw	41.7	x
Total income from barley production	**308.6**	**201.1**
Mechanized works	178.7	298.4
Seed	40.1	46.3
Fertilisers	72.4	x
Cideral fallow	x	43.6
Chemical substances	60.8	64.4
certification works	x	7.2
Total costs	**352.0**	**459.9**
Profit (GM)	**- 43.4**	**- 258.8**
Proposed amount of payment (EUR/ha)		**215**

Table B14 Process of payment calculation of AEM – Organic farming (grasslands) – LT

Cost components	Traditional farming	Organic farming
Total income from milk production	**710**	**354**
Fertilisers	186	
Haymaking	128	84
Certification (perennial grass)		4
Certification (cows)		0.6
Total costs	**318**	**89**
Profit (GM)	**392**	**265**
Proposed amount of payment (EUR/ha)		**127**

Table B15 Process of payment calculation of AEM – Organic farming (arable land) – PL

Cost components	A year before certification	With certificate
Income forgone		
Loss on crop value (20% or 15% of 2 640 PLN)	**138.9**	**104.2**
Cost savings		
Savings in directly costs (fertilisers, sprays)	**50.0**	**50.0**
Additional costs		
Costs of labour (20 man-hours)	44.7	44.7
Higher fuel consumption due to machine weed control	11.8	11.8
Costs of hire machine to manure spreading	99.5	99.5
Total additional costs	**156.0**	**156.0**
Balance	**244.9**	**210.2**
Proposed amount of payment (EUR/ha) -86%/94%	**210**	**197**

Table B16 Process of payment calculation of AEM – Organic farming (grasslands) – PL

Cost components	EUR/ha
Income forgone	
Hay yield decreased by 20 dt	142
Cost savings	
Savings in costs of fertilisers (87.4 kg pure NPK)	35
Balance	**107**
Proposed amount of payment a year before certification (81%)	**86**
Proposed amount of payment with certificate (64%)	**68**

Table B17 Process of payment calculation of AEM – Organic farming (arable land) – SCO

Cost components	Years 1	Years 2	Years 3 – 10	Total
Gross margin loss	406.5	406.5	0	813.0
Cost of certification	18.0	18.0	144.0	180.0
Management effort				484.5
Total income foregone	424.5	424.5	144.0	1 477.5
Proposed payment of payment (EUR/ha)	**330.0**	**330.0**	**720.0**	**1 380.0**

Table B18 Calculation of GM losses for arable land conversion (3 years average) – SCO

Cost components	Winter wheat			Spring barley			Spring oats			Spring beans		
	CF	OF	diff.	CF	OF	diff.	CF	OF	diff.	CF	OF	diff.
Revenue	**1 314**	**562.5**	**751.5**	**912**	**486**	**426**	**892.5**	**514.5**	**378**	**519**	**420**	**99**
- grain	1069.5	513		669	373.5		604.5	384		519	420	
- straw	244.5	49.5		213	112.5		288	130.5		-	-	
Cost	**432**	**217.5**	**214.5**	**276**	**217.5**	**58.5**	**282**	**217.5**	**64.5**	**318**	**246**	**72**
- seed	85.5	135		75	135		82.5	135		105	148.5	
- fertiliser	174	52.5		76.5	52.5		85.5	52.5		33	52.5	
- spray	147			103.5			93			108	-	
- other	25.5	30		21	30		21	30		72	45	
GM	**882**	**345**	**537**	**636**	**268.5**	**367.5**	**610.5**	**297**	**313.5**	**201**	**174**	**27**
No. hectares	95 544 (25.7%)			257 449 (69.3%)			15 824 (4.3%)			2 717 (0.7%)		
Loss/ha												**406.5**

Table B19 Process of payment calculation of AEM – Organic farming (grasslands) – SCO

Cost components	Years 1	Years 2	Years 3 – 10	Total
Gross margin loss	310.5	310.5	0	621.0
Cost of certification	18.0	18.0	144.0	180.0
Management effort				484.5
Total income foregone	328.5	328.5	144.0	1 285.5
Proposed payment of payment (EUR/ha)	**180.0**	**180.0**	**720.0**	**1 080.0**

Annex B 2 – Natural handicap payments

Table B20 Process of payment calculation of natural handicap payments – CZ

Costs components	Natural handicap payments in:		
	Mountain areas	Other areas	Specific areas
GFI / ha in 1999 (non LFA)	351.22	351.22	351.22
GFI / ha in 2000 (non LFA)	389.00	389.00	389.00
GFI / ha in 2001 (non LFA)	437.72	437.72	437.72
Average GFI (non LFA)	392.16	392.16	392.16
Percentage of lower economic production	64%	47%	49%
Basis of calculation (difference in productivity as difference in GFI)	249.50	185.54	191.14
Savings of factor costs	40%	40%	40%
Savings of factor costs due to lower intensity	99.79	74.20	76.45
Compensation base	149.68	111.33	114.62
Proposed amount of payment (EUR/ha)	**149**	**111**	**114**

Table B21 Process of payment calculation of natural handicap payments – DE_{NRW}

Cost components	Natural handicap payment				
	Up to 15 LVZ	Up to 20 LVZ	Up to 25 LVZ	Up to 30 LVZ	Up to 35 LVZ
Average yield on grassland (MJ NEL / ha)	48 000	48 000	48 000	48 000	48 000
Yield reduction caused by natural conditions (%)	25	20	15	10	7
Gross yield (MJ NEL)	36 000	38 400	40 800	43 200	44 640
Harvest losses (%)	30	30	30	30	30
Net yields (MJ NEL)	25 200	26 880	28 560	30 240	31 248
Replacement cost value (EUR/ 10 MJ)	0.153	0.153	0.153	0.153	0.153
Proposed amount of payment (EUR/ha)	**128.52**	**102.82**	**77.11**	**51.41**	**35.99**

Table B22 Process of payment calculation of natural handicap payments – LT

Cost components	Highly unfavourable areas	Less unfavourable areas	Non-LFA areas
Output crops	219.25	243.6	471.2
Output livestock	162.2	187.4	22.6
Other output	7.8	4.0	4.0
Total output	389.25	435.0	497.8
Variable costs	186.2	207.3	203.6
Fixed costs	130.55	136.4	146.3
Total costs	316.75	343.7	350
Gross profit	**72.5**	**91.3**	**147.8**
Difference with non-LFA areas	**75.3**	**56.5**	-
Proposed amount of payment (EUR/ha)	**75.3**	**56.5**	-

Annex B3 – Natura 2000 payments

Table B23 Process of payment calculation of Natura 2000 on agricultural land – CZ

Cost components	GM from grassland with typical fertilisation (80 kg N/ha)	GM from grassland without fertilisation (0 kg N/ha)
Costs of seeds	3.26	3.26
Costs of fertilisers	30.2	0
Costs for crop protection	0.9	0.9
Other direct material	3.4	3.4
Other direct costs and services	13.2	13.2
Total variable costs	**50.9**	**20.7**
Hay yield (ton/ha)	5.1	2.4
Sale price of hay (EUR/ton)	52.9	52.9
Total income	**269.8**	**126.9**
Gross margin	**218.8**	**106.2**
Proposed amount of payment (EUR/ha)		**112.64**

Table B24 Process of payment calculation of Natura 2000 on agricultural land - DE_{NRW}

Cost components	FFH and EC areas for bird preservation with:		
	High conservation obligations	Moderate conservation obligations	Minimal conservation obligations
Average gross yield on grassland without measure (MJ NEL)	48 000	48 000	48 000
Natural caused yield reductions by obligation (%)	**22**	**12**	**10**
Gross yield on grassland with measure (MJ NEL)	37 440	42 240	43 200
Harvest losses (%)	30	30	30
Net yield without measure (MJ NEL)	33 600	33 600	33 600
Net yield with measure (MJ NEL)	26 208	29 568	30 240
Difference of net yield with and without measure (MJ NEL)	7 392	4 032	3 360
Replacement cost (EUR/ 10 MJ)	0.146	0.146	0.146
Revenue reductions (EUR/ha) – total income foregone	**107.92**	**58.87**	**49.06**
Proposed amount of payment (EUR/ha)	**98**	**48**	**36**

Table B25 Process of payment calculation of Mountain grazing on Natura 2000 – ES_N

Cost components	Rough grazing and scrub	Pastures and meadows
Income foregone (EUR/ha)		
Average net margin of restricted pastures	340.74	539.00
Average net margin of improved pastures	355.96	694.98
Difference in net margins	16	156
Preserve specific elements of nature interest (estimated as 4% decrease of the gross margin of these pastures)	15	32
Total income foregone	**31**	**188**
Proposed amount of payment (EUR/ha)	**31**	**188**

Table B26 Process of payment calculation of Sheep grazing on Natura 2000 steppe lands – ES_N

I. Prohibited grazing period:	
Additional costs	
Feeding costs (EUR/day/animal)	0.05 – 0.15
Average livestock density (animal/ha)	3.39
Recalculated feeding costs (EUR/day/ha)	0.17 – 0.51
Period when grazing is prohibited (max. number of days)	77
Total increase of additional costs	**13.09 – 39.27**
Proposed amount of payment (EUR/ha)	**30**
II. Reduction of flock size:	
Additional costs	
Average salary for a part time shepherd (EUR/day)	50.86
Average number of sheep managed by one person (number of animals)	732.28
Labour costs (EUR/day/animal)	0.069
Average livestock density (animal/ha)	3.39
Recalculated labour costs (EUR/day/ha)	0.23
Period when grazing is limited up to 700 heads (max. number of days)	179
Total increase of additional costs	**41.17**
Proposed amount of payment (EUR/ha)	**41**

Table B27 Process of payment calculation for Natura 2000 on agricultural land – IT_{UMB}

Cost components	1st approach	2nd approach
Additional costs		
Yield of pastures (FU/ha)	1 050	
Recalculated yield of pastures (kg/ha)	2 625	
Price of mixed hay (EUR/ton)	75.75	
Rent of a new pasture (EUR/ha)		129.00
Management costs of the new pasture (EUR/ha)		59.30
Transaction / administrative costs (EUR/ha)		10.00
Total additional costs	198.84	198.30
Total additional costs (20% of area)	**39.77**	**39.66**
Proposed amount of payment (EUR/ha)	**40.00**	**40.00**

Table B28 Process of payment calculation for Natura 2000 on agricultural land - LT

Land fertility point and dominant type of farming	NVA according to average structure of farms (EUR/ha) for:		Income foregone (EUR/ha)
	Traditional farming	Restricted farming	
up to 32 – (dominant type: livestock farms)	61.13	29.18	31.95
32-35	57.60	24.57	33.03
35-40	84.78	47.94	36.84
40-45	92.14	46.68	45.46
48 and more (dominant type: crop production farms)	111.27	58.91	52.36
Average income forgone			**39.93**
Proposed amount of payment (EUR/ha)			**40**

Table B29 Process of payment calculation of Natura 2000 on agricultural land – PL

Cost components	1	2	3	4	5	6	7	8	9	10
Income foregone										
Lost GM/ha because of extensiveness	97.63	97.63	97.63	97.63	97.63	97.63	97.63	97.63	97.63	97.63
Lost GM from LU for fattening (0.76 LU)		160.52		160.52						
Additional costs										
Hay-making	135.00	75.00	30.00	75.00	120.00	135.00	135.00			
Purchase of fodder for animals	61.84		30.92		30.92	30.92	30.92	92.76	154.61	
Moving away cutting hay and stacking	59.20	32.89	13.15	32.89	52.63	59.20	59.20			
Bringing the animals to the pasture	167.76		118.84		167.76	118.84	118.84	167.76	167.76	
Difficulties in rural activities near this area										2.63
Cultivation activities										44.74
Additional income										
Income from LU for fattening	160.40		42.20		105.53	210.05	210.05	126.63	105.53	
Proposed amount of payment (EUR/ha)	**366**	**370**	**243**	**317**	**368**	**224**	**224**	**232**	**318**	**147**

Note: 1: Protecting habitats in birds' ground nesting sites
2: Moss
3: Rushes with tall sedge
4: Meadows, moor-grass and selernicowe
5: Warm likes meadows
6: Semi natural wet hay-meadows
7: Semi natural meadows fresh habitats
8: Meadows rich of species: sod of white bent-grass
9: Halophyte
10: Ecological compensation area

Table B30 Process of payment calculation of Natura 2000 on forest land - CZ

Typical forest types within Natura 2000 areas	AFI of species composition divided by rotation period for:		Difference of AFI multiply by rotation of current stand	Total annual payment divided by 20 years and weighted by area
	current stands	possible stands		
Šumava	141.0	160.0	2 662.2	39.52
Chřiby	170.0	173.8	393.1	4.60
Podyjí	117.9	123.5	223.7	0.94
Podluží	160.8	187.7	1 065.4	5.71
Šumava	125.1	127.5	483.6	6.75
Total income foregone (EUR/ha)				**57.52**
Proposed amount of payment – rounded (EUR/ha)				**60.44**

Table B31 Process of payment calculation of Natura 2000 on forest land - DE_{NRW}

Cost components	Additional costs	Income foregone
Maintenance of old and deadwood proportions:		
Maintenance costs per tree over 20 year (EUR/ha)	187.50	
Estimated area with trees older than 120 years (ha)	5 880	
Estimated old and deadwood tree densities (trees/ha)	10	
Privately owned forest areas located in FFH areas in NRW (ha)	28 000	
Total additional costs (EUR/ha)	**393.75**	
Biotope specific development measures for endangered species:		
Maintenance costs of particular biotope over 20 years (EUR/ha)	6 125	
Estimated area with particular biotopes (ha)	185	
Privately owned forest areas located in FFH areas in NRW (ha)	28 000	
Total additional costs (EUR/ha)	**40.46**	
Removal of undesired generations:		
Labour costs (EUR/hour)	20	
Number of hours over 20 years (hours)	2	
Total additional costs (EUR/ha)	**40.00**	
Maintenance of deciduous forest:		
Income reductions (EUR/ha)		40
Recalculated income reduction (EUR/ha FFH area) (45% on FFH-area)		18
Total income foregone over 20 years		**360**
Clear cutting prohibition:		
Average value of trees reached exploitable stages (EUR/ha)		14 391.60
Average interest loss due to a delay in usage of 6 years related to a time horizon of 20 years (EUR/ha)		18 709.08
Average rotation period (years)		136
Total income foregone over 20 years		**137.57**
Pre-mature usage of undesirable tree species (coniferous):		
Total income foregone over 20 years		**37.00**
Sum of additional costs and income foregone over 20 years (EUR/ha)		**1 008.78**
Proposed amount of payment (EUR/ha)		**50.00**

Table B32 Process of payment calculation of Natura 2000 on forest land – IT_{UMB}: Permanent exclusion from felling trees

Cost components	1st criterion	2nd criterion
Income foregone		
Mean volume of felled coppice woods (m^3/ha)	108.2	
Mean volume of 2 non-felled trees (m^3)		3
Timber price (EUR/ m^3	30	30
Share of non-felled volume per ha (%)	3 – 4	
Income losses (EUR/ha)	97.38 - 129.84	90
Total income foregone		90 – 129.84
Total income foregone – annual (/5 years)		**18.00 – 25.97**
Additional costs		
Topographic location of trees using GPS		29.51
Total additional costs		**29.51**
Proposed amount of support		**47.51 – 55.48**
Proposed amount of payment (EUR/ha)		**40**

Table B33 Process of payment calculation of Natura 2000 on forest land – IT_{UMB}: Exclusion from felling of coppices

Cost components	Exclusion from felling of beech coppice-woods having reached the rotation age	
Income foregone		
Mean volume of beech coppice woods (m3/ha)	157.5	
Mean volume of high forests (m3/ha)		360
Timber price (EUR/ m3	30	30
Income - stumpage value (EUR/ha)	4 725	10 800
Interest rates (%)		2 – 7
Capitalized stumpage value (EUR/ha)	1 067 – 7 376	25 – 2 185
Total income foregone		1042 – 5 191
Total income foregone – annual (/5 years)		254 – 1 101
Proposed amount of payment (EUR/ha)		200

Table B34 Process of payment calculation of Natura 2000 on forest land – LT

Cost components	Final forest cutting operations forbidden	Cutting operations in non-clear cutting way	Additional number of living trees is preserved and left in clear cutting areas	Cutting of drying/dead trees/wood is forbidden/restricted in forest stands older than 20 years
Income foregone				
Mean volume of mature forest stands (m^3/ha)	255	255		
Average volume of one left tree (m^3)			0.8	0.6
Average marketable volume = 90%	230	230	0.72	0.54
Average price of uncut fuel-wood (EUR/m^3)				4.8
Average price of round wood (EUR/m^3)	29.9	29.9	29.9	
Average costs of wood harvesting and logging (EUR/m^3)	9.9	9.9	9.9	
Average price of uncut wood (EUR/m^3)	20	20	20	
Average volume of wood left after the first cutting case (%)		50		
Interest rate (%)	3.7	3.7		
Average number of trees left in clear cutting area			10	15
Proposed amount of payment (EUR/ha)	**170**	**85**	**144**	**40**

Annex B4 – Forestry measures

Table B35 Process of payment calculation of establishment costs in 221 measure – CZ

Cost components	Coniferous	Broadleaf
Additional costs		
Soil preparation	112.01	112.01
Seedlings (average 6 050 / 8 000 pc. per ha)	1 058.35	1 558.29
Labour costs for planting	869.09	1 070.81
Transportation of seedlings	106.70	106.70
Forest improvement - increase by 30% due to necessity to keep recommended number of trees according to national rules	643.84	854.35
Total additional costs	2 789.99	3 702.16
Proposed amount of payment (EUR/ha) – 70/ 80% of calculated amount	**1 952.99 / 2 231.99**	**2 961.32 / 2 590.32**

Table B36 Process of payment calculation of maintenance costs in 221 measure – CZ

Cost components	EUR/ha
Additional costs	
Weed control	268.60
Protection against animals	117.51
Protection against rodents	33.58
Other protection	16.79
Total additional costs	**436.48**
Proposed amount of payment (EUR/ha)	**436.48**

Table B37 Process of payment calculation of income foregone in 221 measure* – CZ

Cost components	CZK/ha
Income foregone (GM from grassland with fertilisation level around 40 kg N/ha)	
Costs of fertilisers	450
Costs of seeds	97
Costs for crop protection	26
Other direct material	101
Others directs costs and services	393
Cost of baling	900
Total variable costs	**1 967**
Hay yield (ton/ha)	3.40
Sale prices of hay (CZK/ton)	1 880
Total income	**6 362**
Total income foregone (GM)	**4 425**
Proposed amount of payment (CZK/ha /EUR/ha)	**4 425 / 148.57**

* The payment is valid for afforestation of grasslands.

Table B38 Process of payment calculation of establishment costs in 221/223 measure*-PL

Cost components	PLN/ha	
	Coniferous	Broadleaf
Additional costs		
Preparation of soil (average cost) - ploughing up lanes with a stump cutter (95 PLN x 12h) - complete deep ploughing and deeper ploughing (55 PLN x 8h and 9.5h) - ploughing up and cultivating of furrows (55 PLN x 13.5h)		715
Seedlings - coniferous (8 000 x PLN 0.32) / broadleaf (6 000 x PLN 0.49) - bonitation shrubs (500 x PLN 0.35)	2 560	3 115
Seedlings used for replacement in the 2nd year of cultivation (20%) (1 600 x PLN 0.32, 1200 x PLN 0.49)	512	588
Supply and heeling in of seedlings (40 km x PLN 2, PLN 140 – unloading, loading and heeling in) / 2		110
Planting (coniferous PLN 10 x 200 h, broadleaf PLN 10 x 220 h)	2 000	2 200
Replacement of seedlings (coniferous PLN 10 x 60 h, broadleaf - PLN 10 x 65 h, supply – PLN 220/2)	710	760
Total additional costs	**6 607**	**7 488**
Payment (70% of investment costs)	**4 625**	**5 241**
Proposed amount of payment (PLN/ha /EUR/ha)	**4 620 / 1 215**	**5 240 / 1 378**

* The payment is valid for establishment costs of a forest culture in areas with favourable conditions.

Table B39 Process of payment calculation of maintenance costs in 221/223 measure*- PL

Cost components	PLN/ha
Additional costs	
1-3 year-old forest culture - cutting out of weeds (twice a year, 40 h) - cultivation of soil around the seedlings (1 operation per 2% of surface area, 8h)	480
4 -5 year-old forest culture - tending felling (1 operation in mixed cultures, 46 h)	460
Protection of the forest against insects and fungi	27
Protection of the forest against fires	10
Average cost of forest culture maintenance	**977**
Proposed amount of payment (PLN/ha /EUR/ha)	**970 / 255**

* The payment is valid for maintenance of a forest culture in areas with favourable conditions.

Table B40 Process of payment calculation of income foregone in 221 measure – PL

Cost components	PLN/ha
Income foregone	
Lost GM for land of poor quality (bonitation factor up to 0.85)	1 029
Average direct payment lost	560
Total income foregone	**1 589**
Proposed amount of payment (PLN/ha /EUR/ha)	**1 580 / 415**

Table B41 Process of payment calculation in 222 measure* - IT_{UMB}

Cost components	EUR/ha
Additional costs	
Establishment costs	216.07 – 797.39
Purchase of plants	67.50 – 526.00
Total additional costs	**283.57 – 1 323.39**
Proposed amount of payment (EUR/ha)	**280 – 1 320**

* The payment is valid for submeasure “Plantation of uniformly distributed trees on arable land”

Table B42 Process of payment calculation of establishment costs in 221/223 measure* - SCO

Cost components	GBP/ha
Additional costs	
Site preparation	205.33
Planting - must be beat-up and weeded until established: 85% of area planted with productive broadleaves (per 3 100 spacing) 10% internal unmapped open space 5% native/amenity broadleaves (per 1 100 spacing) Total cost of planting operations Total cost of planting operations covered (less 20% maintenance inclusion in SFGS)	 (85% of 1 860) = 1 581.00 (10% of 750) = 75.00 (5% of 770) = 38.50 1 694.50 1 355.60
Protection - area is protected from livestock and rabbits of deer: Tree Shelters (1.60 GBP/shelter), Vole guards and rabbit control	691.05
Total additional costs	**2 251.98**
Proposed amount of payment - 70% (GBP/ha /EUR/ha)	**1 575 / 2 362**

* The payment is valid for productive broadleaves

Description of payment calculation process of submeasure "Measures to maintain and develop ecological valuable forest biotopes" in 225 measure - DE_{MWP}

Method considerations

The forest owner renounces the harvest of a tree for a specific time period. Thereby he loses income in terms of interest, which he could have obtained by investing the net profits. After 20 years he could harvest the tree. However, he does not obtain the present value of the tree but a lower one caused by physical deterioration. Actual net returns decline. The sum of income losses (interest loss and value loss) of single trees determine the losses per ha.

1. Interest loss for non-usage: Interest loss due to renunciation of harvest

Foregone interest income for non-usage with an interest rate of 3% for the period of consideration (factor 1.0320 = 1.806).

2. Value loss due to impairment of wood quality in 20 years

Non-usage of trees for 20 years leads to an average value loss of 10% (e.g. 0.5% p.a. real) up to 20% in specific cases depending on the tree species.

3. Calculation example

Tree species beech tree; value loss of 1% per year

Fixed yield: 10 m³

Calculated net revenue without exploitation costs: EUR30/m³

Present value without exploitation costs: EUR300/tree

1. Interest loss

At most, annual opportunity costs of 300 x 0.03 = EUR9.00 emerge under the assumption a) of

an alternative interest rate of 3% and b) that annual interest income is re-invested and not consumed.

2. Value loss

The value loss after 20 years is 1% p.a. e.g.:EUR $300 - \frac{300}{1.01^{20}} = 54.14$ /20 years respectively on average EUR2.70/a.

Result

The sum of interest- and value loss is to be paid in five homogeneous instalments in the first five years. Therefore annual opportunity costs (1) and value loss (2) need to be added and afterwards multiplied by the period of consideration 20 years:
(EUR9.00/a + EUR2.70/a) * 20 = **EUR234**

The total loss is discounted up to the beginning of the instalments.

$$K_0 = \frac{K_n}{1.0p^n} \qquad K_0 = \frac{234.00€}{1.03^{20}} \qquad K_o = 129.56€$$

Hence we need to calculate a finite, yearly annuity in advance:

$$K_0 = r * \frac{(1.0p^n - 1)}{0.0p * 1.0p^n} \qquad r = \frac{\frac{K_0}{(1.0p^n - 1)}}{0.0p * 1.0p^n}$$

$$r = \frac{\frac{129.56}{(1.03^5 - 1)}}{0.03 * 1.03^5} \qquad r = 28.52$$

This value is the effective income loss due to forgone interest and value loss. Up to now no financial incentive exists, which causes the optional uptake of the forest environmental measure despite high risks. Therefore, until 2006, an incentive element of 1.1 was applied, leading to an annual payment of **EUR31.37/tree**. For an annual possible payment of EUR200/ha/year about **6 trees** could be taken under contract in this example.

Description of payment calculation process of submeasure "Restoration of previously drained wetlands in forests" in 225 measure - DE_{MWP}

Conditions:

Eligible are only previously drained wetlands in forests where usage intensities are on average lower than 1 solid cubic metre / year and ha. The calculation of the payment level to compensate the income losses follows the capitalised value method. The calculation implicitly assumes that the income loss on the area under contract is permanent.

Example:

Annually sustainable and obtainable profit: EUR20

Interest rate: 2 %

$$Valueofoutput = \frac{sustainable\_obtainalbe\_profit}{0.0p} = \frac{20}{0.02} = 1000€$$

The capitalised value is paid in five instalments of 200EUR per ha.

Annex B5 – Meeting standards measure

Table B43 Process of payment calculation of meeting standards measure – GR

Cost components	Year					Total additional costs
	1st	2nd	3rd	4th	5th	
Additional costs						
Microchip for aged sheep and goats	3.30	2.64	1.98	1.32	0.66	9.90
Microchip for young sheep and goats	4.95	3.95	2.95	1.95	0.95	14.75
Reserve 15%	0.33	0.32	0.30	0.29	0.28	1.52
Proposed amount of payment (EUR/animal)	**8.58**	**6.91**	**5.23**	**3.56**	**1.89**	**26.17**

Table B44 Process of payment calculation of meeting standards measure – IT_{VEN}

Cost components – additional costs	EUR/holding		Proposed amount of payment (EUR/year)		
	MIN	MAX	First year	Fifth year	Total per period
131/1a	one-off contribution				
Simplified communication	500	1 000	-	-	300
Complete communication	800	1 600	-	-	800
Simplified PUA and communication	1 600	2 400	-	-	1 500
Complete PUA and communication	2 400	4 500	-	-	2 000
131/1b	payment for 5 years (80→40%)				
Design/introduction livestock feeding plan	2 500	4 500	2 000/3 600	1 000/1 800	7 500/13 500
131/2a	one-off contribution				
Presentation of "Environmental Integrated Permit" (for introduction of BAT)	2 400	4 500	-	-	2 000
131/1c	decreasing values (5 years – EUR500/year)				
Livestock management reorganization due to introduction of new rules	-	7 500	2 500	500	7 500
131/2b	decreasing values (5 years)*				
Introduction of quality environmental systems	-	10 000	4 500	500	10 000

* The process of digression of the maximum annual payments is following: 4500 the 1st year, 3500 the 2nd year, 1000 the 3rd year, 500 the 4th and 5th year. A minimum payment per holding is not indicated in the payment calculation.

Annex B6 – Animal welfare payments

Table B45 Process of payment calculation of animal welfare submeasure E.4* – DE

Cost components	Submeasure				
	Dairy cows	Breeding cattle	Beef cattle	Finishing pigs	Breeding pigs
Additional costs (EUR/animal/year)					
Increase of movement areas by 3%/5% - caused by destocking	15.00	11.00			
Outdoor runs outs - additional labour tasks (mucking out)	16.25	16.25	16.25	1.90	3.80
Littered laying areas (straw beddings) (0.3 kg straw/animal/day) - additional labour tasks (littering and mucking out)	8.75	8.75	12.50	2.50	14.50
- additional costs (straw production and storing)	13.5	16.6.	154.00	12.40	29.20
Total additional costs	**53.50**	**52.60**	**182.80**	**16.80**	**47.50**
Proposed amount of payment (EUR/LU)	**54.00**	**53.00**	**183.00**	**129.00****	**158.00****

* E.4 – Cattle and pigs in free stall barns with non- or partly perforated floors with outdoor run-outs
** Recalculation to LU use coefficient 1 animal = 0.13 LU within finishing pigs and 0.30 LU within breeding pigs

Table B46 Process of payment calculation of animal welfare submeasure "Basic condition for cattle farms" – FI

Cost components	EUR/LU
Income foregone	
Health care plan	3.69
Farm-level disease protection and bringing animal matter and feed to the farm	1.02
Preventing the spreading of faecal pathogens	7.16
Systematic production monitoring	5.72
Written feeding plans	2.80
Water flow measurement	0.08
Animals not kept in isolation	3.03
Written plan for backup system in case of ventilation, feeding or watering equipment failure	3.43
Testing and maintenance costs of an aggregate unit	1.02
Total income foregone	**27.95**
Additional costs	
Health care agreement	0.33
Health care visits	5.25
Health care plan	2.81
Farm-level disease protection and bringing animal matter and feed to the farm	1.03
Prevention of salmonella	1.23
Prevention of *tinea capitis*	0.20
Systematic production monitoring	10.78
Written feeding plans	11.42
Total additional costs	**33.05**
Additional income (benefit from uptake of the measure)	**46.42**
Sum of net income foregone and additional costs	**14.58**
Total transaction costs (20% of the sum of net income foregone and additional costs)	**2.92**
Proposed amount of payment (EUR/LU)	**17.50**

Table B47 Process of payment calculation of animal welfare submeasure "Dairy cattle – Production of Parmigiano-Reggiano in the plain"- IT_{ER}

Cost components	EUR/LU
Additional costs	
Purchase of feed and fodder	58.74
Variable costs for farm fodder	4.41
Labour costs	135.48
Expenditure for energy and water	18.58
Know-how	1.01
Total additional costs	**218.22**
Savings	
Veterinary costs	21.73
Total savings	**21.73**
Proposed amount of support (EUR/LU)	**196.49**

Table B48 Calculation of "base premiums" for each improved typology - IT_{ER}

Submeasures based on typology	Improvement of:				
	farm and private management	breeding and stalling systems	environmental monitoring	feeding and watering	cleanliness, health and behavioural aspects
%	5	30	25	15	25
Proposed amount of payment (EUR/LU)	9.82	58.95	49.12	29.48	49.12

Table B49 Process of payment calculation of animal welfare submeasure "Compulsory actions" –SCO

Cost components	EUR / farm
Additional costs*	
Skilled farm labour 5 hours	58.65
Farm management 2 hours	27.54
Veterinary time 3 hours	277.11
Sub total	363.30
75% contribution	**272.47**
Additional costs**	
Skilled farm labour 5 hours	58.65
Farm management 1 hours	13.77
Veterinary time 1 hours	92.37
Sub total	164.79
75% contribution	**123.60**
Total 75% contribution	**396.07**
Proposed amount of payment (EUR/farm)	**390**

* Proactive scheme for the use of treatments, including guidance on the use of veterinary advice and treatment

** Proactive scheme for the use of vaccines and routine medications

Table B50 Process of payment calculation of animal welfare submeasure "Sampling"– SCO

Cost components	EUR / farm
Additional costs*	
Skilled farm labour 5 hours	58.65
Farm management 1 hours	13.77
Veterinary time 3 hours	277.11
Sub total	349.53
75% contribution	**262.16**
Proposed amount of payment (EUR/farm)	**255**

* Sampling - To undertake sampling to identify diseases / conditions such as twin lamb disease or copper deficiency, which may be present on farm having a negative impact on animal health and welfare and take informed control measures to address conditions

Table B51 Process of payment calculation of animal welfare submeasure "Biosecurity"– SCO

Cost components	EUR / farm
Additional costs for biosecurity plan*	
Farm management 7 hours	96.39
Sub total	96.39
75% contribution	**72.30**
Additional costs for fence maintenance	**EUR/ metre**
Material cost per metre of fence	2.25
Labour cost per metre of fence	2.40
20 year maintenance cost per metre**	4.65
Annual maintenance cost per metre	0.24
75% contribution	**0.18**
Proposed amount of support for biosecurity plan***	**75.00**
Proposed amount of support for fence maintenance per metre (EUR/farm)	**0.15**

* To produce a bio security plan to ensure the safe integration of new stock on farm and to minimise the risk of spreading disease by maintaining fences around isolation areas to enhance bio security levels and to prevent diseases from entering the herd/flock

** Fences are expected to last 20 years

*** One-off payment

Annex C – General framework

I. Basic data

1. Fill in following table "**Overview of the current RD measure**" according to the instructions below:

a) Name of submeasures, schemes or categories of the RD measure
(*it is expected to be described whole structure of the measure in detail according to separate payment rates existed)*

b) Differentiation of the payment = existence of more payments for one submeasure, scheme or category *(e.g.: by region, farm structure, time of commitments for OF, slope land etc.)*; in this column write NO or YES according to existence of differentiated payments (also write their payment levels or intervals in the column c));

c) Level of payment according to RDP (presumption is EUR/ha, if different unit is used, please write it with). *For countries, where EUR is not used write the level of payment as in national currency so in EUR. Eventually add exchange rate used.*

d) The percentage level of confirmed payment compared with calculated payment *(presumption of the level is 100%; the lower means calculated payment is not paid in total / the higher means that the particular schemes are preferred or that transaction costs are applied in the case of AEM or animal welfare payments)*
If the level is differing from 100% write the reasons below the table.

e) Targeting of payments – determination of areas where it is possible to enter into the particular submeasure, scheme or category.
(e.g.: AEM: payment could be horizontal (for whole republic – e.g. OF), regional (only in given areas – e.g. county) or mixed (possible for whole republic but only in given areas – e.g.: crake protection in the CZ;
LFA: the payment is only for areas given as LFA according to given criteria as the altitude, slope land, soil quality etc.).

f) Existence of measure (single submeasures, schemes, categories) before the year 2007 and change of its payment level in the new RDP. The existence of measure is investigated in scope of the earlier RDP for programming period 2000/2004-2006. If the measure existed previously, fill in column f) by following marks: 0 measure did not exist, ↑ increase of payment, ↓ decrease of payment, = same payment.
If there were some changes in comparison with previous period (increase or decrease of payment level) write the reasons below the table.

Table C 1 Overview of the current RD measure

a	b	c	d	e	f
Name of measure (i.e. submeasures, schemes, categories)	**Is payment somehow differentiated? Yes/No**	**Level of payments**		**Targeting**	**If measure existed previously, fill in payment level change**
		EUR/ha (CZK/ha)	**% in calculated level of payment**		

2. Is your country implementing any differentiated payments (within the RD measure)?
(e.g. by natural condition: climate, soil quality, altitude zone, slope, etc.; by farm structural characteristics: arable farm, horticulture farms, permanent cropping farms, pig / poultry farms, etc.; by regional characteristics: National Park, Protected Landscape Area, Natura areas, etc.)?

☐ YES
☐ NO

If YES (*should be already mentioned in column b) of the table 1 above*), describe what kind of differentiated payments exists (How are payments differentiated?) and why such differentiation is provided (What are reasons for keeping more payment levels instead of one single payment?):
……

If none, write reasons:
……

3. Have differentiated approaches been implemented in past but not in subsequent programme?

☐ YES
☐ NO

If YES, write which and why do not continue?
……

4. Have differentiated approaches been discussed in-house but not been implemented?

☐ YES
☐ NO

If YES, write which and why have not been implemented?
……

II. Methodology of the payment calculation "How payment levels are currently calculated"

5. Identification of commitments entering into the payment calculation of RD measure and detail description of payment calculation process:
According to EU, regulation payments should compensate foregone income /losses and additional costs, which are connected with RD measure access:

a) foregone income / losses (e.g.: decrease of production in OF, lower quality of hay production due to later cutting, etc., in addition also counteractive savings are included as for example price premium for organic products);

b) additional costs (e.g.: obligatory training, additional grass cutting, costs at soil analysis, higher labour costs, etc., in addition also counteractive savings are included as for example the savings of fertilization or spraying costs in OF);
c) transaction costs (since the transaction costs can be used only within agri-environment and animal welfare payments we decided to analyse them in separate question below).

Write the following in sequence:

a) write name of particular submeasures, schemes or categories

b) determination of eligible criteria (fill if the submeasure is limited for some specific areas)

c) describe relevant commitments of particular submeasures, schemes or categories

d) describe necessary land use /management practice changes or maintenance resulting from these commitments and identification of those which are entering into the payment (for those which are not entering into the payments write reasons)

e) finally describe the process of payment calculation for chosen submeasures, schemes or categories of the RD measure (preferably into the table). The aim is to identify particular items of payment, its data source and used reference period. For better understanding please use notes describing the process of payment calculation in more detail.

Note: Since this area is one of main objectives of the AGRIGRID project, it is necessary to provide an explanation for the payment calculations in as much detail as possible - detailed description of compensatory payment layout = what items were included in the calculation and what is the rationale of including such items in the calculation...)

----------**Only for AEM and animal welfare**----------

6. Do you involve into the payment calculation the transaction costs?

☐ YES

☐ NO

If YES, describe the methodology of their calculation including the level of these costs, data sources and write the name of the sub-measure where they are used:

……..

---

7. If it is not possible to describe the process of payment calculation for RD measure / chosen submeasures in your country by using the procedure suggested in question nr. 5., explain used methodologies of calculation in more detailed here:

(It is expected to provide here something like "instruction manual".

In addition an existence of any other alternatives to standard costs methods for payment calculations used (e.g. tenders) should be mentioned here as well.)

……

8. Please describe commitments defined in the baseline requirements which have impact on payment calculation:

a) describe your system of good agricultural and environmental conditions (GAEC) and its relation to commitments of the RD measure (see examples for GAEC in Error! Reference source not found.)

……

b) describe any other conditions resulting from the national law or C-C which can not be paid out within the RD measure payments:

……

9. Does your country provide payments which levels exceed limits given in the Council Regulation (EC) No. 1698/2005 (any national limits?)

☐ YES

☐ NO

If YES, describe them and write reasons:

……

10. Does your country apply any maximum criteria (e.g. farm size, amount of money) which limits the level of payment?

(degression of payment according to hectares = full support up to 100 ha, 50% up to 300 ha, 0% over 300 ha; maximal payment per farm; payment for limited time of commitment as in OF, etc.).

☐ YES

☐ NO

If YES, describe the limits, particular submeasures / schemes by which are used and reasons for setting these limits:

……

11. What problems did you encounter during the payment calculations? (What problems have been encountered?)

(e.g.: determination of decrease of the hay production incurred by lower fertilisation, more difficult work in vineyards with higher slope land, etc.)

……

12. What solutions did you derive for these problems? (What solutions have been derived for these problems)?

……

13. Which issues remain unsolved and why?

……

14. Is potential over- and under-compensation an issue when designing new measures and payment schemes?

……

III. Data sources

15. Fill in following table according to the instructions below:

a) specify data sources used for calculation for RD measure (try to provide whole list);
b) write organisation responsible for data source
c) periodicity (it means how frequently are they up-dated, published);
d) spatial aggregation level (it means how data are used within payment calculation, not in which form exist)
e) purpose of the source usage (write briefly the main range of usage within payment calculation).

Table C 2 The list of the data sources necessary for payment calculation and their usage

a	b	c	d	e
Data sources	**Organisation responsible**	**Periodicity**	**Spatial aggregation level**	**Purpose of usage**

16. Which data do you miss for easier calculation (= availability of which data would be made the payment calculation easier)? Could you specify?

……

IV. Contextual information

17. Statistical comparison – indicators of "uptake"

Based on data in tables below, we can compare following indicators:

- share of areas under the selected RD measure as a whole / or particular submeasures, schemes or categories / in the UAA (%);
- share of farms / holdings involved in the RD measure (in classification according to submeasures, schemes or categories) in whole number of farms / holdings in agriculture (%);
- share of financial expenditure of the RD measure in the total budget of RDP (%);
- average payment in EUR/ha of the selected RD measure (eventually per farm,…).

	2004	2005	2006
UAA			
Area of agricultural land in RD measure			
Number of holdings / farms (total)			
Number of holdings / farms entering in RD measure			
financial expenditure for RDP (total)			
financial expenditure for the RD measure			

18. Could you consider administration complexity of calculation?

a) How many institutions are involved into payment calculation:

☐ 1

☐ 2 – 3

☐ more than 3

Write their names:

b) How many institutions are involved in making observations / controlling / testing of payments:

☐ 1

☐ 2 – 3

☐ more than 3

Write their names:

19. Write down state rules and regulations which define the RD measures:

……

If you have any additional comments on the survey, please use this box:
(It is expected to add here: remarks and comments of the interviewee that cannot be included in the questionnaire, own observations and reflections on the interview, etc…)

Table C 3 GAEC evidence

Issue	GAEC-standards [1)]	yes (x)	Description of national GAEC-standards	voluntary obligation [2)] yes (x)	Description of national voluntary obligation (AE, Natura2000, forestry, LFA... obligations)
Soil erosion	Minimum soil coverage				
	Minimum land management reflecting site-specific conditions				
	Retain terraces				
	Other standards?				
Soil organic matter	Standards for crop rotations where applicable				
	Arable stubble management				
	Other standards?				
Soil structure	Appropriate machinery use				
	Other standards?				
Minimum level of maintenance	Minimum livestock stocking rates or/and appropriate regimes				
	Protection of permanent pasture				
	Retention of landscape features				
	Avoiding the encroachment of unwanted vegetation on agricultural land				
	Other standards?				
Other standards?					

1) According Council Regulation (EC) No. 1782/2003, Article 5, IV.
2) Is there any obligation similar as GAEC-standard for which it is possible to get for example agri-environment payment?
For example: GAEC-standard = min. 5% of arable land is covered during winter.

AE-obligation = min. 15% of arable land is covered during winter; the payment is calculated in relation to 10% of winter coverage which is going over GAEC standards.

Or:

GAEC-standard for protection of permanent pasture is missing.

While AE-obligations for protection of permanent pastures exist there (for example the maximum level for nitrate fertilisers usage is set

et