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

**Review of payment calculation for  
Natura 2000 payments on agricultural land (213)  
and on forestry land (224)**

**WP4**

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## List of abbreviations

AEM	Agri-Environmental Measure
AFI	Average Felling Increment
AOPK	Agency for Nature Conservation and Landscape Protection of the Czech Republic
BAP	Biodiversity Action Plan
C-C	Cross-Compliance
EC	European Commission
EEC	European Economic Community
EU	European Union
FADN	Farm Accountancy Data Network
FFH	Flora, Fauna Habitat
FU	Forage Unit
GAEC	Good Agricultural and Environmental Conditions
GM	Gross Margin
IACS	Integrated Administrative and Control System
LAEI	Lithuanian Institute of Agrarian Economics
LU	Livestock Unit
MJ NEL	Mega Joule Netto-Energy-Lactation
MoA	Ministry of Agriculture
MoE	Ministry of Environment
n.a.	Not applicable
n.d.	No data available
NGO	Non-governmental Organizations
NP	National Park
NVA	Net Value Added
PLA	Protected Landscape Area
RD	Rural Development
RDP	Rural Development Plan
RDR	Rural Development Regulation
SMR	Statutory Management Requirement
SPA	Special Areas of Conservation
TC	Transaction Cost
UAA	Utilized Agricultural Area
VUZE	Research Institute of Agricultural Economics

## Project partner countries

CZ	Czech Republic
DE <sub>NRW</sub>	Germany – North Rhine-Westphalia
ES <sub>N</sub>	Spain - Navarra region
FI	Finland
GR	Greece
IT <sub>UMB</sub>	Italy - Umbria region
LT	Lithuania
PL	Poland
SCO	Scotland

## 1. Introduction

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.

The aim of this review is to summarise different approaches to payment calculations for Natura 2000 payment as on agricultural land as on forestry land. This aim will be reached with the help of answering the most important issues and key questions which are associated the payment calculation. The review of Natura 2000 payments covers the following partner countries and regions: the Czech Republic, North Rhine-Westphalia (Germany), Navarra region (Spain), Finland, Greece, Umbria region (Italy), Lithuania, Poland and Scotland.

Although the emphasize is on methods applied to calculate Natura 2000 payments in the new RDPs for the programming period 2007 – 2013, some information is also based (e.g. some statistical data or development of payment rate) on earlier RDPs.

### **Key points of the review:**

- existence of Natura 2000 payments in partner countries,
- types of Natura 2000 payments differentiation,
- eligibility criteria,
- obligation commitments which must be undertaken,
- differences in payment calculation processes,
- problems and relevant solutions identified during payment calculation,
- types of data used in payment calculation.

## 2. Comparative analysis

### 2.1. Basic data about Natura 2000 measures

Separate Natura 2000 payment measures are not implemented at all for agricultural or forest land in two of nine partner countries (FI and SCO). 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. Among obligatory measures are the forest-environment payment (225) and support for non-productive investment (227) while Natura 2000 measure is optional. In Greece, the measure 213, Natura 2000 on agricultural land, has been excluded during a final RDP preparation and conservation will be ensured by AEM. Poland supports Natura 2000 on agricultural land within AEM as one of the packages containing 10 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, Natura 2000 on forest land, is not implemented because forests in Poland are generally owned by the state and as such are managed by General Directorate for State Forests. In view of this the forests in Poland are subject to specific laws both in terms of management and environmental protection.

In Finland, biodiversity in Natura 2000 on agricultural areas is enhanced through the special AEMs “Management of traditional rural biotopes” and “Enhancing of biological and landscape diversity”. Biodiversity of forests is promoted by national funds outside the RDP through environment payments for forestry and forest nature management projects which is also applied to the Natura 2000 areas.

Support for Natura 2000 sites in Scotland is included in AEM by applying higher scores for applications on Natura sites than for other areas<sup>1</sup>. In the case of Natura 2000 on forestry land, the preservation of biodiversity is also included in forest environment payments and targeted through a range of other regulations and obligations such as Biodiversity Action Plans (BAPs) and UK Forestry Standards.

In all partner countries, where Natura 2000 payments are granted, the particular measures and their payment calculations are mostly known except of Greece, where a call for tenders for the calculation of the Axis 2 of RD measures was issued in April and has not been finished yet.

#### 2.1.1. Comparison of basic information for Natura 2000 measure

The support focused on biodiversity conversion in Natura 2000 areas has been first introduced in the Council Regulation (EC) No. 1698/2005. Some of the partner countries (CZ, DE<sub>NRW</sub>, ES<sub>N</sub> 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 Council Regulation (EC) No. 1257/99. In the case of Natura 2000 payments on forestry land, this measure represents an entirely new type of support in all partner countries.

All countries which are implementing Natura 2000 payments (CZ, DE<sub>NRW</sub>, ES<sub>N</sub>, GR, IT<sub>UMB</sub>, LT and PL) use a horizontal approach, except CZ and ES<sub>N</sub> 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) there is specific management according to particular sites of SPAs.

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<sup>1</sup> This information is valid at the time of survey – June 2007.

In the five countries (CZ, DE<sub>NRW</sub>, ES<sub>N</sub>, IT<sub>UMB</sub> 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/ha. Both extreme levels are occur in Navarra (Spain) (see Table A.2 in the annex). In Poland, since Natura 2000 on agricultural land is included in AEM, the payment levels range from EUR147 to 371/ha and keep limits valid for AEM 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 RDP Management Authority proposes payments up to EUR300/ha in specific justified circumstances.

In two countries (DE<sub>NRW</sub> and IT<sub>UMB</sub>) the proposed payment levels differ from calculated amount. In the case of North Rhine-Westphalia (Germany), the budget restrictions cause 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 limit equal to EUR200/ha set in the RDR.

### 2.1.2. Payment differentiation

The main and only factor of Natura 2000 payment differentiation is various management / 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 A.2 in the annex). 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. Navarra region (Spain), as only one, 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 payments.

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

**Table 2.1 Existence of payment differentiation for Natura 2000 on agricultural land**

	CZ	DE <sub>NRW</sub>	ES <sub>N</sub>	IT <sub>UMB</sub>	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 2.2 Existence of payment differentiation for Natura 2000 on forest land**

	CZ	DE <sub>NRW</sub>	GR	IT <sub>UMB</sub>	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.

During payment calculation differentiated approaches were not been 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 concrete farm 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 the 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 Czech RDP.

## **2.2. Methodology of the payment calculation**

### **2.2.1. Comparison of 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 Council Regulation (EC) No. 1698/2005 are: parcel in areas designated pursuant to Directives 79/409/EEC and 92/43/EEC (approved Natura 2000 areas), keeping cross-compliance covering GAEC and SMR, 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<sub>NRW</sub>, ES<sub>N</sub>, IT<sub>UMB</sub>, PL) except for Lithuania where the payment is provided for UAA.

Special eligibility criteria on the agricultural land are added in Navarra (Spain) where farmer has to have flock and grazing rights established. To receive payment for reducing flock size farmer must demonstrate that flock size in previous 5 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, 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<sub>NRW</sub>, 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<sub>NRW</sub> only deciduous forests are supported.

Additional eligibility criteria (as obligation to have own animal grazing in the forest or a contract leased out the forest to animal breeders drawn up before the 21<sup>st</sup> of October 2005) are established within one IT<sub>UMB</sub> forestry submeasure.

**Table 2.3 Overview of eligible criteria for agricultural land**

Criteria	CZ	DE <sub>NRW</sub>	ES <sub>N</sub>	IT <sub>UMB</sub>	LT	PL
Parcel in approved Natura 2000 area	✓ <sup>2</sup>	✓	✓	✓	✓	✓
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

**Table 2.4 Overview of eligible criteria for forestry land**

Criteria	CZ	DE <sub>NRW</sub>	GR	IT <sub>UMB</sub>	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

## 2.2.2. Scheme commitments of Natura 2000 measure

### 2.2.2.1. Natura 2000 on agricultural land

Specific commitments of the measure 213 can be summarised as follows (for detailed list of commitments in particular countries see Tables A.3 to A.8 in the annex):

- limitation of fertilisation (CZ, LT, PL),
- stocking density (ES<sub>N</sub>, LT, PL),
- limitation of grazing and mowing (CZ, ES<sub>N</sub>, IT<sub>UMB</sub>, LT, PL),
- prohibition of ploughing up grassland (DE<sub>NRW</sub>, 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 as for mountain areas. In the case of steppe areas there 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 form of stocking density prescription, is applied in all followed countries except of DE<sub>NRW</sub>. In CZ the applicant shall assure that grasslands are grazed or mowed 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

<sup>2</sup> Natura 2000 area in the first zones of NPs and PLAs

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 20<sup>th</sup> to October 15<sup>th</sup>). In some cases the grazing is prohibited at all (i.e. “Moss” and “Meadows, moor-grass and selernicowe”) or allowed only if grass is abundant (“Halophytes”). In case of mowing, Lithuanians cannot mow meadows before 15<sup>th</sup> 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 15<sup>th</sup> to September 30<sup>th</sup> and not more than twice a year, in addition 5 – 10% of area should to be left uncut).

Among other commitments undertaken belong renunciation of applying additional drainage methods (DE<sub>NRW</sub>, LT), renunciation of afforestation (DE<sub>NRW</sub>), preserving certain elements of value for flora and fauna (ES<sub>N</sub>), etc.

#### 2.2.2.2. *Natura 2000 on forestry land*

Specific commitments of the measure 224 can be synthesized as follows (for detailed list of commitments in particular countries see Tables A.9 – A.12 in the annex):

- following management plan (CZ, GR, LT),
- composition of tree species (CZ, DE<sub>NRW</sub>),
- prohibition of clear cutting (DE<sub>NRW</sub>, LT),
- exclusion from felling (GR, IT<sub>UMB</sub>, LT),
- maintenance of old / dead trees (DE<sub>NRW</sub>, 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 of DE<sub>NRW</sub> and IT<sub>UMB</sub>.

The preservation of proposed composition of tree species in favour of deciduous species is obligated in CZ and in DE<sub>NRW</sub>.

Among obligatory commitments represent prohibition or restriction of particular activities. 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<sub>UMB</sub> and further permanent exclusion from felling of certain number of living trees per ha (2 more in IT<sub>UMB</sub>, 10 in LT).

The maintenance of old and deadwood proportion is also popular requirement implemented in DE<sub>NRW</sub> 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<sub>UMB</sub>), removal of undesirable regeneration or applying of biotope specific development activities (DE<sub>NRW</sub>), introduction of coniferous trees in garrigues and oak woods or maintenance of some part of forest to be unmanaged (GR).

## 2.2.3. Components of Natura 2000 payments

### 2.2.3.1. 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 2.5 Components of Natura 2000 payment – agricultural land**

	CZ	DE <sub>NRW</sub>	ES <sub>N</sub>	IT <sub>UMB</sub>	LT	PL
<b>Income foregone</b>						
Reduction of grass yield / GM	✓	✓	-	-	-	✓
Decrease of NVA	-	-	-	-	✓	-
Different productivities of pastures	-	-	✓	-	-	✓
<b>Additional costs</b>						
Increase of feeding costs	-	-	✓	✓	-	✓
Increase of labour costs	-	-	✓	-	-	✓
Increase of rent, management costs	-	-	-	✓	-	-
<b>Additional income</b>						
Income from fatten LU	-	-	-	-	-	✓
<b>Transaction costs</b>						
	-	-	-	✓	-	✓

✓= 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 fertilization, in DE<sub>NRW</sub> 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 fertilizers 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 realize fattening on grassland. Since Natura 2000 on agricultural land in Poland is a part of AEM it is possible to involve transaction costs into the payment as well. These TCs result from the need of preparing of documentation of ornithological and natural habitats and include labour costs of experts.

In Navarra (Spain), within steppe lands, the higher feeding costs during period of grazing prohibition and labour costs due to requirement of flock reduction are compensated. In case of mountain areas, lower productivities 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.

### 2.2.3.2. Natura 2000 on forestry land

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

**Table 2.6 Components of Natura 2000 payment – forestry land**

	CZ	DE <sub>NRW</sub>	GR*	IT <sub>UMB</sub>	LT
<b>Income foregone</b>					
Income reduction – species composition	✓	✓	-	-	-
Income losses – early/never/late cut/sale of trees	-	✓	-	✓	✓
Income losses – dry/dead trees	-	-	-	-	✓
Income losses – rents	-	-	-	✓	-
<b>Additional costs</b>					
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 reached 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<sub>NRW</sub>) or by premature usage of undesirable species (DE<sub>NRW</sub>).

The compensation of wood / tree value lost is applied in Lithuania in 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), further the income loss in form of non-obtained rents due to grazing prohibition in forest is used as one of the approaches.

Additional costs are included into Natura 2000 payment only in two of the five countries (DE<sub>NRW</sub> and IT<sub>UMB</sub>). 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. The amount of all these costs is based on expenditures in previous periods. In Umbria (Italy), there are special additional costs for 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. Separate calculations for each commitment will be provided but the final form of payment calculation is not available yet.

## 2.2.4. Payment calculation process of Natura 2000 measures

### 2.2.4.1. Natura 2000 on agricultural land

The process of payments calculation is presented separately for particular countries in following text. For detailed calculation see Tables A.13 – A.19 in the annex.

### *The Czech Republic*

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

GM is calculated according to the economic principle in following detail:

**Gross Margin (GM) = total income** (hay yield \* sale price) - **total variable costs** (costs of seeds, fertilizers, 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 3 000 EUR 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 4 most frequent types) and improved pastures is the 1<sup>st</sup> 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 2<sup>nd</sup> part of payment represents a reduction of gross margin 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 1<sup>st</sup> approach estimates additional costs for hay purchasing necessary to be realized 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 2<sup>nd</sup> 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 40 EUR/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 fertility areas dominate livestock farms, in high land fertility areas dominate crop production farms and in intermediate fertility areas are their combinations,
- 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 10 AE submeasures focused on Natura 2000 areas.

A decrease of GM from extensive compared to traditional farming represents **income foregone**. A further lost 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 mechanization 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 realize 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 is differed according to habitat area<sup>3</sup>.

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<sup>3</sup> Area to 1 ha (131 EUR), from 1.01 to 5 ha (263 EUR), from 5.01 to 20 ha (526 EUR), from 20.01 to 50 ha (790 EUR) and above 50 ha (1 053 EUR).

#### 2.2.4.2. Natura 2000 on forestry land

The process of payments calculation is presented separately for particular countries in following text. For calculation in more detail see Tables A.20 – A.24 in the annex.

##### *The Czech Republic*

In the case of the new forest management plan creation, the forest owner has 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 is focused on to observation of existing environmental more suitable species composition of trees and is concerned to following forest types: fir, oak, beech, other broadleaved trees, poplar forests and coppices. The payment is calculated as a weighted average of differences in average felling increment (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:

$$\text{AFI} = (\text{incomes in the year of harvest} - \text{costs in the year of harvest}) / \text{rotation period}$$

And the payment calculation has been performed according to the formula:

$$\text{Payment} = (\text{AFI possible} / \text{rotation of possible stands} - \text{AFI current} / \text{rotation of current stands}) * \text{rotation of current stands} / 20 \text{ as the period of payment}$$

By reason of that, forest owners should obtain a payment in the amount equal to the difference between the possible and obliged AFI for a rotation as long as it is for the current stand. And the payment is paid out for twenty-year period.

##### *Germany – North Rhine-Westphalia*

The Natura 2000 payment is created by a sum of compensations resulting from the first six obligations mentioned in Table A.10 in the annex.

- 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 10<sup>th</sup> 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, spruces). Considering that deciduous forests cover only 45% of FFH areas, payment represents 45% of the assumed income reduction.
- The prohibition / restriction of clear cutting represents 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 2<sup>nd</sup> 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 II. 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:

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

The minimum and maximum amount of payment was divided by 5 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 mentioned in Table A.12 in the annex:

- a) 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.
- b) 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.
- c) 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 realized 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 way it is expected 50% of thinned mature trees is left uncut in the forest stand. An assumption is that the forest owner put money, which he/she received from the forest cutting, into bank and then he/she receives income (as interest) from a long term deposit. The evaluation of forest removals is based on mean volume of mature forest stands multiplied by timber price decreased by costs of harvesting and logging.

- d) 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.

### 2.2.5. 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 2.7 Existence of baseline requirements affecting payment calculation**

Baseline requirements	CZ	DE <sub>NRW</sub>	ES <sub>N</sub>	GR	IT <sub>UMB</sub>	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 interventions in the parcel in order to maintain it in good conditions and avoid invasion of undesirable species<sup>4</sup>.

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 belongs the federal state of 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 afforestations 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 strictly requirement 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.

### 2.2.6. Limitation of payment level

An exceeding of the maximum limits laid down in the Annex of Council Regulation (EC) No. 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 300EUR/ha in exceptional cases taking in account the specific circumstances. In addition, Poland keeps different limits valid for AEM since Natura 2000 on agricultural land is implemented as one of the packages within AEM here.

Only one of nine partner countries applies maximum amount per beneficiary. It is in Navarra (Spain) where the limit EUR3 000 per beneficiary is implemented for both existed submeasures

<sup>4</sup> Farmers can remove the undesirable vegetation either by grazing or with mechanical weeding and removal.

(limitation of flock size on Natura 2000 steppe lands and grazing on Natura 2000 mountain areas).

### 2.2.7. 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<sub>NRW</sub> the Natura 2000 measure is not combinable with measures related to allowances for non-productive investments pursuant to article 36 b)vii) Council Regulation (EC) No. 1698/2005. In LT applicants can not apply for support for the same area under the Landscape Stewardship Programme within AEM 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.

**Table 2.8 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 I; state aid; indirect support
DE <sub>NRW</sub>	Non-productive investments within forestry measures	State aid; RD measure within axis III
ES <sub>N</sub>	-	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 III; 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

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 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 will be finished. In the Czech Republic, the applicant farming in protected areas and Natura 2000 areas can choose schemes from a whole

list<sup>5</sup> of grassland maintenance AE submeasures. If the applicant is situated outside the above mentioned areas he/she can not choose higher value AEM<sup>6</sup>. Among Finnish specific AEMs belong “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)<sup>7</sup> 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.

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<sub>NRW</sub>, 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 at securing goals in 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 combinability of Natura 2000 payments with nature conservation contracts is limited in 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 Council Regulation (EC) No. 1698/2005 are also utilized. For example in the Czech Republic there are used “Investments in forests” under axis I to increase the efficiency of forestry by increasing the economic value of forests<sup>8</sup>. Natura 2000 is not implemented in Finland in RDP, but “Conservation and upgrading of the rural heritage” (measure 323) under axis III 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 an occasionally buy-outs of forests by the state.

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<sup>5</sup> 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.

<sup>6</sup> Mesophilic and hygrophilic meadows, Mountain and xerophilous meadows, Species rich pastures

<sup>7</sup> The support for this measure can vary from 40% to 100%, in the case of SPAs it is always 100%.

<sup>8</sup> 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.

Among other supports available for Natura 2000 areas were mentioned also 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.

### 2.2.8. Issues during payment calculation process

During the payment calculation for Natura 2000 measures several problems were listed. The main problems and their solutions are mentioned in the following table. For whole list of problems, their solution and list of unsolved problems see in the annex Table A.25 in the case of Natura 2000 on agricultural land and Table A.26 for Natura 2000 on forestry land.

**Table 2.9 Problems during payment calculation process**

Problem area	Problem	Solution
<b>Data availability</b>		
	Lack of technical and economic data (e.g. yield reduction caused by restrictions used, cost of wood harvesting)	- Usage of scientific literature, own surveys - Usage of normative data instead of actual data
	Lack of regional data enabling to provide calculation on smaller scale	- Simplifications and state wide aggregated averages provided
<b>Standard cost approaches and payment design</b>		
	Long term character of the measure (impossible to cover changes in economic data such as prices, interest rates etc.)	- The methodology used is designed to deal with these problems - New evaluation methods were designed where necessary
	Discrepancies between payment periods and duration of commitments	
	Difficulties in determination of payment components (e.g. income foregone, additional costs) and covering of nature value	
<b>Policy administration</b>		
	Short methodological experience	Advices from other institutions and other countries

In any of followed countries, the over- and under-compensation issue cannot be ruled out due to predominant usage of horizontal approach and flat-rate Natura 2000 payments whose calculation is based mostly on state wide aggregated averages. In some countries the lack of experience with this new kind of scheme and the lack of appropriate data were also mentioned as possible causes of this issue.

Certain fear of under-compensation of Natura 2000 payments exists in the Czech Republic (low payment for Natura 2000 forestry measure due to long payment period – over 20 years), in Umbria region (Italy) (due to necessity to keep the payment limits given by the RDR) and in Lithuania (in case of agricultural land).

In Navarra (Spain), there is an issue of over- and under-compensation partly solved since the payment calculation methodology includes the prohibited grazing period element. That element is determined by the Management Plan of every Natura 2000 site, which makes the system closer to real costs. Despite that, the key problem of average whole territory data usage remains and can impose under-compensation in areas with high net margins of profitability and over-compensation in areas where the net margins are very low.

**Remaining key issues:**

- lack of reliable actual technical and economical data (mainly in case of forestry),
- horizontal x regional approach (over and underestimations can not be ruled out with horizontal approach but more detailed differentiation of payments can increase administration costs beyond an acceptable level),
- the incentive element for Natura 2000 measure is absent,
- problems in relation to the applicability of RDR guidelines (e.g. discrepancies between 5 – 7 year payment and 20 – 25 year commitment period, difficulties with spatial demarcation of eligible areas in forestry),
- problems in relation to the applicability of standard costs approach (e.g. factors as landscape and nature values are nearly impossible to be quantified and covered by payments),
- large variation in commitments and consequently in approaches used for Natura 2000 payments calculation.

**2.3. Data sources****2.3.1. Used data**

The list of data sources across countries is very heterogeneous, mainly for Natura 2000 forestry areas, where no common database exists and each country use data from different sources. Among most common data sources belong statistical data published regularly however an 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 summarized below separately for agricultural and forestry areas.

**Natura 2000 payments on agricultural land:**

- FADN predominates,
- own surveys, expert estimation and academic literature are essential complements

**Natura 2000 payments on forestry land:**

- no common database:
  - CZ – legislation for forest evaluation published by MoA,
  - DE<sub>NRW</sub> – IACS, Forest value evaluation guideline published by Federal state NRW,
  - GR – Analytical list of costs for forestry work published by MoE,
  - LT – FADN, Methodology for accounting and evaluation of sprouts, planting and afforestation works published by MoE,
  - IT<sub>UMB</sub> – price list for forestry products published by Chambers of Commerce, value tables of standing timber published by Regional Agency for Environmental Protection and Prevention,
- own surveys, expert estimation and academic literature are essential complements.

**2.3.2. Missing data**

Lack of data for Natura 2000 payment calculation is an issue in all countries implementing this measure. In Greece such information is not available since the calculation process has not been finished by the date of data collection.

In the Czech Republic, data for grass yield reduction, hay prices and input costs were not available according to different level of fertilization (i.e. 80 and 0 kg N/ha). Similarly in North Rhine-Westphalia (Germany) grass yield reductions due to Natura 2000 restrictions were

estimated by local experts. Lack of technical and economical silvicultural data and shortage of methodological experience with this kind of evaluation are missing in Umbria region (Italy) and Lithuania. Non-existence of regionalized 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.

## 2.4. Contextual information

### 2.4.1. Uptake of the Natura 2000 measure and public expenditure

Considering that the Natura 2000 payments have been introduced by the Council Regulation (EC) No. 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.

**Table 2.10 Share of Natura 2000 on total area in 2005**

	CZ	DE <sub>NRW</sub>	ES <sub>N</sub>	FI	GR	IT <sub>UMB</sub>	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 on total area (%)	13.27	8.81	24.24	14.54	19.20	14.22	11.99	13.50	20.22

### 2.4.2. Administrative structure involved in payment calculation

Usually one to three institutions (mostly ministries of agriculture and environment and/or research institutes) are responsible for payment calculations and their verification in particular countries.

**Table 2.11 Administrative structure involved in payment calculation – agricultural land**

Institution involved in:	Payment calculation		Payment verification	
	No.	names	No.	names
CZ	1	- Research Institute of Agricultural Economics (VUZE)	0	
DE <sub>NRW</sub>	1	- Chamber of Agriculture NRW	0	
ES <sub>N</sub>	1	- Environment, Land Planning and Housing Ministry of Navarra Gov. (MoE)	2	- Environment, Land Planning and Housing Ministry of Navarra Gov. (MoE) - Crops, Livestock and Food Ministry of Navarra Gov. (MoA)
IT <sub>UMB</sub>	2	- Regional administration offices of Umbria Region - University of Perugia	1	- University of Perugia
LT	2	- Lithuanian Institute of Agrarian Economics (LAEI) - MoA	2	- MoA - Lithuanian Chamber of Agriculture
PL	>3	- Institute of Agriculture and Food Economics - Institute of Architecture, Mechanization and Electrification of Agriculture - Institute for Land Reclamation and Grassland Farming - Institute of Soil Science and Plant Cultivation - Institute of Animal Breeding	3	- Agency for Restructuring and Modernization of Agriculture - MoA - MoE

**Table 2.12 Administrative structure involved in payment calculation – forest land**

Institution involved in:	Payment calculation		Payment verification	
	No.	names	No.	names
CZ	2	- MoE - Agency for nature conservation and landscape protection (AOPK)	> 3	- MoA - Forest Management Institute (UHUL) - MoE - AOPK
DE <sub>NRW</sub>	1	- Chamber of Agriculture NRW	0	
GR	3	- Consulting firm - Forestry Service - RD Management authority	2	- Forestry Service - RD Management authority
IT <sub>UMB</sub>	2	- Regional administration offices of Umbria Region - University of Perugia	1	- University of Perugia
LT	2	- MoE - Lithuanian Fund for Nature	2	- MoA - Lithuanian Chamber of Agriculture

### 2.4.3. Final comments and remarks

This chapter covers list of some interesting remarks mentioned in questionnaires.

- the measure design and payment calculation is always influenced by its previous form and from the administration view it is recommended to keep existing approaches to the payment calculation also in the future,
- sometimes more than one approaches for payment calculation exist and level of payment then depend on chosen approach and detail of calculation (e.g. what kind and how many operations are included into calculation process),
- agricultural enterprises which can apply for Natura 2000 measure become scarce (number of livestock owners maintaining such grassland decreases and the measure is not perspective for high-performance enterprises),
- design and implementation of Natura 2000 measure is influenced by coordination of environment and agriculture authorities (i.e. predominance of agriculture authorities in the final decisions),
- a change of farmers' view of Natura 2000 measure will be necessary (i.e. change of idea from receiving a subsidy to producing benefits for the money and uptake of Natura 2000 commitments voluntarily instead of obligatory basis with follow-up compensation),
- factors as landscape and nature values are nearly impossible to be quantified and covered by payments thus different ways of calculation should be discussed in future (i.e. paying for environmental benefit produced by farmer),
- an implementation of forestry measures requires additional work (e.g. the compilation of area registers and spatial demarcation of the eligible areas for following control etc.) and brings administrative complication (e.g. discrepancies between payment and commitment period).

### 3. Conclusion

The review aims to provide comparison of different approaches to payment calculation for Natura 2000 measure on agricultural land (213) and on forestry land (224) across nine EU countries. Although these measures are not implemented in all selected countries, obtained data are for the synthesis sufficient. The review has confirmed an expectation of large variation in commitments and consequently in approaches used for Natura 2000 payments calculation.

Natura 2000 measures are not implemented in Finland and Scotland at all. The support to agricultural land is not applied in Greece and in contrast Navarra (Spain) and Poland does not provide the support to forestry land. In these countries a protection of Natura 2000 areas is realized mainly through (non) / specific agri-environmental measures, forest-environmental measures and non-productive investments, supplemented by national supported system.

Eligibility criteria are in most of the investigated countries similar. Some of these countries apply additional requirements (e.g. minimum size of farm; established flock and grazing rights or obligatory farm management plan). The limitation of the Natura 2000 payment on agricultural land only for grassland is used in all countries except of LT and in the case of forestry land only for specific tree species in CZ and DE<sub>NRW</sub>. Specific commitments for Natura 2000 measures vary significantly across the countries depending on natural and other country-specific conditions. Considerable differences exist within approaches in payment calculation of both Natura 2000 measures. The amount of Natura 2000 payment is generated from basic components as income foregone and additional costs, whereas additional income and transaction costs are added in the case of Natura 2000 on agricultural land. 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 as net margin, replacement costs of yield reductions, NVA difference or average felling increments difference are used as well. Higher similarity exists within determination of additional costs where increase of labour cost and feeding cost dominate and further other type of costs are added according to required activity (e.g. operation costs, rent costs, biotope development costs). Additional income decreasing the final payment is considered in Poland in connection with a possibility to realize fattening on grassland. Finally transaction costs covering costs for ornithological and natural habitats documentation preparation are included only in Poland since Natura 2000 measures on agricultural land are meanwhile a part of AEM there.

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, mainly for Natura 2000 on forestry areas where no common database exists. Among the main problems within payment calculation are: the lack of technical, economic and regional data enabling to provide calculation on smaller scale, lack of methodological experience, difficulties in determination of payment components and quantification of landscape and nature values. During the design of payments has arisen questions relating to long term character of the Natura 2000 on forestry land measure, discrepancy between payment period and commitment duration and difficulties with spatial demarcation of forest areas.

Finally, it was recognized that the comparison of different payment calculation approaches and the development of methodological grid harmonized across all countries is possible, but only on the assumption that some simplification and selection of the most common commitments / payment components will be adopted.

## 4. Annex

### 4.1. Review of Natura 2000 measures

Table A.1 Review of Natura 2000 measures

Country	Name of submeasures of the Natura 2000 measures	Level of payments		Previous existence of Natura 2000 measures <sup>9</sup>
		EUR/ha	% of calculated level of payment	
<b>Natura 2000 payments on agricultural land</b>				
CZ	Natura 2000 payments on agricultural areas	112	100	↑ +22%
DE <sub>NRW</sub>	FFH and EC-areas for bird preservation with high conservation obligations (nature conservation areas or biotopes)	98	90.8	↓ -20%
	FFH and EC-areas for bird preservation with moderate conservation obligations (landscape conservation areas)	48	81.5	↓ -21%
	FFH and EC-areas for bird preservation with minimal conservation obligations	36	73.4	↓ -22%
ES <sub>N</sub>	Sheep grazing on Natura 2000 steppe lands:		100	= 0
	a) Non-grazing period	30		
	b) Flock of < 700 sheep	40		
	Mountain grazing on Natura 2000:		100	0 0
	a) Rough grazing and scrub	31		
	b) Pastures and meadows	188		
FI	n.a.	n.a.	n.a.	n.a.
GR	n.a.	n.a.	n.a.	n.a.
IT <sub>UMB</sub>	Natura 2000 payments on agricultural land	40	100	0
LT	Natura 2000 payments on agricultural land	40	100	↓ -55%
PL	Natura 2000 payments on agricultural land:			.
	1. Protecting habitats in bird's Ground nesting sites	366	100	0
	2. Moss	371	100	0
	3. Rushes with tall sedge	243	100	0
	4. Meadows moor-grass and selernicowe	317	100	0
	5. Warm likes meadows	368	100	0
	6. Semi natural wet – hay meadows	224	100	0
	7. Semi natural meadows fresh habitats	224	100	0
	8. Meadows rich species: sod of white bent grass ( <i>Nardus stricta</i> )	232	100	0
	9. Halophyte	318	100	0
	10. Ecological compensation area	147	100	0
SCO	n.a.	n.a.	n.a.	n.a.
<b>Natura 2000 payments on forestry land</b>				

<sup>9</sup> The compensatory allowances intended for areas with environmental restrictions according to the Article 16 of the Council Regulation (EC) No. 1257/99 is considered as previous measure for Natura 2000 on agricultural land.

CZ	Conservation of the forest management group from the previous production cycle	<b>60.44</b>	100	0
DE <sub>NRW</sub>	FFH and EC-areas for bird preservation with high conservation obligations (nature conservation areas)	<b>50</b>	99.1	0
	FFH and EC-areas for bird preservation with moderate conservation obligations (landscape conservation areas)	<b>40</b>	100	0
ES <sub>N</sub>	n.a.	n.a.	n.a.	n.a.
FI	n.a.	n.a.	n.a.	n.a.
GR	Natura 2000 payments on forest land	<b>300 (maximum)</b>	n.d.	0
IT <sub>UMB</sub>	Permanent exclusion from felling of 2 more trees per ha of every tree species making up the forest	<b>40</b>	84	0
	Exclusion from felling of beech coppice-woods having reached the rotation age	<b>200</b>	79	0
	Prohibition of grazing in forests located in specific habitats	<b>200</b>	98	0
LT	Final forest cutting operations are forbidden or postponed	<b>170</b>	100	0
	Final forest cutting operations have to be carried out in non-clear cutting way	<b>85</b>	100	0
	Additional number of living trees have to be preserved and left in clear cutting areas (one-off payment)	<b>144</b>	100	0
	Cutting of drying trees or dead wood is forbidden or restricted in forest stands 20 years old and over	<b>40</b>	97.5	0
	Preparation or amendment of forest management plan (one-off payment)	<b>59</b>	100	0
PL	n.a.	n.a.	n.a.	n.a.
SCO	n.a.	n.a.	n.a.	n.a.

## 4.2. Contractual obligations within Natura 2000 measure

**Table A.2 Commitments for Natura 2000 on agricultural land - CZ**

Contractual obligation	Management changes
The applicant shall assure that grasslands are grazed or mowed at least twice a year (in justified cases once a year) within fixed deadlines. The mowed biomass shall be removed from the parcels	Limitation of fertilizers application is the basis of the payment, other contractual obligations have not any impact on the payment calculation
Application of fertilisers of farm manure shall be avoided. In the case of pasture, grazing livestock may add at most 30 kg N/ha of grazed area	

**Table A.3 Commitments for Natura 2000 on agricultural land - DE<sub>NRW</sub>**

Contractual obligation	Management changes
Renunciation of ploughing up grassland	Precise land use changes which have to be applied in different areas are districts (small scales) specific and not traceable.
Renunciation of applying additional drainage methods	
Perpetuation of soil relief	
Renunciation of biotope and timber removals	
Renunciation of afforestation	
Obligation to act with consideration of breeding birds and their nests	

**Table A.4 Commitments for Natura 2000 on agricultural land - ES<sub>N</sub>**

Contractual obligation	Management changes
<b>Steppe areas</b>	
Compliance with limitations established by Authorities for conserving the flora and fauna of the sites Participate in training considered necessary by the Authorities	Keep stocking limits in certain areas at certain times
	Exclude of grazing in certain areas at certain time
	Reduction of flock size up to 700 heads at certain times
<b>Mountain areas</b>	
Compliance with grazing rules established in the grazing resources plan for protection of habitats	Maintain a stocking density of 0.1 to 1.4 LU/ha, depending on the type of pasture and the grazing plan
	Preserve certain elements of value for flora and fauna

**Table A.5 Commitments for Natura 2000 on agricultural land - IT<sub>UMB</sub>**

Contractual obligation	Management changes
Prohibition of carrying out complete scrub clearing and stone removal on around 20% of total area of pastures	Prohibition of using 20% of pastures under contract for grazing cattle

**Table A.6 Commitments for Natura 2000 on agricultural land - LT**

Contractual obligation	Management changes
The particular restrictions set in the statutes of protected areas or their management plans	Restriction of ploughing meadows or re-sowing them with culture grass
	Restriction of draining or any other alterations of the hydrological regime
	Restriction of livestock density up to 1 LU per ha
	Prohibition of mowing meadows before 15 of June
	Prohibition of using fertilizers, pesticides or liming substances

**Table A.7 Commitments for Natura 2000 on agricultural land - PL**

Contractual obligation	Management changes
Maintain permanent grassland areas and ecological compensation areas, Farm management plan is based on crop rotation, due on the Code of Good Agriculture Practices, Comply with Minimum standards concerning the use of fertilizers, manure, based on regulations	Limitation of the usage of fertilizers and pesticides
	Hay making period and number of this per year is limited
	Grazing is limited
	Hay grass cutting is limited on the height of 5 to 15 cm
	Livestock density is limited

**Table A.8 Commitments for Natura 2000 on forestry land - CZ**

<b>Contractual obligation</b>	<b>Management changes</b>
Undertake a requirement to conserve the current management group or type of the forest within a new forest management plan	Obligation to keep the proposed species composition of trees without a possibility to replace current types of trees with low AFI (mainly with a favourable environmental impact and broadleaved) by trees with higher AFI (mainly by spruce).
Observe the species composition recommended for the regeneration in the event of forest regeneration and throughout the duration of the commitment	
Submit annually a notification certified by a professional forest manager that the prescribed species composition or the method of forest regeneration by means of suckers have not been changed on the group of stands into the measure	
Undertake to observe conditions on the forest land over 20 years	

**Table A.9 Commitments for Natura 2000 on forestry land - DE<sub>NRW</sub>**

<b>Contractual obligation</b>	<b>Management changes</b>
Maintenance of old and deadwood proportions	Management practice changes follow from mentioned usage restrictions and are district (small scale) specific.
Biotope specific development measures for endangered species	
Removal of undesirable regenerations	
Maintenance of deciduous wood	
Prohibition / restriction of clear cutting	
Premature usage of undesirable tree species	
Renunciation of chemical synthetic pesticides	
Temporal restrictions for harvesting and exploitation operations	

**Table A.10 Commitments for Natura 2000 on forestry land - GR**

<b>Contractual obligation</b>	<b>Management changes</b>
Obligation will be defined in Special Environmental Management Plans based on Special Environmental Assessment	Maintenance of mature tree clusters in coppice forests
	Maintenance of gaps within forests
	Prohibition of collection of ornamental plants, lichen and cutting or deracination of fructiferous species of flora or uncommon species
	Prohibition of logging in a ray of 50 m from predators' or other threatened species nests
	Prohibition of logging in forest bordering zone for 50 – 100 m as well as of isolated trees beyond this border zone
	Prohibition of destroying of riparian vegetation and felling of all kinds of trees at both sides of torrents or streams in a distance of 30 – 50 m
	Prohibition of removal of all badly shaped, overblown or fallen trees
	Prohibition of felling of clusters in torrents, thalwegs and rocky areas utilizing relief
	Prohibition of introduction of coniferous trees in garrigues and oak wood
Maintenance of some part of forests to be unmanaged	

**Table A.11 Commitments for Natura 2000 on forestry land – IT<sub>UMB</sub>**

<b>Contractual obligation</b>	<b>Management changes</b>
Permanent exclusion from felling of 2 more trees per ha of every tree species making up the forest, starting from the oldest and biggest trees	
Exclusion from felling of beech coppice woods having reached the rotation age	
Prohibition of grazing in forests located in specific habitats	

**Table A.12 Commitments for Natura 2000 on forestry land - LT**

<b>Contractual obligation</b>	<b>Management changes</b>
Obligations are defined in management plans of particular type of protected areas	Preparation or amendment of forest management plan
	Additional number of living trees have to be preserved and left in site
	Final forest cutting is restricted or postponed
	Final forest cutting have to be carried out in non-clear cutting way
	Cutting of dead or drying trees is restricted in forests older than 20 years

### 4.3. Tables for calculation of Natura 2000 payments on agricultural land

**Table A.13 Process of payment calculation of Natura 2000 on agricultural land – CZ**

	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 fertilizers	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
<b>Total variable costs</b>	<b>50.9</b>	<b>20.7</b>
Hay yield (ton/ha)	5.1	2.4
Sale price of hay (EUR/ton)	52.9	52.9
<b>Total income</b>	<b>269.8</b>	<b>126.9</b>
<b>Gross margin</b>	<b>218.8</b>	<b>106.2</b>
<b>Amount of payment (EUR/ha)</b>		<b>112.64</b>

**Table A.14 Process of payment calculation of Natura 2000 on agricultural land - DE<sub>NRW</sub>**

Submeasure	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 (%)	<b>22</b>	<b>12</b>	<b>10</b>
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	<b>107.92</b>	<b>58.87</b>	<b>49.06</b>
<b>Amount of payment (EUR / ha)</b>	<b>98</b>	<b>48</b>	<b>36</b>

**Table A.15 Process of payment calculation of Mountain grazing on Natura 2000 – ES<sub>N</sub>**

	Rough grazing and scrub	Pastures and meadows
<b>Income foregone (EUR/ha)</b>		
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
<b>Total income foregone</b>	<b>31</b>	<b>188</b>
<b>Amount of payment (EUR/ha)</b>	<b>31</b>	<b>188</b>

**Table A.16 Process of payment calculation of Sheep grazing on Natura 2000 steppe lands – ES<sub>N</sub>**

<b>I. prohibited grazing period:</b>	
<b>Additional costs</b>	
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
<b>Total increase of additional costs</b>	<b>13.09 – 39.27</b>
<b>Amount of payment (EUR/ha)</b>	<b>30</b>
<b>II. reduction of flock size:</b>	
<b>Additional costs</b>	
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
<b>Total increase of additional costs</b>	<b>41.17</b>
<b>Amount of payment (EUR/ha)</b>	<b>41</b>

**Table A.17 Process of payment calculation for Natura 2000 on agricultural land - IT<sub>UMB</sub>**

	<b>1<sup>st</sup> approach</b>	<b>2<sup>nd</sup> approach</b>
<b>Additional costs</b>		
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
<b>Total additional costs</b>	<b>198.84</b>	<b>198.30</b>
<b>Total additional costs (20% of area)</b>	<b>39.77</b>	<b>39.66</b>
<b>Amount of payment (EUR/ha)</b>	<b>40.00</b>	<b>40.00</b>

**Table A.18 Process of payment calculation for Natura 2000 on agricultural land - LT**

<b>Land fertility point and dominant type of farming</b>	<b>NVA according to average structure of farms (EUR/ha) for:</b>		<b>Income foregone (EUR/ha)</b>
	<b>traditional farming</b>	<b>restricted farming</b>	
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
<b>Average income foregone</b>			<b>39.93</b>
<b>Amount of payment (EUR/ha)</b>			<b>40</b>

**Table A.19 Process of payment calculation of Natura 2000 on agricultural land – PL**

	1	2	3	4	5	6	7	8	9	10
<b>Income foregone</b>										
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						
<b>Additional costs</b>										
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
<b>Additional income</b>										
Income from LU for fattening	160.40		42.20		105.53	210.05	210.05	126.63	105.53	
<b>Amount of payment (EUR/ha)</b>	<b>366</b>	<b>370</b>	<b>243</b>	<b>317</b>	<b>368</b>	<b>224</b>	<b>224</b>	<b>232</b>	<b>318</b>	<b>147</b>

Note: 1: Protecting habitats in bird's 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

#### 4.4. Tables for calculation of Natura 2000 payments on forestry land

**Table A.20 Process of payment calculation of Natura 2000 on forestry land - CZ**

Typical forest types within Natura 2000 areas	AFI of species composition divided by its 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
<b>Total income foregone (EUR/ha)</b>				<b>57.52</b>
<b>Amount of payment – rounded (EUR/ha)</b>				<b>60.44</b>

**Table A.21 Process of payment calculation of Natura 2000 on forestry land - DE<sub>NRW</sub>**

Components	Additional costs	Income foregone
<b>Maintenance of old and deadwood proportions:</b>		
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	
<b>Total additional costs (EUR/ha)</b>	<b>393.75</b>	
<b>Biotope specific development measures for endangered species:</b>		
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	
<b>Total additional costs (EUR/ha)</b>	<b>40.46</b>	
<b>Removal of undesired generations:</b>		
Labour costs (EUR/hour)	20	
Number of hours over 20 years (hours)	2	
<b>Total additional costs (EUR/ha)</b>	<b>40.00</b>	
<b>Maintenance of deciduous forest:</b>		
Income reductions		40
Recalculated income reduction (45% on FFH-area)		18
<b>Total income foregone over 20 years</b>		<b>360</b>
<b>Clear cutting prohibition:</b>		
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
<b>Total income foregone over 20 years</b>		<b>137.57</b>
<b>Pre-mature usage of undesirable tree species (coniferous):</b>		
<b>Total income foregone over 20 years</b>		<b>37.00</b>
<b>Sum of additional costs and income foregone over 20 years (EUR/ha)</b>		<b>1 008.78</b>
<b>Amount of payment (EUR/ha)</b>		<b>50.00</b>

**Table A.22 Process of the payment calculation of Permanent exclusion from felling trees – IT<sub>UMB</sub>**

Components	Permanent exclusion from felling of 2 more trees per ha	
	1 <sup>st</sup> criteria	2 <sup>nd</sup> criteria
<b>Income foregone</b>		
Mean volume of felled coppice woods (m <sup>3</sup> /ha)	108.2	
Mean volume of 2 non-felled trees (m <sup>3</sup> )		3
Timber price (EUR/ m <sup>3</sup> )	30	30
Share of non-felled volume per ha (%)	3 – 4	
Income losses (EUR/ha)	97.38 - 129.84	90
<b>Total income foregone</b>		90 – 129.84
<b>Total income foregone – annual (/5 years)</b>		<b>18.00 – 25.97</b>
<b>Additional costs</b>		
Topographic location of trees using GPS		29.51
<b>Total additional costs</b>		<b>29.51</b>
<b>Proposed amount of support</b>		<b>47.51 – 55.48</b>
<b>Amount of payment (EUR/ha)</b>		<b>40</b>

**Table A.23 Process of the payment calculation of Exclusion from felling of coppices – IT<sub>UMB</sub>**

	Exclusion from felling of beech coppice-woods having reached the rotation age	
<b>Income foregone</b>		
Mean volume of beech coppice woods (m <sup>3</sup> /ha)	157.5	
Mean volume of high forests (m <sup>3</sup> /ha)		360
Timber price (EUR/ m <sup>3</sup> )	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
<b>Total income foregone</b>		1042 – 5 191
<b>Total income foregone – annual (/5 years)</b>		254 – 1 101
<b>Amount of payment (EUR/ha)</b>		<b>200</b>

**Table A.24 Process of the payment calculation of Natura 2000 on forestry land - LT**

	Final forest cutting operations are forbidden or postponed	Cutting operations are carried out 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
<b>Income foregone</b>				
Mean volume of mature forest stands (m <sup>3</sup> /ha)	255	255		
Average volume of one left tree (m <sup>3</sup> )			0.8	0.6
Average marketable volume = 90%	230	230	0.72	0.54
Average price of uncut fuel-wood (EUR/m <sup>3</sup> )				4.8
Average price of round wood (EUR/m <sup>3</sup> )	29.9	29.9	29.9	
Average costs of wood harvesting and logging (EUR/m <sup>3</sup> )	9.9	9.9	9.9	
Average price of uncut wood (EUR/m <sup>3</sup> )	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
<b>Amount of payment (EUR/ha)</b>	<b>170</b>	<b>85</b>	<b>144</b>	<b>38.9 = 40</b>

## 4.5. Problems within payment calculation

**Table A.25 Problems within payment calculation process – Natura 2000 on agricultural land**

Country	Problem	Solution	Unsolved problems
CZ	determination of decrease of the hay production incurred by lower fertilization	VUZE provided own telephone survey among farmers and calculated weight average of yield and some additional supported data were gathered and related scientific literature were studied	flat-rate Natura 2000 payment does not compensate economy limitation equitably for all farmers, suggested three levels of payment (e.g. by climatic zones or altitude) were not used so far
	determination of input cost changes due to such fertilization limitation	some simplification was made – the average variable input costs were accepted as the same as for general so for extensive grassland management (except cost for fertilizations which is for extensive management estimated as zero level)	
	price of hay is missing since FADN does not cover price for products from grassland	survey among farmers was provided by VUZE supplemented by internet offers investigation	
	payments of some extensive AEM on grassland are decreased by 112 EUR (Natura 2000 payment) if the grassland are in the 1 <sup>st</sup> zones of NP or PLA but not always can be compensated by Natura 2000 payment since these localities are not in Natura 2000 areas	in the case of compensation such farmers – new ordinance should be implemented by MoE and farmers were supported form national resources	the problem of discrimination resulting from complementary relationship between AEM and Natura 2000 will be necessary to solve in future
	more differentiated approach (eventually “contract approach”) will be more appropriate	MoE with one NGO have implemented a project focusing on one protected locality and is trying to design management plans for particular farms	acceptance of more differentiated approach needs more time to obtain data and experience with such farm focusing plan
DE <sub>NRW</sub>	quantification of yield reductions caused by the usage restrictions	yield reductions are calculated as a single federal-state-wide scale based on the compliance with minimum standards	
	high regional differences call for calculation provided on smaller scales		this is not feasible
ES <sub>N</sub>	difficult to determine income foregone and additional costs; some other factors are nearly impossible to be quantified (e.g. landscape and nature values)	the methodology used in RDP is designed to deal with these problems and to allow corrections for next payment calculations	
LT	average data form FADN were used instead of differentiated payment according land quality		differentiated payment according land quality were not used

**Table A.26 Problems within payment calculation process – Natura 2000 on forestry land**

Country	Problem	Solution	Unsolved problems
DE <sub>NRW</sub>	long-term character of the measures raises several questions (price of wood, interest rate, etc.)	the solution for problems with payment calculation for Natura 2000 on forestry areas are chosen methods for recent calculations	determination of minimum amount of payments
	small scale local conditions are not considered due to missing administrative manageability		
	assessment of the usage restriction incidences in Natura 2000 areas and subsequent assessments of total financial resources required		
	administrative guidelines to allocate payments over a time horizon of seven years instead of one single payment		
	the federal state contractually commits itself within the measure over a time period of 20 years, whereas the EU commits only to co-financing over 7 years		
IT <sub>UMB</sub>	lack of silvicultural data, complicating determination of non-felled volume and income foregone	thinking up of new evaluation methods	
LT	lack of reliable actual technical and economical data	normative data was used for payments calculations instead of missing actual data	
	approved technological specifications were missing (e.g. average cost of wood harvesting and logging)	not approved technological specifications of the Lithuanian Institute of Agriculture were used	
	short methodological experience	advices form other institutions in Lithuania and foreign neighbouring countries were used	

#### 4.6. Share of data sources used in questionnaires

