AGRIGRID

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

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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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Report D7
Methodological grids for forestry measures

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List of project partners

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Institute of Farm Economics Johann Heinrich von Thuenen-Institute	vTI	Germany
Agricultural University of Athens	AUA	Greece
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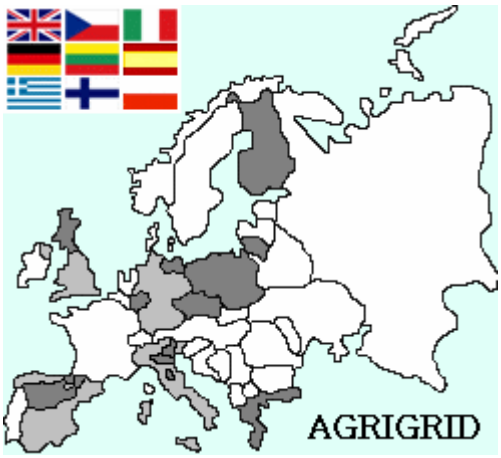

Executive Summary

The report summarised the outcomes of Work Package 5 which was focused on elaboration of the methodological framework for the payment calculation for forestry measures aiming to harmonise the methods of payment calculation across the European Union (EU) Member States. The aim of this report was to describe the developed methodological grids for calculating payments in forestry measures and show its practical application. The grid development considered the following forestry measures: first afforestation of agricultural land (221), first establishment of agroforestry 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).

The grid development was based on information obtained from nine EU member states: Scotland – UK, Germany, Greece, Czech Republic, Lithuania, Finland, Italy, Spain and Poland. Since some of these countries, e.g. Germany and Italy, implement their RDPs at regional level, specific regions were chosen as examples to investigate the forestry measures in these countries. For example, the calculation of forest environment payments in Germany was investigated in Mecklenburg West-Pomerania, while in Italy forestry measures were investigated for the Umbria region. Similarly, payment calculations in Spanish forestry measures were reviewed in the Basque Country and Navarra region.

While eligibility criteria and scheme commitments are often similar across countries, the level of detail 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 modeling exercises. Moreover, payment calculations vary between the different forestry measures. This implied that different logic frameworks needed to be developed and applied which consequently results in different designs of the methodological grids for afforestation measures and forest environment payments. For example, special attention needed to be paid to design separate calculations of establishment costs, maintenance costs and agricultural income foregone in measure 221. The challenge was to develop a harmonised methodology for payment calculations in forestry measures applicable EU-wide but at the same time considering measure-specific and regional circumstances and maintaining relatively low administration costs.

Developing methodological grids for the payment calculation in the different forestry measures requires a detailed knowledge of present conditions and methods at both production level and policy level. At the production level, it is necessary to gather data on the structure and characteristics of the farming and forestry sectors including natural, agronomic and

silvicultural conditions and production systems and techniques. At the policy level, it is necessary to know the existing methods for payment calculations in forestry measures and their impacts on that structure. Existing payment calculations have been reviewed in nine European countries to obtain a better understanding of how the calculations are carried out and to collate a comprehensive database of calculation components.

Based on the review of payment calculations, logic frameworks for the payment calculations in forestry measures have been developed. The logic frameworks provide a generic structure and a clearer exposition of the calculation process. The different core parts of the calculation process have been identified including baseline requirements, relevant commitments defined in forestry measures, lists of practices reflecting required changes in farm and land management, lists of cost, revenue and income components and payment differentiation categories and elements. These parts have then been integrated in the methodological grids, providing a new harmonised and flexible method to calculate forestry payments.

One of the main challenges in the AGRIGRID project was to develop a harmonised method for calculating payments across the EU. The methodological grids provide such a harmonised method through an easy-to-follow generic template of six (seven, if transaction costs are applicable) main calculation steps:

1. Selection of the approach for payment calculation
2. Creation of the linkage relationship between relevant baselines and measure commitments and identification of cost, revenue and income components
3. Definition of payment differentiation
4. Calculation of practices and cost, revenue and income components and/or identification of source for appropriate figures
5. RDR payment limits: Overview and calculation of eligible payment elements
6. Overview of final payment

The different sub-steps in step 4, 'Calculation of practices and cost, revenue and income components and/or identification of source for appropriate figures', provide guidance for the calculation of cost components at different aggregation levels depending on the available information and data for each practice. The number of calculation layers which can be added to the calculation process is flexible and can be adjusted according to the calculation requirements and data availability. The lowest (or most detailed) calculation level includes guidelines for the calculation of the most commonly used components and sub-elements.

While the generic step-by-step approach is the same across all rural development measures, a few special calculation issues need to be considered in the methodological grids for forestry measures. The calculation process varies between different forestry measures. Afforestation measures (including the agro-forestry measure) apply a similar logic framework to the payment calculation. However, separate calculations of establishment costs, maintenance

costs and agricultural income foregone payments (where applicable) become necessary. These 'sub-payments' of afforestation measures have different practices and can have different payment differentiations within the same forestry measure in the same country, thus requiring a separate calculation grid or matrix for each of those 'sub-payments'. This implies that, for example in afforestation measures of agricultural land, the step-by-step approach and the calculation process in step 4 has to be carried for each of the three 'sub-payments'. The different grids are then brought together at the end of the overall calculation process in step 6 to represent the overall financial support provided through measure 221. Similar processes apply to measure 223 with calculations of establishment costs and maintenance costs.

Furthermore, the methodological grids have to be flexible enough to account for large differences in available data and information on the various practices and their components. This aspect is of particular importance given the remaining data problems. To address those differences, the forestry grids allow the user to specify a value at practice level should no further information or data be available for specific cost, revenue or/and income components. However, in this case, detailed information on the source and justification of this value needs to be provided. The outcome of the review of the existing payment calculations in the partner countries suggests that in most cases at least one sub-layer with cost, revenue or/and income components can be calculated. Close collaboration with government agencies throughout the different stages of the grid development ensured that the developed methodological grids are tailored to the needs of the potential users of the software tool.

Overall, the main contributions of the methodological grids for forestry measures can be summarized as follows:

Key contributions of the developed 'forestry grids'

- The harmonised and consistent framework of the step-by-step method for the payment calculations in forestry measures increases the transparency of the calculation process.
- The payment calculations are easily traceable and mechanisms for listing data sources are provided in a consistent manner which facilitates the justification process during the negotiations of the RDPs between the member states and the EC.
- In fact, it is the harmonisation of the calculation process together with the flexibility of the grids which is the main contribution of the developed methodological grids addressing the large variations in existing payment calculations and providing a user-friendly calculation tool.
- The flexibility of the grids also allows the user to apply and compare various differentiation scenarios and review the potential impact on the available budget, payment distribution and overall efficiency of the forestry measures.

The application of the methodological grids is expected to increase the transparency of payment calculations and to facilitate the justification of forestry payments between the member states and the European Commission. However, the potential of applying methodological grids as a harmonised tool for payment calculations strongly depends on the quality and quantity of the available data to quantify additional costs and income foregone. Data availability remains the key problem in payment calculations in forestry measures and the lack of reliable and up-to-date economic and silvicultural data for forestry enterprises is the main limitation for more elaborated payment calculations. While the lack of data is a general problem in forestry measures, it is particular evident in forest environment payments, where existing payment calculations are often reduced to simplified assumptions.

The application of the methodological grids for the payment calculations in forestry (and other RD) measures can be a first step in improving the transparency and consistency of payments, but the development of a consistent and regularly updated data infrastructure for forestry measures, e.g. similar to the FADN database for EU agriculture, is a crucial task for future research to further improve this process. Such database could be integrated with the software tool developed in the AGRIGRID project.

In addition, a set of recommendations could be developed, with the aim of providing some guidance on what calculation approach to be used under which circumstances and different levels of data availability. Such recommendations could also include best practice guidance on how to deal with existing data gaps. Furthermore, the need to enhance the methodological experience of the staff responsible for payment calculations and the design of RD measures has been pointed out in discussions with representatives of government agencies. More attention should also be paid to the harmonisation of the terminology throughout the different steps of the payment calculations.

Beyond the current standard cost based calculations, the feasibility and suitability of modifying the developed grids for the application in marginal cost based calculations of RD payments and in the context of setting maximum prices for auctions to define RD payments could be explored in future work.

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List of abbreviations

AFI	Average felling increment
ARWS	Ameliorative and reinforcing wood species
CZ	Czech Republic
DE_{MWP}	Mecklenburg West-Pomerania (Germany)
ES_{BC}	Basque Country (Spain)
ES_{N}	Navarra region (Spain)
EST	Establishment cost
EU	European Union
EUR	Euro
FADN	Farm Accountancy Data Network
FI	Finland
GAEC	Good Agricultural and Environmental Conditions
GR	Greece
ha	Hectare
k	thousand
IT_{UMB}	Umbria region (Italy)
LFA	Less Favoured Area
LT	Lithuania
MB	Mixed broadleaves
MNT	Maintenance cost
NBL	Native broadleaves
PL	Poland
RD	Rural Development
RDP	Rural Development Plan
RDR	Rural Development Regulation
SCO	Scotland
SFGS	Scottish Forestry Grant Scheme
SMR	Statutory Management Requirements
UK	United Kingdom
WFD	Water Framework Directive

1 Introduction

The report summarises the outcomes of Work Package 5 which was focused on elaboration of the methodological framework for the payment calculation for forestry measures aiming to harmonise the methods of payment calculation across the European Union (EU) Member States. The aim of this report is to describe the developed methodological grids for calculating payments in forestry measures and show their practical application. The grid development considered the following forestry measures: first afforestation of agricultural land (221), first establishment of agroforestry 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).

The grid development was based on information obtained from nine EU member states: Scotland – UK, Germany, Greece, Czech Republic, Lithuania, Finland, Italy, Spain and Poland. Since some of these countries, e.g. Germany and Italy, implement their RDPs at regional level, specific regions were chosen as examples to investigate the forestry measures in these countries. For example, the calculation of forest environment payments in Germany was investigated in Mecklenburg West-Pomerania, while in Italy forestry measures were investigated for the Umbria region. Similarly, payment calculations in Spanish forestry measures were reviewed in the Basque Country and Navarra region.

Table 1.1 summarises the investigated submeasures in the different countries and shows the differences in the extent of implementing forestry measures in the RDPs of the partner countries.

Table 1.1 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 EUR 10 million during the programming period 2007–2013.

As is evident from Table 1.1, 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, Table 1.1 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. Consequently, this report puts the emphasis on these two measures in the synthesis of the different forestry questionnaires and measures.

The measure afforestation of agricultural land (221) is implemented horizontally in all investigated countries and regions, where this measure exists. As shown in Table 1.1, 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 are 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 (mountainous areas, areas with natural handicap other than mountainous, Natura 2000 and WFD areas) and 70% of eligible costs in other areas are paid. Payments in Umbria range from EUR280 to 1580 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 (compare with Table 1.1).

Forest environment payments (225) are a new measure introduced through the current RDR for the period 2007 – 2013. These payments are provided in 7 of the 9 investigated countries and regions. Only Finland and Poland decided not to implement the measure 225 in their rural development plans. 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. The grid development focused on measures using the standard cost approach and the report will thus focus on the afforestation measures (221 – 223) and the forest environment payments (225).

The aim of work package 5 was to develop a harmonised method for calculating payments in forestry measures. The structure of the report broadly follows the harmonised step-by-step approach for the development of methodological grids. Following an overview of the methodologies used for the grid development in section 2, the report describes in section 3 the calculation baselines, commitments and relevant practices, as well as cost, revenue and income components which are considered in the forestry grids. In the next step, the report explains the incorporation of a wide range of payment differentiation categories and associated elements in section 4, before the modeling of the actual calculation process in the methodological grids is explained in detail in section 5. Section 6 then outlines how payment limits and RDR requirements are implemented and applied in the developed grids. Finally, section 7 summarises encountered problems in the grid development and future tasks and conclusions and policy recommendations in relation to the development and application of the grids are derived in section 8. In the annex of the report, an example for the application of the methodological grids is provided for the afforestation measures. Further details on the application of the forestry grids can also be obtained from the tutorial on the application of the new calculation software for forestry measures (Schwarz et al., 2008) and the software user guide through the project website: www.macaulay.ac.uk/agrigrid.

2 Methodology

The purpose of this section is to describe the methodological framework of the grid development. This section will explain the logic framework model for calculating payments in forestry measures which has been developed based on the review of the payment calculations in the nine partner countries. The second key methodological element is the harmonised step-

by-step approach for the grid development and application. A generic step-by-step approach has been adapted to take into account specifics of the payment calculation in forestry measures. Finally, the methodology section outlines the two principal calculation approaches incorporated in the grid development process. The balance sheet approach follows closely a whole farm approach for the calculation of additional costs and income foregone based on FADN terminology and structure (Cesaro et al., 2008). The practices approach allows to calculate additional costs and income foregone in a more flexible environment considering only specific cost elements which, for example, would be relevant for the calculation of additional costs of afforestation. Due to the nature of the forestry measures, the grid application emphasised in the example in the annex focuses on the practices approach.

2.1 Logic framework

The general logic and approach to the payment calculation can be summarised in one framework. Such logic frameworks or models provide a schematic representation of the principal payment differentiation, the main payment elements and the RDR requirements in forestry measures and a clearer exposition of the calculation process.

The development of the logic framework has been carried out in two steps. Firstly, based on the review of forestry measures in the nine partner countries a logic framework has been developed which reflects the actual payment calculations carried out in those nine countries. In a second step, the logic framework was then reviewed with the aim to identify missing parameters and characteristics to improve the applicability of the logic framework across the EU member states. New parameters have been identified and added to the logic framework reflecting the logic and general structure of payment calculations through the developed grids. Due to the different objectives, characteristics and design of the forestry measures different logic frameworks have been developed for afforestation measures and forest environment payments.

Afforestation measures (221 – 223)

Figure 2.1 summarises the different types of differentiation dimensions, main payment elements and the RDR requirements in afforestation measures as applied in the case study countries and regions.

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, area designation 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 hectare. Finally, the sum of all three payment elements is the overall amount of financial support provided in this measure.

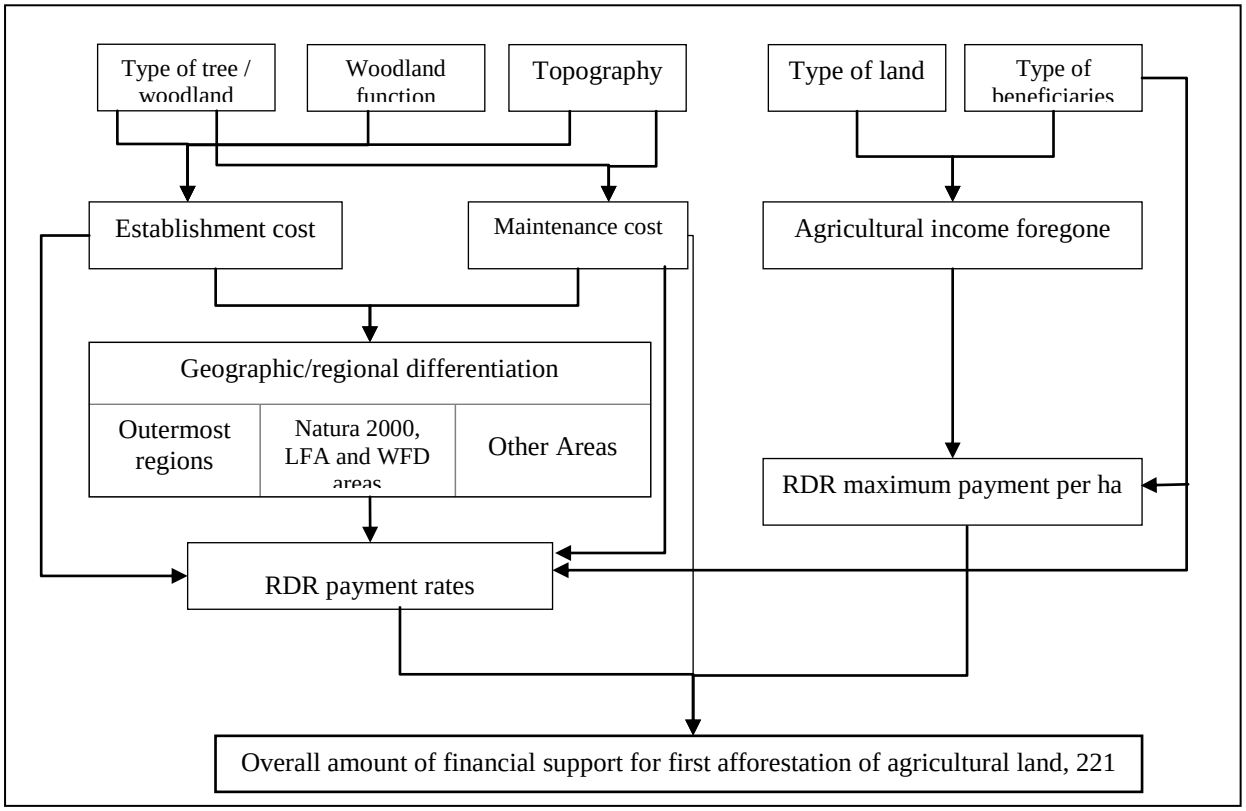

Figure 2.1 Logic representation of existing payment calculations in the measures 221, 222 and 223

Further analysis of the logic model of the payment calculation process revealed that potentially relevant parameters for payment differentiations were missing. For example, technical specifications of afforestations, such as seeding frequency and population density, are likely to differ between various applications and justify different payment levels. Thus, methodological grids for the payment calculations should be able to take into account differences in technical specifications. Moreover, agricultural income foregone elements of the afforestation payment for the abandonment of agricultural activities on the afforested land could not only be differentiated according to the type of land but also with respect to the

different types of crops and livestock which were produced. This way, the calculated level of the income foregone element of the afforestation payment would be directly linked to the previous agricultural production system.

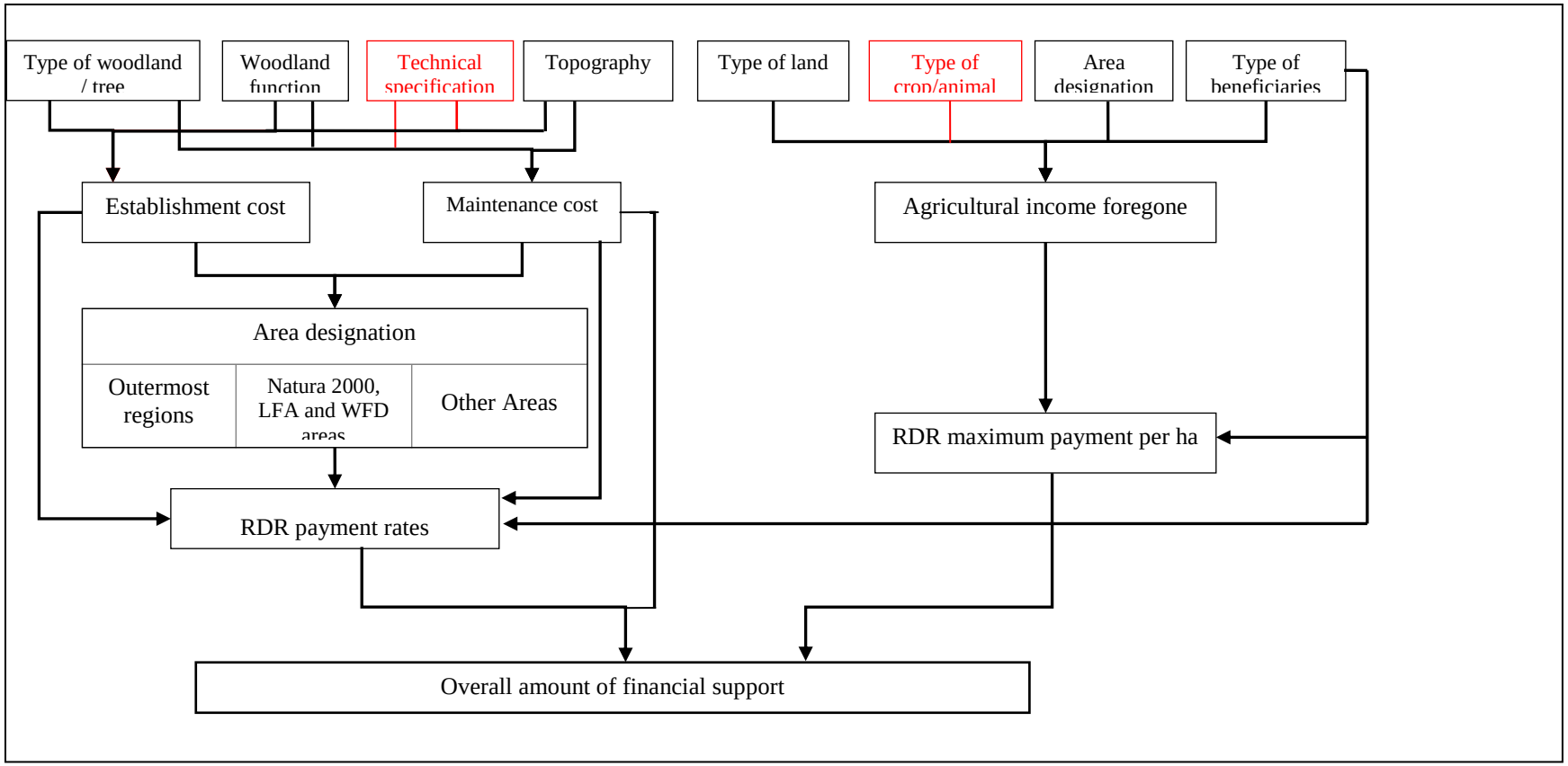

Figure 2.2 Logic framework of payment calculations in methodological grids for afforestation measures 221, 222 and 223

Regional differentiation of agricultural income foregone payments takes place at a different stage of the calculation than for establishment and maintenance costs, which is reflected in the logic framework of payment calculations applied through the methodological grids for afforestation measures 221, 222 and 223 (Figure 2.2).

Forest environment payments (225)

Calculations in forest environment payments are quite different compared to the above forestry measures and require a separate logic framework. The main difference to afforestation measures is that forest environment payments do not require the calculation of different 'sub-payments' such as payments for establishment costs, maintenance costs and agricultural income foregone. Furthermore, forest environment payments are the only reviewed forestry measure which is, in some cases, implemented without payment differentiation (Schwarz et al., 2007; Hrabalova et al., 2007).

Figure 2.3 presents the logic framework of payment calculations in forest environment payments. Figure 2.3 differentiates between the schematic representation of existing payment calculations in forest environment payments, represented by boxes and arrows shown in a black colour, and a more complex logic framework of the payment calculations developed for the grid development and application with added dimensions for differentiating payments (highlighted in red).

In existing payment calculations a limited number of differentiation categories are applied to take into account differences in main additional cost and income foregone components such as forestry output and livestock gross margins (income foregone) and exploitation costs, protection costs and management costs (additional costs). However, livestock gross margin are applied without differentiation according to livestock types. The schematic representation also shows that different percentage rates of the calculated additional costs and income foregone are applied depending on type of woodlands and technical specifications. Finally, minimum and maximum payment restrictions are applied.

The schematic representation of the payment calculations in forest environment payments has then been expanded to reflect an appropriate logic framework for the gird development. Additional dimensions for potential differentiations of additional cost and income foregone elements in relation to the functions of woodlands as well as livestock and area characteristics.

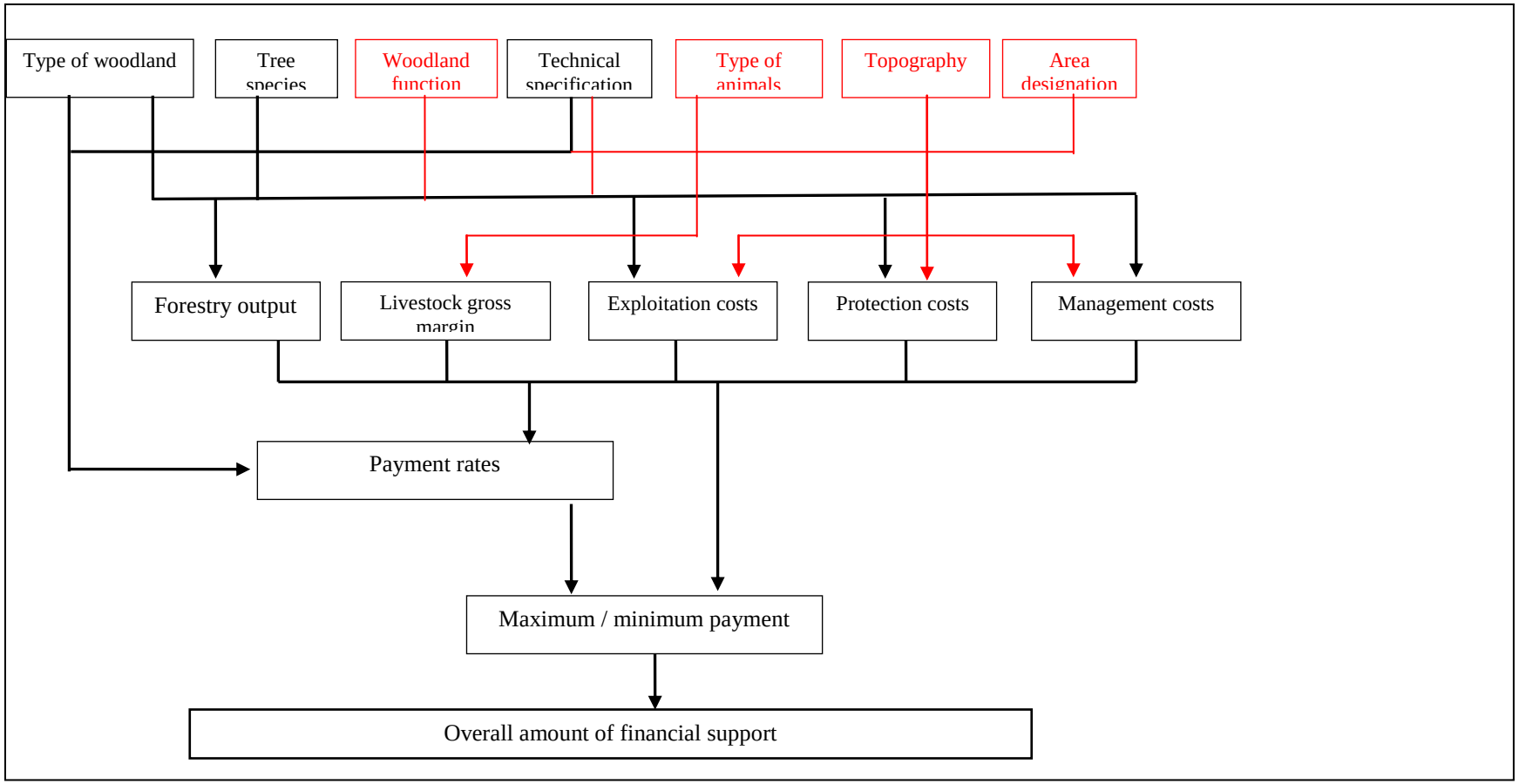

Figure 2.3 Logic framework of payment calculations in methodological grids for forest environment payments 225

2.2 Step-by-step approach

The step-by-step approach is based on the logic framework and was designed to harmonise the grid development and calculation process as well as to simplify the presentation of the application of the measure-specific grids developed. Two examples for the application of the step-by-step approach in the development of the grids for the forestry measures is provided as an example in the Annex.

The AGRIGRID project developed a generic step-by-step approach for the grid development across the different rural development measures. The generic step-by-step approach for the calculation process and grid development can be broken down into six or seven main steps depending on the relevance of transaction costs. These steps include:

1. Selection of the approach for payment calculation
2. Creation of the linkage relationship between relevant baselines and measure commitments and identification of cost, revenue and income components
3. Definition of payment differentiation
4. Calculation of practices and cost, revenue and income components and/or identification of source for appropriate figures

(5. *Quantification of transaction costs – not applicable for forestry measures)*

5. (6.) RDR payment limits: Overview and calculation of eligible payment elements
6. (7.) Overview of final payment

The generic step-by-step approach has then been applied to the forestry measures. Sub-steps have been added to reflect the flexibility of the grids to add several levels of payment differentiation and allow for a detailed calculation of the various additional costs and income foregone components over different levels, depending on the availability of required data. Figure 2.4 provides an overview of the step-by-step approach as applied for the forestry measures.

In the first step, the user has to choose one of two principle calculation approaches to be applied in the grid development. This will determine the list of cost, revenue and income components which can be selected in the second step. The Balance sheet (FADN) approach uses cost, revenue and income components at the whole farm level and its components are organised in the same hierarchy as in the FADN database. The Practices approach allows the user to calculate payments based on specific activities or practices required to fulfil the commitments of the rural development measure. In other words, this approach identifies cost, revenue and income components for particular practices. That implies that the Practice approach has to provide more flexibility for the user and thus needs to allow the user to modify the cost, revenue and income lists from which components are selected for the payment calculation. On the other hand, the Balance sheet (FADN) approach provides a

consistent but fixed framework following the FADN concept. However, the nature of the forestry measures implies that payments are calculated based on specific practices. Consequently, the grid development and application for forestry measures focuses on the Practice approach.

The second step represents the creation of a linkage table. The linkage table combines each measure commitment with a baseline for the payment calculation. In addition, the linkage table links each commitment with relevant practices (if the Practice approach is chosen as in the case of forestry measures) and cost, revenue and (or) income components. At this stage, only the structure of the grid calculation is defined and no values are specified for the different components. The identification of relevant baseline requirements for each RD commitment is important to ensure conformity of the calculated payments with the RDR requirements, which state that payments can only compensate commitments beyond the minimum mandatory requirements. Moreover, the difference between the baseline and the additional commitments has to be properly described in the payment justifications for the RDPs. However, baselines for payment calculations in forestry measures are less clearly defined and rather general calculation baselines are defined (see section 3 for more details).

The third step defines the applied payment differentiation. Three principle decisions need to be made at this point. First, should the calculated payments be differentiated, yes or no. If the decision is yes, then the methodological grids provide a user-friendly approach to select relevant differentiation categories and elements and incorporate multiple differentiation levels in the calculation. In this context, the second decision is which differentiation categories shall be considered in the calculation and, thirdly, in what hierarchy shall these be applied.

The fourth step of is the core part of the calculation process and deals with the actual calculation of the various selected cost, revenue and income components. Several sub-steps have been defined for the calculation process in forestry measures. In step 4a a summary grid provides an overview of the selected practices and the associated cost, revenue and income components as well as the applied differentiation hierarchy. Values for the different cells of the summary grid will be calculated in the subsequent sub-steps. However, in cases where the values for the cells are only available through expert consultation, values can also be entered without a calculation process attached, but the source of the figures has to be provided to ensure transparency. Since level of details in the calculation of forestry payments vary, the methodological grids provide the flexibility to add different numbers of calculation layers (calculation sub-steps).

The fifth step is the adjustment of calculated payment levels by RDR payment limits or any additional limits. The sixth and final step of the forestry grids presents an overview of the total calculated payments for each of the selected differentiation categories and elements and after all required adjustments (RDR or other limits).

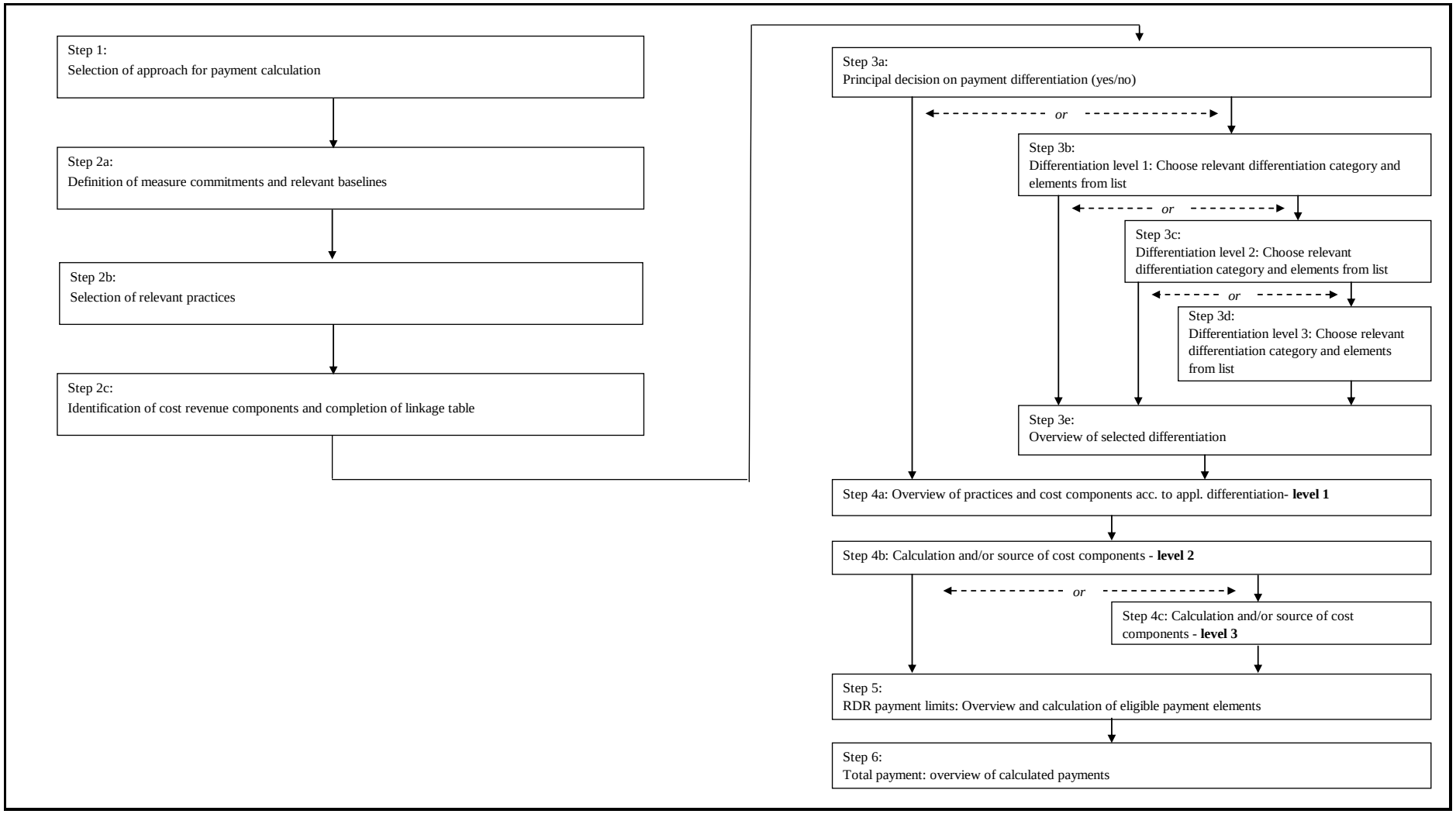

Figure 2.4 Step-by-step approach of methodological grids for forest measures

1 Baseline, commitments, practices and cost, revenue and income components

This chapter explains in more detail step 2 of the above step-by-step approach and explains how commitments and practices are linked to baselines for the payment calculation. The purpose of this step in the grid development is to ensure that only additional management requirements due to the uptake of the rural development measure (i.e. forestry measures) are taken into account in the payment calculation. In addition, the linkage table provides an overview of practices and cost, revenue and income components relevant for the payment calculation. It is important to emphasise again that the grid development for forestry measures focuses on the application of the Practice approach. Table 2.1 shows the template and structure of the linkage table.

Table 2.1 Template of linkage table

RD commitment	Baseline	Practice	Cost	Revenue (& income)
Commitment 1	Baseline 1	Practice 1.1	Cost component 1.1.1	Revenue component 2.1.1
			Cost component 1.1.2	Revenue component 2.1.2
		Practice 1.2	Cost component 1.2.1	Revenue component 2.2.1
			Cost component 1.2.2	Revenue component 2.2.2
Commitment 2	Baseline 2	Practice 2.1	Cost component 2.1.1	Revenue component 2.1.1
			Cost component 2.1.2	Revenue component 2.1.2
		Practice 2.2	Cost component 2.2.1	Revenue component 2.2.1
			Cost component 2.2.2	Revenue component 2.2.2

3 Baselines and commitments

Baselines

GAEC and statutory management requirements are not applied for forestry measures in most of the investigated countries and regions. An exemption is, for example, the Basque Country, where the compliance with cross-compliance requirements is specifically established for measures 221 and 225. 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 in forest management plans include Fauna, Flora and Habitat Directive and Natura 2000 designations. In addition, there are a number of national laws and regulations which applicants have to take into account. Examples include UK forestry standards or federal state forestry laws and federal state law on nature conservation in Germany. Standard cultivation requirements based on the forest legislations and regulations form the baseline for forest environment payments.

However, while forestry measures are designed considering forestry standards or other regulative requirements, there is no evidence available from the review that existing legislative baseline requirements have a direct impact on the payment calculations in afforestation measures. In fact, the baseline for payment calculations in afforestation measures

is rather the corresponding status quo situation without the proposed or planned afforestation. In other words, a comparison of the situations with and without the uptake of the afforestation measures is carried out to identify additional costs.

Commitments

In general, commitments in afforestation measures reflect the requirement of establishing or maintaining the forest area subject to the measure and are less detailed than, for example, in agri-environment measures. Commitments in forest environment payments cover the different key activities of this measure including the a forest management plan, species composition and reduction or renunciation of economic exploitation of the forest. The following table provides a list of commitments for payment calculations in forestry measures, as included in the methodological grids in the software tool.

Table 3.1 List of commitments in forestry measures for the grids

Measure 221: Establishment costs
Establishment of a new woodland/forest on agricultural land
Other
Measure 221: Maintenance costs
Maintenance of new woodlands/forests
Other
Measure 221: Agricultural income foregone payment
Establishment of a new woodland/forest on agricultural land
Other
Measure 222: Establishment costs
Establishment of a new woodland/forest as part of an agro-forestry system
Other
Measure 223: Establishment costs
Establishment of a new woodland/forest on non agricultural land
Other
Measure 223: Maintenance costs
Maintenance of new woodlands/forests
Other
Measure 225
Development of forest management plan
Conservation and improvement of species composition of forests
Management of the forest according to an approved forest management plan
Renunciation of forest harvesting and operations for a defined period
Other

3.1 Practices

Using the Practice approach for forestry measures, one or several practices are then derived for each measure commitment in step 2b. Practices reflect particular activities which need to be carried out by the land manager to fulfil the measure commitment and incurs additional costs and (or) income foregone. In most cases practices can be disaggregated into one or several cost, revenue and income components for the payment calculation. It is, however, also possible that a value for a "standard cost" is used at practice level (see section 5 for further details). It is this flexibility which is of crucial importance to take into account the varying extent of available data in forestry measure calculations and to achieve user-friendliness in the new payment calculation tool. Table 3.2 lists the selected practices included in the developed methodological grids for the different forestry measures. In addition, the first two columns of Table 3.2 show the applied classification of the practices.

Table 3.2 Practices in forestry measures

F1 - Forest establishment	F2 - Forest maintenance/management	Practice	Measure
☑	☑	Planning	221(EST), 222, 223(EST), 225
☑		Site preparation	221(EST), 222, 223(EST)
☑		Transportation	221(EST), 222, 223(EST)
☑		Planting	221(EST), 222, 223(EST)
☑		Protection of seedlings	221(EST), 222, 223(EST)
☑	☑	Protection of plantations	221(EST&MNT), 222, 223(EST&MNT), 225
☑		Replacement of seedlings	221(EST), 222, 223(EST)
☑	☑	Irrigation	221(EST&MNT), 222, 223(EST&MNT)
	☑	Weeding	221(MNT), 223(MNT), 225
	☑	Brashing	221(MNT), 223(MNT), 225
	☑	Pruning	221(MNT), 223(MNT), 225
	☑	Thinning	221(MNT), 223(MNT), 225
	☑	Bush clearing	221(MNT), 223(MNT), 225
	☑	Removal of stumps	221(MNT), 223(MNT), 225
	☑	Maintenance of old- and deadwood	225
	☑	Care of under tree area	221(MNT), 223(MNT), 225
	☑	Care of area between rows	221(MNT), 223(MNT), 225
	☑	Tree cutting to preserve forest structure	225
	☑	Replacement of trees	221(MNT), 223(MNT), 225
	☑	Protection of trees	221(MNT), 223(MNT), 225
	☑	Maintenance of forest protection	221(EST&MNT), 222, 223(EST&MNT), 225
☑	☑	Other	221(EST&MNT), 222, 223(EST&MNT), 225

The list of practices for the forestry measures was derived by identifying and generalising most commonly used practices from the review of existing payment calculations. In order to increase the user-friendliness of the developed grids, classifications of the practices were defined across the different forestry measures. The classification of the practices allows a user to select practices from a predefined list filtered for relevance concerning forest establishment or forest management and maintenance.

3.2 Cost, revenue and income components

Payment calculations of forestry measures are based either on additional cost elements (e.g. in the case of afforestation of non-agricultural land, 223), a combination of cost, revenue and income components (e.g. afforestation of agricultural land, 221) or also only on revenue/income components (e.g. in some cases forest environment payments). In step 2c of the grid development, the user can select if and which cost, revenue and income components to include in the calculation of the values for the different practices. This process provides sufficient flexibility to account, on the one hand, for situations where users use a standard cost catalogue for practices based on expert consultation and, on the other hand, for situations where data for detailed calculations of various components for a practice are available.

Table 3.3 General cost/revenue list for practices approach

1. TOTAL OUTPUT
- TOTAL OUTPT FORESTRY
- Sales
- Farmhouse consumption
2. TOTAL INPUT
ESPLICIT COSTS (at level of practice)
- FORESTRY SPECIFIC COSTS
- Seeds and seedlings purchased and produced
- Fertilizers and soils improvers
- Tree and plantation protection products
- Other forestry specific costs
- OTHER PRACTICE RELATED COSTS
- Machinery and equipment
- Land improvements and buildings
- Electricity, lubricants and heating fuels
- Water
- Contract work
- Other overheads
- WAGES PAID
- Wages for permanent and seasonal work
- RENTS
- INTERESTS
- Interest and financial charges
IMPLICIT COSTS (at level of practice)
- Opportunity cost of family work
- Opportunity cost of current capital
- Opportunity cost of owned land
3. INCOME
- GROSS MARGIN
- GROSS FORESTRY INCOME
- Average felling increment

General categories for the cost, revenue and income components have been developed across the different rural development measures (see the summary report on the grid development for more detail). Table 3.3 shows the general categories and the associated cost, revenue and income components selected for the forestry measures. For revenue or output components the user can choose between (timber) sales and farmhouse consumption or, at more aggregated level, total forestry output. Cost components are divided into explicit and implicit costs. Under explicit costs the user can select forestry specific costs, other practice related costs, wages, interests, and rents. Implicit costs represent opportunity costs for family work, capital and owned land. Gross margin and gross forestry income are the available income components. Further details can (and should be added, if data are available) be added by using sub-layers in the calculation process in step 4 of the grid application (see section 5 for more details).

Table 3.4 provides an example for a filled linkage table with the defined and selected commitments, baselines, practices and cost components for the calculation of maintenance costs in measure 221. Please note that in this example no revenue or income components are selected due to the nature of the calculation of the maintenance payment.

Table 3.4 Example of a filled linkage table (maintenance costs in measure 221)

RD commitment	Baseline	Activity	Cost	Revenue/Income
Maintenance of new woodland/forest according to forest standards	No woodland / forest established and no maintenance activities carried out	Weeding	Seedlings	
			Fertilizers and soil improvers	
			Tree and plantation protection products	
			Other specific costs	
			Machinery costs	
			Other overheads	
			Wages	
			Contract work	
			Rent	
			Interest	
			Opportunity cost family work	
			Opportunity cost capital	
		Beating up	Seedlings	
			Fertilizers and soil improvers	
			Tree and plantation protection products	
			Other specific costs	
			Machinery costs	
			Other overheads	
			Wages	
			Contract work	
			Rent	
			Interest	
			Opportunity cost family work	
			Opportunity cost capital	
		Pruning		
		Replacement of trees		
		Protection of trees		
		Protection of plantations		
		Maintenance of forest protection	Seedlings	
			Fertilizers and soil improvers	
			Tree and plantation protection products	
			Other specific costs	
			Machinery costs	
			Other overheads	
			Wages	
			Contract work	
			Rent	
			Interest	
			Opportunity cost family work	
			Opportunity cost capital	
		Care of under tree area		
		Care of area between rows		
		Bush clearing		
		Removal of stumps		
		Irrigation		
		Other		

Highlighted in grey are the defined commitment and baseline as well as the selected practices and cost components relevant for the calculation of maintenance costs in measure 221. While this is just a fictive example of a filled linkage table, it shows the principle function and purpose of step 2.

4 Payment differentiation

The third step of the grid development defines to what extent the calculated payments are differentiated. The methodological grids allow the user to calculate one uniform payment or to consider different differentiation dimensions, for example with respect to the type of woodland or type of land.

First, the user needs to decide if a uniform payment or any kind of differentiated payment should be calculated. This decision is represented in the grids by the sub-step 3a. Assuming that a user wants to apply some form of payment differentiation, the methodological grids then provide the flexibility for the user to implement different layers of payment differentiation (steps 3b – 3d). In other words, the user needs to decide how many differentiation categories shall be considered in the calculation of the forestry payments. For

afforestation measures such as afforestation of agricultural land, payment differentiation can be implemented differently for the calculation of establishment costs, maintenance costs and the agricultural income foregone payment. For each selected differentiation category one or several differentiation elements can be selected.

In the final sub-step 3e, the grid development produces an overview of the applied payment differentiation. A summary grid is produced which shows a matrix with the selected practices on the one side and the selected differentiation categories and elements on the other side. The hierarchy of selected differentiation categories is given by the order of the selection.

For the payment calculations in forestry measures 11 different categories of payment differentiation have been defined and included in the grids. Those 11 categories are:

1. Type of woodland
2. Tree species
3. Woodland function
4. Technical specification
5. Designated areas
6. Topography
7. Type of beneficiary
8. Type of land
9. Soil quality
10. Type of crops
11. Type of animals

The list includes categories directly related to woodland and trees (e.g. type of woodland, tree species, woodland function), categories related to the technical specifications of plantations, related to geographic and topographic aspects, land and soil related categories (e.g. type of land and soil quality) as well as agricultural related categories (type of crops and animals) for payment calculations in measures 221 and 222.

Table 4.1 Differentiation categories and elements for forestry measures

Differentiation category	Differentiation elements	Description
Type of woodland	Conifers Broadleaves Mixed conifers & broadleaves Afforestation Arboricolture/Plantation Riparian Coppice Native forest	Different payment levels for various types of woodlands (e.g. higher establishment costs for broadleaves in comparison to conifers)
Tree species	Oak Populus sp. Juglans regia Castanea sativa Platanus orientalis Pistacia lentiscus var. chia Celtis australis Caretonia siliqua Morus sp. Aleppo pine Turkish pine Stone pine Cypress Down oak (quercus pubescens) Horn-beam (Ostrya carpinifolia) Other	Different payment levels depending on the species of tree planted or managed, for example based on the assumption that establishment and/or maintenance costs vary depending on the tree species
Woodland function	Edges (Buffer zone) Afforestation of set-aside land (Buffer zone) Polyspecific Protection Productive (Fast growing) Productive (traditional) Productive (resin) Productive (commercial) Naturalistic (conservation) Naturalistic (regeneration) Other	Different payment levels to different functions of the woodland

For each differentiation category, a set of differentiation elements have been defined and included the framework of the methodological grids. Table 4.1 shows the differentiation elements for the categories type of woodland, woodland species and woodland function as examples. A complete list of all defined differentiation elements is provided in the annex. However, in the software tool of the methodological grids the user has the possibility to modify the list and add further categories and elements.

Table 4.2 outlines an example for the application of step 3. The example refers to the calculation of the agricultural income foregone payment in measure 221 and shows the selection of two differentiation layer, i.e. two differentiation categories (soil quality and designated areas) with a number of differentiation elements.

Table 4.2 Step 3e: An example for the overview of the applied payment differentiation

Differentiation category: Soil quality	Improved land			Unimproved land		
Differentiation category: Designated areas	Severely disadvantaged LFA	Disadvantaged LFA	Non-LFA	Severely disadvantaged LFA	Disadvantaged LFA	Non-LFA

For simplicity reasons and to emphasise the principal application of the summary grid, the example shows an application with only two differentiation categories. Further differentiation categories could be added in the payment calculation. With finishing step 3, the user has created the framework of the methodological grid for the payment calculation. All components and payment differentiation has been defined. In the next step, the actual calculation of the various cost, revenue and income components under each practice will be carried out for each differentiation.

5 Calculation of cost and revenue components

This section explains the framework, approach and scope of the calculation process of the various components of the selected practices using the methodological grids. In the first few steps, the structure of the payment calculation grids is developed. Now, in step 4, the methodological grids can be used to fill the matrix of practices and differentiation dimensions (Table 5.1) by quantifying additional costs and income foregone for each of the selected practices.

The different sub-steps in step 4, the calculation process, provide guidance for the calculation of cost components at different aggregation levels depending on the available information and data for each practice. The number of calculation layers (step 4b – 4c) which can be added to the calculation process is flexible and can be adjusted according to the calculation requirements and data availability. The lowest (or most detailed) calculation level includes guidelines for the calculation of the most commonly used components and sub-elements.

While the generic step-by-step approach is the same across all rural development measures, a few special calculation issues need to be considered in the methodological grids for forestry measures. The calculation process varies between different forestry measures. Afforestation measures (including the agro-forestry measure) apply a similar logic framework to the payment calculation. However, separate calculations of establishment costs, maintenance costs and agricultural income foregone payments (where applicable) become necessary. These 'sub-payments' of afforestation measures have different practices and can have different payment differentiations within the same forestry measure in the same country, thus requiring a separate calculation grid or matrix for each of those 'sub-payments'. This implies that, for example in afforestation measures of agricultural land, the step-by-step approach and the calculation process in step 4 has to be carried for each of the three 'sub-payments'. The different grids are then brought together at the end of the overall calculation process in step 6

to represent the overall financial support provided through measure 221. A similar process applies to measure 223 with calculations of establishment costs and maintenance costs.

Furthermore, the methodological grids have to be flexible enough to account for large differences in available data and information on the various practices and their components. To address those differences the forestry grids allow the user to specify a value at practice level should no further information or data be available for specific cost, revenue or/and income components. However, in this case detailed information on the source and justification of this value needs to be provided. The outcome of the review of the existing payment calculations in the partner countries suggests that in most cases at least one sub-layer with cost, revenue or/and income components can be calculated.

5.1 Explanation of the calculation process

In order to explain the application of the different sub-steps of the calculation process in step 4, we use an imaginary example for the calculation of the establishment costs in measure 221. For our example we have selected different levels of detail in the calculation of the different practices and cost components to show the flexibility of the grids. More examples can be found in the annex.

Table 5.1 Step 4a: Overview of practices and payment differentiation (level 1)

	Establishment costs			
	Differentiation element			
Differentiation category: Type of woodland	Conifer	Conifer	Broadleaves	Broadleaves
Differentiation category: Woodland function	Productive (commercial)	Naturalistic (regeneration)	Productive (commercial)	Naturalistic (regeneration)
Practice				
Site preparation	0	0	0	0
Protection of seedlings	0	0	0	0
Planting	0	0	0	0
Total establishment costs	0	0	0	0

At the beginning of the calculation process in step 4, the methodological grids provide an overview of the selected practices and payment differentiation (Table 5.1). Each cell in this matrix represents the total additional costs and income foregone for a practice under one of the selected payment differentiation options. The values for each cell are calculated (or determined) in the subsequent sub-steps or calculation levels and the final value for each practice and payment differentiation combination will be automatically transferred into this matrix. That is, the matrix shown in Table 5.1 provides the starting point and the results of the calculation process in step 4.

In the second level (step 4b) additional costs and income foregone are quantified for the

different practices. Table 5.2, Table 5.3 and Table 5.4 emphasise the different options for the quantification of the additional costs and income foregone. Table 5.2 provides an example for an application where no data on cost components for the practice are available and consequently an aggregated figure at practice level is used, for example through stakeholder consultation or expert opinion. Table 5.2 of the grids also provides the option to fill in the data sources for the values of the costs at practice and component levels. The identification and verification of the values through provision of a justifiable data source is particularly important for the use of aggregated figures to ensure transparency in the calculation process. The values entered in Table 5.2 are automatically transferred into the summary grid in level 1 of the calculation process (see Table 5.6).

Table 5.2 Step 4b: Practice 1 (level 2)

Practice 1: Site preparation		**Not based on calculation of components**	**Based on calculation of available components**			
		Aggregated amount	Component 1:	Component 2:	Equation	Value
Components						
Data source		**Explain source of information**				
Differentiation						
Type of woodland	**Woodland function**					
Conifer	Productive (commercial)	**210**				
	Naturalistic (regeneration)	**140**				
Broadleaves	Productive (commercial)	**200**				
	Naturalistic (regeneration)	**120**				

While the grids provide the option to use aggregated figures at practice level, the aim needs to be to provide as much detail as possible in the calculation process. It is envisaged that in most cases sufficient data will be available to split the costs at practice level in several components of additional costs and income foregone. Table 5.3 provides an overview of the calculation of the costs for a practice (here protection of seedlings) using different cost components as identified in step 2 of the grid development.

The costs for the practice 'protection of seedlings' are calculated for each applied payment differentiation by multiplying the cost of one tree shelter by the assumed numbers of tree shelters required per hectare. The grids provide the calculation structure for the different cost components and allow users to add specific assumptions (here the number of required tree shelters) as additional calculation components. The grids show also the applied equation linking the different cost components and ask the user to fill in the data source from which the values were obtained (in the above example Forest Inventory 2007). While the example in Table 5.3 only requires simple calculus, more complex calculation processes with a higher

number of cost components and assumptions can be included in the grids by adding further columns. The calculated values are then transferred into the summary grid as shown in Table 5.6.

Table 5.3 Step 4b: Practice 2 (level 2)

Practice 2: Protection of seedlings		**Not based on calculation of components**	**Based on calculation of available components**			
		Aggregated amount	Component 1:	Component 2:	Equation	Value
Components			Cost for tree shelter	Assumption 1: No. of tree shelters per ha		
Data source			Forest Inventory 2007	Forest Inventory 2007		
			a	b		
Differentiation						
Type of woodland	**Woodland function**					
Conifer	Productive (commercial)		1.6	55	= a * b	**88**
	Naturalistic (regeneration)		1.6	20		**32**
Broadleaves	Productive (commercial)		1.6	400		**640**
	Naturalistic (regeneration)		1.6	150		**240**

A third example for level 2 of the calculation process is shown in Table 5.4. This example emphasises the possibility that some of the cost components identified for a specific practice might be based on a calculation of different sub-elements and require another layer or level of calculations. In such cases, the structure of level 2 remains unchanged, but the values of cost components which are based on further calculations are obtained from level 3 of the calculation process and not entered by the user directly.

In the example in Table 5.4 the cost components ‘cost for seedlings’ and ‘wage’ of the practice ‘planting’ are based on calculations in step 4c (level 3). For example, the cost for seedlings of EUR800 for productive (commercial) conifer woodland and EUR1200 for productive (commercial) broadleaves woodland are calculated in step 4c (level 3). Hence, the grids indicate in Table 5.4 that the source of the values is step 4c. Otherwise, the structure and principle calculation in step 4b (level 2) is the same as in Table 5.3. The costs for the practice ‘planting’ are calculated through the identified cost components and added calculation assumptions following a defined equation.

Table 5.4 Step 4b: Practice 3 (level 2)

Practice 3: Planting		**Not based on calculation of components**	**Based on calculation of available components**				
		Aggregated amount	Component 1:	Component 2:	Component 3:	Equation	Value
Components			**Cost for seedlings**	**Wage**	**Assumption 1: Reduction for maintenance inclusion**		
Data source			Step 4c	Step 4c			
			a	b	c		
Differentiation							
Type of woodland	**Woodland function**						
Conifer	Productive (commercial)		800	500	0.8	= (a + b)*c	**1040**
	Naturalistic (regeneration)		200	100	0.8		**240**
Broadleaves	Productive (commercial)		1200	500	0.8		**1360**
	Naturalistic (regeneration)		300	100	0.8		**320**

In principle, depending on the complexity of the calculation or cost components as well as the amount or detail of available data, further calculation levels can be added to step 4 of the grid application. However, in this report, we have limited the calculation process to three calculation level with the lowest level 3 providing calculation guidelines of often used cost components and sub-elements (e.g. wage) (step 4c). To maintain the flexibility of the grids and given the variety of different ways to calculate practices or cost components no general attempt has been included in the grids to provide strict guidelines of how to calculate each component. Only the most often used cost components or sub-elements are included in the calculation guidelines, but these guidelines can be expanded by the user. Table 5.5 shows the examples for calculation guidelines for the cost components 'cost for seedlings' and 'wage' according to the level 2 example shown in Table 5.4.

Table 5.5 Step 4c: Practice 3 (level 3 – calculation guidelines)

Cost component	Sub-element a:	Sub-element b:	Sub-element c:	Equation
Cost for seedlings	Number of seedlings	Cost per seedling		= a * b
Wage	Hours	Wage rate		= a * b

Calculated values for the cost components and practices will be automatically transferred by the grids to the upper level of the calculation process (from level 3 to level 2 and from level 2

to level 1) which results in the summary grid (Table 5.1) filled with the calculated values for each practice under the various differentiation options. Table 5.6 shows the filled summary grid for our example in this section.

Table 5.6 Step 4a: Overview of practices and payment differentiation (level 1) - filled

	Establishment costs			
	Differentiation element			
Differentiation category: Type of woodland	Conifer	Conifer	Broadleaves	Broadleaves
Differentiation category: Woodland function	Productive (commercial)	Naturalistic (regeneration)	Productive (commercial)	Naturalistic (regeneration)
Practice				
Site preparation	**210**	**140**	**200**	**120**
Protection of seedlings	**88**	**32**	**640**	**240**
Planting	**1040**	**240**	**1360**	**320**
Total establishment costs	**1338**	**412**	**2200**	**680**

The scope of dealing with complex calculations and differentiations as well as with respect to the automatic updates and linkages between different calculation levels is limited in Excel. The application of the final version of the developed methodological grids through the software tool (See Buchan et al., 2009) solves those limitations and increases the ability of the grids to deal with complex calculations.

5.2 Data sources and required data input

The review of existing payment calculations in the partner countries identified a number of key data sources. The list of data sources used in the calculations across countries and regions is quite heterogeneous. Used data can be differentiated into forestry and agricultural data and the data sources the two groups can be synthesised as follows:

Forestry data:

- Expert studies, advisory services and stakeholder evaluations
- Forest inventory and national and regional regulations
- Economic forestry data such as value of standing timber and prices for firewood
- Methodological frameworks for the evaluation of forest values provided by national Ministries
- Academic literature

Agricultural data:

- FADN and national agricultural data sets to quantify gross margin losses
- Expert studies and stakeholder evaluation to quantify input requirements

In a number of cases the lack of reliable forestry data has been emphasised. Missing forestry data include economic data and technical specifications for forestry. Moreover, the lack of FADN data for forestry land, current silvicultural data, monitoring data and more detailed spatial data has been pointed out.

The flexibility of the methodological grids allows this method to be used in payment calculations for forestry measures even though detailed data are often not available in the forestry sector. However, in order to fully utilise the potential of the methodological grids, a consistent European data infrastructure in the forestry sector would be important. The provision of a harmonised method for calculating forestry payments across the EU consistent with the requirements of the EU policy framework improves the justification and transparency of payments. These benefits of the new method for payment calculations would be even greater, if the grids could be applied with a consistent European data infrastructure for forestry with a similar level of detail across the EU. Some member states have tried to develop rather detailed catalogues of standard costs for a wide range of different forestry practices and activities. However, to develop a consistent European data infrastructure for forestry requires a coordinated effort between member states, potentially similar to the FADN database for agriculture (see also section 7).

6 Implementation and application of payment limits and RDR requirements

A number of different payment limitations are applied in forestry measures, e.g. maximum amount of payment per farm / beneficiary and percentage rates of calculated additional costs which are eligible for financial support. The maximum annual premium to cover loss of income from afforestation in measure 221 is EUR700/ha for farmers and EUR150/ha for other natural persons or private law bodies. The maximum rates of support for the premium for establishment costs in the measures 221 – 223 varies between 85% of eligible costs in outermost regions, 80% in LFA, Natura and WFD areas and 70% in other areas. Forest environment payments, on the other hand, have absolute payment limits and the RDR requires that payments per hectare are between EUR200 and EUR40. The different RDR requirements in forestry measures require a flexible design of step 5 in the grid development.

The purpose of step 5 of the grid development is to ensure that the calculated payments are consistent with the RDR requirements. Depending on the forestry measure, the specific upper and lower payment limits are incorporated. In accordance with the measure-specific requirements, the user can select between absolute and relative payment limits whereby the grids are preset with the absolute maximum and minimum payments as well as the percentage rates. Table 6.1 shows an example for the application of relative RDR requirements in the calculation of establishment costs in measure 221 building on our previous example in section

5 (Table 5.6).

Table 6.1 Application of RDR requirements: Establishment costs in measure 221

	Establishment costs			
Differentiation category	**Type of woodland**			
Differentiation: Type of woodland	**Conifer**	**Conifer**	**Broadleaves**	**Broadleaves**
Differentiation: Woodland function	**Productive (commercial)**	**Naturalistic (regeneration)**	**Productive (commercial)**	**Naturalistic (regeneration)**
Total establishment costs	**1338**	**412**	**2200**	**680**
RDR payment rate	**Establishment costs eligible for premium**			
Outermost areas (85%)	**1137**	**350**	**1870**	**578**
Natura, LFA and WFD areas (80%)	**1070**	**330**	**1760**	**544**
Other areas (70%)	**937**	**288**	**1540**	**476**

The top part of Table 6.1 summarises the calculated additional costs for the establishment costs premium for each of the applied payment differentiations (compare with Table 5.6). In the lower part, Table 6.1 then incorporates RDR payment requirements limiting eligible costs for the premium to 70%, 80% or 85% of the calculated additional costs depending on the selected regions. The grids also allow the application of payment rates for maintenance costs although not strictly required by the RDR, but some member states chose to apply the payment rates for establishment and maintenance costs calculations.

A similar principle is applied in the grid development for forest environment payments. Instead of the percentage rates, minimum and maximum payments are incorporated as upper and lower ceilings which become binding, if the calculated additional costs and income foregone are lower then the minimum payment or higher than the maximum payment.

The calculated eligible payment elements are then transferred to step 6, where the grids provide an overview of total amount of financial support under each applied differentiation. In the case of afforestation measures the step-by-step approach then needs to be repeated for the maintenance costs (measures 221 and 223) and agricultural income foregone payment (measure 221).

7 Problems, contributions and future tasks in the development of methodological grids for forestry measures

The review of the payment calculations in forestry measures identified a number of different problems which can be synthesised into four key areas:

- Data availability
- Standard cost approach and payment design

- Policy administration
- RDR requirements
- Large variation in payment calculation approaches

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 and seeking advice on methodological issues from other organisations. However, the review concluded that a number of key problems remain unsolved and need to be taken into account in future payment calculations. The remaining key issues can be summarised as follows:

- Lack of data and missing opportunity to test the reliability of results remains an important issue.
- Lack of transparency in the calculation of standard costs
- Problems in relation to the applicability of standard costs in the 'real world'
- Problems in relation to the applicability of RDR guidelines
- Testing of the efficiency of more differentiated approaches of calculating payments and their impact on over- and under-compensation
- Large variations in the implementation of forestry measures
- Large variations in the approaches used to calculate payments

The development of the methodological grids directly addresses some of the identified remaining key issues for future payment calculations. The key contributions of the developed grids are:

Key contributions of the developed 'forestry grids'

- The harmonised and consistent framework of the step-by-step method for the payment calculations in forestry measures increases the transparency of the calculation process.
- The payment calculations are easily traceable and mechanisms for listing data sources are provided in a consistent manner which facilitates the justification process during the negotiations of the RDPs between the member states and the EC.
- In fact, it is the harmonisation of the calculation process together with the flexibility of the grids which is the main contribution of the developed methodological grids addressing the large variations in existing payment calculations and providing a user-friendly calculation tool.
- The flexibility of the grids also allows the user to apply and compare various differentiation scenarios and review the potential impact on the available budget, payment distribution and overall efficiency of the forestry measures.

However, the potential of applying methodological grids as a harmonised tool for payment calculations strongly depends on the quality and quantity of the available data to quantify

additional costs and income foregone. While the developed method has been seen as useful by relevant stakeholders, the lack of reliable and up-to-date economic and silvicultural data for forestry enterprises remains a key problem. The lack of data is a general problem in forestry measures but is particular evident in forest environment payments. The development of a consistent and regularly updated data infrastructure for forestry measures, e.g. along the lines of the FADN database for EU agriculture, is a crucial task for the future to further improve the application of methodological grids and payment calculations in forestry measures.

8 Conclusions

The report summarised the outcomes of Work Package 5 which was focused on elaboration of the methodological framework for the payment calculation for forestry measures aiming to harmonise the methods of payment calculation across the European Union (EU) Member States. The aim of this report was to describe the developed methodological grids for calculating payments in forestry measures and show its practical application. The grid development considered the following forestry measures: first afforestation of agricultural land (221), first establishment of agroforestry 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).

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 modeling exercises. Moreover, payment calculations vary between the different forestry measures. This implies that different logic frameworks needed to be developed and applied which consequently results in different designs of the methodological grids for afforestation measures and forest environment payments. For example, special attention needed to be paid to design separate calculations of establishment costs, maintenance costs and agricultural income foregone in measure 221. The challenge was to develop a harmonised methodology for payment calculations in forestry measures applicable EU-wide but at the same time considering measure-specific and regional circumstances and maintaining relatively low administration costs.

Developing methodological grids for the payment calculation in the different forestry measures requires a detailed knowledge of present conditions and methods at both production level and policy level. At the production level, it is necessary to gather data on the structure and characteristics of the farming and forestry sectors including natural, agronomic and

silvicultural conditions and production systems and techniques. At the policy level, it is necessary to know the existing methods for payment calculations in forestry measures and their impacts on that structure. Existing payment calculations have been reviewed in nine European countries to obtain a better understanding of how the calculations are carried out and to collate a comprehensive database of calculation components.

Based on the review of payment calculations, logic frameworks for the payment calculations in forestry measures have been developed. The logic frameworks provide a generic structure and a clearer exposition of the calculation process. The different core parts of the calculation process have been identified including baseline requirements, relevant commitments defined in forestry measures, lists of practices reflecting required changes in farm and land management, lists of cost, revenue and income components and payment differentiation categories and elements. These parts have then been integrated in the methodological grids, providing a new harmonized and flexible method to calculate forestry payments.

One of the main challenges in the AGRIGRID project was to develop a harmonised method for calculating payments across the EU. The methodological grids provide such a harmonised method through an easy-to-follow generic template of six (seven, if transaction costs are applicable) main calculation steps. The generic template of the step-by-step approach has been expanded for the forestry measures according to their specific characteristics. In addition to providing a harmonised method for payment calculations, the structure and flexibility of the methodological grids also ensure that this new method can be applied with different levels of details and available data. This aspect is of particular importance given the remaining data problems. Close collaboration with government agencies throughout the different stages of the grid development ensured that the developed methodological grids are tailored to the needs of the potential users of the software tool.

Overall, the main contributions of the methodological grids for forestry measures can be summarised as follows:

Key contributions of the developed 'forestry grids'

- The harmonised and consistent framework of the step-by-step method for the payment calculations in forestry measures increases the transparency of the calculation process.
- The payment calculations are easily traceable and mechanisms for listing data sources are provided in a consistent manner which facilitates the justification process during the negotiations of the RDPs between the member states and the EC.
- In fact, it is the harmonisation of the calculation process together with the flexibility of the grids which is the main contribution of the developed methodological grids addressing the large variations in existing payment calculations and providing a user-friendly calculation tool.
- The flexibility of the grids also allows the user to apply and compare various differentiation scenarios and review the potential impact on the available budget, payment distribution and overall efficiency of the forestry measures.

The application of the methodological grids is expected to increase the transparency of payment calculations and to facilitate the justification of forestry payments between the member states and the European Commission. However, the potential of applying methodological grids as a harmonised tool for payment calculations strongly depends on the quality and quantity of the available data to quantify additional costs and income foregone. Data availability remains the key problem in payment calculations in forestry measures and the lack of reliable and up-to-date economic and silvicultural data for forestry enterprises is the main limitation for more elaborated payment calculations. While the lack of data is a general problem in forestry measures, it is particular evident in forest environment payments, where existing payment calculations are often reduced to simplified assumptions.

The application of the methodological grids for the payment calculations in forestry (and other RD) measures can be a first step in improving the transparency and consistency of payments, but the development of a consistent and regularly updated data infrastructure for forestry measures, e.g. similar to the FADN database for EU agriculture, is a crucial task for future research to further improve this process. Such a database could be integrated with the software tool developed in the AGRIGRID project.

In addition, a set of recommendations could be developed, with the aim to provide some guidance on what calculation approach to be used under which circumstances and different levels of data availability. Such recommendations could also include best practice guidance on how to deal with existing data gaps. Furthermore, the need of enhancing methodological experience of the staff responsible for payment calculations and the design of RD measures has been pointed out in discussions with representatives of government agencies. More attention should also be paid to the harmonisation of the terminology throughout the different

steps of the payment calculations.

Beyond the current standard cost based calculations, the feasibility and suitability of modifying the developed grids for the application in marginal cost based calculations of RD payments and in the context of setting maximum prices for auctions to define RD payments could be explored in future work.

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Annex – Example for the application of forestry grids

Annex 1: Excel file with the core parts of the forestry grids, including:

- Step-by-step template
- Logic frameworks
- Lists of identified commitments and baselines
- List of identified practices and their classification;
- List of identified cost, revenue and income components
- List of differentiation categories

Annex 2: Excel file with an example for the step-by-step approach of the methodological grids for payment calculations in forestry measures.