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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Summary report on grid development

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List of project partners

Project partner	**Short name**	**EU Member States**
The Macaulay Land Use Research Institute	MLURI	Scotland
Institute of Farm Economics Johann Heinrich von Thuenen-Institute	vTI	Germany
Agricultural University of Athens	AUA	Greece
Institute of Agricultural Economics and Information	ÚZEI	Czech Republic
Lithuanian Institute of Agrarian Economics	LAEI	Lithuania
MTT Agrifood Research Finland	MTT	Finland
National Institute of Agricultural Economics	INEA	Italy
Humboldt University Berlin	HUB	Germany
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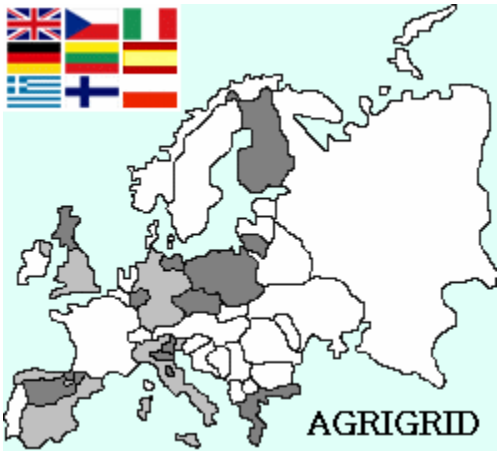
Instituto de Desarrollo Rural Sostenible	IDRiSi	Spain
Agrotec Polska Sp. z o. o.	-	Poland



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List of abbreviations

AEM	Agri-environmental measures
CZ	Czech Republic
DE	Germany
DE_{MWP}	Mecklenburg West-Pomerania (Germany)
DE_{NRW}	North-Rhine Westphalia (Germany)
EC	European Commission
EEC	European Economic Community
ES_{BC}	Basque Country (Spain)
ES_{NAV}	Navarra (Spain)
EU	European Union
FADN	Farm Accountancy Data Network
FI	Finland
GAEC	Good Agricultural and Environmental Condition
GFI	Gross Farm Income
GFM	Gross Forestry Margin
GLM	Gross Livestock Margin
GM	Gross Margin
GR	Greece
ha	hectare
IT_{ER}	Emilia-Romagna (Italy)
IT_{UMB}	Umbria (Italy)
IT_{VE}	Veneto (Italy)
LF	Logic Framework
LM	Logic Model
LMD	Logic Model Diagram
LSU	Livestock Units
LT	Lithuania
MA	Managing Authorities
MG	Methodological grid
MS	Member States
N	Nitrate
NVZ	Nitrate Vulnerable Zones
NWFP	Non-wood forest products
PL	Poland
RD	Rural Development
RDP	Rural Development Programme
RDR	Rural Development Regulation
SCO	Scotland
SGM	Standard Gross Margin
SMR	Statutory Management Requirement
UAA	Utilised Agricultural Area
VAT	Value Added Tax

1. Introduction

All European Union member states implement Rural Development schemes. For the programming period 2007-2013 these schemes are regulated by Reg. (EC) 1698/2005, which states that payments granted for Rural Development must be based on verifiable estimates of farms' costs and revenues.

In order to strengthen and, at the same time, make more clear this principle, the European Commission circulated a Working Document[1] named *Agri-environment commitments and their verifiability*. Despite its title, the document addressed not only agri-environmental measures but also measures with similar design and calculations, including "animal welfare payments, natural handicap and Natura 2000 payments, forest-environment payments or meeting standards". The purpose was to highlight the general principles of the measures' design and the main standard assumptions for payment calculations.

Nevertheless, both the EC Regulation and the Working Document lack the definition of a standardised and unequivocal process for the calculation of those payments, with the result that the methods for the calculation of payments related to RD schemes vary considerably among member states and regions.
Hence, there is an obvious need for the development of a unifying approach which would set common guidelines and methods for the calculations. In the AGRIGRID project, so-called methodological grids have been developed for this purpose.

As shown in Figure 1, WP8 is a cross-cutting work package within phase 2 of the project. As mentioned above, the objective of the WP was to provide the general design of the grids as well as contribute to the software development, in particular for all the aspects related to its structure. All that activity mainly took place in the middle of the project, after the definition of the necessary knowledge base, and can be split into the reviews of payment calculation, and a literature review focusing on methodological issues required by the grid development.

The starting point to develop a general framework for the design of the methodological grids is the idea that every end-user must be able to obtain an input mask suitable for his valuation requirements. Even though we are analysing the same measure or scheme, the needs of two evaluators may be very different from each other. Hence, a grid must fulfil two main requirements: to provide an ever-effective general structure for calculation; and to give the possibility, under specific conditions, of being adapted to every single need.

[1] Rural Development Committee, Working Document RD10/07/2006-final.

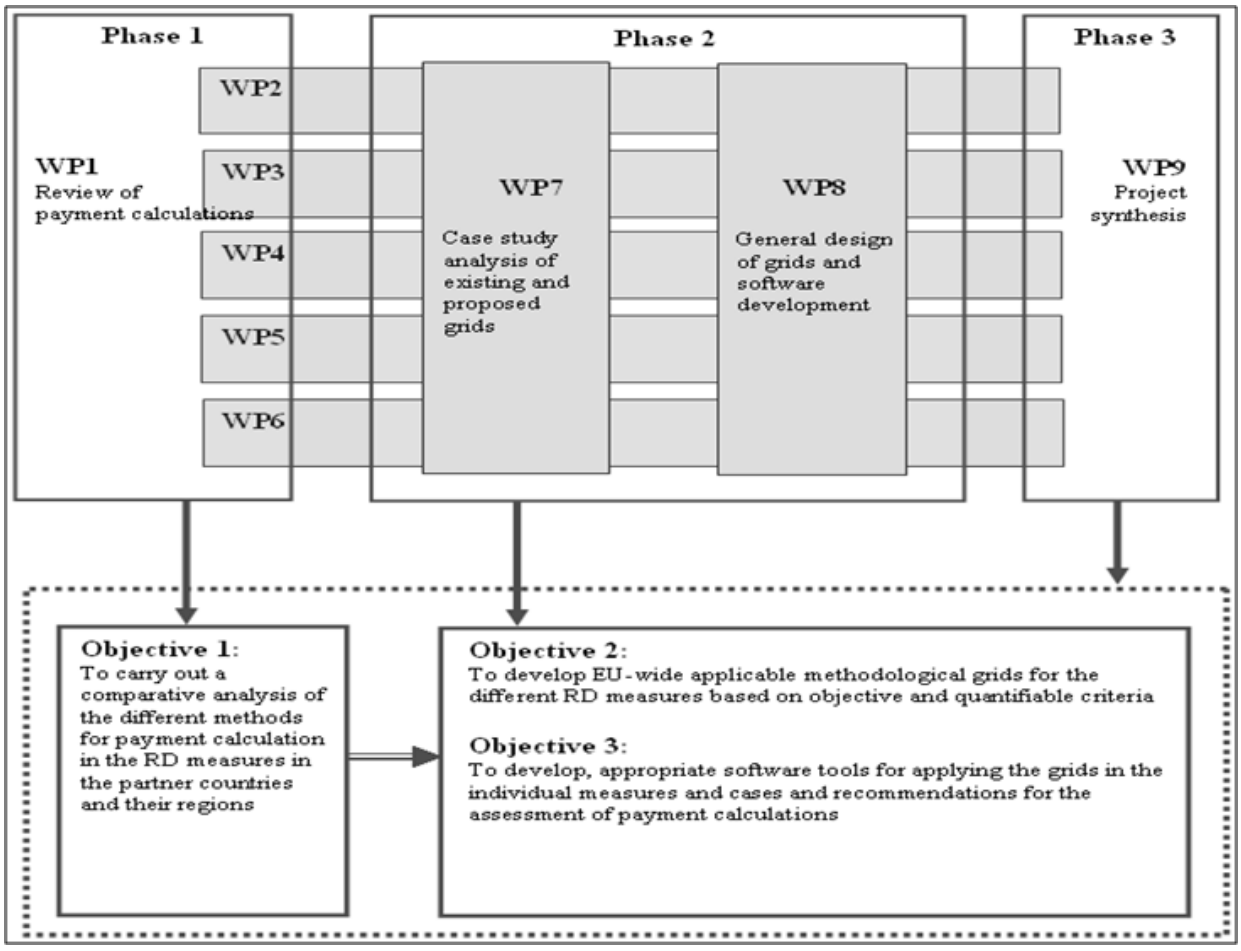

Figure 1. Position of WP8 within the project phases

1.1 Logic model diagrams and methodological grids: some preliminary information

The concept and theory of logic models was introduced around the 1970s or earlier. It has then evolved to meet new needs, and is a basic tool for problem analysis, management and evaluation.

Logic model diagrams and grids are essentially a schematic way of representing a complex problem. Grids and logic models are used together in the representation of the problem in a way that makes multi-dimensional problems easy to be considered and solved.

Grids are often used in complex problem analysis to represent the logic process to reach a solution. Several applications of grid methodology are reported in the literature, encompassing various fields, frequently computer science and biometric science. Moreover, logic models are often used in the theory and practice of enterprise organization and business management.

As a schematic way to represent a decision-making process, a grid can be formulated as a simple spreadsheet where different parameters influencing the decision are included. The increasing complexity of the decision-making process often leads to a set of tables connected by links and logic connections.

The logic model should be sized in a way that allows readers to easily understand it without extensive reference and cross-comparisons between pages. Ideally, the logic model is one or, at most, two pages long. The level of detail should be sufficient for the reader to grasp the major items that go into an

organization or program, what occurs to those inputs, the various outputs that result and the overall outcomes that occur.

In the case of payment calculation the logic framework is rather complex, as the different approaches adopted (or adoptable) for each individual measure and country called for the implementation of a very general framework for the standard grids which has then been modified and adapted at country level and measure level.

A bibliographic research has been conducted during the first phase of the project. The analysis of existing literature on logic models and methodological grids gave a first idea about how the methodology has been applied in other fields of research and investigation.

Logic modeling is a thought process that program evaluators have found useful for at least forty years and that has become increasingly popular among program managers during the last decade (Jordan 2003). However, in a more comprehensive definition, logic models are something more complex and less clearly defined. In general terms, with reference to the issues of AGRIGRID project, a logic model is a simple illustration of the logic behind a policy, program, or initiative. It represents and clearly defines the links between the theoretical assumptions/principles of a program, the program activities (or, better, the way they are implemented) and the outcomes.

The use of logic models to define the problem and find the solutions in AGRIGRID refers to the fact that it has been necessary to consider a large number of diverse, dynamic and interdependent information and elements belonging to different domains such as legislation, farm accountability, RD policies and socio-economic and geographic differences among and within the member states and regions. All of them are information, parameters or rules that an operator needs to draft correctly the calculation documents required by the EC during the negotiation and in particular the measures' approval phase.

At the beginning, the attention of the investigation was focused on some theoretical aspects related with the resolution of complex problems: the key question was how a complex problem can be solved. The issue of problem solving is studied in psychology and in the cognitive science from the point of view of the mental processes involved. For the current purpose the interest was to outline some methodological concepts, in order to better understand the width and complexity of the "project" problem. One of the most feasible examples of a very general problem solving procedure is called "*means-end analysis*" (Newell and Simon 1972). This method starts from the assessment of the differences between the current problem state and the actual goal state, and it aims to find the systems as well as the tools that will reduce that difference.

With respect to the context of the project, the current problem state, the goal state and the resolving systems can be identified respectively as:

- The current state: a number of different conditions and methods for payment calculation among the EU member states, at both production and policy level, which must be harmonized and managed by means of a structure and an ever-effective methodology;
- The goal state: the creation of a unique method of calculating payments for different RD measures and specific natural and agronomic assumptions, considering also socio-economic and geographic differences at national, regional and farm level;
- The resolving system: multidimensional grids containing all the information required for the implementation of measure justification and, by means of a logic model, the possibility of identifying the necessary relationship between policy, legislation and the accountable domains the information belongs to.

The next paragraphs describe the main results of the literature review, which looks at both scientific studies and practical/operative reports such as grey literature.

1.1.1 Complex problem solving: principles and mechanisms

The complex problem solving emerged as a field of psychology in its own right and it was usually presented as a specific part of chapters on cognitive psychology, sometimes so technical that it is difficult for non-experts to plough through (Sternenberg and Frensch 1991). In the last twenty years, studying complex problem solving has became an important theme in several areas such as engineering, mathematics, computer simulation or social sciences.

Independently from the field, researchers and philosophers have argued that the easier approach in complex problem solving exists in the analysis of simple modular systems and their interaction, outlined within the problem. (Simon 1969), (Fodor 1983). Although there are no guarantees that all complex systems can be divided into simple subsystems, some can, so this behaviour seems to be the most reasonable first step in the approach to a complex problem. The analysis of sub-components includes the acquiring a detailed knowledge of each of them, always maintaining a wider look at their correlation. An example of the theoretical procedures involved by complex problem solving can be visualised in Figure 2.

The model highlights the process of change from a given complex situation to a goal state, through a series of mental efforts and operative passages, initially lead by the "visual modeller", after involving also the "actors"[2]. The important passages are represented by the three moments in the middle of the figure (A, B, C). In A, the visual modeller's efforts aim to explain his mental model in a visual model by mapping out the components of the given problem. In B, the visual model has to be enriched by all partners' perspectives and knowledge. The C moment concerns the planning phase of the actions, including a careful understanding of the problem and its potential solutions; such a phase culminates with the production of an operative protocol.

The investigation has highlighted various methodological aspects concerning different methodological approaches of complex problem solving; two of them have been reported here for their relevance. In the first approach, the researcher focused on a sort of ever-effective methodology aiming at the comprehension, exploration and control of complex and dynamic systems. Funke (1991) provides a list of what are the principal tasks underlying the achievement of such purpose:

a. "*Intransparency*": the complex system usually has variables that do not lend themselves to direct observation. Their presence and knowledge is noticed in terms of "symptoms" from which one has to infer the underlying state;
b. The presence of multiple possible goals, some of which can be contradictory;
c. The complexity of the situation is commonly measured proportionally to the abundance of the processes or variables involved;
d. An high degree of connectivity among variables implies difficulty to anticipate all the possible effects among them;
e. The attitude of complex situation to be affected by dynamic developments in time;
f. Time-delay effects of the actions performed.

[2] The terms "visual modeller" and "actors" are taken from Clemens, 2008. In the context of the current project the role of visual modeller is played by WP8 leading partner, while the actors are the other WP responsibles.

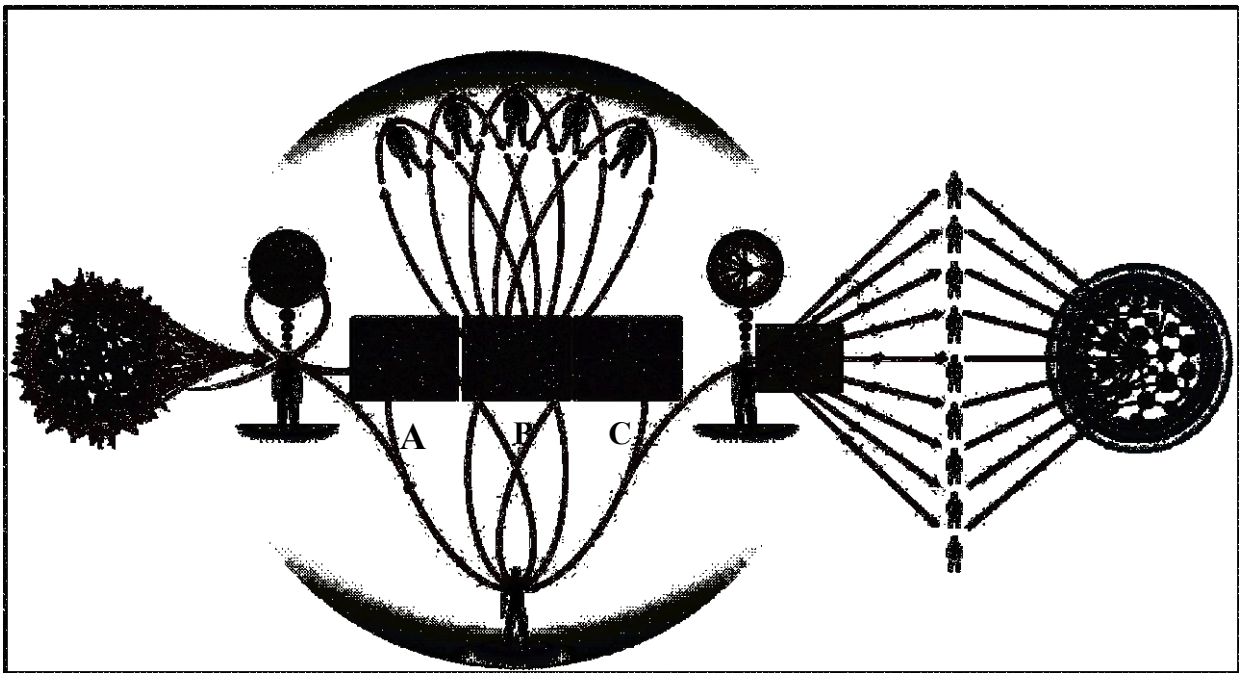

Figure 2. The art of complex problem solving (Clemens, 2008)

The second interesting study concerns the approach to complex mechanical problems. Engineering problems are commonly characterized by semantically rich domains and their development needs a domain-specific knowledge. As goals of the analysis' phase, Hegarty (1991) identifies the achievement of two different knowledges: (1) the *conceptual knowledge* as knowledge of the principles of each domain and (2) the *procedural knowledge*, as knowledge of the mechanisms of the problem solving and how to carry out the operations.

1.1.2 The concepts of Logic Model Diagrams

One of the methods proposed to represent and solve complex problems is the "logic model". The concepts and theory of logic models were introduced in the 1970s to improve programs evaluation and planning for federal governments in the United States. Nazar (2006) gives a full detailed excursus of the historic evolution of the Logic Model approach and its process of diffusion so far.

Logic models were born with the proliferation of social programs in the U.S., to answer the growing demand for program evaluation. The prominent investigator of the theory is Joseph Wholey, distinguishing himself in the field of program evaluation, developing an evaluation model based on the detailed examination of: Resources, Activities, Outputs, and short-, intermediate- and long-term Outcomes (Nazar 2006). Although the development in the recent decades of a great number of LM applications, the fundamental structure still represents the core of the Logic Model approach.

A Logic Model is a diagram and a text that describe the key logical (causal) relationships among program elements and the problem to be solved, thus defining measurements of success (Jordan, 2003). The terminology may differ but the means of the main parts of the approach are always the same. In its simplest form LM is characterised by:

INPUTS: they represent the resources (financial, human, organizational, etc.) a program has at its disposal to direct towards its tasks;

OUTPUTS: they include activities done by the program with the resources (processes, tools, events, technology, etc.) and the direct products;

OUTCOMES: they are the specific changes in program participants' behaviour, knowledge, skills, status and level of functioning. In other words, what can be measured as impact of the change, occurring in organizations, communities and systems. Normally they are divided in short-term, medium-term and long-term outcomes.

Reading a logic model means to follow the chain of reasoning, or "***If... then***..." statements, which connects the program's parts (W.K. Kellogg Foundation 2001). The clarity of thinking that is necessary to build the model is crucial for the overall success of the program. Figure 3 shows an example structure for LM developed in recent years, called also Program Logic Model or Program Action Logic Model. Among the methodological aspects concerning the LM approach, the use of graphical tools, such as drafts, diagrams, schemes in place of long descriptions is particularly advised: "*a picture is worth a thousand words"* (W.K. Kellogg Foundation 2001).

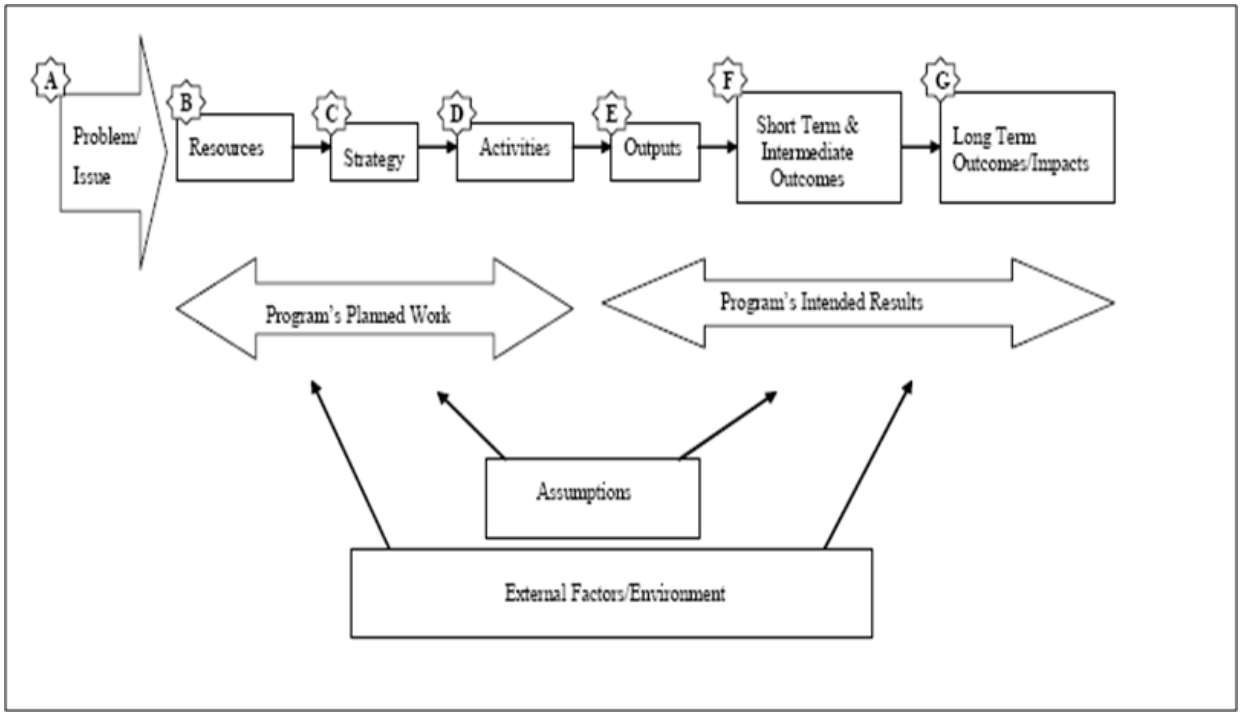

Figure 3. Core components of the Program Logic Model (Gale et al. 2006)

Because of their great success, there are a number of popular Logic models developed recently, in accordance with the type of application that they are absolving; this fact suggests to choose, the *right tool for the job* with, in case, the possibility to make some adaptations.

The following list, with the corresponding references, aims to give an overview, by no means complete, of some LM application fields:

Program and Project design: models to plan, monitor and evaluate projects for the development of financial proposals to donor countries or donor organizations (Evaluating Socio Economic Development 2003), (Innovation Network 2001), (W.K. Kellogg Foundation 2001). Logic model is an important tool in the design of financial programs as well as the monitoring and evaluation of their output. One of the examples within the family of LMs is the intervention logic of a program: the intervention logic is a scheme used to visualise the relationships between the public intervention and its objectives, and it presents the chain of causality between programs and expected results. The core elements of such a scheme, normally presented in methodological working papers, are the different types of effects of a

financial measure and the different types of objectives to which the measure can contribute (ECORYS and IDEA 2005).

Research development: LM is a tool commonly used to plan and to strengthen the conduction of relevant, strategic, basic and applied research, rather than the improvement of technology development in close connection with the private sector. The flexibility of LM allows to consider in a unique logic scheme the public or private inputs (funds, researchers, facilities, etc) the outputs of the research and the technology development produced in collaboration with the private sector, conducting technical demonstrations, tests and studies, including the building of a market infrastructure to support technologies (Jordan 2003).

Strategic planning: to identify and prioritise major long-term desired results in an organisation, and strategies to achieve those results (Gale 2006), (Information Society and Media DG 2005), (Evalsed 2008).

Organisational assessment and business management: comprehensive view of the current situation in an organisation, but without prescribing how to change it in order to evaluate the actual performance (National Institute of Standards and Technology 2008).

Resources and environmental management: as for the management of resources within a society or organisation, LM is applied also for the evaluation of the efficiency in the use of natural resources in a context of environmental management. (Turner et al. 2000; Rose 2002).

University and learning courses: LM theory and application are the core topics of university and learning courses about programs' evaluation (Harvard Family Research Project 2000; Cooperative Extension 2008; Powell and Henert 2008; Frankel and Gage 2007).

1.1.3 Relations between Logic Models and grids

The representation and schematisation of a complex problem is often multidimensional. As already briefly described, AGRIGRID is typically faced with this kind of problem. In fact, the analysis and representation of how payments should be modulated in terms of MS, region, area, type of measure, etc. is a typical multidimensional problem which cannot be represented by a simple LM. However, the concept of grids includes two main aspects: the first one is mainly the representation of multidimensional complex problems, while the second (and more represented in literature) is the interconnection, analysis and distribution of knowledge taken from different and un-homogeneous sources.

On the last definition of grids, examples in literature are rather frequent, ranging from biomedical sciences (Payne et al. 2007) to the prevention and management of natural disasters (Smirnov et al. 2007), finally to Information Technology (Napier et al. 2009).

The design of grids involves, in that sense, both the multidimensional representation of the problem and the systematisation and use of different sources of information. In the AGRIGRID framework, the methodology applied has mainly considered the grids as a tool for representing the problem. However, the way the problem of defining a methodology for payment analysis and calculation has been faced is strictly related with the "grid" approach. In fact, sources of information are rather un-homogeneous, knowledge is dispersed and a systematic approach is missing. In that way, the final product of the AGRIGRID project can be considered as a first prototype of a knowledge grid, where a proper methodology of analysis is codified and information/data originated from different sources are made available.

2. Methodology

During the project, and parallel to the bibliographic research, the comparative analysis of payment calculations has outlined with more precision the whole methods with which the justification of the investigated RD measures and countries/regions were implemented in the current programming period. One of the first activities within WP8 was to study a way to link the different methodological aspects found in literature and the experience and knowledge provided by specific analyses of the current justification documents; this would grant a more reliable design of the desired structure of the grids.

The activities of analysis and design, described in more detail in the paragraph 2.1, had the main objective of defining the logic model at the base of the methodological grids: the model links all the information, criteria and domains involved in payment calculation and fixes the recommended procedures to determine the final level of compensation for the acceptance of the RD commitments. Beyond the drafting of the LMD, the design activity ended with the creation of a preliminary raw structure for the grids.

Later on, the first grids were delivered to the WP2-WP6 leading partners and applied to the investigated measures and MS, in order to test their performance and sensibleness. Thanks to such practical experience, it was possible to bring the necessary modifications and improvements to the structure with the synergic work of all partners; in this way, it has been possible to produce a user-friendly, flexible and suitable tool applicable to the whole set of measures investigated, as well as to different countries or regions. Paragraph 2.2 presents more specifically the single activities carried on to revise and adapt the raw structure, in anticipation of the realisation of the final methodological grids.

2.1 The phase of analysis and design of the preliminary grids

One of the important results of the review of RD payment calculations across the EU was a more precise knowledge of what has been done by the managing authorities to respect the new standards and rules for the current programming period. The analysis of RDP documents, in particular of the payment justifications, showed a high degree of variation in the extent of the implementation of a particular measure in different countries. Among the justifications, there are various examples of exhaustive accomplishment of the new EC dispositions (Figure 4): first the identification of the relevant baseline practices, then their association with the RD commitments and finally the calculation of the payment through the standard cost approach, based on the difference between the economic appraisal of the farm performance in the baseline situation and that one participating to the measure.

These are not the most common situations observed across the set of member states and of investigated measures. Several problems have been identified during the review of payment calculations: in some cases the lack of methodological experience in payment administration implied that the baseline practices were not always defined and their connection with the RD commitments were not transparent and clear. In other cases, the standard cost approach did not take into account the wide range of different circumstances. The lack of reliable technical and economical data negatively influenced the representativeness of “standard” or average figures for costs and revenues.

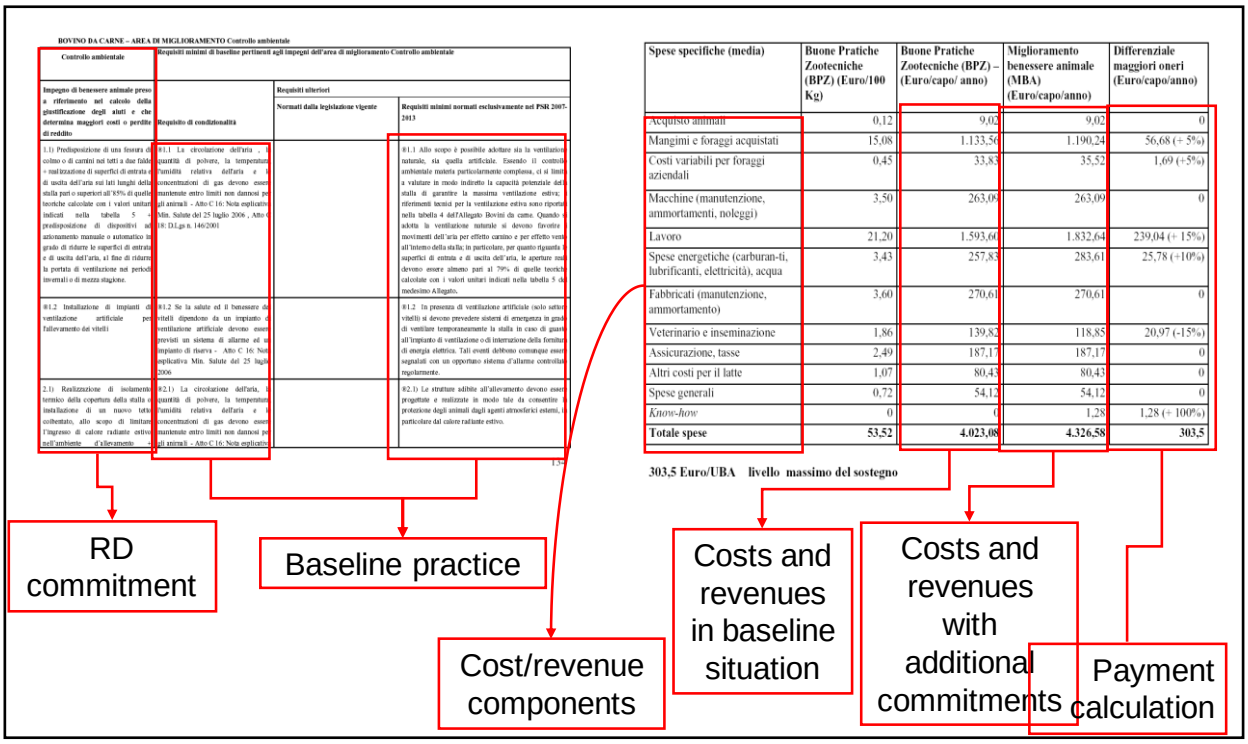

Figure 4. Example of linkage between baseline, RD commitments and respective costs/revenues – Animal Welfare payments in IT_{ER}

Grids and logic models are commonly used together to make multi-dimensional problems easy to consider and solve. As a schematic way of representing a decision-making process, a grid can be formulated as a simple spreadsheet where different parameters influencing the decision are included. The increasing complexity of the decision-making process often leads to a set of tables connected by links and logic connections. The standardisation of the procedures of selection of such parameters represents also the recommended "guideline" for the correct implementation of the calculation process.

The last operation is rather complex and the different approaches adopted for each individual measure and for each partner country impose the implementation of a very general framework as well as a set of standard grids that can be modified and adapted at country level and measure level. Figure 5 shows the logic scheme, the LMD of the methodological grids, as a theoretical process to determine the final level of payment in every RD measure and MS. It includes an identification of Cross-Compliance for each country and each measure, a consequent definition of the baseline, a clear identification of additional commitments for each individual measure and, finally, a calculation of revenue losses and additional costs for each measure and each of the "dimensions" considered in the calculation.

The main differences between existing grids and the proposed scheme are mainly due to the fact that:

- for some measures it is rather difficult to define a proper baseline (e.g. natural handicap payments, forestry measures);
- cost lists and differentiation elements are rather diverse and standardisation seems to be very difficult;
- data sources are also very different and, again, a standardisation is almost impossible.

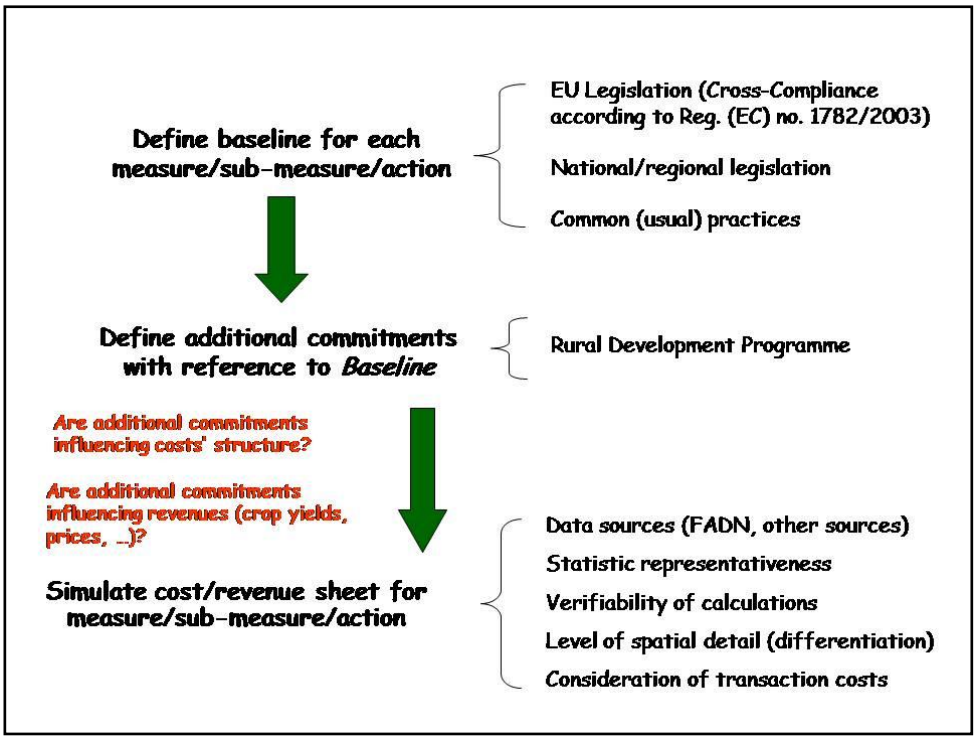

Figure 5. Logic scheme of the analysis, as a result of the review of current RD payments

In Figure 5 there are some specific aspects – like data sources and others – that, excluding the "level of spatial detail" included in the domain of payment differentiation, apparently are not considered within any of the above cited domains, but that definitely need to be taken into account to accomplish the EC requirements for the implementation of payment calculation. In addition, the necessity to produce an ever-effective tool over several measures, and all the EU member states/regions, inevitably implies a series of complications in the grid development.

The following are the main factors that had to be considered before the design of the grids:

- The necessity to consider some elements relevant within the calculation of payment, whose effects are not very clear and observable:
  - Different countries and measures;
  - Sources of data;
  - Different methods of calculation of a single cost/revenue item;
  - Transaction costs;
  - Ceilings of the EC regulations;
  - Differentiation of payments according to the year of commitment;
  - The lack of information about baseline in some specific countries or within some measures;
- The extent of implementation of a particular measure in different countries implies the involvement of information usually characterised by an high degree of variation among them and within their domains; this fact means that their harmonisation and classification within the domains is necessary;
- The standardisation of the calculation methods contrasts with the necessity to have a flexible structure always applicable among countries and measures.

These problems were very important for the correct definition of the structure of the grids themselves. The identification of a resolution *a priori* is not unique. Hence the research for a solution was done through the practical application of preliminary grids to the investigated measures. The following paragraph reviews the main activities for producing the final methodological grids.

2.2 The second phase: development of the methodological grids

The second phase of the project was totally dedicated to the creation of a system applicable EU-wide as well as differentiated by the nature of the measure. The following are the main operative procedures carried out within this phase:

1. The creation of a preliminary model of methodological grids with a structure as similar as possible to the draft outlined within the design phase.
2. The definition of guidelines for the application of preliminary grids to the set of measures the project deals with. The work allowed the extraction of the different information, rules and methods contained in each investigated measure and to obtain a reference data set to test the applicability of every revision and adaptation of the raw structure.
3. Thanks to the practical experience of the partners in the use of the grids, it was possible to identify the modifications, additions and lacks necessary to improve their applicability, particularly in the integration of all the information and methods, and in the standardisation of the implementation procedures for the calculations. An important role within this activity was performed by the definition of specific classification systems to integrate the information among the several measures and MS.
4. The definition of the general logic framework, representing the general functioning of the methodological grids in a flux diagram; the general framework was then adapted to produce measure-specific logic frameworks.
5. The definition of a proper layout for the methodological grids, both at general level and measure-specific level.

The above activities constituted also the reference point for the implementation of the software tool.

3. Logic framework for the application of methodological grids to RD payment calculations

The logic framework provides the method to connect the different parts that make up the methodological grids; it represents the logic sequence of actions that also a inexpert operator can follow to carry out the recommended RD payment calculation process.

The framework derives from the LMD of the first phase of analysis. Indeed, the main objective of the first part of the grid development was to represent, using a grid-based structure, the payment calculation of each individual measure as it is, at present time, included in the Rural Development Programmes 2007-2013. While eligibility criteria and scheme commitments are often similar across countries, the level of detail in the calculations varies between the different implementations. The standard cost approach can be as simple as using an aggregate figure for both costs and revenues or can include several cost and revenue components for a range of required activities. Similarly, approaches used to quantify the different components vary from using expert studies or opinions to more detailed modelling exercises. Therefore, developing such a structure required a detailed knowledge of present conditions and methods at both production and policy level: existing payment calculations have been reviewed in the nine partner countries to obtain a better understanding of how the calculations were carried out and to collate a comprehensive database of calculation components.

The initial shape was that of a flux diagram because it gave the possibility to resume all the operations of the calculation process in one page, highlighting the main passages. For the development of the methodological grids, the logic framework developed in the first phases of the project has been useful to know how the MS approached the problem in the definition of Rural Development programs. The definitive formulation of the framework resulted from the synergic work among the project partners, each contributing personal experience in the application of the preliminary grids to the specific

measures. After the logic framework was delivered to partners, it was adapted by the horizontal packages to measure specific needs. The latter activity also helped the partners in the development of the measure-specific grids.

Figure 6 is the general logic framework in its definitive layout: it has been designed as a sequence of operations, according to the different phases of RD payment calculations:

- The recognition of relevant baseline requirements and the comparison of these requirements with the voluntary practices provided for by the RD measures;
- The identification of cost and revenue components prompted by the RD commitments;
- The definition of the most suitable criteria for the differentiation of payments.

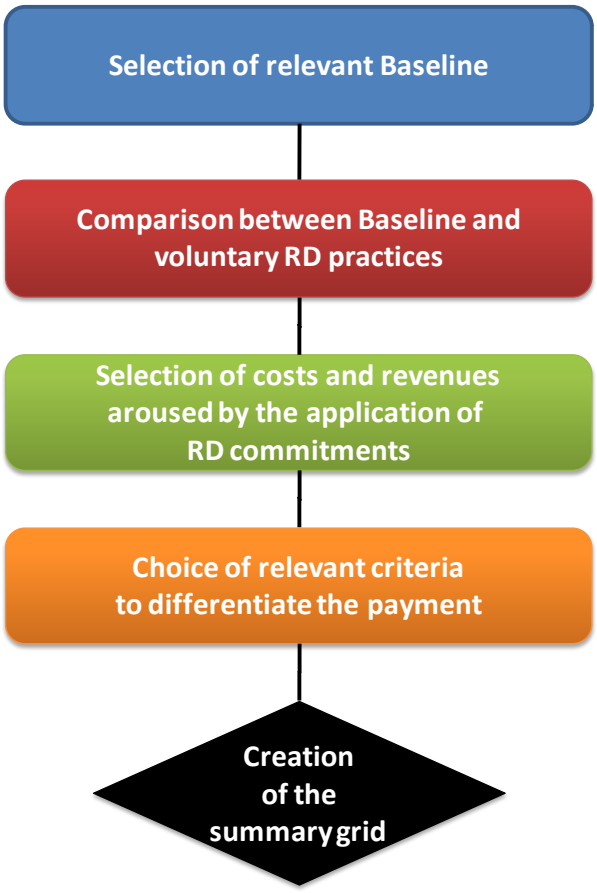

Figure 6. General logic framework for the development of methodological grids

Nevertheless, payment calculations can still vary significantly between measures; this implied that different logic frameworks needed to be developed and applied, which consequently resulted in different designs of the measure-specific methodological grids.

Some of the measure-specific frameworks (e.g. in Animal Welfare or Natural Handicap Payments) are quite similar to the general format, while others ended up in very altered structures, like the one designed for Natura 2000 payments grid (Figure 7). But the most notable example can be probably found in the afforestation measures (Figure 8), where special attention needed to be paid to design separate calculations of establishment costs, maintenance costs and agricultural income foregone.

In the following paragraphs, the development of each of the above mentioned steps will be described.

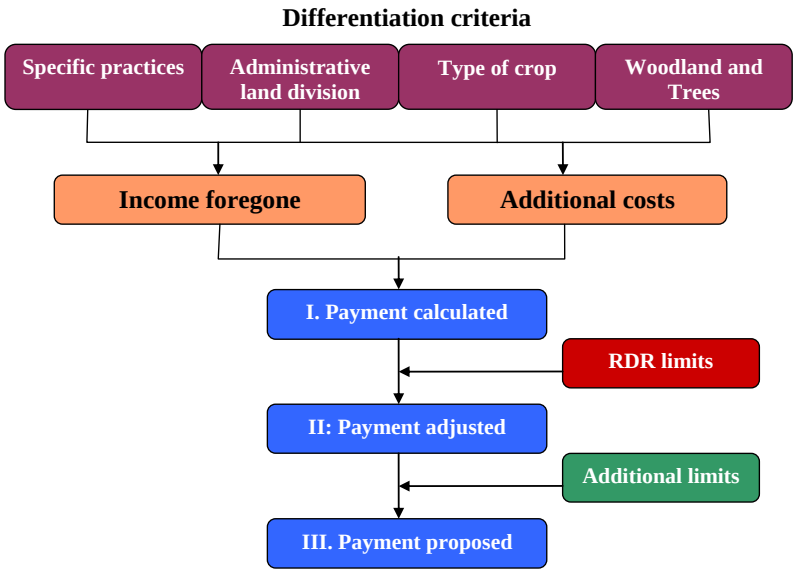

Figure 7. Logic frame work for the design of the Natura 2000 payments grid (from D6)

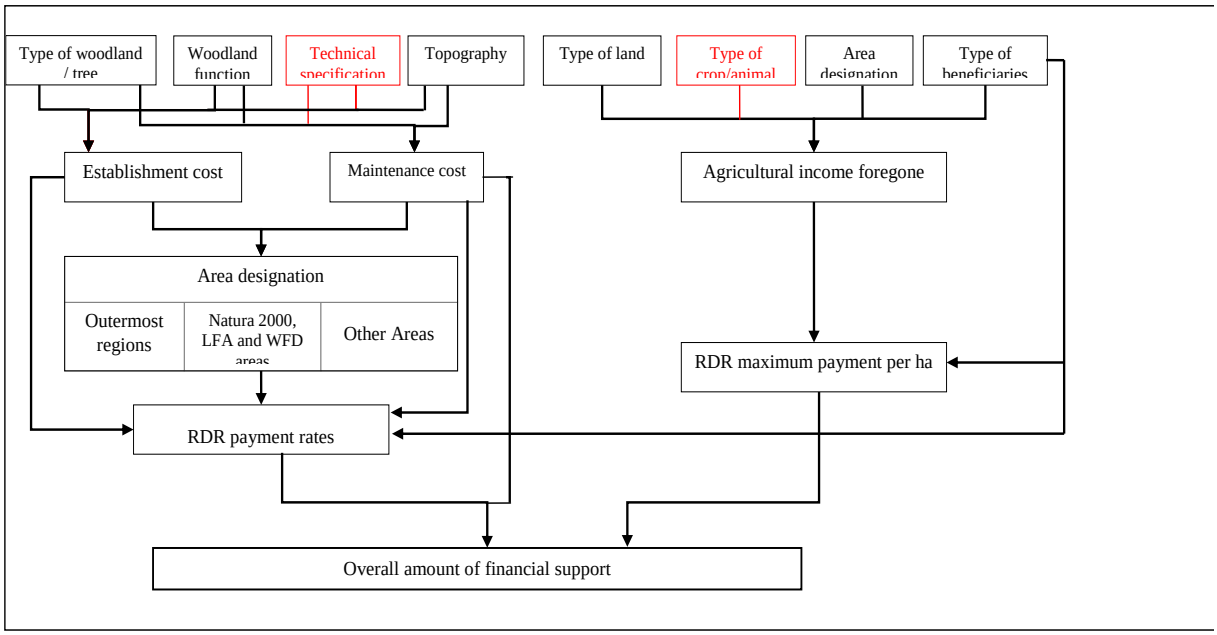

Figure 8. Logic frame work of payment calculations in methodological grids for afforestation measures (from D7)

3.1 Assessment of baselines

The baseline for the current programming period is clearly defined in the EU Commission working document *RD10/07/2006-final*, which states that the *baseline* beyond which AEM commitments have to go switches from good farming practices to a new set of obligation standards:

- Based on EU legislation (relevant Cross-Compliance provisions according to Reg. (EC) No 1782/2003) which comprises:
    a. Statutory Management Requirements – SMRs (as set out in Annex III of the Regulation)
    b. minimum requirements to maintain land in good agricultural and environmental conditions (GAECs as set out in Annex IV of the Regulation)
    c. maintenance of land under permanent pasture [art. 5(2)]
- National/regional legislation identified in the programme, which concerns:
    a. minimum requirements for the use of fertilisers
    b. minimum requirements for the use of plant protection products
    c. other relevant mandatory requirements established by national/regional legislation.

An assessment of the European and national (or regional) baseline requirements regarding Rural Development is necessary due to the Reg. (EC) 1968/2005 itself, which states that Rural Development payments can compensate only commitments going beyond the minimum mandatory requirements. Moreover, during the negotiations for the approval of the current RDPs, it has clearly emerged that the difference between the baseline and the additional commitments must be properly described in the programmes and must be coherent with the process of payment calculation. Therefore, the baseline must be defined according to the description of RD measures in the considered RDPs, which in its turn must be consistent with the definitions and commitments stated at European level.

This is why the logic framework for the calculation of RD payments takes into account the description of the relevant baseline requirements and considers also the link between baseline, additional commitments (specific obligations of the RD measures) and respective costs and revenues.

The starting point of the analysis was a review of how the assessment of the current baseline requirements has been faced in the investigated RDPs. Using a set of standardised tables, each partner collected information on SMRs, GAECs and additional requirements in their country (or region). The additional baseline requirements are obviously neither SMRs or GAECs, but they refer to specific national/regional legal acts set up by each Member State (or Region), which have no correspondence to GAECs and/or SMRs as well as to common practices if they are used to define the baseline. Moreover, it has to be recalled that if, for a particular RD measure or for some Cross-Compliance issue, there are no relevant SMRs or GAECs, the common agricultural or forest management practices must be considered as baseline. The reference to common agricultural or forest practices applies also in the case that these practices (those adopted by the majority of farmers in the area) are more restrictive than SMRs and/or GAECs. This occurrence seems to be rather uncommon in the RD measures investigated by our project, nevertheless it had to be taken into consideration when assessing baseline requirements of those RD measures (e.g. forestry measures) for which the baseline is not defined by a "legal act".

This analysis provided a useful overview of which baseline requirements are more relevant for a particular RD measure: for example, within Natura 2000 measures the baseline is represented mostly by ***common practices*** and by the requirements stated in ***additional national legislation*** which applicants have to meet in the Natura 2000 areas. A similar situation occurs with the forestry measures, for which SMRs and GAECs are seldom applied in most of the investigated countries and regions. On the contrary, baseline requirements under Reg. 1782/2003 are relevant for Animal Welfare measure across the EU.

Notwithstanding this, the review pointed out also the fact that the existing baseline requirements are seldom considered directly in the calculation of RD payments.

According to EU legislation, it is the difference between a baseline practice and a RD requirement which should determine the amounts of additional costs and revenue losses that settle on the amount of payment. The lack of evidence of this relationship drove the European Commission to ask many Member States for integrations in their current RDPs.

So, a general system of comparison between baseline and RD commitments, the so-called *linkage table*, has been designed. Table 1 shows an example of how this table (in one of its provisional designs) has been filled by partners, according to the commitments provided for by the RD measures investigated in the project.

However, it has to be recalled that, although all regulative measures hold when implementing a RD measure, not all of them influence payment calculations. More precisely, only baseline requirements whose tightening up directly influence the balance of a firm in terms of additional costs and/or revenue losses have to be considered in the payment calculation. For example, the baseline requirements for the scheme of *Protection of NVZs* in Greece derive from the local Special Action Plan, issued in compliance with the EEC Directive 91/979 which in its turn is part of the European SMRs. Yet, all provisions related to manure handling, even though being part of the Special Action Plan, do not constitute an active element in the specific calculation procedure since no manure is used in the production process under examination.

A peculiar case is related to natural handicap payments (measures 211 and 212), since for these measures the baseline requirement is basically the same as the RD commitment: i.e. to continue farming and to comply with the minimum requirements. Therefore, what counts in the calculation of natural handicap payments is the difference in the permanent natural handicap between the less favoured area and the reference area. The reference areas are those where there are no permanent natural handicaps.
Examples of the final *linkage tables* implemented in the methodological grids are shown in the Annexes. Most of the baseline requirements collected by partners have also been used to create a library that has been implemented in the final software tool.

3.2 Identification of cost and revenue components

One of the key issues in the process of payment calculation is the recognition of how the implementation of a RD commitment influences the balance of a farm in terms of additional costs and/or revenue losses.
The foremost step towards the creation of an organized cost/revenue structure has been trying to detect relevant cost, revenue and income components used in the payment calculations of the current programming period and to codify them in a standardized way. At an early stage FADN (European Farm Accountancy Data Network) categories have been used as a basis to produce a first list of cost/revenue items. The result was a roll of entries, which every partner had to adapt to the different measures and countries, highlighting the most relevant elements and adding any missing one, on the basis of the specificities come out from the investigated RDPs during the first phase of the project.

Table 1. Examples of linkages between RD commitments and related baseline requirements

Measure 214 in Greece 214_5. Livestock farming extensification - 5.1. Rental of private pastures				
RD commitment	**Baseline practice**	**Type of baseline**	**Additional cost element**	**Additional revenue element**
Rental of private pastures	Maintain minimum livestock density	GAEC	SE375-Rent paid	Sheep's meat Ewe's milk
	Grazing capacity	Additional baseline		
Actions for the avoidance of degradation all of pasture areas (old and new)	Avoid excessive stocking density	GAEC	Environmental management plan	Goat's meat Goat's milk
Measure 225 in Italy, Umbria Region				
RD commitment	**Baseline practice**	**Type of baseline**	**Additional cost element**	**Additional revenue element**
Release of 2 trees per hectare of felled timber, chosen among the largest or oldest ones	Observance of the provisions concerning the realese of a single tree for each cut hectare, chosen among the largest or oldest ones	Additional baseline	Topographic location of trees Forestry exploitation costs	Revenue from forestry exploitation
Measure 213 in Czech Republic				
RD commitment	**Baseline practice**	**Type of baseline**	**Additional cost element**	**Additional revenue element**
The applicant shall farm in conformity with GAEC	All GAEC	GAEC	Commitment not included in calculation	Commitment not included in calculation
The applicant shall utilize the agricultural land for a set period of time			Administrative condition – not covered by payment	Administrative condition – not covered by payment
The applicant shall assure that grasslands are at least 1x grazed or 2x mowed a year (with few exceptions) within fixed deadlines. The mowed biomass shall be removed from the parcel	Basic grasslands maintenance as a common farming practice	Additional baseline	Commitment not included in calculation	Commitment not included in calculation
Application of fertilisers or farm manure shall be avoided. In case of pasture, grazing livestock may produce at most 30 kg N per hectare of grazed area	Act No. 114/1992 Coll., on the protection of nature and landscape, as amended in connection with the creation of the Natura 2000 network	SMR	SE295-Fertilisers	Hay yield
	The typical/general fertilisation level = 80 kg N/ha (mineral)	Additional baseline	SE281-Total specific cost	Yield of meadows
After transition to the single payment scheme, the applicant shall comply within his entire holding with the binding requirements (SMR)	All SMR	SMR	Commitment not included in calculation	Commitment not included in calculation

The selected balance sheet entries have been grouped in the following categories:

A) Production of crops / livestock activities (Yield * Price)
B) Subsidies
C) Variable Costs
D) Gross Income (A+B-C)
E) Transaction costs
F) Data sources (qualitative information)

As before mentioned, the proposed list was built starting from the FADN structure, adapted and simplified to fit to the methodology of payment calculation in the RDPs. In particular the following adaptations have been considered:

- the list originally included only variable costs: this is clearly stated in the methodological document *RD/10/07/2006–final*, which imposes that investments in machinery or installation needed for the specific commitments fall under investments and cannot be considered in the payment calculation. That is why only costs associated to the use of production means have been considered;
- opportunity costs are not included in the FADN cost/revenue structure, however the use of opportunity costs is accepted in certain cases. One case is the opportunity cost of family labour, which is one of the most frequent additional costs in the calculation of RD payments;
- taxes, being a general cost calculated at farm level, were not considered in the first list; also Value Added Tax (VAT) is normally internalised in the price of products and is generally not explicit in the taxation system in agriculture;
- items for transaction costs were left free as they do not fit into the FADN scheme;
- the proposed list included also some categories of subsidies, as they can be relevant (in a few cases, actually) for payment calculations; in fact, they can be relevant only if the possibility of drawing an aid is somehow hampered by a particular RD measure (e.g. the RD commitments modify the level of the subsidy).

The leading partners of Work Packages 2 to 6 adapted the proposed list to the RD measure they were responsible of and afterwards every project partner verified and in case updated the proposed categories using information drawn from their national/regional RDPs.

The outcome of this task was a long and diverse list of costs, revenues and other items, as well as a set of reports delineating the importance that a particular entry has in the payment calculation of each investigated RD measure. In the case of cost or revenue components not belonging to the FADN database, the possible data sources for the component itself were also reported.

What emerged clearly is that many of the items reported in the final list could hardly be put in a FADN-like balance sheet structure; nevertheless, most of them were relevant and have been also used in many payment calculations of the current programming period. This happened because, in accordance also with the EC document *RD/10/07/2006–final*, the proposed starting list was based on a profit-and-loss account approach, while current payment calculations are often based on a so-called "production process" approach. Hence, the listed entries can be divided in two general types:

- cost/revenue items taken directly from the FADN database or, however, items that can be easily related to an existing FADN variable. For example, entries with a higher detail with respect to the European definitions but whose level of detail is available in the national FADN networks, or balance-sheet items that cannot be included in a profit-and-loss account but are counted in FADN as assets and are also relevant for some payment calculations;
- other items (mainly costs) referring to a farming practice or to a production process, which is affected by the implementation of a RD commitment and whose monetary value is directly estimated in the calculation (e.g. the cost of mowing or for the drafting of a management plan);

In the definition of a new methodological path for the calculation of payments, we faced the difficulty of combining the two types of cost/revenue items and, as a consequence, the two different calculation

methods that can be found in the Rural Development Programmes. Therefore, we took the decision of splitting all entries in two separate lists and setting up two not combinable approaches to be followed within the methodological grids: the *Balance Sheet approach* and the *Practices approach*.

3.2.1 The *Balance Sheet* approach

The Balance Sheet approach consists of a direct comparison, in a proper accounting exercise, of two samples of farms: one undertaking a Rural Development scheme and one similar in terms of farming system and local conditions, but not participating in the concerned scheme.

Once chosen the balance items that are influenced by the implementation of a RD commitment, the difference existing between the two samples in all those revenue and cost components (i.e. the difference in gross margin) determines the cost of participation in the scheme.

Evidently, the available data sources and the nature of the samples influence the level of detail that can be reached in the selection of cost/revenue components for the calculation process. Hence, the grids give the possibility to choose the appropriate level of detail, whether it is a simple comparison of total farm output and costs or a very detailed calculation carried out considering yields and prices of products as well as single components of production inputs.

A possible variation of the Balance Sheet approach is what in Deliverable 4 has been defined as *partial budgeting*: this simplification of the main approach consists in the identification of an appropriate sample of non-participants and the assessment of revenue and cost elements which are known to be influenced by a RD commitment; then, variations due to the implementation of a measure are estimated in the form of either a proportional or absolute value change.

This second calculation method has been largely used in the investigated Member States; nevertheless, its application is not desirable because it often entails a wide resort to expert opinion instead of using significantly representative figures.

What joins the two above mentioned methods is the obligation of using only a fixed balance-sheet structure, with no chance of adding new items. This aspect, though giving the grids a certain inflexibility, should allow easier comparison of different calculations, among Member States but also among RD measures.

Furthermore, the original idea behind the creation of a calculation approach based exclusively on FADN definitions was to give the possibility in the future to supplement the grids and the software with data taken directly from the FADN datasets. Anyway, there is no constraint of using FADN data: figures for calculations can be taken from every source.

The Balance Sheet approach suits the payment calculation of those RD measures whose commitments involve the whole farming system; in fact, it has already been used in the payment calculation for the introduction of organic farming in Germany and Czech Republic. Another example can be the calculation of natural handicap payments (measures 211 and 212), as they consider the handicap of the entire farm located in a less favoured area.

The full list of FADN items that has been implemented in the methodological grids is reported in the Annexes.

3.2.2 The *Practices* approach

The implementation of most of the current RD measures (or sub-measures) usually involve just a few, if not only one, production processes or farming practices. So, this approach consists in breaking down a

particular RD measure in commitments, according with the description of the measure itself in the official documents.

Once identified which practices are influenced by the implementation of a RD measure[3], the following step consists in fixing how the "cost" of these practices varies when passing from the baseline situation to the "committed" situation. This operation can be carried out in two ways:

- directly assessing the cost of the practice, through available price lists or (less preferable) through an expert opinion;
- determining and quantifying the specific and implicit costs that can be attributed to the implementation of the practice.

Evidently, the second option is the most effective; therefore, the working group drafted a short list of cost components that could be used for the statement of every production process that have been incorporated in the methodological grids. The statement is shown in Table 2 and the meaning of each of the statement's entries is explained in the Annexes. However, in the horizontal WPs a few adaptations have been made, in order for the general statement to fit the measure-specific grids.

The main problem related to the adoption of this approach concerns the statement of the credit side of the account. In fact, it is seldom possible to determine the revenue of a specific activity within a farming system. For this reason, revenues can be assessed at farm level instead of the "practice" level.

Calculation approaches similar to this one were already used in the current programming period, for example in many Natura 2000 schemes and in some very specific AEM measures. Table 3 reports a few examples of how the Practices approach works within the investigated RD measures.

[3] The working group has already supplied the methodological grids with a set of commitments and practices that can be frequently noticed in the payment calculations of current RDPs.

Table 2. General cost list for the statement of production processes

1. Total output
1.1 Total output crops and crop production
1.1.1 Crop production sold
1.1.2 Farm use and farmhouse consumption
1.2 Total output livestock and animal products
1.2.1 Gross Livestock Margin
1.2.2 Animal products sold
1.2.3 Farm use and farmhouse consumption
1.3 Total output forestry
1.3.1 Gross Forestry Margin
1.3.2 Farmhouse consumption
1.4 Other outputs and subsidies
2. Total inputs
SPECIFIC COSTS
2.1 Crop specific costs
2.2.1 Seeds and seedlings purchased and produced
2.1.2 Fertilizers and soil improvers
2.1.3 Crop protection products
2.1.4 Other crop specific costs
2.2 Livestock specific costs
2.2.1 Purchased feedingstuff
2.2.2 Feedingstuff produced on the farm
2.2.3 Other livestock specific costs
FARMING OVERHEADS
2.3.1 Upkeep of machinery and equipment
2.3.2 Upkeep of land improvements and buildings
2.3.3 Electricity, lubricants and heating fuels
2.3.4 Water
2.3.5 Payments for external services
2.3.6 Other farming overheads
EXTERNAL FACTORS
2.4 Wages
2.4.1 Wages for permanent and seasonal labour
2.5 Rent
2.5.1 Land and buildings
2.6 Interest
2.6.1 Interest and financial charges
3. Implicit costs
3.1.1 Opportunity cost of family labour
3.1.2 Opportunity cost of current capital

Table 3. Examples of implementation of the *Practices* approach

Measure 214

RD Commitment	Baseline	Practice	Revenue	Costs
1 mowing/year mandatory	3 mowings/year mandatory if there's no grazing	Mowing	Fixed list of revenue components	Fixed list of cost components
Prohibition of use of any pesticides, fertilisers and soil improvers	Prohibition of use of some types of pesticides	Fertilization		Fixed list of cost components
		Crop protection		Fixed list of cost components
Establishment of catch-crops	Cultivation of arable land	Ploughing	Fixed list of revenue components	Fixed list of cost components
		Sowing		Fixed list of cost components
		Removal		Fixed list of cost components
Production of organic cereals	Production of conventional cereals		Fixed list of revenue components	Fixed list of cost components

Measure 221 – Establishment costs

RD Commitment	Baseline	Practice	Revenue	Costs
Establishment of a new woodland or forest	No forest or woodland present	Site preparation		Fixed list of cost components
		Planting		Fixed list of cost components
		Protection		Fixed list of cost components

Measure 221 – Agricultural income foregone

RD Commitment	Baseline	Practice	Revenue	Costs
Establishment of a new woodland or forest on agricultural land	Active agricultural land management and production		Fixed list of revenue components	Fixed list of cost components

Measure 213

RD Commitment	Baseline	Practice	Revenue	Costs
Grazing livestock may be at most 30 kg of N per ha of grazed area	The typical/general fertilisation level is 80 kg of N per ha (mineral)	Fertilization	Fixed list of revenue components	Fixed list of cost components

Measure 215

RD Commitment	Baseline	Practice	Revenue	Costs
Conversion from stall-feeding to mixed rearing (free range in spring and summer pastures and stall-feeding in the remaining period)	Animals may be stall-fed	Feeding	Fixed list of revenue components	Fixed list of cost components
		Grazing		Fixed list of cost components
Adoption of veterinary assistance schedule	No mandatory plan or veterinary schedule, except for calves	Veterinary assistance		Fixed list of cost components

Examples for agri-environmental measures:

- The first example shows one commitment counting one practice, and one commitment counting two practices
- The second example shows one commitment counting three practices
- The third example shows one commitment without any practice

For each practice a fixed list (always the same, i.e. the one reported in Annex X) of cost components can be filled-in. Otherwise, a comprehensive cost value can be assigned to the whole practice.
Revenue will be generally determined only once for the entire commitment (using a fixed list of revenue components or assigning a comprehensive value), as it is usually difficult to assign a specific revenue to each practice.

Examples for forestry measures

- Measure 221 – Establishment costs: one commitment and a number of practices with a list of cost components for each practice
- Measure 221 – Agricultural income foregone: one commitment with no specific practices → Gross margin calculation through a set of revenue and cost calculations

These examples reflect the possible splitting of forestry grid in sub-grids

Example for Natura 2000 on agricultural land

- One commitment with one practice, whose "value" can be either directly stated or calculated through the fixed sets of revenue and cost components

Example for Animal Welfare

- One commitment counting two practices, and one commitment counting one practice

For each practice the fixed list of cost components can be filled-in. Otherwise, a comprehensive cost value can be assigned to the whole practice.
Revenue may be determined only once for the whole farm (using a fixed list of revenue components or assigning a comprehensive value) as it is usually difficult to assign a specific revenue to each practice.

Table 4 shows in which methodological grids the two calculation approaches have been implemented.

Table 4. Implementation of the two calculation approaches in the methodological grids

	LFA	Natura 2000	AEM	Animal Welfare	Forestry	Meeting Standards
Balance Sheet Practices	✓	✓	✓	×	×	×
	✓	✓	✓	✓	✓	✓

✓ = implemented; × = not implemented

Whatever is the approach chosen for the calculation of a certain payment, one must face the problem of data availability. Considering the wide range of commitments and calculation approaches applied, it is conceivable that each country uses a varied heap of data sources.

At the beginning of the grid development, based on the outcomes of the initial review of current payment calculations (Figure 9), a list of possible data sources have been proposed; in this list, derived from an Italian MoA's document, the sources were catalogued in a theoretical order of representativeness:

- ad hoc surveys
- EUROSTAT data
- national statistics
- FADN database
- monitoring and evaluation of previous RDPs
- third party surveys
- planning documents from Public Authority
- periodic publications by Chambers of Commerce
- data owned by producer associations
- opinion of experts
- other statistics and economic data

This preliminary list resulted insufficient to categorize all used data sources. Hence, the working group decided to give each measure-specific grid's developer the possibility to identify the most suitable data sources for its grid. In fact, the methodological grids must be flexible enough to account for large differences in available data. Hence, in the final grids the user is let free to use any data source, but detailed information on the source and justification of inserted values needs to be provided.

Another crucial aspect of payment calculation is related to the fact that many cost and revenue components can be broken down into simpler elements. This is why for each measure-specific grid a sort of multi-layered calculation structure has been developed, which allows to calculate cost and revenue components at different aggregation levels depending on the available information and data. The number of calculation layers which can be added to the calculation process is flexible (depending also on the concerned measure) and can be adjusted according to the calculation requirements and data availability. Furthermore, each grid provides a basic set of formulas for the most common calculation elements.

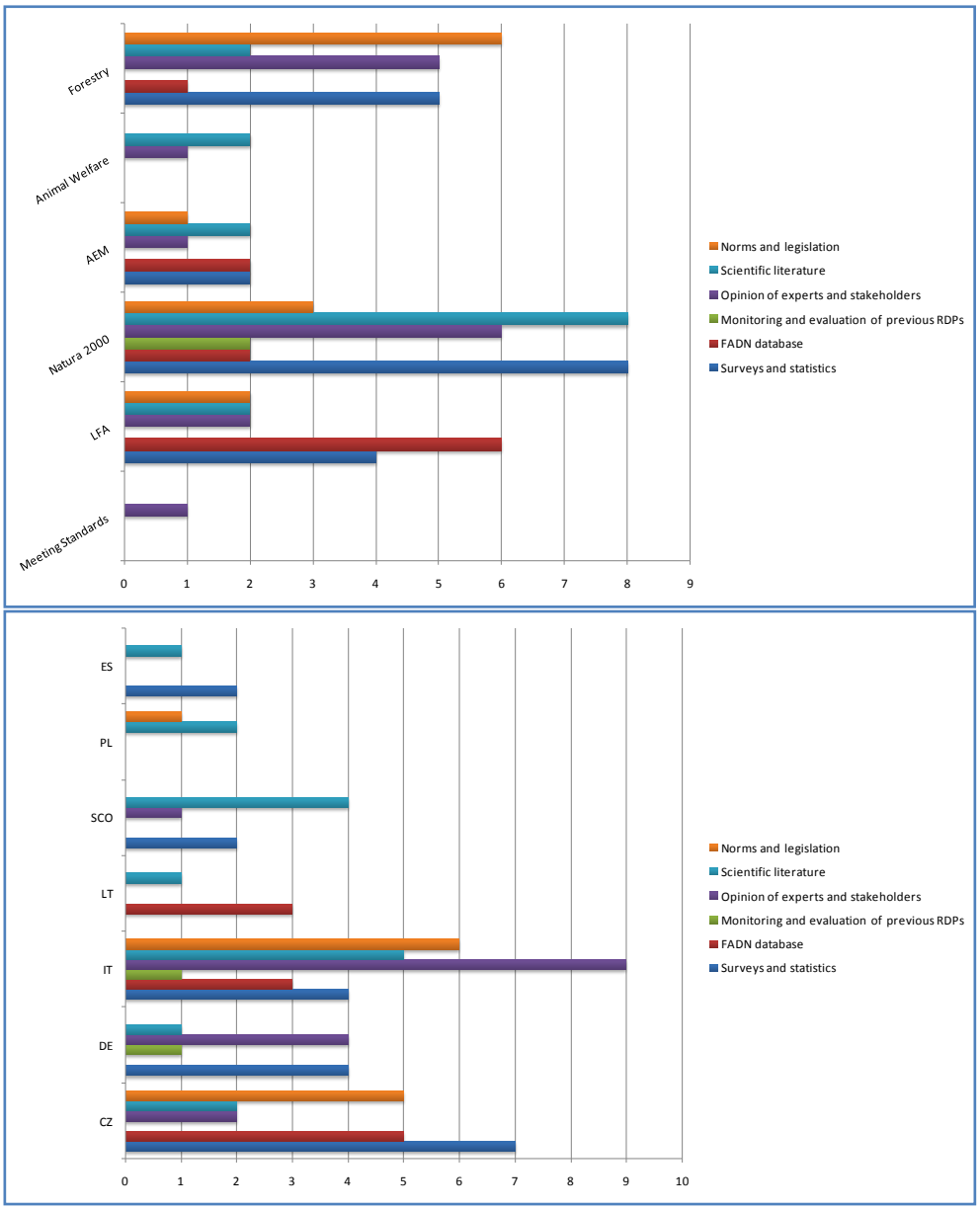

Figure 9. Use of different data sources in the investigated countries and measures

3.3 Payment differentiation criteria

The third necessary step to design the final structure of the methodological grids was the definition and description of the factors that must be taken into consideration during the calculation as "differentiation" of payments. These are, of course, measure-specific elements as well as country-specific ones. As a matter of fact, the differentiation of Rural Development payments can be considered as one of the main systems to avoid under- and over-compensation.

Payment differentiations can be made according to various criteria. Using spatial criteria one can identify at least three categories of differentiation, using either administrative, environmental or agronomic data. A second broad classification approach is the use of structural characteristics of a farm.

A preliminary assessment of relevant differentiation criteria has been done by Partner 7 on the basis of the Deliverable D2: taking as a starting point the categories identified on page 25 of the deliverable,

some main types of payment differentiation that can be found in the various RDPs have been highlighted. These were:

- land use / animal species
- crop / variety / breed
- intensity of farming practices, production and conditions
- farm size (ha, LSU, etc.)
- administrative / regional / territorial differentiation
- specific land or animal attributes
- socio-economic indicators or indexes

For each of the above mentioned groups, a first brief inventory of differentiation elements coming out from D2 have been listed. Task of each WP2-WP6 leading partner was to define a complete set of relevant payment differentiation categories and to extend the list of differentiation elements under each category, basing on the outcomes of the review carried out during the first phase of the project.

Subsequently, every partner country had to complete the above mentioned measure-specific lists adding relevant country-specific elements used at present in the national/regional RDPs.

The reasons why each element have been included in the differentiation lists have been also reported in a separate document.

Once again, the result was a very heterogeneous set of items, with partially overlapping categories, and elements that could fit into more than one category. Moreover, there was also some mixing up of differentiation elements with eligibility criteria and/or baseline situations. Besides, payment differentiation varies significantly between different RD measures: in Agri-environmental measures a great variety of differentiation approaches have been used, while Natura 2000 payments are less differentiated, rather, most of the commitments show only one payment level per hectare. Quite complex is the situation regarding Meeting Standards: in Greece this measure is not differentiated at all, while in Veneto Region, Italy many variants were observed.
Task of Partner 7 has been to try and reorganize all the information in a structured but as simple as possible configuration.
The final structure of the differentiation criteria is organized in three levels:

1. **Categories**
2. **Sub-categories** (groups of differentiation elements with the purpose of tidying up the lists)
3. **Elements** (they represent the basic way of differentiating a RD payment)

All the items reported in the final structure were mostly taken from the information provided by all project partners, with the addition of a few more elements collected from already existing EUROSTAT classifications like FADN, CORINE, etc. The structure of the differentiation criteria is presented in the Annexes.

3.4 Final grids and step-by-step template

The final grids are just the end of the path followed through the logic framework: they can be considered as a multi-layered set of tables, each of them containing all the information collected and worked out during the various phases of the analysis.
In order to present in a simplified way the application of each developed grid, an easy-to-follow generic template has been designed. This structure, presented in Figure 10, derives directly from the logic framework and it basically consists in the various procedures that a user has to do when using the grids. The seven main calculation steps that make up the general template are:

1. **The choice of the approach for the calculation**: in the first step, the user must to select one of the two previously described approaches (*Balance Sheet* or *Practices*); once chosen, the calculation approach cannot be changed.

2. **Creation of the linkage relationship between relevant baseline and RD commitments, and identification of cost, revenue and income components**: at this stage, only the basic structure of the calculation sheet is defined and no figures for selected calculation components have to be specified.
3. **Definition of payment differentiation criteria**: depending on the characteristics of the concerned measure, one or more differentiation levels can be specified; based on the chosen differentiation criteria, separate calculation processes for each differentiation situation can be prompted.
4. **Calculation of monetary values for practices and cost, revenue and income components, and/or identification of data sources for appropriate figures**: at this step there are two data entry options, i.e. to specify figures for both RD commitment and baseline situation to obtain a calculated difference, or to put in the difference directly if specific data are missing.
5. **Calculation of transaction costs**: they include costs for information seeking, provision of technical advices, bookkeeping, training courses and other opportunity costs and can be calculated as a fixed amount or as percentage of the overall calculated payment (up to 20%).
6. **Consideration of RDR payment limits and application to eligible payment elements**: in the RD Regulation maximum payment ceilings are specified for some measures, so the grids give the user the chance to apply them to the calculation process.
7. **Overview of final payment**.

While the generic step-by-step structure is the same across all Rural Development measures, a few special calculation issues need to be considered in the measure-specific grids. One clear example can be found in the forestry grid, as 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 has to be carried out for each of the three "sub-payments". The different grids are then brought together at the end of the overall calculation process to represent the overall financial support provided through measure 221.

On the contrary, some of the developed grids do not include step 5 as transaction costs, according to existing regulations, are applicable only for a few RD measures (e.g. agri-environmental measures and animal welfare payments).

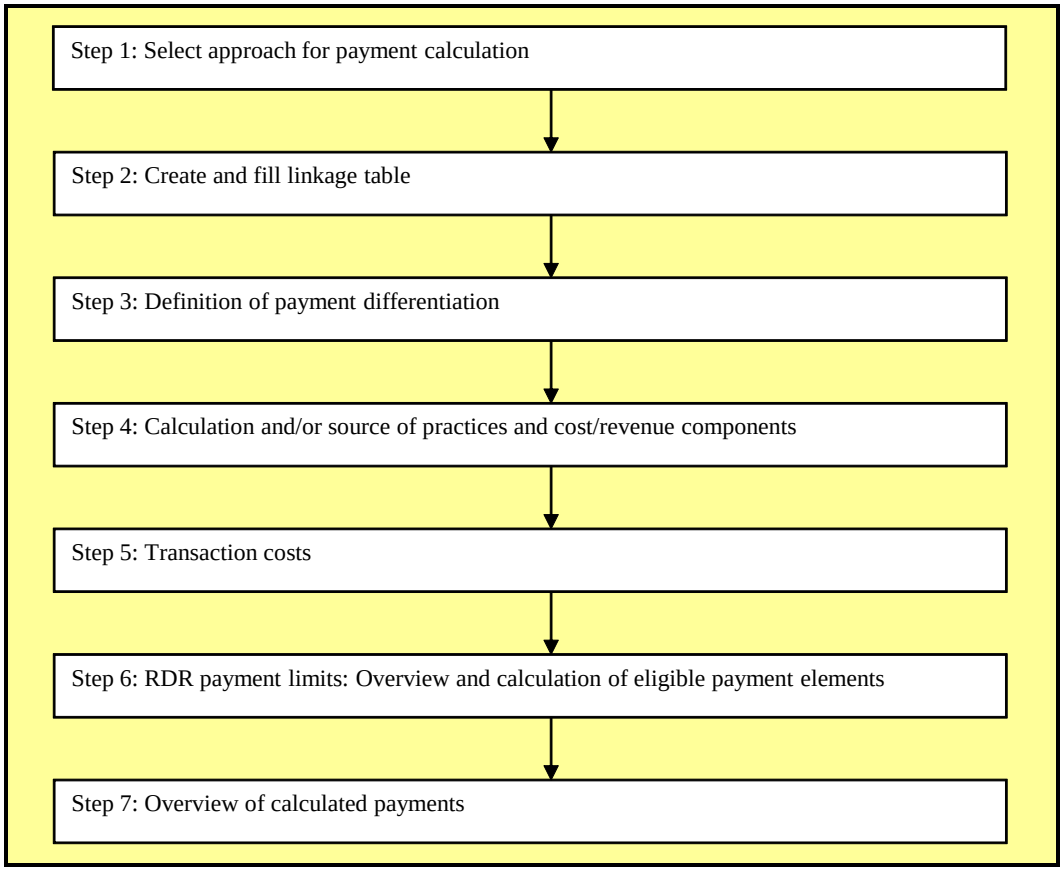

Figure 10. General design of the step-by-step template

5. Conclusions and recommendations

The report provides a synthesis of activities and results of carried out within AGRIGRID project. WP8, as clearly described in the introduction, has to be considered mainly as a coordination task: in fact, the objective of the Work Package was to provide the general framework for the development of measure-specific grids, as well as to contribute to the development of the software tool, in particular for all the aspects related to its structure and organization. All the activities took place in the middle of the project, after a preliminary phase of investigation on the existing methods for payment calculation.

The initial part of the report illustrates how the methodology has been investigated, and briefly describes different methods and applications. The core part of the report focuses on the logic framework for the process of payment calculation and on the general grids developed and proposed for the construction of final measure-specific grids.

Then, in the final part of the report different approaches adopted for each individual measure have been analysed, comparing the baseline definition, the cost/revenue structure adopted in the payment calculation, the organization of the differentiation elements and the general grids adopted.

Methodological issues

Concerning the adopted methodology and the assumptions, it should be recalled and underlined that the logic scheme adopted by AGRIGRID is designed to be as coherent as possible with the main data sources used and usable in the payment calculations, i.e. the Farm Accountancy Data Network. In fact, the balance sheet scheme adopted in the logic framework and in the grids is strongly connected with the structure of data collection and processing adopted by FADN. The two calculation approaches (*Practices* and *Balance Sheet*) adopted are both directly derived from the FADN balance sheet scheme.

However, during the project it has been decided to create a standalone software, i.e. data derived from FADN and other sources are used as inputs for the AGRIGRID software but no direct connections between FADN or other datasets and AGRIGRID software have been created. This is motivated by the fact that the format of FADN data and the processing work necessary to adapt them to AGRIGRID is too complex and too diverse (between measures and MS/regions) to be standardised into an automatic software procedure.

As often underlined in several reports and working documents during the project, payment differentiation is one of the fundamental elements to avoid overcompensation. During the first part of the project the comparison of payment calculations (D2) gave evidence of the fact that payment differentiation is almost impossible to standardize. Hence, the standardization proposed in AGRIGRID regarded only main categories of differentiation, living the differentiation elements free for each measure and MS/Region.

From the point of view of the "economic theory" behind the AGRIGRID scheme, one problem emerged during the project is related to the possibility of considering fixed costs in the payment calculation. It must be recalled that the methodology proposed at EU level for payment calculation does not allow to consider investment costs, even if formulated in depreciation form. There has been a strong discussion during the negotiation of RDPs on this point and it is not our intent to take a position on it. However, we suggest some reflections on one significant point: some of the measures (for example organic farming) imply structural changes on the farm, and these changes are obviously connected with some investments at farm level. There is, of course, a risk of double counting with Axis I measures but, when Managing Authorities can certify that investments are not paid twice, a support of investments, either in Axis I (which is probably better) or in Axis II in the form of depreciation, should be necessary to avoid under-compensation.

Policy implications

On the side of policy implications and suggestions, some important points are the following ones.

In general terms, it can be underlined how the proposed methodology is, for the Managing Authorities (regions, state administration, agencies, etc.) easy to use and, if adopted, it could contribute to homogenize the approach to payment calculations which is currently very diverse between regions/MS and measures. In addition to that, the adoption of the AGRIGRID procedure and software gives the Managing Authorities the possibility to follow a scheme that is coherent with what is required by EU Commission, and to respect the economic "logic" behind the payment analysis.

From a practical point of view, the adoption of the AGRIGRID scheme could facilitate the MA in the process of negotiation of RDPs with the European Commission, as it provides a common scheme of analysis and respects the guidelines for payment analysis/justification.

Another important point is the possibility for MS and MA to carry on a sensitivity analysis, e.g. for price variations or costs' structure. This possibility is particularly important in a period, like the current one, when price of products and cost of production factors are rather unsteady.

Other benefits of the LMD adoption are represented by the fact that it makes rather easy to verify the type of data used by the MA in the payment calculation and the assumptions which are the basis for payment differentiation. If adopted, the AGRIGRID scheme and software could give the possibility to create a set of information which should allow to compare the situation in different Countries. Of course a proper data network is still far to be created, however at the current state all data and information can be stored locally and made available for all users. The creation of a proper data network, and also the design of links between AGRIGRID and the various datasets used for the Payment Analysis should be developed only in the framework of a joint project with FADN authorities.

With the ongoing process of revision and enhancement of the Rural Development policy within the "Health Check", some new strategic objectives have been introduced. This revision of the RD policy will shortly cause the proposal and negotiation of new measures. This process of revision of RDPs could be a good chance to test the methodology and the software.

Particularly during 2008 a discussion between MS and EC took place on the opportunity to modulate payments (in particular agri-environmental ones) to price changes. Also in this case the adoption of the AGRIGRID framework could facilitate the revision of payments' scheme and the modulation of payments.

The most important weak point of the methodology appears to be the availability of data. In the best case, when using FADN data, the representativeness of the sample is often insufficient to represent very detailed phenomena as those which are the basis for AGRIGRID calculations. In addition, the sample is seldom representative for new measures and for measures with a very small uptake. For some measures the use of FADN data is impossible, see for example forestry measures where no homogeneous data collection exists at European level.

Another important limitation in the use of FADN data is represented by the fact the European standard for FADN data collection does not include information on costs of production at the level of productive process, which means that the only information available is referred to costs of production at farm level. There are actually some research activity (FACEPA project within the 7th European Research Program Research) facing this issue, but first results will not be available before the end of 2010.

Last but not least, in some of the measures investigated in the AGRIGRID project (e.g. natural handicap payments) it has been difficult or impossible to define a proper baseline and to calculate costs/revenues in the baseline situation. At EU level the measure is now under revision and it is probably convenient to consider this problem in the process of re-design of the measure.

Remarks

In a complex situation, as is the case of AEMs or Forestry measures, policy makers and administrators tend to adopt measures easier to handle. Proposed innovative schemes that could be not easily monitored due to complicated calculations for their design and assessment, should not be very popular. This is the main argument for the usefulness of the calculation grids proposed through the specific project. The proposed methodological grid for the calculation of AE payments as well as the software will enable policy makers at all levels of administration to overcome the problem of complexity, increase their flexibility and thus allow them to adopt innovative measures.

In this sense the adoption of the proposed methodology could be an incentive for decision makers to adopt more effective measures, having at the same time a simpler approach to payment calculation.

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Annexes

Annex 1
Examples of the final *linkage tables* implemented in the methodological grids

Annex 2
List of FADN entries implemented in the final grids (from AGRIGRID software)

Annex 3
Explanation of each of the statement's entries for the Practices approach

Annex 4
Complete list of practices implemented in the methodological grids

Annex 5
Complete structure of payment differentiation criteria

Annex 1

Examples of the final *linkage tables* implemented in the methodological grids

Measure 211 and 212 – Natural handicap payments			
Type of baseline	Description	Baseline practice	RD commitment
SMR	Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources.	SMR	Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources.
GAEC	Untilled headlands	Arable parcels alongside watercourses and main ditches must have an untilled headland of at least 0.6 m, to which fertilisers and plant protection products are not applied.	In the similar manner in every less favoured area in Finland, arable parcels alongside watercourses and main ditches must have an untilled headland of at least 0.6 m, to which fertilisers and plant protection products are not applied.
Measure 213 and 224 – Natura 2000 payments			
Type of baseline	Description	Baseline practice	RD commitment
Additional Baseline	National statistic (consumption of mineral fertilizers per ha of agricultural land)	The typical / general fertilization level = 80 kg N/ha (mineral)	Application of fertilisers or farm manure should be avoided. In the case of pastures, at most 30 kg N/ha can be supplied annually by grazing livestock.
GAEC	Rules for the maintenance of grassland	On permanent grasslands growing vegetation has to be cut and mulched yearly, or mowed and removed from the land every second year. These measures may not be undertaken between 1st April and 30th of June	Obligation to keep principles prohibiting any deterioration of the current state of biotope qualities for continuing cultivation.

Additional Baseline	Law of the Forests No. I-671 (approved by the Seimas of the Republic of Lithuania, 22/11/1995).	Standard cultivation requirements based on the Forest Law	The final felling of forests is forbidden, or should be postponed. The final forest cutting operations have to be carried out in non-clear cutting manner. An additional number of living trees has to be preserved and left in clear cutting areas. The cutting of drying trees or dead wood is forbidden or restricted in forest stands 20 years old and more.
Measure 214 – Agri-environmental payments			
Type of baseline	Description	Baseline practice	RD commitment
SMR	Specific requirements on storage, handling and application (period, method, location) of manure and fertilisers (specific obligations for nitrates).	An interval without any growth during annual crops cultivation is required to be limited because of the elimination of increased risk of nutrient elutriation according to Nitrate Directive	Applicant shall sow annually a specified catch crop (defined types of possible / recommended seeds in defined amount = kg/ha) within the crop rotation on a specified area and a set deadline
Additional Baseline	National statistics (consumption of mineral fertilizers per 1 ha of agricultural land)	The typical/general fertilisation level = 80 kg N/ha (mineral)	The average annual application of fertilizers may be at most 80 kg N/ha (the limit encompasses application of fertilizers, farm manure and livestock grazing). At least 5 - 55 kg N/ha of each land block need to be supplied annually by grazing livestock, which means limitation of mineral fertilizers application and at the same time a decrease of livestock density.
Additional Baseline	National statistics	Average intensity of animal rearing on permanent grassland = 1.5 LU/ha	

Annex 2

List of FADN entries implemented in the final grids (from AGRIGRID software)

- AGRI01 - Net Income for justification
  - SE420 - Family farm income
    - SE415 - Farm net value added
      - SE410 - Gross farm income
        - SE131 - Total output
          - SE135 - Total output crops and crop production
            - SE140 - Cereals
            - SE145 - Protein crops
            - SE146 - Energy Crops
            - SE150 - Potatoes
            - SE155 - Sugar beet
            - SE160 - Oil seed crops
            - SE165 - Industrial crops
            - SE170 - Vegetables and flowers
            - SE175 - Fruit
            - SE180 - Citrus fruit
            - SE185 - Wine and grapes
            - SE190 - Olives and olive oil
            - SE195 - Forage crops
            - SE200 - Other crop outputs
          - SE206 - Total output livestock and livestock products
            - SE216 - Cows milk and milk products
            - SE220 - Beef and veal
            - SE225 - Pigmeat
            - SE230 - Sheep and goats
            - SE235 - Poultry meat
            - SE240 - Eggs
            - SE245 - Ewes and goats milk
            - SE251 - Other livestock and products
          - SE256 - Other output
        - SE605 - Total subsidies (excluding on investments)
          - SE610 - Total subsidies on crops
            - SE611 - Compensatory payments
            - SE612 - Set-aside premiums
            - SE613 - Other crop subsidies
          - SE615 - Total subsidies on livestock
            - SE616 - Dairying subsidies
            - SE617 - Other cattle subsidies
            - SE618 - Sheep and goat subsidies
            - SE619 - Other livestock subsidies
          - SE620 - Other subsidies
            - SE621 - Environmental subsidies
            - SE622 - LFA subsidies

SE623 - Other RD Payments

SE625 - Subsidies on intermediate consumption

SE626 - Subsidies on external factors

SE630 - Decoupled payment

SE631 - Single farm payment

SE632 - Single area payment

SE640 - Additional aid

SE270 - Total inputs

SE281 - Total specific costs

SE285 - Seeds and plants

SE290 - Seeds and plants (home grown)

SE295 - Fertilizers

SE300 - Crop protection

SE305 - Other crop specific costs

SE310 - Feed for grazing livestock

SE315 - Feed for grazing livestock (home grown)

SE320 - Feed for pigs and poultry

SE325 - Feed for pigs and poultry (home grown)

SE330 - Other livestock specific costs

SE331 - Forestry specific costs

SE336 - Total farming overheads

SE340 - Machinery and building current costs

SE345 - Energy

SE350 - Contract work

SE356 - Other direct costs

SE360 - Depreciation

AGRI02 - Investments (allowable by RD payments)

AGRI03 - Forest land including standing timber

SE365 - Total external factors

SE370 - Wages

SE375 - Rent

SE380 - Interest

AGRI04 - Opportunity cost of family labour

Annex 3

Explanation of each of the statement's entries for the Practices approach

1. Total Output

In this section all farm revenues are taken into account. These revenues have different characteristics/classifications, and many of them come from different sources (not necessarily FADN). The main types of output are listed below:

- sales of crops and animal products, sales of livestock (animals)
- farm use and farmhouse consumption (crops and animal products)
- change in stock (positive or negative, relevant for crops and animal products)
- change in livestock evaluation
- farm subsidies

Four categories of activities are taken into account:

I. CROPS
II. LIVESTOCK AND ANIMAL PRODUCTS
III. FORESTRY
IV. OTHER PRODUCTS

1.1 Total output crops and crop production

1.1.1 C*rop production sold* includes all the returns received and due from product sale transactions during the accounting year (quantity * price). Sales are entered without addition of any grants and/or subsidies and without deduction of marketing costs, taxes or milk super levy.
In this account the *change in stock* is also included: this is the difference between the closing valuation and the opening valuation (stocks of forage crops purchased as animal feed are excluded).

Sales	Opening evaluation	Closing evaluation	**Production sold**
a	b	c	a + (c-b)

1.1.2 *Farmhouse consumption* is the value of product consumed by the holder's household, plus the value of product used for payments in kind for labour and other goods and services. *Farm use* is the value of the holding's products used as inputs on the holding during the year. This includes feedingstuffs as well as seeds and seedlings.

1.2 Total output livestock and animal products

1.2.1 To calculate the *Gross Livestock Margin* (GLM) it is necessary to take into account the difference between the valuation of stock at the end and at the start of the accounting year together with purchases, sales, births and deaths of animals. The following table sums up the calculation procedure:

Opening valuation	Purchases and birth	Closing valuation	Sales and death	**GLI**
A	B	C	D	**(C+D)-(A+B)**

The opening and closing valuations are the values of livestock belonging to the holding, at the start and at the end of accountancy year respectively. In this case, the animals which are present in the holding for more than one year are taken into account and the net change in value corresponds to the increase in volume of the animals present in the holding multiplied by the relevant price.

1.2.2 As for crops, the account of *animal products sold* takes into account the changes between the closing and the opening valuation. In this case the method is the same used for crops, which means considering sales and the change in stocks (difference between prices and quantities at the end and at the start of accounting years).

1.2.3 *Farmhouse consumption* is the value of livestock and animal products consumed by the holder's household. *Farm use* is the value of the animal products (e.g. manure and milk) used as inputs on the holding during the year.

1.3 Total output of forestry

As concerns forestry, woodland area is excluded from the Utilised Agricultural Area (UAA) of the holding but it is included in the total area. It includes poplar plantations and nurseries located within woodland.

1.3.1 The output of forestry sector, named *Gross Forestry Margin* (GFM), takes into account the valuation at the start and the end of accounting year together with the value of exploitations realized during the year, that is the sale of felled timber and/or of standing timber. In the case of felled timber, the income statement will comprise exploitation costs, while in the case of standing timber there is only an income deriving from the sale of timber (the purchaser will incur the exploitations expenses). In case the forestry production can also include Non Wood Forest Products (NWFP).
The following table sums up the calculation procedure:

Opening valuation of forest	Closing valuation of forest	Exploitations	**GFI**
E	F	G	**(F+G) - E**

1.3.2 In the *farmhouse consumption* of forestry sector, the values of forestry product used on the holdings (including timber, firewood, NWFP) are recorded.

1.4 Other outputs and subsidies

This account includes other outputs that can be referred to crops or livestock production. Moreover, there are general outputs that concern different aspects of farm activity; also subsidies are included in this account.
As concerns **crops**, some voices not covered by specific accounts can be included here together with seeds and seedlings of grasses, arable and horticultural crops and permanent crops grown under shelter.
With regard to **livestock**, among the other outputs may be included meat of equines and other animals, wool, receipts for animals held under contract, etc.
In general, are included **other general outputs** not classified under other headings. For example, incomes coming from leased land for sowing or for occasional letting of fodder areas, interest on liquid assets, farm tourism, receipts relating to previous accounting year, etc.
As concerns **subsidies**, the account includes those received for crops (decoupled payments), livestock, environment and rural development.

2. Total Input

The group of Total Input is composed by the value of all non-capital inputs used in the production of non-capital products during the accounting year. Inputs received as payments in kind are also included.
Costs exclude:

- inputs used to increase, repair or replace the holding's fixed assets which are considered as investments
- consumption of capital assets (depreciation and sales of capital)
- costs of production for private consumption

The inputs are the costs linked to agricultural activity/process and related to the output of accounting year.
Three categories of costs have been considered:

- SPECIFIC COSTS
- FARMING OVERHEADS
- EXTERNAL FACTORS

SPECIFIC COSTS
This account includes three headings:

2.1 Crop & forestry specific costs includes four kind of costs:

2.1.1 *Seeds and seedlings purchased and produced by the farm*: it includes costs of young trees and bushes for new plantations (permanent crops and woodland).

2.1.2 *Fertilizers and soil improvers:* all purchased fertilizers and soil improvers including lime, compost, peat and manure. It excludes manure produced in the holding.

2.1.3 *Crop protection products:* here are included all materials used for the protection of crops and plants against diseases and bad weather (insecticides, fungicides, herbicides, poisoned baits, etc.).

2.1.4 *Other crop specific costs:* all the general costs not recorded in the previous headings. Labour costs, contract work and mechanisation are not included in this account.

2.2 Livestock specific costs includes feedingstuffs and other specific livestock cost.

2.2.1 *Purchased feedingstuffs* includes feedingstuffs purchased as standing crops (grass and fodder plants), costs of use of pasture land not included in the UAA (short-term land rental), purchased litter and straw for bedding, additives for storage and preservation
2.2.2 *Feedingstuffs produced on the farm* includes all the farm products used for animals that is marketable feedingstuffs, forage crops (returned as *farm use*) and the value of litter and straw produced on the holding but if marketable in the region and year in question

2.2.3 *Other specific livestock costs* comprises veterinary, medicines, artificial insemination, castration, milk tests, handbook subscription and registration, products for cleaning livestock equipment, packing and processing materials and all the other costs not covered in the other specific livestock cost headings

FARMING OVERHEADS

Farming overheads are general costs not liked to specific production processes (costs to upkeep the equipment, energy, motor fuels, contract work, insurance, etc.).

2.3.1 *Upkeep of machinery and equipment*: includes total cost of upkeep and minor repairs to machinery, costs and purchase of small equipment, forcing frames, tyres, protective clothing, detergents for general cleaning (not those used for livestock and crop production that entered under other specific livestock costs or crop costs), and a proportion of the cost of private cars corresponding to their use for farm purposes. These repairs do not change the value of machinery or equipment: this kind of repairs or conversions are considered as investments and not as costs.

2.3.2 *Upkeep of land improvements and buildings*: includes the maintenance of buildings and land improvements financed by the holder. Includes also the purchase of necessary building materials but not those for new investments.

2.3.3 *Electricity, lubricants and heating fuels*: considers the total consumption for farm business use. Firewood is included.

2.3.4 *Water*: is the cost of connection and the consumption of water for all farm purposes. It does not include the costs of using irrigation equipment that could be divided into upkeep of machinery and equipment, electricity, etc.

2.3.5 *Payments for external services:* analysis, planning, technical assistance

2.3.6 *Other farming overheads* as insurance (all premium for farm risks, excluding employee accident insurance that is entered under the social security costs), farm taxes arising from current productive activity in the accounting year and other dues (secretarial services, office expenses, telephone charges, etc.). As concern the taxes, they can be related to the farm business (as environmental taxes or additional levy on milk) or be taxes on land and buildings, paid in relation to the owner occupation or use of farmland, woodland and buildings by the holder.

EXTERNAL FACTORS
This account is composed by three headings that concern the remuneration of inputs (work, land and capital) which are not the property of the holder.

2.4 Wages: this heading includes the wages and social security charges (and insurance) of wage earners, that is all payments to employees in return for work done.
In general, wage costs include:

- cash equivalent of payments in kind (e.g. rents, meals and lodging, etc)
- productivity bonuses and profit share-outs
- recruitment expenses
- employee social security contributions, taxes and insurance

It excludes the amounts received by workers considered as unpaid workers (wages lower than a normal wage, persons who do not receive a salary) and all the holder's and employer's costs. It excludes labour used on work under contract (contract work and machinery hire).

2.5 Rent: this heading includes the net value of cash and payments in kind for renting of land, buildings, quotas and other rights for the farm business.

2.6 Interest: this heading includes interest and financial charges on loans for the farm business (loans for purchase of land and buildings, purchase of land or working capital). The subsidies on interest are not deducted and are entered under "grants and subsidies on costs".

3. Implicit costs

While wages, rent and interest (recorded as external factors) have a monetary expression that can be considered as explicit costs for the remuneration of inputs not in property of the holder, the implicit costs deal with the holder's labour and capital. To compute them, the opportunity cost method is used, that is the value of input in its best alternative use.
For example: not paying rent on the self-owned property generate an implicit rent considered as an implicit cost because while rent is a deductible expense, implicit rent is not. The same thing happens with the implicit cost of liquid assets or shareholder's capital that is the maximum interest that would be earned on them as a fixed deposit or as an investment in alternative ways. The most important implicit cost in the agricultural sector is that one related to the family work, this is generally calculated multiplying the use of family work (hours, days, months or years) by a reference income (usually equal to the earning of non-agricultural workers). However it has to be recalled that the methodology to assess the opportunity cost of non monetary inputs is often controversial and several different methods have been proposed and applied.

3.1.1 *Opportunity cost of family labour*: usually the units of family work (provided also by the FADN) are multiplied by a reference income that could be, for example, the gross annual earning of non-agricultural workers in the area (alternative jobs) or the wages in the agricultural sector of the area, etc..

3.1.2 *Opportunity cost of current capital:* this opportunity cost is the expected return deriving from other potential investment activities, that is the rate of return that investors could earn in financial market. Usually, the rate of bonds is take into account.

Annex 4

Complete list of practices implemented in the methodological grids

Allow weeds to grow after harvest	Maintenance of old- and dead-wood
Care of area between tree rows	Mapping environmental aspects of farms
Care of under-tree area	Nutrient management planning
Continue farming activities complying with Cross-Compliance requirements	Organize health care visits for livestock
Create beetle banks	Permanent exclusion from felling
Create stone walls / fences	Preservation of particular tree species composition
Create uncultivated/buffer strips	Prohibition/limitation of using fertilizers
Develop an animal health and welfare plan	Prohibition/restriction of final felling by clear cutting
Forest beating up	Prohibition / temporal restriction of final felling
Forest brashing	Prohibition of using particular share of grassland
Forest bush clearing	Protection of forest plantations
Forest irrigation	Protection of forest seedlings
Forest planning	Protection of trees
Forest planting	Purchase of additional material
Forest pruning	Removal of tree stumps
Forest site preparation	Removal of undesirable regenerations / tree species
Forest thinning	Removing stock or other restrictions on grazing
Forest transportation	Replacement of forest seedlings
Forest weeding	Replacement of trees
Fulfill new obligations to farming practices	Restriction of timing and frequency in mowing meadows
Maintain beetle banks	Retain stubble after harvest
Maintenance/development of specific biotopes	Set-aside of land
Maintenance of forest protection	Tree cutting to preserve forest structure

Annex 5

Complete structure of payment differentiation criteria

- **1 Administrative land division**
  - 1.1 NUTS II
    - Name of NUTS II
    - Name of NUTS II
    - Name of NUTS II
    - Other NUTS II
  - 1.2 NUTS III
    - Name of NUTS III
    - Name of NUTS III
    - Name of NUTS III
    - Other NUTS III
  - 1.3 EC Regulations / National laws / Regional laws
    - LFA Areas
    - Natura 2000 Areas
    - NVZ Areas
    - Protected Areas (National or Regional)
    - Other areas
  - 1.4 Administrative land differentiation based on specific indicators
    - Municipality with average of >210 kg of N/ha of UAA
    - Municipality HA
    - Municipality HB
    - Area OA
    - Area OB
    - Area S
    - Area SX
    - Gemarkung 1 (LVZ)
    - Gemarkung X (LVZ)
    - Choerent Region 1
    - Choerent Region 2
    - Choerent Region 3
    - Area HUA
    - Area LUA
    - Standard regions (transport cost)
    - Fragile regions (transport cost)
    - Very fragile regions (transport cost)
    - More disadvantaged land (grazing categories)
    - Less disadvantaged land (grazing categories)
    - Ratio 1 (degree prot/usage restrictions)
    - Ratio 2 (degree prot/usage restrictions)
    - EMZ range 1
    - EMZ range 2
    - Other areas
- **2 Land characteristics**
  - 2.1 Slope
    - 1° range of slope
    - 2° range of slope
  - 2.2 Soil fertility/quality
    - 1° degree of fertility
    - 2° degree of fertility

		Improved soil
		Unimproved soil
2.3	Altitude	
		Mountain
		Hill
		Plain
2.4	Exposure	

2.5	Land use - Agricultural areas (CORINE)	
		Arable land
		Permanent crops
		Pastures
		Heterogeneous agricultural areas
		Other
2.6	Land Use - Forests and semi-natural areas (CORINE)	
		Forests
		Shrubs and/or herbaceous vegetation associations
		Sclerophyllous vegetation
		Open spaces with little or no vegetation
		Other
2.7	Land Use - Wetlands (CORINE)	
		Wetlands
		Coastal wetlands
		Other
2.8	Land Use - Water bodies (CORINE)	
		Inland waters
		Marine waters
		Other
2.9	Other geographic/social/economic features	
3	**Farm characteristics**	
3.1	Type of farming (TF8) (FADN)	
		Fieldcrops
		Horticulture
		Wine
		Other permanent crops
		Milk
		Grazing livestock
		Granivores
		Mixed (crops and livestock)
3.2	Size classes (FADN classification)	
		< 2 ESU
		2 - 4 ESU
		4 - 6 ESU
		6 - 8 ESU
		8 - 12 ESU
		12 - 16 ESU
		16 - 40 ESU
		40 - 100 ESU
		100 - 250 ESU
		≥ 250 ESU
3.3	Size classes (Other than FADN)	
		< 40 ha of UAA
		> 40 ha of UAA

		< 150 ha of UAA
		151 - 250 ha of UAA
		251 - 500 ha of UAA
		> 500 ha of UAA
		< 3000 kg of N produced
		3000 - 6000 kg of N produced
		> 6000 kg of N produced
		LSU < n
		LSU > n
	3.4 Other charcterization of farm land	
		Inside UAA
		Other
4	**Type of animals**	
	4.1 Horse	
		Horse for fattening (meat)
		Breed Žemaitukai
		Breed Lithuanian Weighted
		Other
	4.2 Cattle	
		Calves for fattening (meat)
		Other cattle < 12 months
		Male cattle 12 - 24 months
		Female cattle 12 - 24 months
		Male cattle > 24 months
		Breeding heifers
		Heifers for fattening (meat)
		Dairy cows
		Other cows
		Breed Burlina
		Dying breeds
	4.3 Sheep	
		Ewe (female for breeding)
		Other sheep (male for breeding)
		Various breeds
		Sheep for milk
		Sheep for fattening (meat)
	4.4 Goat	
		Goat for breeding (female)
		Other goats (male for breeding)
		Goat for fattening (meat)
	4.5 Pig	
		Piglets
		Breeding sow
		Pigs for fattening (meat)
		Other pigs (boars)
		Various breeds
	4.6 Poultry	
		Table chickens (meat)
		Laying Hens
		Other poultry
		Breed gees
	4.7 Other animals	
5	**Type of crops**	

5.1	Cereals
	Durum Wheat
	Soft Wheat
	Maize
	Rye
	Barley
	Oats
	Ryce
	Other cereals
5.2	Other fied crops
	Dry pulses
	Potatoes
	Sugar beet
	Sunflower
	Soya
	Hops
	Cotton
	Peas
	Field beans
	Beans
	Groundnut
5.3	Vegetables and non-perennial fruit
	Under shelter
	Tomatoes
5.4	Flowers and ornamental plants

5.5	Seeds

5.6	Fodder crops and fallows
	Fodder Maize
	Other silage cereals
	Other fodder plants (alfalfa)
	Permanent pasture
	Temporary grass
	Fallows and set aside for previous regulation
	Rough grazing
	Peas
	Field beans
	Beans
	Alfalfa
	Meadows
	Other
5.7	Permanent crops (excluding forestry)
	Vines
	Wine grapes
	Table grapes
	Raisins
	Olives grooves
	Table olives
	Ollive oil
	Fruit and berry orchards
	Nuts
	Citrus fruit orchards

Nursery (excludes tree nurseries)

6 Woodland and trees

6.1 Type of woodland

Conifers
Broadleaves
Mixed conifers & broadleaves
Afforestation
Arboricolture/Plantation
Riparian
Coppice
Native forest

6.2 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

6.3 Woodland function

Edges (Buffer zone)
Afforestation of set-aside land (Buffer zone)
Polyspecific
Protection
Productive (Fast growing)
Productive (traditional)
Productive (resin)
Naturalistic (conservation)
Naturalistic (regeneration)
Other

7 Planning and management

7.1 Type of husbandry

Summer pasture
Free stall barn with grazing
Free stall barn on straw
Free stall barn on straw with run-outs
Open cycle
Close cycle

7.2 Type of final product

Cheese Parmigiano
Cheese Grana Padano (or edible milk)

7.3 Specific technical choices (planning level)

1° type of material seeding
2° type of material seeding

Seeding frequency 1
Seeding frequency 2
Estabilshment density 1
Estabilshment density 1
Conifers with < 20% soft broadleaves
Conifers or soft broadleaves with < 20% hard braod leaves
Hard broadleaves and/or Tilia with mixed conifers and/or soft broadleves > 40%
Hard broadleaves + Tilia or Populus etc.
5 - 15 % (ARWS)
16 - 25 % (ARWS)
26 - 35 % (ARWS)
< 35 % (ARWS)

7.4 Specific practices (management level)

Animal Ration with low N and P
Fertirrigation
Solid fertilization
Normal/Typical
Respect of particular restrictions 1
Respect of particular restrictions 2
Respect of particular restrictions 3

8 Type of beneficiary

8.1 Legal status of beneficiaries

Farmer practising farming as his main occupation
Part-time farmer
Other than farmer farmer
Farmer associations
Private law bodies
Public authorities

8.2 Farmer qualification

Trained farmers
Successor of early retired
Young farmers

8.3 Other

Maintaining previous RDP commitments
Introduction RDP commitment

9 Year of commitment

9.1 Year

1°
2°
3°
4°
5°