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EUROSTAT: "Improvement of the Agricultural Information System (AgrIS)
In the Phare Candidate Countries"
Financed by the EU Phare programme
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Draft Description of Approaches for each Candidate Country used for preparing the data on inputs per agricultural activity

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ABTA	Activity Based Table of Accounts
AgrIS	Agricultural Information System
AKII	Institute of Agricultural Economics, Hungary
ARIC	Agricultural Registers and Information Center
ASM	Agricultural Sector Modelling
ASSM	Activity Specific Simulation Model
CC	Candidate Countries
CSB	Central Statistical Bureau
CSO	Central Statistical Office
EAA	Economic Accounts for Agriculture
ESU	European Standard Units
FADN	Farm Accountancy Data Network
FCC	Fixed capital consumption
FYROM	Former Yugoslav Republic of Macedonia
Ha	hectare
I.A.E.	Institute of Agricultural Economics
IAFE	Institute of Agriculture and Food Economics
IDARA	Strategy for Integrated Development of Agriculture and Rural Areas in CEE Countries, situated at Bonn University
INRA	Institut National de la Recherche Agricole, France
LAAC	Latvian Agricultural Advisory and Training Center

LSIAE	Latvian State Institute of Agricultural Economics
LVL/ha	Latvian Lats/hectare
MoA	Ministry of Agriculture
N.A.A.C	National Agency of Agricultural Consulting
NPK	Natrium, Phosphor, Kalium
NSI	National Statistical Institute
OPAL	Operative Policy Analysis Tool (developed by ASA Institut)
SGM	Standard Gross Margin
SPEL	Sectional Production- and Income Model for European Agriculture
SSORM	Statistical Service of the Republic of Macedonia
VUEPP	Institute of Agricultural Economics, Slovakia
WS	Workshop

1 Introduction

Within the project "Improvement of the Agricultural Information System (AgrIS) in the Phare Candidate Countries (AgrIS-CC)", special attention is put on the approaches the countries apply to collect necessary information and elaborate the data on inputs per agricultural activity, in order to:

- provide an overview on data sources and methods used in the CC,
- assess whether the input data fulfill AgrIS requirements,
- increase comprehensive knowledge and thus improve the methods applied and optimize sources used,
- envisage more uniform approaches.

Ten Central and East European Candidate Countries (CC) participate in the project: Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, and Slovenia. In addition, FYROM (Macedonia) and Malta take part in project activities on their own account.

Each country was asked to provide a description of its specific approaches for the generation of input data per agricultural activity. The collection and analysis of the given information should result in proposals for optimizing the sources used and for improving the methods, altogether for a progressive development of the methods and data sources used. Close coordination with Counterparts and Eurostat was an important precondition for this task. The content of the description of approaches can be described as follows:

- Firstly, an overview on current sources and methods applied for gathering and generating the data on inputs per agricultural activity in the Candidate Countries is given (Chapter 2).
- Secondly, an assessment of the different approaches with regard to the requirements of AgrIS is presented within Chapter 3.
- In Chapter 4, problems and challenges are outlined, regarding data generation on inputs per activity for single countries or groups of countries with similar preconditions. Specific comments and recommendations on the subject are included.
- The review of sources and methods will result in major common conclusions and recommendations Chapter 5).
- A more detailed presentation for each of the 10 CC is given in Chapter 6, containing specific country chapters. The comments on the data sources and methods provided by our counterparts are incorporated in this inventory. Beyond, information gathered in previous projects was taken into account.

2 Overview of current sources used and methods applied

In the course of the AgrIS-CC project the Candidate Countries were asked to provide detailed information about sources and methods for each single input item of the minimum list:

All 10 CC, plus Macedonia (FYROM) and Malta made strong efforts to provide the information required.

Though, only four CC made the information available in such detail, namely **Latvia, Lithuania Poland and Estonia.** The Estonian counterparts did send comments on their data according to the following division: crop production, variable costs, fixed costs, FCC.

The **Czech Republic, Slovakia and Slovenia** presented main features of the sector models they apply in the Riga and Prague Workshops. The data on inputs, these three CC delivered for AgrIS are elaborated mainly with the help of these models.

Hungary has started to apply two approaches in parallel in the course of the project, which have been described by the Counterpart.

Bulgaria and Romania were just able to deliver data for very selected items in the beginning of the project. In the meantime, with the help of specific project support, Bulgaria has carried out a special survey; being the only source where data is derived from. Romania so far could only deliver data on use of fertilizer, gathered from the Ministry of Agriculture. This is why in this report, for both CC, no information related to single input items is given. Approaches and results of the sub-projects are presented in separate reports.

The **Macedonian** Counterparts have presented possible future sources for data on inputs during the Workshop in Bonn. **Malta** is also planning to use sources such as Census results and FADN, but these are not yet available.

The information provided is presented in detail within the Country chapters. Below, an overview is given on main sources used and methods applied.

2.1 Primary sources for collecting information on input data

As concerns data sources for input coefficients, it can broadly be stated that

- FADN data provide a key basis for input coefficients in various countries.

  The data base for data on inputs is much better for large, corporate farms than for small scale farms. In many CC, the large entities are obliged to provide their annual accounts and a range of further information (often including detailed data on the use of inputs) to the Ministries or Statistical offices. That allows to elaborate input coefficients for large scale agriculture. Anyhow, the main problem remaining, is to find out how far the input coefficients on this basis can be transferred/adjusted to small scale farming.

- Normative data are in most CC still an important source for the elaboration of activity specific input data. The problem is how far these reflect realistic current cost structures. Expert estimations are used to verify these data,
- Specific surveys have been carried out by some CCs

In the course of preparation for the two interim workshops in Prague and Bonn, the following overview on sources applied by the CC has been elaborated:

Table 1. Sources used for generating input data per activity

Status 05/2002. **Main sources in Bold**. *Planned sources in Italic.*

	Official Statistics &FADN	**Scientific Data**	**Survey Results**	**Expert Estim.**
Bulgaria	OPAL, Balance sheets *Initial FADN-data may be available from 2003 on, Ag. Census (results available from 2004)*	Norm. Data	**Input Survey** *(*currently 64 *in future 3,000 units);*	X
Czech Republic	**FADN** / OPAL	**Cost Analysis** **Normative Data**		
Estonia	**FADN; SGM Calculations** *Results from Ag. Census (2001)*	**Norm. Data for major activities**		X
Hungary	Farm **accountancy data** of large agr. holdings; (former approach) **FADN** from 2000 on (new approach)		X (combined with FADN)	
Latvia	Agricultural Statistics/ FADN/ OPAL	**Normative Data** **Diverse Research Results**	X	X
Lithuania	**FADN, data from book keeping** *(Agr. Census 2003)*	**Norm. Data,** Standard Coefficients		X

Poland	**OPAL/ Micro-economic data from sample** Agr. Statistics, Representative *FADN sample*		X **(annually 1300 farms)**	X
Romania	**Data on Use of Fertilizer from MoA** *Agr. Census 2002; FADN Pilot from 2002 on, repr. Results: 2004/5*		*Handbook of ext. service*	***Planned with help of ASA***
Slovakia	**FADN/OPAL**	**Norm. Data Research Results**	X	X
Slovenia	**OPAL/ Agr. Statistics**	**Research Results** **Simulation Data**		X
Macedonia	*Agricultural Statistics*	*Norm. Data*	*X, Special survey planned for fertilizer*	*X*
Malta	Ag. Census '01, SGM FADN (to start this year)		*X Animal and Crop Surveys*	*X*

As Table 1 shows, most of the countries are relying on a range of different data sources. Especially the CC that use various kinds of different data sources proof to have established a functioning network between different institutions. Most of the countries whose sources do not satisfy AgrIS requirements by and large point out the need and the intention for "new" data sources in future. The countries which apply agricultural sector models often use the same sources for generating input-coefficients for their own modeling purposes as well as for AgrIS-needs. "New" and additional data sources include a) for nearly all countries a stepwise increase of data from an extended FADN, b.) additional or extended surveys; c.) the elaboration of SGMs for Malta and Macedonia to have starting values for the generation of the input data; d.) Agricultural Censuses if explicitly including questions on input costs per agricultural activity (special cost questions were asked in the Maltese census and will be asked in other CC's censuses that are envisaged within the next two years).

It has to be underlined that in June 2002 only, Hungary, Latvia, Slovenia, Slovakia and Bulgaria (on the basis of a specific survey) have fulfilled the objectives of this project,

to fill in all items and activities of the AgrIS minimum list

for the period 1995-2001 (adjusted in March 2002: 1996-2000).

For the other CC, it has so far turned out to be impossible to deliver the required data. The main reason therefore is a lack of appropriate sources and partially also a lack of necessary staff and financial resources. "New" data sources indicated in italic in Table 1 are supposed to help filling the present gaps.

Data availability: Overview of the status in Mid-July 2002

Country	1995	1996	1997	1998	1999	2000	2001
Bulgaria							
Czech Republic							
Estonia							
Hungary							
Latvia							
Lithuania							
Poland							
Romania							
Slovakia							
Slovenia							
Macedonia							
Malta							

Data provided by counterparts	Data estimation by ASA	Data for fertilizer	Data only for crops

2.2 Methods for generating input coefficients

As concerns the methods applied for generating input data per activity, it can broadly be stated that there are two groups of approaches for the generation of data on inputs per activity prevailing:

a) In various cases the CC counterparts apply approaches for the generation of activity specific input coefficients for their own agricultural sector modeling. The same data can be used as the basis for the elaboration of input coefficients for AgrIS. The countries applying sector models have been working with the models often since many years.

b) In other countries, no fixed method has been applied yet for generating input coefficients.

This division of countries in those applying sector models for some time already and those who do not, and thus different problems in elaborating data on inputs per activities, has lead to two separate Interim Working groups during the project's period. These took place in March 2002 in Prague for those CC applying sector models and in Bonn in May 2002 for the countries using approaches that are no sector models.

To a) The CC invited to the WS in Prague were Czech Republic, Latvia, Poland, Slovakia and Slovenia. They have either developed their own sector model (Czech Republic, Slovakia, Slovenia, Latvia) or are following the basic philosophy of Sector Modeling applied in the EU (Poland applies an ABTA-Table, as it forms the basis for the SPEL). But also Estonia and Latvia (and previously Lithuania) now tested the INRA model for generating input-data on the basis of FADN. The INRA approach is a rather different kind of model, compared to the agricultural sector models, as they are applied within the CC. Latvia possibly will even apply several models in future, also including the INRA-Model.

At present the input data per activity, which are gathered in connection with the Sector Modeling activities of the CC are not always fully in line with AgrIS requirements, but cover a major part of the minimum list .

For more detailed information, compare the final country reports of the previous Multi-Country ASM project. Short descriptions about the current status by country can also be found in the Minutes of the Prague Workshop in March 2002.

To b) Other CC did not apply any sector models in recent years. Nevertheless they partly elaborated input coefficients (Hungary, Lithuania) in former years. These are based on collection systems or normative data. Bulgaria, Estonia, Romania, as well as Macedonia and Malta reported no activities in this respect during the last years. For the purpose of AgrIS, these CC either have started new systems recently or have to start from scratch with data collection and elaboration new approaches for elaborating input coefficients are mainly based on FADN data, specific surveys and normative data. . I The countries will increase their survey samples in future and take into account further sources (e.g. outcomes of the Agricultural Census). For more information, the minutes of the Bonn Workshop held in May 2002 can be consulted.

In order to test the applicability of an already existing approach in the Member States for generating the data on inputs per activity on the basis of FADN, the INRA approach has been applied in Estonia in parallel to traditional sources and it has previously been tested in Lithuania in June 2002 (compare respective reports). Though, the data provided by the Counterparts for AgrIS has still been elaborated by their own approaches. For Estonia the problem is that the data generated by applying the INRA-approach in many cases lacks consistency. The model must be adjusted first before applying it again and getting results that can be used for AgrIS. Moreover the INRA approach has been applied only for FADN 2000 (and within the previous ASM Multi Country project for 1999) thus it is not possible yet to deliver a long time series of input data on the basis of FADN.

Anyhow, the Estonian Counterparts intends to further investigate the possible use of the data generated with the INRA-Approach for improving the current input-coefficients.

3 Assessment of current state

An assessment of the different approaches for elaborating the input coefficients regarding to the requirements of AgrIS focuses on the following criteria:

(1) Suitability of the approach

(2) Plausibility and Transparency/ Traceability of the approach

3.1. Suitability of the approach

In general it can be stated that all the primary sources the CC currently are using for building their data base are useful and appropriate. However they are not always sufficient to fulfill the requirements yet. The different methods in the form of models or model like calculations present suitable instruments to generate sound and plausible input coefficients. Those countries using no specific approach or just rather outdated collection methods, will have to adjust and complete their proceedings to become more suitable and sufficient.

3.1.1 Suitability of data sources

As regards the **data sources**, the following ones used are suitable with the indicated reservations:

- **FADN,** provides an important basis. According to the FADN methodology the data is collected from annual accounts. Despite the fact that the volume and details of the data collected are very specific in nature, the FADN data cannot be used for analytical accounting. It does not show the inputs used for each output and only provides information on the total charges paid on each farm. A restriction is a time lag of normally two years and that the data thus gained is not statistically approved At present they are often not fully representative. Thus for reasons of representatives it is essential to improve and extend the FADN in general. Some of the CC already have reached major progress (to a different extend) in setting up a representative FADN: Hungary, Czech Republic, Slovakia, Slovenia, Lithuania, Estonia and Latvia and Poland. For these countries it is to be expected, that the data basis on production costs will improve in parallel to the increase of representativeness of the FADN. The other CC's did not yet start or did just undertake initial steps in the FADN set up. The FADN set up should be speeded up in these countries and a close link between FADN set-up and AgrIS-Input data preparation should be established

- For **Surveys** in general it is true that the data collected might be suitable but is, limited to a restrictive data basis (esp. for animal activities) and thus is not representative enough

- **Agricultural Statistics** are a suitable source and can at least be used for a part of the input coefficients

- **Sources used for EAA** are suitable sources whereas the EAA results itself can be used under very specific conditions only and should not be taken to adjust data generated else way (see below)

- **SGM** can be used to a certain extent, if there is no other data source available, but do not completely represent reality and should be cross-checked whenever other data sources become available.

- **Normative data** are in most cases suitable sources but are not supposed to be taken as main source because they do not reflect annual specifics. Attention has to be paid on outdated normative data, as agricultural preconditions in the CC change quickly.

- **Supply and use balance sheets** can help to fill in data gaps, but they are often highly aggregated. For example, the balance sheets can provide data on the activity specific use of seed (including imports and exports). They further show the amount of crop products used for animal feeding. This source is of specific importance for those countries, which do not yet have a complete EAA available.

- **Census results** can be an appropriate means to elaborate input data per activity according to the reference units of AgrIS but only if specific questions on costs are added to the questionnaire

- **Trade statistics** are rather an unsuitable data source as there is no acknowledged way how to generate the input costs per activity on this basis. Trade statistics, if possible to be replaced should be neglected as results for the input coefficients hardly can be taken from this kind of source.

3.1.2 Suitability of methods

As regards the **methods** for preparing the input data, the following ones applied are suitable with the indicated reservations:

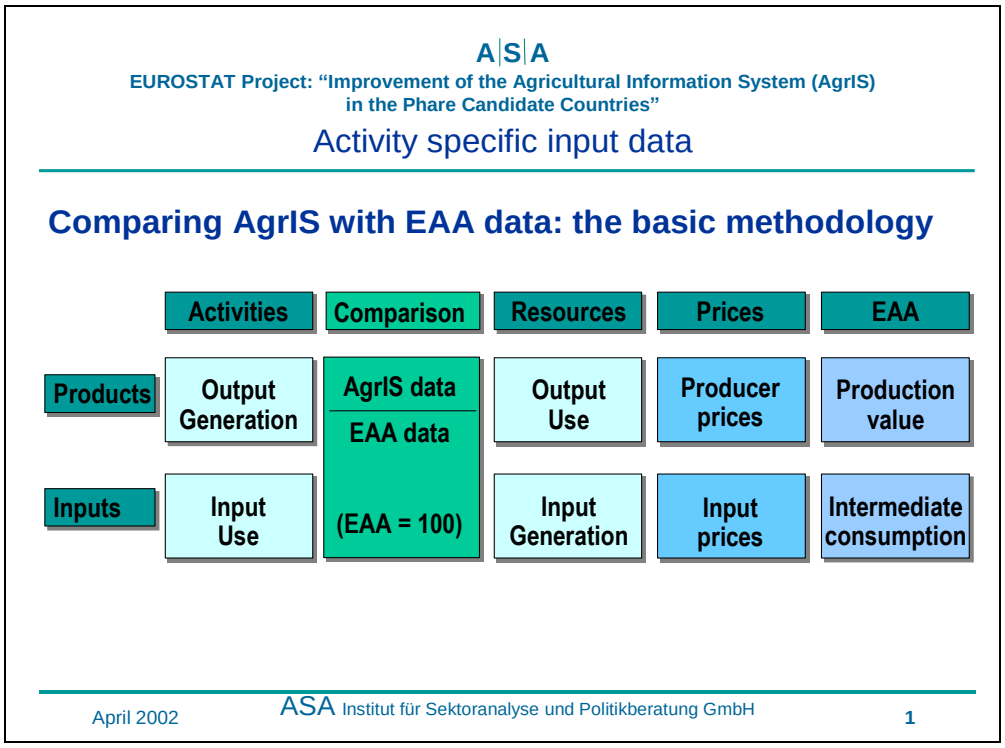
- **Own sector models** as mentioned above turned out to be suitable and helped gaining comparably longer time series and a higher quality of coefficients. The countries who used to work with their own sector models, like Czech Republic can make use of a data basis which is already available for other purposes. Usually these databases are built up for several years and thus facilitate a continuous data flow. .However there are also restrictions e.g. concerning the required structure and differentiation of AgrIS. Limited compliance is currently true for the Agro 3 Model and its Satellites applied in Czech Republic and the Slovakia. Other models like the Slovenian model are suitable but hardly transferable to other countries due to a lack of user-friendliness.

- The **INRA-Model** has been tested with Estonian and Latvian FADN data and is currently run with Lithuanian FADN data. There has been the experience made in the Member States, that the INRA model is by and large a suitable instrument for generating the input data. The same has been learnt during the testing especially with the Estonian data. Nevertheless there are restrictions, like a time lack, which is in general two years for the Member States. Specific limits are that the model produces non-reliable or negative coefficients for activities that are less represented. (For a more detailed description of the INRA Model and its functions please have a look in the Annex)

- The **ABTA approach linked to EAA** has been developed by ASA. It is described in detail in the presentations of the interim workshop in Bonn and will be explained

precisely also in the upcoming coherency report. For a simplified description please have a look at the illustration below. Besides allowing automatic checks of data consistency it is also suitable to facilitate data base generation in the case of missing years and data gaps for specific regions. However, if this approach is used to generate an initial set of data for a specific country it is necessary to choose a country in the same region or having the same natural and technological conditions as basis for computing the coefficients. The data estimated like this can only serve as a basis for revision by the CC-Counterparts. The results gained by this method always will be indicated as not being original data. The approach should also be seen as a way to check the reliability of EAA and not as a one-way proceeding only. For a closer description of this approach pleas have a look at the report on coherency, which will be finished by the end of July 2002.

Table 3: OPAL-Linked ABTA Model



Summing up, all the sources and methods applied are suitable but have particular shortcomings. In the case of the sources this means that a broad range of sources is recommendable to compensate restrictions of single sources. Some countries will also benefit from completing their data sources with additional ones by gaining more representative data. General coherency problems with using different sources have to be solved at the same time.

For the model calculations further adjustments will be necessary in nearly all cases to modify the self developed models in a way that they better match the AgrIS structure. In the case of the INRA model adjustments have to be done according to the needs of the specific country, which is relatively easily possible, according to INRA experts. In

particular minor agricultural activities like fruits or poultry as well as a high self consumption of the produced good like fodder have to be reflected in an adjustment of the model.

3.2 Plausibility and transparency/ traceability of the approach

Generally speaking all the data sources indicated by the CC are plausible ones, which are commonly accepted and used for elaborating input coefficients.

The models applied also fulfill the criteria of plausibility. Firstly experience has been made with testing these models for a long time already and partially in several countries (French INRA-Model, Finish-Agri-Model). Secondly the provided data of all the countries using sector models is in most cases plausible and consistent with the EAA, ranging between plus/minus 10% difference to EAA aggregates. These positive results lead to the conclusion that the different combinations of sources and the methods applied, on the whole have to be plausible and consistent, too. Nevertheless some minor changes will still be necessary, to overcome implausible results like e.g. negative coefficients in specific cases.

As regards the **countries that until now provided data not on the base of sector models**, the data given at present a seems in general to be broadly in line with EAA data. Though, in several single cases the input data show stronger deviations from EAA. This should give a hint for rechecking the input data as well as the EAA. For the approaches used to generate this data this implies that inconsistencies of the different sources are probable. In these cases it is recommendable to modify the existing sources e.g. by extending the samples taken. Moreover new data sources should be added to fill existing data gaps and to compare implausible results (e.g. strong negative profitability) with figures from other statistics/surveys.

Concerning **transparency and traceability**, it is important to know where the results are derived from in order to find out potential mistakes. This is also the reason why the CC are supposed to provide both: Tables with original input coefficients, generated for AgrIS and the adjusted ones (meeting EAA-aggregates). Adjustment coefficients and explanations for differences on the approach applied for EAA-harmonization are also required.

Otherwise, if actually it was the EAA being wrong, mistakes are disguised and can not be discovered again and the original and right input coefficient is lost. Nevertheless this does not mean the any coherency-checks by the CC themselves are superfluous. Several countries for example do rough estimations ahead before generating their input data, to have a means of improving their data and finding mistakes themselves.

4 Problems and challenges

Besides the written information provided by the CC, in the course of the two interim workshops held in Prague (April 02) and Bonn (May 02), all countries described specific problems they have to deal with preparing the input data. The most common ones experienced by several countries are specified. Proposals for solutions have also been figured out and discussed during the workshops and should be given as follows:

4.1 Problems regarding data availability

1) There is a lack of sources to generate data before 1999

The countries participating at the workshop in Prague agreed to reduce the time span to be covered to be 1996 to 2000. For the counterparts taking part at the workshop in Bonn the decision was that each CC will try its utmost to provide time series as long as possible, but it should be flexible for how many years the countries manage to deliver data. (The same is not true for EAA, which is indispensable to be delivered for the whole period). For further years, data shall be calculated by *ASA on the basis of EAA.*

2) The results are not representing enough holdings; partially there is a high quota of subsistence farming which is hardly represented due to a lack of book keeping

It is important that the survey or FADN samples are increased in future to achieve a more representative basis. To include especially subsistence farms, the agricultural censuses planned could serve as a useful instrument if they cover specific questions on input costs.

3) In most CC, it is difficult to get data about the consumption of self produced inputs in individual farms.

This fact not only makes data elaboration very difficult, but can also lead to wrong (negative) input coefficients when applying a model (compare results of the test of the INRA model in Estonia).

4) Some CC have difficulties to determine fixed capital consumption

In the frame of the previous Eurostat EAA and ASM projects, several countries have started to improve their FCC calculations. Within this project, missions to explain a better proceeding have been carried out by ASA-experts to Lithuania and Bulgaria. Therefore, it can be expected that the general problem of calculating appropriate FCC rates will be overcome in due course.

5) Results are difficult to gain for years not typical for the respective agriculture

Because of these cases it is important that there is a broad range of data Normative data can be imported if the results of the normative data are close to EAA and experts can explain the differences. Also SGM could be used to have starting values. If there is a bad year for a certain crop one can adjust the SGM on the basis of expert opinion.

6) Data availability for other animals and other plant production is limited

The input cost should be given monetary input costs per Euro output

7) Several countries have difficulties to obtain data for selected minor activities, such as fruit and vegetables.

Though all activities of the minimum list are important to cover, in a first step, minor activities can be estimated by expert opinion or similar, and should be verified in a second step when "new" data sources become available.

8) Several countries have more difficulties to provide data for animal activities than for plant production. Especially cattle categories according to age groups can't be made out

Concerning the differentiation of cattle activities, the following was agreed: Some countries are not in a position to provide data for the different age groups of non-dairy-cattle. These countries should either provide data for the different age groups or for the total "cattle without dairy cows"

4.2 Procedure problems

9) The current AgrIS input table structure does not picture the intra-sectional and intra-unit flows, which is different from several sector models.

The inclusion of additional input items and production activities, in order to work l with the Gross-Concept of the previous SPEL has been extensively discussed. During the two workshops it was agreed to possibly include additional items according to the "Gross-Concept", like e.g. overhead costs. In order to prepare a consolidated proposal for the input-data table, the CC's may extend the list of input items and activities according to their needs and data available. Additional lines an columns can be put in to have the structure of the Gross Concept (on the right hand side for activities and on the bottom for inputs – in both cases only behind the original lists in order not to disturb the structure of the table)

10) Results for those activities that do not represent major agricultural actives are misleading

This is especially true if the INRA-Model is used for data generation, which has to be solved by adjusting the model thus these kind of activities are represented more.

11) Categories from country specific models have to be tuned to AgrIS

The countries are currently working out appropriate ways to adjust their models or to built in tuning factors to make the categories compliant. In Czech Republic the IDARA-Model is partially used for this means. The Slovenian Counterpart has provided the bridge data used in the input table (by adding rows and columns on additional items).

12) Conversion into hectares as standard units is difficult

Specific explanation have been given especially to Bulgaria how to calculate in order to achieve the standard units and respective conversion factors have been proposed

5 Conclusions and recommendations for future steps

In the whole, all participating CC have made strong efforts in the course of the project for finding out appropriate data sources and methods for the calculation of data on inputs, using already existing experiences of other CC. They have described, partly in very detail, how data are derived and elaborated and thus provided useful background information for Eurostat assessments of AgrIS input data.

Concerning further improvement of sources and methods, the above assessment points at different necessities, depending on which approaches the countries chose and the quality of their results provided so far. Recommendations how to solve specific

availability or methodological question are included at the respective points in the previous chapter.

Though the needs for further improvement and/or assistance are quite heterogeneous, some major conclusions can be drawn being valid for all CC:

(1) Efforts should be done to include the full set of information sources presented. Probably in most countries all these data sources are even available and it is the cooperation between the related institutions, which has to be approved still to really use the existing resources as much as possible.

As an example, Latvia is citing several times "Cost calculations for development programs" as a source for the elaboration of data on inputs. CC where data is still missing could try to use similar sources.

(2) Closer co-operation needs to be established between the countries as well. The possibility to contact project partners was supported during the two Workshops but exists constantly. The counterparts are invited to use this opportunity more frequently in order to exchange experiences and get good advice from partners involved in the same kind of work.

(3) It has turned out that some countries using models are in a better position for providing a good quality and a long series of data. The use of simple, intermediate but also sophisticated economic and other models as data sources is underdeveloped in several countries still. This needs to be improved: potential model-types to be used for gathering additional data are: Linear and Non-linear programming models, Partial and General Equilibrium models, Sector models, etc.

It is strongly recommended that the countries already applying models, e.g. the INRA model, should continue to do so and should try to improve the model results step by step; Other countries should check the possibility of adopting and adjusting a model already in use in other countries.

It is very important that the INRA Model is adjusted as soon as possible to the specific needs of the countries, which want to apply the model. The necessary adjustments probably will not vary too much. At the same time it is indispensable for all countries who intend to make continuous use of INRA to improve the FADN data basis quickly, thus the data put into the model are really representative.

(4) In general it is necessary in all the CC that the financial resources are improved to be able to have additional staff and equipment for an extension of the data collection. Moreover there is no legal basis for the data collection in most of the countries yet, which would be necessary on the long term to ensure the budget necessary and get the commitment of the farmers involved for achieving reliable data.

(5) For all the above recommendations (1)-(4), Eurostat should act as supporting institution and provide a platform for further co-operation and exchange of information. One central point, where questions and problems arising in the CC are collected, assessed, and answered is highly recommendable. Very good experience has been gained with organizing regular meetings, where CC Counterparts can present the status of their work and discuss problems and possible improvements.

6 Country-specific approaches

Within chapter 6 of this Methodology the very specific approaches and sources used by each country will be listed. The following description will make a difference between the sources for data ascertainment and the methods for calculating data. CC have been asked to deliver the respective information of the current state of information collection and concerning their data elaboration on the positions, covering the agreed Minimum List of input items. Developments and progress achieved with regard to the elaboration of input coefficients is reflected here.

6.1 Bulgaria

6.1.1 Current sources and methods

In Bulgaria until recently there has been no system for calculating input coefficients. There were few individual but no representative and reliable data (normative data for 1999, testing for 1996-1997). According to the distribution of work between NSI and MoA collection of the information on FADN-data is under the responsibility of MoA.

The existing sources were not sufficient to establish the input coefficients data basis as required within the current AgrIS CC project. These sources present had been:

1. Quarterly Surveys and balance sheets of the NSI, which are at the same time the main basis for EAA set up and are often highly aggregated.
2. Survey data collected by the Agricultural Economics Institute from 1996, but only covering selected items and are a limited number of farms
3. Surveys carried out within the section of industrial statistics.
4. Data from the Pilot Survey, carried out within the previous pilot project on EAA which cover only a limited number of animal activities and are highly aggregated

For this reason in the course of a subproject a targeted survey for the years 1995-2000 has been developed covering 64 holdings among the registered units in 17 regions. The farms included were active for the period and kept relatively reliable bookkeeping. The regional statistical officers selected the units and the intentions were to cover all pointed activities. The list of inputs of this survey was even more detailed than the Minimum list. The list of crop activities was selected to represent 70-80% of crops in each group. The list of animals was by main groups.

The survey results 1995-2000 have been made available since the middle of May. For the year 2001 it is envisaged to include all registered units, altogether about 3000 holdings. The project made a significant contribution for improving the input coefficients data basis: Bulgaria provided data for the time series 1995-2000 and several calculations with conversion factors have been done to adjust the provided structure to the AgrIS standard units.

6.1.2 Detailed sources/methods used per input item

Due to the lack of initial sources, and the fact that all input data delivered now are derived from the a.m. survey, there is no specification of different sources for particular input items.

6.1.3 Problems and challenges

- At the moment the prepared data is not representing enough holdings, but the limited sample will be increased in the near future.

- The problematic of converting the Bulgarian area units into hectare levels has been solved with the help of conversion factors by ASA.
- The determination of fixed capital consumption is still a problem.
- Questions, how to treat overhead costs (e.g. salaries for managing staff) have been discussed via e-mail. A pragmatic approach has been agreed upon in the Bonn Workshop, namely to add the item "overhead costs" in the AgrIS input data list and to split the costs by output value.
- The co-operation between the different institutions involved in Bulgaria is difficult and the NSI often does not have enough influence. Moreover the delivery of data from other institutions is often on delay. Example SGM: In the responsibility of the MoA, not available yet.

6.1.4 Future plans for data generation

- Reliable data on the basis of the census can be provided in two years
- According to the distribution of work between NSI and MoA collection of the information on FADN-data is under the responsibility of the MoA. A FADN pilot project shall be implemented within one region, but the results will not be available before the end of the Year 2002. The FADN data will be available after the 2003.
- Until then the NSI they will continue doing similar annual surveys as they are in process now (including 3,000 units)
- In the near future: data could be provided by July of each year, for the year before (yearly survey data).

6.1.5 Country specific short-term recommendations

(1) Efforts should be done to include a broader set of sources.

(2) The extension of the survey sample to achieve an improved representativity should be continued in the future years

(3) On the long term the use of a model should be envisaged. As soon as FADN data is available the INRA-Model could possibly be tested.

(4) The required AgrIS structure should be considered in future already when designing the survey in order to have less work with conversion

6.2 Czech Republic

6.2.1 Current sources and methods

In the Czech Republic currently there are 2 main sources for input data:

1. Data collected by the Agricultural FADN as main source
2. Cost analysis results

Czech Republic applies the AGRO 3 Model, which is based on a linear programming approach (partial equilibrium). Moreover Sub-Models are used, which establish a linkage between animal and plant production. The sub-models include also yield specific input coefficients, forming the basis for computing the activity specific input coefficients.

Though applying the AGRO 3 model for several years, data on inputs according to AgrIS requirements have so far only been delivered for the years 1998-1999.

6.2.2 Detailed sources/methods used per input item

The main source for the cost analysis in the Czech Republic is the farm sample investigation FADN (Farm Accountancy Data Network). The obligation of the cost investigation for farms in CR is given by the Accountancy Act (1991). With respect to the fact that this Act does not include a detailed description of the cost calculation structure, the methodology of the cost calculation was worked out by the Research Institute of Agriculture Economics Prague (VUZE), approved by the Ministry of Agriculture and Ministry of Finance and recommended for the cost investigation in CR. The principle of this methodology is the system of full cost calculation (in contradiction to the system used in the EU). The aim of the farm sample investigation is to provide every year's final cost calculations (relating to the end of the actual year) after accounting all cost and revenues from the actual year's production together with last year's costs relating the actual year's production. In cost calculations there are considered interrelations among individual branches and production sections of the agricultural production.
The cost calculation consists in assigning costs to a revenue item (product, labor activity, or service) defined by amount, time, or other way in the form of realized revenue (outside the farm), in-farm revenue (inside the farm). In the course of calculation process the costs are identified in the two forms: direct costs, which are obtained directly from accountancy of the one revenue item, and indirect costs, which must be derived from the more revenue items by special schedule algorithms.
Costs permanently monitored for the help and overhead revenue items are scheduled to the other revenues as secondary costs. The dividing of secondary costs are realized

- for help activities according to monitored working hours of tractors and machines related to individual revenues
- for overheads according to direct material and labor costs.

The cost investigation in CR comes out from the following standard cost structure:
1. Purchased materials (seeds, feed, fertilizers, plant protection, the other direct materials)
2. Own products (seeds, feed, fertilizers, plant protection, the other own materials)

3. The other direct costs and services (hired services, energy, fuels, insurance, rent, taxes)
4. Labor costs (wages and other personal costs – social and health insurance
5. Depreciation of material assets (e.g. machines, buildings etc.) and non-material assets (software, property rights etc.)
6. Depreciation of animals (based category of breeding – e.g. dairy cows, sows)
7. Costs for the own machines, repairs and maintenance
8. Production overheads
9. Management overheads

The items 1, 2, 3, 5 and 6 are calculated as direct costs for the individual revenues, the items 7-9 are secondary costs, the item 4 includes both direct costs relating to individual revenues and the appropriate share from secondary costs.

"Double accountancy" (DA) obliged for cooperatives and partnership farms (not obliged for private farms) is based on the method of analytical accounts and enables to monitor 86 cost items and 55 revenue items. It enables to work out not only the standard cost structure, but also a different more detailed cost structure.

"Single accountancy" (SA) mostly used by private farmers is based only on monitoring income and expenditure items. This is the reason why the cost investigation is extended by the additional investigation for monitoring cost of individual products (totally 60 cost items). Cost items which can be assigned to individual products (seeds, feeds, fertilizers, external services etc.) are directly monitored for concrete revenues. The other cost items (fuels, electric energy, interests etc.) are obtained for the farm as a whole and must be calculated as overhead costs. The additional investigation is for SA suggested in such a way so that the result cost structure would be the most comparable with the results of DA.

Total costs of a revenue item are recounted on the defined calculation units by several methods. For the revenue with the one product only, the total costs are divided by the total amount of this product (e.g. potatoes). For the revenue with more products (the main product and coupling products), the total costs are divided by the defined share coefficients for individual products. For example, for wheat costs there are used share coefficients 88:12 (grain – straw), for cow costs 94:6 (milk – calves), etc.

With respect to the fact that the cost investigation includes financial data about revenues and costs there are monitored also natural data necessary for recalculation of revenues and costs on production capacity units (1 ha for plant production, 100 feeding days for animal production) and production units (1 ton, 1 litter of milk, 1 kg of increase and 1 kg of the live weight).

6.2.3 Problems and challenges

- The AgrIS database structure is not fully compatible with the above described cost investigation provided in CR. From this reason it is necessary to define relations between the Czech cost structure and the AgrIS cost structure and then to recalculate the Czech costs with the aim to reach the maximum compatibility both structures. In the revised data delivered by Czech Republic it is indicated if the commodities as regards the detailed cost structure are (A) recalculated from the original aggregate cost structure or (B) denote the original aggregate cost structure
- It is difficult to represent private farming with the instruments currently used and achieve a good representativity.

6.2.4 Future plans for data generation

- The input items for the agricultural activities of crop production will be generated for 1996-97 in the same way as for the years 1998-2000.
- Despite time constraints the Colleagues of the VUZE in Brno will try to deliver the data for animal production for 1996 and 1997.
- In future the data gathered for the IDARA-Model will also be taken into account for data generation.
- The FADN approach is currently further developed.

6.2.5 Country specific short-term recommendations

(1) Numerous efforts regarding the gathering of information could be a possibility in order to overcome existing bottlenecks and come up with longer time series and more reliable data.

(2) The IDARA Model should also be further adjusted to the specific Czech needs to use it for filling gaps

(3) It should be tested soon whether the AGRO 3 model categories can be adjusted and/or tuned to better comply with the AgrIS nomenclature for input data. The application of the INRA model could be tested with FADN data. Results could be compared with current data.

6.3 Estonia

6.3.1 Current sources and methods

Currently the main source for input data is FADN data. Several additional sources are used for breaking up the FADN data according to the different activities:

1. The FADN database is the main data source for obtaining the input coefficients for different agricultural activities. Currently, the input coefficients are available for two years i.e. 1999 and 2000. The current FADN sample is based on the Agricultural Registers and Information Center (ARIC) database on the holdings that received direct subsidies in certain year.

   The FADN data for 2000 were collected, checked, processed and analyzed by the Jäneda Training and Advisory Center. Data were collected from 500 (400 holdings in 1999) agricultural holdings, but 39 (30 holdings in 1999) of them were discarded for various reasons (for example under 2 European size units, negative cash flow). The weighting coefficient in the sample in 2000 was 10.78 (12.8 in 1999) on average. Weighting coefficients were calculated also for different types of holdings and size groups. For processing and analyzing the FADN data, the concerned farm holdings were grouped by type of farming and economic size based on the FADN classification system and on the typology of the agricultural holdings. The analyzed farm holdings were divided as follows: arables; horticulture; permanent crops; dairy cattle; mixed livestock holding; granivores; mixed crops-livestock.

2. In order to break down the FADN data by products the following sources are used:

   - normative data on inputs used from pervious years;
   - data from Standard Gross Margin calculations;
   - results of researches;
   - expert calculations and estimations.

The elaboration of input coefficients for AgrIS purposes has been done without any model. In addition, within the previous ASM project and within this AgrIS project, the INRA approach has been tested for both years 99-2000 with Estonian FADN data. Results have been compared, but the data delivered is still the one elaborated by the expert. In the following, a more detailed description is provided.

6.3.2 Detailed sources/methods used per input item

1. "Expert Method"

In order to calculate the input coefficients per type of agricultural activity, the costs of production were computed as following:

In case of crop production the data on farm holdings specialized to field crops production was used i.e. arables. All calculations of the input data have been done per hectare in crop farming and per head in livestock farming in Estonian kroons.

Concerning each type of production, the data of holdings specialized in this kind of agricultural production was used.

In the calculation of the **variable costs** of production, the norms for consumptions either per hectare in crop farming or per animal in livestock farming was taken. Then, in order to adjust the standard input used for real FADN data, they were multiplied by adjusting coefficients. For finding the adjusting coefficient of a certain item of variable cost, the norms of consumption of each product are multiplied by volume of output (either by certain number of hectares or by animals), and then summed up. The sum is divided with the total costs of certain input.

Concerning the calculation of **fixed costs** of production, the share of each product in total output has been taken into account. This means that in order to determine the fixed costs per different kind of activity an assumption was made - the value of the input used is proportional to the value of the output. Assuming proportionality, the share of certain product in total output was taken as a base. For example, in case of cereals, its share in total output was estimated and then multiplied with the total amount of certain input item and divided with the number of hectares of the cereals.

The FADN methodology prescribes that **depreciation of fixed capital** should be calculated from the replacement value of fixed assets. Therefore depreciation has been re-calculated according to the area of agricultural land used and the number of animals, on the bases of the study "Analysis of fixed assets in agriculture", carried out in 2000.

The percentage of depreciation of drainage in total fixed assets depreciation is very high ca 25%. It is caused by the fact that 734.5 thousand hectares of agricultural land (of which 641.5 thousand hectares of arable land) have been drained in Estonia (Data of the Estonian Land Board). Most of the drainage was built 15-20 years ago and now require additional costs. In view of fact that part of drainage systems are still in balance of the state, only small part of drainage depreciation are included in the EAA.

2. INRA-Model

In addition to the input coefficients estimated by the Estonian experts, the French model INRA was applied with the Estonian FADN data for years 1999 and 2000. The Counterparts and INRA experts have elaborated separate reports, where results are described in detail.

Summarizing the different results of testing the INRA-model with Estonian FADN data for the year 2000, it can be stated that the input data are practicable and reliable in the case for the wheat, barley, cereals at total, potatoes, rape, vegetables (to a certain extend), cattle total (cattle + milk), pigs, milk and eggs. The cost coefficients for the remainder activities (e.g. fruit, rye, oats, other cereals, legumes, poultry, other crop and animal products) are not practicable due to either negative or extremely positive coefficients.

6.3.3 Problems and challenges

- Model-Modifications

At the moment the results of applying the INRA-model in Estonia are not fully satisfying. The model gives for several activities, especially minor activities, which are not well represented in the FADN sample, non reliable or negative coefficients. Hence, in order to meet the AgrIS requirements, some changes should be done in the model. According to the INRA experts, adjusting the model further does not cause big problems. As mentioned above, INRA input data for Estonia is not submitted to Eurostat. However in the future, as soon as INRA-model will match the Estonian needs the intention is to use the data derived by this model.

- Representativity

Besides, as was mentioned above, there are no farms with economic size under 2 ESU in FADN sample and most likely never well be henceforth. Hence, in order to ensure that the input data represent the total agricultural sector including small producers e.g. household plots, some other data sources in addition to the FADN database should be envisaged. For example, in the calculation of subsidies has been used FADN data so far. But it is necessary to notice that not all producers have received subsidies. Hence, taking into account that overall objective of AgrIS system is the account of all agricultural sector, it is planned to recalculate subsidies according to the real amount of subsidies paid divided whether by number of hectares or by head of animals.

- Data availability before 1999

Despite the fact, that the FADN database is available in Estonia since 1996, the input data calculation can not be used because of the small number of agricultural holdings represented in 1995-1998 FADN samples. Also, the sample was not made up according to all requirements in the FADN methodology.

6.3.4 Future plans for data generation

- The results of the analysis of the FADN data might not fully reflect the real situation in Estonian agriculture. In order to make a reliable and correct analysis of the structure of the population of agricultural holdings the results of the agricultural census held in July 2001 will be used in future. Though, processing and analyzing of the data collected by the Estonian Statistical Office takes time.

- In addition, during the next year it is planned to carry out a survey of 30 farms, which will be picked out from the FADN sample. Each farm will be asked to fill out the questionnaire on inputs used in agricultural activity. The Ministry of Agriculture will finance this survey. As soon as the results are received, existing input data will be examined. The main goal of this survey is to check out existing input data based on FADN database and also SGM data control.

- Besides, in the near future the methodology of calculation of FCC will be reviewed and therefore, some changes might be done in particular concerning the depreciation data.

- Concerning the data availability before 1999, Estonia created a working group in order to try to look through the existing input data discuss the methodology used for input data generation and work out the input data for the previous years. The working party meeting was held in July and a similar meeting will probably be held in future again. The participants were representatives of the following institutions: :

two representatives from MoA, tree from Jäneda Training and Advisory Centre, two from the Estonian Institute of Agricultural Engineering and one from Statistical Office.

6.3.5 Summarizing theCountry specific short-term recommendations

(1) Estonia is very conscious of the still existing problems and already took several steps and decisions to overcome shortcomings in its approaches. It should be supported in its activities

(2) The envisaged working party meeting with representatives of several institutions involved with data collection will surely be very fruitful and should possibly be held on a regular basis. A good cooperation like this can be highly recommended to all other CC also.

(3) The INRA-Model should be adjusted to the specific Estonian needs as soon as possible.

(4) Data coming from the Agricultural Census should be included as soon as possible.

6.4 Hungary

6.4.1 Current sources and methods

Currently there are 2 main sources for input data:

1. The input data collection is organized by the Cost and Price Analyzing Department of AKII. The collection in Hungary was already done in the seventies on the basis of surveys. This survey method was slightly adjusted and modified in 1990. There is one survey done for bigger holdings and one for small scale farms:

    - The survey for the professional holdings is done annually and about 100-170 holdings are included. 49 agricultural activities are covered: 37 on plant production and 12 on animal production. The production of the observed organizations is about 9-30% of the total production of professional units. It has a share of 2-18% of the total agricultural production.

    - The survey for the small scale holdings is carried out annually. About 170-200 co-operatives are included. 19 agricultural activities are covered: 13 on plant production and 6 on animal production. The observed holdings' share in the total production of the whole small-scale holdings was 1-5%. These small-scale holdings are part-time holdings. They are members of a special cooperation or integration according to their products. For example there is integration for the producers of Hungarian red paprika, or tobacco and so on. There are 30-40 members of integration on average. Consequently, the system covers 5000-6000 small-scale, part-time farms.

    Since 1998 there is an additional second approach, which merged survey data collection with the FADN system in order to cover a wider range of agricultural producers including private farmers. In that year however the FADN system covered only the third part of the country and about 1200 farms of Hungary. This has been improved now. The results for 2000 will be calculated with using both the traditional and the revised way to compare the differences caused by the changes the data processing. For the new method, survey results from140-170 corporations (about 50-60% of the total FADN farms) are considered, professional and small private farms. The FADN data is derived from larger agricultural entities (900 holdings provide input coefficients per activity). Small scale part-time farms have only been included for such products where small scale farming is typical in Hungary. This is in general true for fruits and vegetable.

2. As a minor source seed statistics from the Statistical Office are taken into account.

Hungary is one of the few countries being able to deliver input coefficients for 1995-2000 according to the minimum list based on own sources.

6.4.2 Detailed sources/methods used per input item

In the coming years Hungary will use the above mentioned two different approaches parallel to compare and adjust the data gained.

According to the new approach combining FADN and survey data, the system of cost determination was changed and now counts with variable and fixed costs.

According to the former approach the direct and the indirect cost of all activities of the enterprise were collected. The four major parts crop production, Livestock production, Other agricultural activities and out of branch activities, as well as branch-works and indirect costs were included in the survey sheet. The so-called clear cost calculation was used in this former approach, the elements of which are the following:

- **Total cost of materials**: Artificial fertilizers: Plant protection product,
  Materials for building: Parts of equipments
- Total cost of energy **:Gas:**
  Motor spirits
  Diesel oil
  Oil for heating
  Electricity
  Other Energy
- **Feeding stuffs purchased from outside the agricultural industry**
- **Veterinary expenses**
- **Other stuffs purchased from outside the agricultural industry**
- **Other stuffs**
- **Wages**
- **Social contribution:** Fixed capital consumption
  Buildings
  Equipment
  Other
- **Other costs in total:** Services purchased

6.4.3 Problems and challenges

- With the exception of seeds statistics, all other input items have been observed from the view point of "traditional data bases" focusing on farm accountancy data of larger agricultural holdings. The data provided for the time series 1995-2000, therefore, represent only a limited share of overall agricultural production in Hungary. The big number of small scale farms is definitively underrepresented.
- At the moment there is a lack of financial resources to extend data collection.
- Moreover in Hungary there is no legal basis for the data collection.

6.4.4 Future plans for data generation

On the long term it is foreseen, to extend the FADN for activity related data and reduce the analyzed survey data.

- Hungary does not consider it as necessary to apply a model at the current state but it is not generally opposed to apply models in future.

- At the moment there is no opportunity to get more detailed information on the inputs per activities from the census done in 2000. Nevertheless according to census results it is possible to build a representative database, which will serve getting an improved data quality in future. Unfortunately it has been excluded to ask specific cost questions in future censuses. The statistical office already tried to place some cost questions in the 2000 Census but all questions about any kind of costs were refused in the parliamentary committee.
- Data directly collected at test holdings could be provided by September of each year, for the year before.

6.4.5 Country specific short-term recommendations

(1) As an activity related extension of FADN is planned for the near future, the Hungarian Counterparts can decide to test the application of the INRA Model at a later stage.

(2) An improved representativity by extending the sample and including small scale farming is desirable. In particular a real representative sample of small-scale farms is needed.

(3) The input data delivered by Hungary covers the time span required, but coherency checks with EAA show major differences. Both, the input data and EAA data will have to be reviewed. For future cross-checking purposes it is important to have approved EAA data available in time.

(4) Using future censuses for asking specific cost questions should be envisaged again.

6.5 Latvia

6.5.1 Current sources and methods

There are several main data sources for obtaining input coefficients in Latvia:

1. LAAC gross margin calculations
2. small surveys of farms
3. normative data (obtained via research) as well as expert estimations

For using these different sources to gather input data Latvia established a network of co-operation with numerous institutions.

Latvia, in addition, applies the two methods for elaborating input data for agriculture: Several cost analyses with bookkeeping data are done and attempts to use some econometric methods in the available FADN data processing in order to obtain input use coefficients .

Besides, there has also been a test for using Latvian FADN data with the French INRA model.

6.5.2 Detailed sources/methods used per input item

The rows (input) are filled in according to input data level "EAA database", excluding one item "maintenance of buildings". Maintenance of materials and buildings are together in one position "maintenance of materials". There are problems to get information.

Seeds and planting stock

Data on grain, potatoes and vegetables are obtained from the CSB farm survey, which is also the source for data on consumption of self-produced inputs in individual farms, while data about the self-produced and purchased input use in agricultural companies and in state farms was taken from their annual statistical reports. Concerning the use of seed in 1999, the data from the Ministry of Agriculture, calculated according to average standards, have been used. The use of self-produced seed has been valuated in internal consumption prices (depending on type of product, they were assumed as 90-100% of farm gate price). Purchased seed is accounted in farm gate prices. Some of purchased seed prices for year 1999 and 2000 are taken from the company "Latvian Seed". For the rest of products seed consumption standards from LAAC gross margin calculations have been used and prices have been assessed by the expert method, based on different available data sources.

Energy, lubricants

Electricity

Data from LAAC book keeping farms, which are specialized in a particular production activity (grain, potatoes, sugar beet, vegetables, dairy, beef, pork), are used for the

calculation of expenditures on electricity in the crop sector. For other activities, the calculations, which were done for the sector development programs, are used, or, alternatively, data from similar activities, applying the expert method, were used.

Other fuels and propellants

There are data from LAAC gross margin calculations used for estimates of expenditures on petrol and lubricants in the crop sector. The costs of agricultural services also are taken from these data. There were special coefficients calculated by LSIAE describing the share of petrol and lubricants in the total costs of agricultural services.

Cost calculations from the development programs for dairy, beef and pork sectors have been used as input data source for the livestock production.

For the rest of activities in the livestock sector the costs have been assessed using the expert method.

Fertilizer and soil improvers

Use of fertilizers by crop production activity is obtained from CSB survey, which covers state farms and agricultural companies and reports consumption of fertilizer (in pure substance) and manure by type of activity in a particular cropping year. For individual farms the use of fertilizer is reported only as total figure. To get specification, the proportions between the different types of substance calculated from the companies' survey are applied. The price of fertilizer is obtained by dividing the total costs for fertilizer and soil improver (less purchased manure, the share of which is assessed by expert method) by the amount of pure substance in the used fertilizer. The price proportions between elements N, P and K are the same as used by LAAC 1:4:2.5.

Plant protection products

Data on consumption of plant protection products by activity are obtained from pesticide consumption normative data, reported in LAAC gross margin calculations, where they are given separately - for farms with intensive and extensive production. Average indicators for the whole activity are calculated as average weighted, where the proportion of high and low yield areas (reported in CSB Structural Survey) are taken as weights (based on expert assumption about the yield threshold to be counted as intensive production).

Veterinary expenses

Data about veterinary expenses on one animal are taken from LAAC gross margin calculations. Data about the numbers of animals and fowls is taken from data of CSB about farms in Latvia.

Feeding stuffs

Data of consumption and prices of feeding stuffs are taken from LAAC gross margin calculations.

Maintenance of materials and buildings

Data about equipment and buildings maintenance costs in crop sector are taken from LAAC gross margin calculations like expenditures on services. There is a special coefficient, calculated by LSIAE, which describes the share of maintenance costs in the expenditures on agricultural services.

For livestock production cost calculations (dairy, beef and pork sector) "Analytical reviews by sectors" have been used as data source; for the rest of activities in the sector the expert method has been applied.

Agricultural services, other goods and services

Actual data from LAAC are used in calculation of expenditures on agricultural services in crop sector. For individual activities cost calculations from activity development programs (flax, rape-seed), or data on similar activities, applying expert method, have been used as a source.

Fixed capital consumption

Data about fixed capital consumption are taken from calculations made by researchers of LSIAE for each production activity.

Other subsidies

This item includes compensation of excise tax, interest relief and grants for pedigree cattle. Compensation of excise tax is applied to all production activities in proportion to used amount of petrol. Data about total value of subsidies is taken from Ministry of agriculture.

Other taxes

This item includes taxes on land and under-compensation of VAT. Expert method has been used as a source of taxes calculations for individual activities.

Labor costs

Labor costs are based on labor consumption standards developed for activity development programs; where not available, data for similar production activities are used. An average labor cost 0.65 LVL/ha was assumed for 1999 (including social costs).

Rent

In most cases the level of land rent payments is taken from FADN database, in particular from farms with specialization in crop production activities. To evaluate rent payments on fodder areas, FADN data about rent payments in specialized dairy farms were used.

Interest paid

There are data from LAAC gross margin calculations used in approximation of interest paid in crop production activities. There were special coefficients calculated by LSIAE describing the share of interest paid in the total costs of agricultural services, for which the rate per hectare is given for most crop production activities. Coefficients are calculated based on estimated capital costs, share of credits in financing the purchases of capital goods and average interest rate available for producers.

In livestock production the values of interest paid per activity unit are taken from FADN data analysis - data from farms with specialization in particular activity.

6.5.3 Problems and challenges

- One problem in Latvia are appropriate data sources, in particular the lack of data for the years 1995-1996. The currently used data sources, though numerous, are more built on normative data than actual average costs in Latvian farms per Agricultural Activity unit.

- Latvia reported also some problems with single items:

  a) for other crop products/other animals and non-separable secondary activities only expert estimations are indicated yet. Only values are available but no number of hectare or head for activities. For the future, the decision during the Prague WS was to provide monetary input costs per Euro output

  b) It is difficult to separate seeds per activities by the source (purchased from the other agricultural holdings or from outside the agricultural "industry")

  c) More problematic activities to differentiate are forage plants, vegetables (very different costs for covered areas and field vegetables) and fruits

  d) the cattle categories according to age groups can't be dealt with easily; currently there is no costs for equines. The costs for fur-bearing animals and rabbits are currently together in the activity "other animals".

6.5.4 Future plans for data generation

Unfortunately the FADN database yet is not representative enough but in future the use of FADN data base for the purpose of breaking down the costs by Agricultural Activity could be a good solution.

6.5.5 Country specific Short-term recommendations

(1) Latvia is conscious of the still existing problems and very interested in overcoming them. It should be supported in its activities.

(2) As was done in the past, the full range of data sources in Latvia, including "new" data sources such as increasingly representative FADN data and Census results, should be used and close co-operation between institutions should continue.

(3) As soon as the FADN has been extended adjustments of the INRA model to the specific Latvian needs, should be envisaged as well

6.6 Lithuania

6.6.1 Current sources and methods

Several data sources are used in Lithuania:

1. Data from FADN (the number of holdings increased from 500 in 1998 to 2000 farms in 2001) and from OPAL
2. Data from book keeping
3. Normative data and experts evaluations from different fields
4. Other sources like maps with technological indicators.

6.6.2 Detailed sources/methods used per input item

Seeds and Planting Stock

It is not possible to distinguish between seeds supplied by other agricultural holdings and seeds purchased from outside the agricultural industry. Only the information on how much and what sort of seeds are needed per hectare are available. This data on one hectare seed consumption for sowing of various cultures is being obtained from technological cards as well as the Institute of Seed Growing. For the control of the results drawn the data of agricultural respondent farms and enterprises' annual financial record has been used.

Energy and Lubricants

Input of electric power, diesel fuel and lubricants for one hectare has been calculated according to various plants' cultivation technological cards also regarding the yield of plants as well as input price variations in the period of 1998 – 2000. Lithuania's agricultural record does not encompass gas, heating gas oil, residual fuel oil and motor spirits expenses.

The expenses are being incorporated into agricultural respondent farm accountings nor agricultural enterprise annual financial records. Input of electric power and diesel fuel for agricultural planting stock and livestock in 2000 as compared to last years' indicators increased notably as electric power prices rose by 38 % and diesel fuel by 37%. The input of electric power and diesel fuel in livestock sector is being calculated for an average animal regarding the intermediate consumption expenditures that are indicated in the agricultural economic accounts.

Fertilizers and soil improvers

Fertilizer consumption in Litas/ha has been calculated according to various products technological cards, adjusting data agreeably to crop area and fertilizer selling alteration in the period of 1998 – 2000. Fertilizer consumption quantities kg/ha are estimated in reference with optimal norms of mineral fertilizers for outdoor plants and in accordance with basic active substances: nitrogen, phosphorus, kali. Fertilizer dispersal for plants indicated has been calculated as follows: ammonium nitrate (33 %), phosphate mineral fertilizers (P2O5) and potassium mineral fertilizers (K2O).

Plant Protection Products and Pesticides

Chemicals (fungicides, insecticides, herbicides) for various agricultural plants for one hectare have been calculated regarding the yield of plants as it is indicated in technological cards for the year 2000. Chemical consumption Litas/ha 1998 – 1999 has been estimated by adjusting the 2000 normative data in accordance with plant yield and price variations. In 2000 prices of the chemicals as compared to those of 1999 have decreased by 8 %. Thus, in 1999 agricultural plant (the yield of which has not changed during the period of 1999 - 2000) chemical input rate Litas/ha was higher than that of 2000.

Veterinary Expenses

Veterinary expenses (medicaments, insemination, veterinary services) have been calculated per head of animals in reference with FADN data 1998 -–2000. Concrete veterinary expenses for separate animal species have been estimated sustaining the ratios of animal repartition into provisory animals (cows, bulls – 1, other sorts of cattle – 0,6, pigs – 0,3, piglets – 0,17, sheep and goats – 0,1, fowls – 0,02, horses – 1).

Animal Feedstuffs

Feedstuffs have been calculated per head in reference to "Opal-Stand" intermediate consumption data "Feedstuffs (farm intra-consumption)" of 1998 – 2000 as well as data provided by the Departments of Statistics on number of provisory animals in farms and agricultural enterprises of the period analyzed. Concrete feedstuffs input for separate animal species have been calculated in reference to animal conversion into provisory animals in ratios. More concrete indicators of feedstuffs to cultures or complementary and complete feed according to animal and feedstuff (meadow hay, milk) species have not been counted, as there are no factual data.

Material, Building Maintenance and Agricultural Services

This sort of input referring to the structure of agricultural production has been divided into input in crop sector and input in livestock sector. The input in crop sector has been estimated regarding correspondent intermediate input calculated in 1998 – 2000 by "Opal-Stand" (pointing out their quantity for one hectare of particular crop area). In the livestock sector this kind of input has been calculated for one provisory animal and then for concrete animal species that are usually dispensed in reference to ratios of animal conversion into provisory animals.

Other Goods and Services

This kind of input comprises 12 % of gross intermediate consumption, which is determined regarding different plant and animal species. The value of 12 % has been determined considering recommendations of Lithuania's Ministry of Agriculture on methods of cost price calculation.

Fixed Capital Consumption

Fixed capital consumption of various crop products has been calculated regarding technological cards of agricultural production data. In livestock sector fixed capital consumption for one provisory animal has been estimated sustaining FADN data. Concrete fixed capital consumption for separate animal species has been calculated in reference with ratios of animal conversion into provisory animals.

Employer Compensation

Work payments input for crop products have been calculated regarding technological cards of agricultural production as well as estimating crop yield and work payment variations in agricultural sector in 1998 – 2000. Work payments input in livestock sector have been estimated using FADN and Agricultural enterprises annual financial record data, also evaluating livestock production comparative weight in common agricultural production. Work payment input for concrete animal species has been dispensed regarding the ratios of animal conversion into provisory animals.

Subsidies on Products

Subsidies on various agricultural products have been calculated in Litas for one hectare of concrete crop area or separate animal species in reference to information prepared by the Ministry of Agriculture Department of Agricultural Policy and Strategic Planning.

6.6.3 Problems and challenges

- The data generation for 1995-1996 is practically impossible due to a lack of sources.
- There is also problems with data elaboration for the year 1999 as this year was untypical for Lithuanian Agriculture.
- The current methods are insufficient to achieve a high data quality
- Lithuania has executed a subproject of running Lithuanian FADN 2000 data with INRA. The testing had been done with two different versions of the INRA Model. The new version of the model takes on farm production into account. This is one reason why the results were very satisfying. Another reason according to Lithuania is that the FADN is the best representative source present, there. Most farms are mixed crop farms in Lithuania and more than 25% are small scale farms. Though difficult for modeling the results were judged as very good except for some coefficients gained that are negative like e.g. sugar beet. The results gained with INRA model will be used to help controlling the data elaborated with the original methods in order to get an improved version of the data basis.

6.6.4 Future plans for data generation

- There will be a pilot census in 2002. The Institute will co-operate with the Statistical Office in order to include questions on costs in the Questionnaire for the Census in 2003.
- If the INRA model could be applied continuously , Lithuania could provide data by the end of each year, for the year before.

6.6.5 Country specific short-term recommendations

(1) The minimum list for crop production activities is not yet complete. Data gathering should be improved to fulfill the minimum list

(2) Within the sub-project, possibilities for adjusting the INRA- Model should be worked out, in order to possibly obtain an appropriate model for the future

(3) The data gained by recommendations of the Ministry of Agriculture like for other goods and services has to be rechecked by a second source or expert opinions. The same is true for technological cards as main source, as these kinds of sources might not reflect the reality .

(4) In order to develop the countries data base even more, the full range of data sources in the country, including "new" data sources, should be used and closer co-operation between institutions should be established.

(5) After completion of the Agricultural Census, additional data should be obtained.

6.7 Poland

6.7.1 Current sources and methods

The main data sources for obtaining input cost on specific activities in Poland are

1. Microeconomic data are derived from samples and calculated in Institute of Agriculture and Food Economics (IERIGZ). The unit production cost survey of the IERIGZ includes approximately 1300 peasant farms to be enlarged to country results according to the actual farm structure. A separate sample covers the former state farms.
2. Data provided for EAA (mainly or according to Central Statistical Office (CSO) data)
3. Average input costs based on farm accountancy. Central Statistical Office (CSO)
4. Surveys on agricultural input prices, normative data and expert estimations also play a role.

6.7.2 Detailed sources/methods used per input item

Seeds and planting stock

Data related to seeds produced and used by the same holding:

a) quantities: for main crops data based on CSO surveys on (crop …), for rest activities from input cost survey IAFE or agricultural normative data.

b) prices: according to CSO data. Prices used in AgrIS model differ from product prices several percents depending on product. (for example for cereals they are lower on about 8%)

Data related to seeds purchased outside agriculture is assessed on information from General Seed Inspection Inspectorates.

Petrol and lubricants and electricity, fuel for heating

Total Costs of energy and costs for electricity on 1ha or unit of production are estimated with respect of unit cost surveys conducted in IAFE or calculations, that are confronted with CSO data of consumption of energy and materials in agricultural sector.

Fertilizer and soil improvers

Cost of fertilizers covers NPK, calcium and micro fertilizers. Cost of fertilizers on unit of production are estimated on unit production cost survey by IAFE (for main crops) and confronted with CSO data of quantities of fertilizers utilized in agricultural sector.

Plant protection products and veterinary expenses

Similarly to data considering fertilizer and soil improvers value of plant protection product consumption on unit of production is elaborated. Data from unit production cost survey by IAFE are confronted with data of value of plant protection products or veterinary expenses used in agricultural sector delivered by CSO.

Feeding stuffs

Total consumption of feeding stuffs includes:

a) feeder purchased outside of agricultural sector

b) feeder produced and consumed inside agriculture (produced and consumed by the same holding and purchased from other holdings)

Value of used in production feeding stuffs on unit of animal is elaborated on the basis of quantities data from production cost survey by IAFE and average country prices reported by CSO.

Maintenance of materials and buildings

Basis of elaboration that group of data is survey on unit cost of production conducted by IAFE. Spatially part dealing with share of repairing cost of machinery and buildings in total cost of maintenance of fixed capital and valuating unit cost of production. Spatial attention was given to CSO data on total cost of maintenance of materials and buildings in agricultural sector.

Labor costs

Total labor cost estimated for agricultural sector is arranged to particular activities proportionally to labor input according to unit production cost survey by IAFE and expert estimation.

Fixed capital consumption

Basis of elaboration that data is survey on unit cost of production conducted by IAFE - mostly part dealing with share of fixed capital consumption in total costs of maintenance of fixed capital. Total sums of fixed capital consumption of fixed capital components in agriculture provided by GUS was taken into consideration.

Rent

In most cases the level of land rent payments is taken from IAFE database, in particular- from farms with specialization in crop production activities.

Other taxes on production

That position mainly covers land tax and taxes on machinery and buildings.

Subsidies

In 1998 there wasn't any subsidies on production. In 1999 and 2000 subsidies on wheat and rye had place. Other subsidies are mainly subsidies aimed to lower interest payments. Those data comes from Ministry of Agriculture and Rural Development and Agricultural Market Agency.

Interest paid

Those data covers sums that were given back to agricultural farms due to subsidies aimed to lower interest payments.

Level on activities

Data on level of activities reflect CSO data (data for animals are average of number of animal reported three times a year, among them on the beginning and end of calendar year.

6.7.3 Problems and challenges

- The data availability for a number of minor plant production activities as well as for 'Other animals' and Other animal products' is limited or the respective data are (more or less) unreliable.
- Data concerning raw tobacco; hops; fibre plants; other industrial crops: others, other crop products; other animals; other animals products (excl. By- products) are not included as the quality of the data base therefore is not sufficient.
- Data provision before 1998, will be impossible due to a lack of sources
- The differentiation of cattle in age groups is problematic for Poland
- Additional input data like prices for purchased seeds or other industrial inputs as well as any physical numbers are not available

6.7.4 Future plans for data generation

Adjusted data for the years 1998-2000 has been sent to ASA recently. No further plans for future adjustment or completion of data elaboration have been expressed by the Counterparts.

6.7.5 Country specific short-term recommendations

(1) Additional surveys could be done to gain results that are more representative.

(2) A closer cooperation should be envisaged with other CC to exchange ideas for further improvement of establishing the input data base.

6.8 Romania

6.8.1 Current sources and methods

In Romania, there is no activity-related input data basis for the years 1995-2001 available yet. In previous times, input coefficients or normative data were elaborated, but they referred mainly to large entities, whereas nowadays around 80% of the agricultural production is produced by small units. Due to financial constraints, the research institutes stopped to elaborate coefficients or normative data after the political changes in the early 1990s. The going back to data from the past is irrelevant according the expert opinions as like mentioned, the structure of the agriculture changed completely. The State agencies of Agricultural Consulting (N.A.A.C.) and private ones (New Systems, National Agency of Agribusiness Consulting) confirmed the lack of requested data, and the fact that there is no centralized statistic evidence of them at the moment.

1. Only Figures for some activities (mainly plant production) for the year 1999 have been delivered to ASA in the frame of the previous ASM project. Though, the Romanian Counterparts re-confirm that these data were only preliminary and will have to be revised.

2. The Ministry of Agriculture, Food and Forests supplied data regarding chemical fertilizers with nitrogen, phosphorus and potassium, active substance, for 24 crops during 1995-2000.

3. The data availability will improve after estimations done by ASA that will be revised together with the Romanian experts.

4. Romania has expressed its intention to explore further data sources until autumn of this year and to possibly deliver more data by that time.

One source is existing which was first judged to be useful for, is a hand-book of the extension service, Agentia Nationala de Consultanta Agricola: "Production Technologies Substantiation, Production Costs and Approximate Prices Estimates for Field Crops, Volume Fodder Crops, Pastures, Fruit Trees and Vine in 2000", published in 1999 by the Institute of Agrarian Economics (I.A.E) with the support of the National Agency of Agricultural Consulting (N.A.A.C.). However according to the Romanian experts this work is in fact a catalogue of draft technologies leading to a definite productivity for the main vegetal produce, which can not be used for the purpose of this project, as they represent just the recommended inputs to apply and not the real amounts used.

A sub-project was defined in order to establish a data base on inputs per agricultural activity in Romania for the years 1995-2001. Nevertheless the Romanian Counterparts were not able to find appropriate sources yet. Now ASA will do estimations on the basis of the OPAL-linked ABTA approach. These estimations are send to Romania, to be discussed and revised during a second mission of an ASA-expert.

6.8.2 Detailed sources/methods used per input item

As there is no appropriate data sources available yet, no statement con be given concerning the single sources used per input item.

6.8.3 Problems and challenges

- The lack of appropriate sources, presented in detail at 6.8.1 has made the generation of activity specific input coefficients practically impossible for the agricultural and statistic research institutes. The sub-project so far only led to re-confirmation of this matter of fact.
- There are no statistic reports regarding the inputs per agricultural activity at private agricultural exploitations. The level of family farming accounts for over 80% of total and focuses on subsistence farming. There is also a total lack of book keeping as there is no legal duty for bookkeeping at farms in Romania.
- In general the co-operation between Institutions is very good. (There are regular meetings with MoA, and contact on specific questions with the Institute of National Statistics.) Nevertheless the intention is to keep closer contact with the latter.

6.8.4 Future plans for data generation

- Romania is still in the process of exploring possible data sources and will try to do an approximation on the bases of technological standards. This will be send to ASA asap. Together with the assessments of ASA-Institute the results of this approximation have to be discussed and adjusted with the Romanian experts. Moreover additional data are available for pesticides, potassium and other chemicals that have not been delivered yet and will be made available.
- Discussions with experts from the National Institute of Statistics revealed that the elements necessary for building the data base would be available only after the agricultural census, which is to begin this summer. The Romanian experts stated that they will cooperate with NSI such, that possibly cost questions (accounts), will be asked in the census.
- On the other hand, FADN has not been introduced yet in Romania. First tests in some provinces are planned for the year 2002, but representative results are not expected before 2004 or 2005. This means, FADN cannot be used as a source for the elaboration of input coefficients for the period required within this project, either.
- SGM exist, but they are not used for the project. The Romanian counterpart will figure out, if the present SGM could be used for the input data preparation in future

6.8.5 Country specific short-term recommendations

(1) Data should be gathered for 1999 and 2000, first; later data for other years should be collected, if possible at all.

(2) First of all it will be necessary during the coming weeks that the data estimated by ASA will be carefully assessed by experts, adjusted and revised, to have at least some data though not original ones available.

(3) It is essential to care for a very good cooperation between the institutions involved in order to ensure that a least none of the few sources possible are

missed. Moreover good relationships between the IAE, NSI, IAAC and the MoA will be crucial for creating future approaches.

(4) Further sources like SGM, economic report results or similar should be investigated in.

6.9 Slovakia

6.9.1 Current sources and methods

Most data in Slovakia are based on

1. farm survey with 110-120 enterprises
2. Institute's publication: Variable Costs of Agricultural Enterprises in the Slovakia
3. Normative data checked with FADN information and research results on variable costs.
4. Research results covering the variable costs of the Agricultural Economics Institute. They cover the year 1999 and 2000. (An update is expected every 3 to 5 years. Only information on fertilizer and subsidies will be probably updated annually).
5. Other research reports are used as well.

The central approach for generating the input coefficients on the basis of the sources mentioned is an integrated VUEPP-Databases for sector modeling: "Natural- und Value parameters of variable Costs". The method for sector modeling applied is the Agro-3 Model and its satellites, also used like in Czech Republic. The structure of this data basis takes into account both the national requirements and the structural requirements of AgrIS.

One advantage of this parameter basis is that for important cost indications there is also physical information given, e.g. for consumption of seeds and plants (bought from other agricultural holdings or produced and consumed on the same holding) fertilizer, some feeding stuffs, straw, young animals, energy and water.

Besides the average inputs per hectare or animal also variable costs are evaluated according to classes (5 in plant production, 3 in animal production) and regions.

Slovakia provided slightly different versions of input coefficients, derived from different data sources. The former sources used for modeling are normative data checked with FADN information and research results. The sources used for the newer version of data is in particular a farm survey as well as information gathered in the Statistical institute on variable costs. Since the cost structure for the year 2000 is in the disaggregated form (- close to the AgrIS structure), some of cost items in the previous years were derived through the 2000 structure. The change of sources lead to a provision of more realistic data than the previous version and is closer to the EAA.

From 2000 onwards for all kinds of costs there is a value oriented projection or prognosis.

6.9.2 Detailed sources/methods used per input item

Fertilizer

Data for fertilizer from the VUEPP data basis is like all other data compared with the VUEPP-internal System "Costs of the agricultural producers" and the FADN. In addition data for fertilizer and PSM is compared with the corresponding official statistics

Energy

The same proceeding like with fertilizers is also envisaged for the item energy

Variable Costs

It is doubtable if the efficiency and productivity indications for detailed cattle and pork production procedures lead to useful results

Intermediate Consumption

Currently this is figured out by the help of a specific survey done for AgrIS purposes. The former source therefore was FADN and the total Intermediate Consumption provided by the statistical office for bigger holdings. For the smaller holdings it is estimated with the help of FADN

6.9.3 Problems and challenges

- Data availability for the years 1996-1998 is limited, as the VUEPP integrated data basis is relatively new. The coefficients for this period were therefore calculated especially on the basis of survey data EAA and some expert knowledge.
- There are some difficulties with the required categories for animal production, which will however change in the coming future
- There is no data available about flowers and other animal products. Possibilities of an estimation by using indices for positions of the same aggregate are currently discussed. For industrial inputs data from the statistical office are necessary.

6.9.4 Future plans for data generation

Comprehensible data has been delivered for the period 1995-200. Slovakia will probably continue the elaboration of input data in the future years on the basis of the same approach as applied currently.

6.9.5 Country specific short-term recommendations

(1) The approach of an integrated data base with possibilities for diverse cross-checks of the input data generated seems to be very valuable. The Slovakia should be supported in maintaining and improving the data base.

(2) As the Slovakia and The Czech Republic actually apply the same model (Agro 3 and satellites) is important that both countries cooperate closely to profit from each other. Especially as Czech Republic is working on adjustments of the model at the moment, in order to make it more compliant to the AgrIS structure, Slovakia should be involved in this in order to benefit for its own integrated VUEPP data basis.

6.10 Slovenia

6.10.1 Current sources and methods

The main data sources used in Slovenia are the following:

1. Data from Agricultural Statistics and the EAA
2. Simulation Data
3. Research Results and expert estimations.

The models applied in Slovenia are hosted by the country's Research Institute of Agricultural Economics. As main methodological approach Slovenia applies the Activity Specific Simulation Model, ASSM, an agricultural sector models, which is based on the SPEL-Concept. The sector model is applied for policy analysis purposes and also activity specific input coefficients are calculated for that purpose. This is why a detailed data-basis with yield specific input-use coefficients is linked to that model. The coefficients are also used for providing data for AgrIS. The data on inputs present are based on long term surveys. On this basis and the use of Slovenian technological guide numbers inputs for important products are generated. The definition of the technological processes in a specific year is given by experts (Working periods, used technology etc.). After that Slovenia is also checking possible mistakes within the EAA if inconsistencies emerge.

For some activities (seeds, flowers, other plant production) were there is no ASSM-calculation expert estimates are done.

A detailed presentation about the structure of the model has been provided by the Slovenian Counterpart for the Riga Workshop within the previous ASM project. It can be found in CIRCA.

6.10.2 Detailed sources/methods used per input item

No information provided.

6.10.3 Problems and challenges

- There had been some problems initially with part of input costs not being part of EAA output (e.g. milk for feeding purposes, natural fertilizer). This problem is being solved by adjusting the structure of the input table according to the specific needs (adding additional rows and columns) and taking into account the Gross-Concept.
- There are some difficulties with a sensible differentiation of cows in age groups as the categories do not correspond to the Slovenian activities.
- Moreover it has to be kept in mind that Slovenia has comparatively high prices due to a high level of technology, in particular for plant protection

6.10.4 Future plans for data generation

- At the moment the ASSM model is fundamentally adjusted and revised. (Modification of the functions, modern software etc.) which probably will not be finished before November 2002. However this will not change the data generation in principle.

6.10.5 Country specific short-term recommendations

(1) Slovenia provided a set of high quality data for the whole time series and it should go on using all the different sources available as well as the ASSM-Model

(2) It is important to make adjustments to the EAA transparent thus possible mistakes in the EAA can still be discovered. This is why during the workshop in Prague it was decided that the countries provide both original and adjusted data, as well as the adjustment coefficients.

6.11 Macedonia

As a non-Phare CC, Macedonia provided information about the potential generation of the data on inputs.

The main data sources used in Macedonia could be the following:

(1) Data from Agricultural Statistics and the EAA

(2) Normative data

(3) Trade Statistics are used for comparison or if other data are missing

The following potential sources/methods per input item have been presented at the Bonn Workshop:

Seeds and planting stock

Quantities for enterprises: SSORM surveys

For individual farms: Estimation based on normative data for total seed for the main crops and estimation for purchased and self -produced seed used)

Prices purchased seed: purchase prices based on SSORM survey for enterprises used also as the data source for prices concerning individual agricultural production

Electricity, Lubricants

(Input items per activity are not available)

Quantities: SSORM surveys concerning the enterprises

For individual agricultural production: Estimation based on survey for agricultural equipment used in agricultural production and input ratio for used lubricants per number of average annual hours spent by each type of machines used.

Price: SSORM surveys

Fertilizers and Soil Improvers

(Input items per activity are not available)

Quantities: SSORM survey concerning the enterprises which provide only total figure by amount of pure substance in the used fertilizer, but not per activity.

For individual agricultural production: Estimation for total quantities based on survey concerning the enterprises and other surveys conducted in SSORM. (Special survey in the future is planned for improvement input data)

Prices: SSORM surveys

Plant protection products and pesticides

(Input items per activity are not available)

Quantities: SSORM survey concerning the enterprises which provide only total figure by kind of plant protection products and pesticides used .

For individual agricultural production: Estimation for total quantities based on survey concerning the enterprises and other surveys conducted in SSORM.

Prices: SSORM surveys

Animal feeding stuffs

Quantities for feeding stuffs purchased from outside the agricultural "industry":

SSORM survey concerning the enterprises

For individual agricultural production: Estimation based on SSORM surveys for the number of livestock; production statistics and trade statistics).

For feeding stuffs produced and consumed by the same holding :

SSORM survey concerning the data for enterprises;

For individual producers: estimations based on normative data and SSORM survey.

Prices: SSORM surveys for feeding stuffs purchased from outside the agricultural industry.

Problems: The biggest difficulty that would have to be solved is in general the availability of sources of information for being able to calculate input data ***per activity.***

Future Plans: Data for 1998 will be delivered latest by first week of September 2002 Standard gross margins are not calculated yet, but are planned for the future and could be taken into account as a future data source. Moreover new surveys will be designed for EAA and AgrIS needs, focusing also on inputs per activity.

6.12 Malta

As a non-Phare CC, Malta provided several information about the potential generation of the data on inputs.

The main data sources used in Macedonia could be the following:

1. Results of Farm Census '01
2. Animal and Crop Surveys
3. SGM data
4. Trade statistics

As regards the potential approach Malta will prepare the input data in line with OPAL

Problems: Difficulties could emerge currently in Malta with calculating data per activity but it has to be seen that SGM calculations carried out at the moment with the help of ASA, in order to solve this problem
Some items as e.g. all fodder is consumed is produced in Malta and there is no cereals except for the production of straw, this would have to be particularly considered when preparing the input coefficients

Future plans: Unfortunately the FADN planned for this year will be postponed. The census is currently going on; a rough estimation will be available next week and the actual data will be provided in the next months, maybe some time before the final report. Additional "AgrIS-questions" are already included in the Census (special cost sheets. Data were compared with data the statistical office had available).
Moreover some data can be delivered on the basis of SGM, that are currently prepared.

ANNEX

Inra-Coutprod-Model

FADN (Farm accountancy Data Network) provides information on the total charges paid on each farm according to the type of charge. The charges are not however matched with the various products. It is as though, for each farm, we had only the margins from a table giving the charges borne by each product. This information is inadequate either to tell us the production costs involved in producing a particular good or to identify the income generated by the production of a particular good.

COUTPROD is an econometric approach method of breaking down the charges by products. This approach presupposes two strong hypotheses:

- the amount of use made of each factor of production depends only on the product manufactured and not on the farm. All farms are therefore assumed to use the same production technique.
- the value of the input used is proportional to the value of the output.

The model's specification

The initial statistical unit is the farm. The output of the various goods is X_i *(i = 1, ..., n)* and C_j represents the total non-allocated costs of the factors of production (*j = 1, ..., m)*. Finally, C_{ij} is the production cost in factor *j* of the good *i*.

Assuming proportionality, the cost C_{ij} is a linear function $a_{ij} X_i$ of the output of good *j*. In all, the total cost observed is the sum of the costs relating to the various products. In practice, the model is only approximate. On every farm, the observed costs differ from the theoretical costs by a random factor u_j:

$$C_j = \sum_i a_{ij} X_i + u_j \qquad \text{where} \quad u_j \ \text{iid}$$

The factors *uj* are of zero expectation and independent from one farm to the next, which means that the consumption of input *j* by a given farm is not affected by another farm's consumption of the same input. There is therefore no constraint of supply. Moreover, the link between the residues for two different inputs on the same farm depends on the inputs and not on the farm. The phenomena of size and technology peculiar to each farm are therefore disregarded.

The non-labour income R_i derived from the production of the good *i* is the difference between the output X_i and the sum of the costs occasioned by that output. The model's estimate also assumes that this income (sum of outputs less sum of variable and fixed costs except labour) is a linear function $b_i X_i$ of output. In all, the income generated by all outputs is

$$R = \sum_{i=1}^{n} b_i X_i + v \qquad \text{where } v \text{ iid}$$

If the model is to retain its logical consistency, we have to introduce the constraint that the output of a good is the sum of the income and costs, i.e.:

$$\sum_j a_{ij} + b_i = 1 \quad \forall i$$

The estimation procedure

The model then becomes a simultaneous equations model with linear constraints on the coefficients. It is estimated as such, the constraints being integrated at the time of estimation, from the individual data. We made use of an 'SUR' (Seemingly Unrelated Regression) procedure to estimate the model.

The cost breakdown by imputation

COUTPROD procedure provides coefficients that allow an average costs and income structure to be calculated for the farms in the considered sample. However, using it presents problems for two reasons:

- equality between the sum of theoretical costs and the observed costs is not verified at individual level because of the presence of the residues u_j. The same situation arises with income. Statistical exploitation at a more detailed level is therefore impossible once some heterogeneity appears.
- the model is only approximate. In particular, the lack of a constant in the estimates means that, on average, there is nothing to ensure that the sums of the residues are equal to zero. Consequently, even on average, the sum of the theoretical costs for a factor *f* with the observed costs is not guaranteed. In other words, the model does not conserve the masses. This is particularly the case in the recent past.

For these two reasons, a further stage was introduced into the process, consisting of imputing costs per output at individual farm level using the model's results.

A fairly simple way of ensuring identity between the sum of the theoretical costs for a factor *j* and the observed costs, that is of reconstructing the masses, is to recover the residues *uj* and distribute them among the different products pro rata to the outputs. Such distribution pro rata to the outputs seems quite natural given the model's specification.

Breakdown of work by product

It is necessary to take account of family work in particular so as to avoid making false comparisons of net income not including family work as between countries or even between products. Because the proportions of paid employment and family work differ

according to the production structures, the analysis in fact had to be refined by distinguishing between the two types of work.

We have the valuation of paid work for every farm, but not that of family work. We begin by calculating the total number of family Annual Work Units (AWU). Then, in order to put a value on family work, we apply the average regional wage rate to the number of family AWU. This gives an overall valuation of family work for each farm.

In the model's present version, this breakdown is not made in the same way as for other charges, that is by regression from the work on outputs. That method has already been tried and has given unsatisfactory results. Family work is in fact a "fixed" factor and its level varies little with the size of the farm. The assumption of a proportional link between the levels of cost and output is not realistic for this charge. Another method was therefore used on the assumption that if the factors of production are "normally" remunerated, work forms the greater part of the value added. We therefore chose to break down family work and paid work for each farm in proportion to the margins on each product.

Possible Coutprod's Model Improvements

One important point to underline is that the model was built on the structure of the 1985's Farm Return of RICA. This Farm Return was changed several times to introduce new variables and improve the quality of data. For instance more variables are now collected on direct payments (table J) where as subsidies by output are generated in the current model by considering it as negative cost. So it's possible to introduce new information but it's necessary to modify the structure of the files.

- COUTPROD model was used is in several studies to analyse costs of production in EU Member States and some Candidate Countries. Results was discussed with experts in these countries that enabled improvements to be made to the model. Some other possible improvements was discussed in this current study.

On farm use productions could be included in the model

- Products and charges are estimated without on farm use production (seed and feedstuffs). The costs relating to crops consumed on the farm as animal feed do not therefore appear as such, but indirectly in animal production costs. The reason of this option is the lack of valuation of fodder in RICA.

In the current model, ,one can expect that results could be upset for some plant products, such as barley, a lot of which is consumed within the unit as well as being sold. In fact,

when intra-unit consumption is important we rather report a bias on coefficients crops (inta-unit consumed) than on animal production.

- The proposed improvement is to induce the on farm use production in the model. It's then necessary to estimate fodder value. Tests could be done for countries where this valuation exists. When it's not the case (most countries), we can introduce a fixed valuation on fodder areas. The change in the econometric model is quite simple: we restrict to zero the coefficients of animal productions in crop cost equations and introduce on farm use fodder as feed cost to be distributed among animal productions.

Non-agricultural activities

In the current version of the model the production of non-agricultural activities (other receipts, forestry) is not included but some cost that can not be separated from other costs, are included. The problem was not so important when the model was built in 1985, but now the part of these activities is quite high in some Member States. The following table gives percentages of 'other receipts' and 'forestry product' in total production in 1997 RICA database:

It might be possible that results would be improved by adding an output categories of non-agricultural activities. Coefficients of these categories have to be put to zero for crops and animal proportional costs.

Introduction of expert knowledge or exogenous coefficients

- In the application of COUTPROD model some results could be very weak and in few cases coefficients of production could be negative. This problem may occur for different reasons:

- -One activity is not representative in the sample. For instance, eggs and pigs are often produced in specialised farms. These farms produce also a small amount of cereals.

- -Multicollinearity of regressors. For instance beef and milk.

- -specification problems.

- One proposed solution consists to introduce exogenous coefficients in the model when estimated costs are non reliable. These coefficients could be given by experts or estimated by other methods (for instance by applying COUTPROD to a reduced field of the sample). A study of the coherence of this solution has to be made.

Scale effects

Currently the model assumes the absence of economies of scale and economies of dimension, the output coefficients being the same for all farms regardless of their size. Such an assumption seems far from unrealistic for intermediate consumption and for capital, but it does pose the problem of such more or less fixed factors as land and family work. In the case of land, some extensification of production is observed as the area increases. Given its virtual fixity, however, family work is not at its long-term optimum level for many farms. The lack of a real link between family work and the physical size of farms is reflected in economies of dimension.

The easier way to take account of economies of scale is to estimate costs for different class size of farms and recalculate average costs.

Physical based allocation of inputs

In the current model, inputs are allocated based on the value of the output. We can assume that the difference in the prices of outputs explains the difference in product quality. One proposition of improvement consists of an allocation of inputs based on physical output (ha, number of kg produced, animals). This could lead to better results, but we have to apply the model to small homogeneous areas such as regions. The different units of production will also complicate the structure of the model.

Subsidies affectation

Subsidies by product are generated in the current model. Subsidies are treated as negative costs and the coefficients permit to affect total subsidy among outputs. According to the impovements in collecting direct payments in RICA (table J), it will be possible to introduce exact direct payments by product.