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Workshop "Agricultural Sector Modelling for Candidate Countries"

to be held in Riga, Latvia at the

Latvian State Institute for Agricultural Economics (LVIAE)

19th and 20th April 2001

Report on the Status of Agricultural Sector Modelling within the Candidate Countries

Contents:

Note: This report has been drafted by Dr. Steffen Noleppa on the basis of the ASM questionnaire produced by ASA-Institute in July 2000

1. Introduction

The Agricultural Sector Modelling (ASM) pilot project within the overall project is concerned with the provision of data from Candidate Countries (CCs) to be stored in a data base established for the purpose of the Agricultural Information System (AgrIS). Such a consistent, comprehensive, and integrated agricultural reference data base system is currently under construction at Eurostat in Luxembourg. As a first step towards this ambiguous objective an inventory of the major agricultural sector models which are used in the CCs and the data input and output of these models has been organised. The main target behind this activity was to identify agricultural sector models which may serve as a source of already available data to be entered into the integrated data base system.

In particular, a questionnaire was developed by ASA Institut für Sektoranalyse und Politikberatung (ASA), Bonn. After approval by the project management, the questionnaire was send to thirteen CCs[1]. The questionnaire has been answered by all of them. Backstopping was provided by ASA.

The questionnaire did not always contain all information as it was expected. But based on the questionnaire it was possible to assess the general status quo in each CC (activity ASM 1 of the project) and to get some initial results on available data and model sources on agriculture to be integrated into AgrIS.

This paper summarises the main findings from the CC's responses. It is structured in the same way the questionnaire was constructed. Within Part A of the questionnaire, questions concerning general information on the use of agricultural sector models have been asked, first. Part B, then, was developed to get more detailed information with respect to agricultural sector models based on the so called Activity Based Table of Accounts (ABTA) approach; Part C was created, third, to ask similar questions as in Part B, this time for agricultural sector models based on others than the ABTA approach. This differentiation was made to cover the whole variety of models used for picturing reality of the agricultural sector.·With Part D of the questionnaire, suggestions and

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[1] In alphabetic order the following CCs have been asked: Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Malta, Poland, Slovakia, and Slovenia.

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comments on ASM in general have been requested from the CCs. And finally, Part E was constructed to get insights into data sources for ASM based on the ABTA approach.

The results of the questionnaire will be described cross country, here. In the reminder of the project, details will be explained for each country. Results are presented as indicated by the particular CC.

2. Results of the Questionnaire

2.1 General Information

With Part A of the questionnaire, the CCs provided a rough overview on the modelling efforts already carried out in each particular country. Four questions have been asked. The first question *"Does your country apply any kind of agricultural sector model?"* aimed at identifying CCs with some use of sophisticated modelling techniques. The results are shown in table 1.

Table 1: "Does your country apply any kind of agricultural sector model?" – Results [a]

Candidate Country	YES	NO
Bulgaria		X
Croatia		X
Cyprus		X
Czech Republic	X	
Estonia	X	
Hungary	X	
Latvia	X	
Lithuania	X	
Macedonia		X
Malta		X
Poland	X	
Slovakia	X	
Slovenia	X	

[a] In case nothing has been indicated by a particular CC, "NO" was chosen as the answer.

Only eight of the 13 countries have clearly indicated: *YES*, we are applying some kind of agricultural sector models! In fact, it is known that further models are applied for some of the countries concerned. These models are sometimes established within bi- and multi-lateral

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research projects but unfortunately not on a regular basis for issues outside the respective projects.

Looking at the above an initial and rough conclusion could be that CCs which are targeting to join the EU within the coming three to four years are more active in regard to agricultural sector modelling.

The second question *"What is (are) the types(s) of the model(s)?"* referred to the technical type and the approach used in only those CCs which apply agricultural sector models. Table 2 presents an overview of the results.

In terms of the technical type, six of the eight countries are using an econometric model. Since econometric models usually depend on a tremendous amount of data, this can be considered as a pro towards data availability. Rather seldom is linear programming (LP). LP models on the other side are used quite often in EU member states for various sector analysis, especially but not exclusive on the farm level. Here, unfortunately a bottleneck has to be envisaged for the CCs against the specific project background since LP models – due to its structure and context – may provide numerous production and input data.

When it comes to the approach used, the majority of the eight CCs is in favour of partial equilibrium models within a static environment. Partial equilibrium models are relatively easy to use since only limited data is necessary to built and run the model: supply, demand and trade quantities, prices and so called price elasticities[2]. Therefore, it should not be expected that to many data to be used in AgrIS can be obtained from such models.

Summarising the model types and approaches used under "others", it is interesting to note that the majority of indications point at EAA, OPAL, PIT, SPEL or other accounting-type models. The application of such standardised approaches should help to set up a valuable data source for AgrIS.

Table 2: "What is (are) the types(s) of the model(s)?" – Results

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[2] With respect to elasticity values, partial equilibrium models may have an econometric component as well. And indeed, if the results in table 2 are compared with respect to the technical type and the approach used, the dominance of both is apparently.

Candidate Country	Technical type		
	Econometric	Linear Programming	Others
Czech Republic			X
Estonia			X
Hungary	X		
Latvia	X		X
Lithuania	X	X	
Poland	X		X
Slovakia	X		X
Slovenia	X		
	Approach [a]			
	Partial Equilibrium	Static	Dynamic	Others
Czech Republic	X			
Estonia				X
Hungary	X	X		X
Latvia	X	X	X	
Lithuania	X	X		
Poland	X	X	X	
Slovakia		X	X	
Slovenia	X	X		

[a] Two additional approaches have been given for selection with the questionnaire: "general equilibrium model" as well as "comparative static". However, both have not been indicated by the CCs.

However, having reflected the results shown in table 2 and the answers given with respect to two additional questions *"What is (are) the name(s) of the model(s)?"* and *"Add additional characteristics of your model(s), if possible!"*, one has to have the following points in mind:

1. Some terms used in the questionnaire may not have been sufficiently clear to the respondents (for example the distinction between a general equilibrium and a partial equilibrium type model or the difference between static, comparative static and dynamic). In fact that should not harm this general assessment to much.

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2. Counterparts several times did not indicate the availability of models, even when such models are well described in literature and documentation has been published. Why is the knowledge on modelling efforts in a country not widespread?

Additional information to the named models for selected CCs will be given in the country specific description during the reminder of the project.

2.2 Agricultural Sector Models Based on the ABTA Approach

The first question within <u>Part B</u> of the questionnaire was *"Does your country apply any kind of agricultural sector models based on the ABTA approach?"*. Five CCs answered with *YES*: the Czech Republic, Hungary, Latvia, Lithuania, and Slovenia. In addition to Bulgaria, Croatia, Cyprus, Macedonia, and Malta – five countries which do not apply any agricultural sector model at all – Estonia, Poland, and Slovakia do not make use of the ABTA approach for modelling, yet.

Having asked *"Who is running the model?"*, secondly, it was found out that with the exception of Slovenia, modelling is most of all based within research institutions – in all cases it is the country's Research Institute of Agricultural Economics. –. In the Czech Republic and Hungary statistical institutions are involved as well. This is similar to many EU member states where ABTA based modelling efforts are carried out by research teams and quite often in close co-operation with the official statistics of the member state. Slovenia closely, however, co-operates with the Department of Economics, Politics and Law at Universität für Bodenkultur in Vienna, Austria.

An international co-operation has to be considered as not unusual in terms of modelling in general since the formulation, testing and running of sophisticated models like agricultural sector models and the complementary use of data for modelling is "path dependent". Experience shows that in many cases approaches already established successfully elsewhere are taken over. In order to assess this dependency, the following question was raised, third: *"Who supported the development of the model?"*. It was expected to get more information about the (foreign) institutions which provided the relevant background for starting modelling in the particular CC. And indeed, support from abroad, especially from Phare projects is mentioned several times.

The close co-operation with the official statistics when applying the ABTA approach not only in EU member states but in the CCs as well (which became apparent with question two of Part B of

the questionnaire) becomes even more clear when reflecting the answers given for the fourth question of Part B: *"Are the data sources mainly …?"*. Table 3 provides the results.

Table 3: "Are the data sources mainly …?" – Results

Candidate Country	Official Statistics	Scientific data	Expert Information	Others
Czech Republic	X			X
Hungary	X			
Latvia	X	X	X	X
Lithuania	X	X	X	X
Slovenia	X	X	X	X

All of the five CCs already applying the ABTA approach make use of data from official statistics. Four CCs make use of additional data as well. Scientific data and expert information are used in three of the five CCs: Latvia, Lithuania and Slovenia. Moreover, "other" sources are in use in these three countries as well as in the Czech Republic: in the case of the Czech Republic the additional source is the Farm Accounting Data Network (FADN) already established; for Latvia (survey), Lithuania (normative figures), and Slovenia (calculations) the data source, however, is not very well described, thus giving no room for a more targeted description of the data source, yet.

In order to identify what is behind the data sources, the next request was formulated: *"Please, describe the main data base for the model in general!"*. Unfortunately, all CCs gave only rather brief descriptions which cannot be analysed here profoundly. Only the Czech Republic, Hungary and Latvia made some efforts to draw a clear picture. The limited knowledge gained from the answers will be described later within the project by focusing on single countries.

Then, it was asked *"What kind of results have been derived from the model so far"* and *"Who is using the results of the model?"*. Table 4 gives the answers for the last mentioned question.

Table 4: "Who is using the results of the model?" – Results

Candidate Country	Ministry of Agriculture	Others

Czech Republic	X	X
Hungary	X	
Latvia	X	X
Lithuania		X
Slovenia		X

In three cases the model results are used by the Ministry of Agriculture of the respective country. This has to be considered as one important step towards analysing the agricultural sector for a more targeted decision making by state authorities. Especially in the Czech Republic the use of ABTA based models is focussing on policy issues: The so-called Green Report of the country is based on EAA tables derived from the modelling as well as the calculation of GDP figures for agriculture. In case of Hungary and Latvia, similar results are derived so far: agricultural output and agricultural income are target indicators for conducting meaningful analyses. In addition, these two countries name the simulation and forecasting of prices and price indices respectively. To complete the picture drawn from the questionnaire: Lithuania uses model results for the calculation of income and profits in the agricultural sector, and Slovenia is doing some impact analysis concerning EU accession.

The results derived reflect that the use of agricultural sector models for different policy and other purposes stands right at the beginning in the CCs but puts into the "right" direction. Probably the formulation of a model is developed quite far in some countries, what is missing, however, is a clear understanding of what the models can do and what not! For instance, ABTA based models may have some "valves" to provide price data, but other models are much more suitable for this kind of results! In general, prices in ABTA based models should be an input not an output! Against this background, no wonder, the range of already available results is rather limited, the full advantage has by far not been taken yet!

Some countries do see this bottleneck. It becomes obvious when reflecting the results of the last two questions asked in Part B of the questionnaire: *"How would you evaluate the model's capabilities?"* and *"Which suggestions to you have for the further development of the model?"*. The capability of the currently available models in the five CCs are evaluated most of all with "Satisfactory". Only the Czech Republic indicated a "Good", but sees quality problems with the

data sources. What are the obstacles, the suggestions for further improvements? Here is a selection of some detailed answers:

- The Czech Republic: better use of model results, introduction of logical tests, higher automatisation;

- Hungary: improving compatibility between the model data and data bases available (national statistics, FADN);

- Latvia: obtaining of correct input data, development of algorithms for applying scenario techniques;

- Lithuania: better co-operation with the Czech modellers[3];

- Slovenia: better compatibility;

Summarising the main findings is easy, therefore. The ABTA approach is under development in at least few of the CCs. Manifold activities are still necessary to be carried out before the approach may be used for a real and targeted policy analysis exercise in the CCs. The main bottlenecks, today, are the quality of the input data and the reliability of the outputs. Against this background, it can not be expected that these models will provide the full set of data as required by AgrIS in the very near future.

2.3   Agricultural Sector Models Based on Other Approaches

Same questions as in Part B have been asked in Part C of the questionnaire. The question *"Does your country apply any kind of agricultural sector models based on other approaches than the ABTA approach?"* was answered with *YES* by six CCs: the Czech Republic, Hungary, Latvia, Poland, Slovakia and Slovenia. Hence, four countries are using the ABTA as well as other approaches for modelling the agricultural sector. The author appreciates this mixture: no model has all advantages or excludes all disadvantages; the use of different models for analysing the complex reality of agriculture is a clear must for a targeted policy advice.

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[3] The Lithuanian model is formulated from the original model applied in the Czech Republic.

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Having asked *"Who is running the model?"*, secondly, the first impression from the answers given is that – as in case of the ABTA based models – research institutions are dominant in running a particular model. Against this background it is not necessary to repeat here what has been said above already. With the exception of Poland the models are hosted by the country's Research Institute of Agricultural Economics, again. In Poland, however, the situation is different: in this CC the Agricultural Policy Analysis Unit is running the model and a scientific institution seems not to be involved.

Then, "*Who supported the development of the model?"* was asked in order to get an impression of the knowledge transfer from abroad into the CCs. Three countries (Latvia, Poland, and Slovakia) named well-known institutions with respect to successful modelling applications: the Institut für Agraentwicklung in Mittel- und Osteuropa, Germany (Latvia), the Economic Research Department of the United States Department of Agriculture, USA (Poland), and the Food and Agricultural Policy Research Institute, USA (Slovakia). And indeed, the application of sophisticated models needs a tremendous knowledge transfer. Of course, a partial equilibrium model, for instance, may be constructed very simple, but if the model should be useful for policy making – as indicated by the countries as well –, the nature of the model has to be rather complex from a scientific point of view.

The results for the next question of Part C *"Are the data sources mainly …?"* are summarised in table 5.

Table 5: "Are the data sources mainly …?" – Results

Candidate Country	Official Statistics	Scientific data	Expert Information	Others
Czech Republic	X	X	X	X
Hungary	X			
Latvia	X	X	X	X
Poland	X	X	X	
Slovakia	X	X	X	
Slovenia	X	X		X

In all of the six CCs the main data source used is the official statistics. Five countries are using scientific data as well. In addition expert information and other sources are used in four respectively three CCs[4]. In total, the results are similar to those for the same question in part B of the questionnaire.

Additional information concerning the data sources could be obtained from the following request: *"Please, describe your main data base for the model in more general!"*. The answers given are more detailed as in Part B. Depending on the particular model used, numerous data and information are collected and made available for modelling. In all of the six CCs, production, trade and consumption figures (quantities, land use, animal heads, etc.) for commodities / markets modelled are on top. In addition, price data (national as well as international reference prices for various market levels) with respect to the commodity / market under investigation are in use for modelling. Balance sheet figures and simulation data are used quite often as well. In total, the data described here by the CCs can be considered as a valuable source for AgrIS and may add considerable value to the data base after having integrated, already, data from ABTA based models.

"What kind of results have been derived so far?", this was the next question asked. The main result is a remarkable one: All six CCs use non-ABTA based models for impact analysis with a strong agricultural policy emphasis! Medium- to long-term projections and simulations are the main targets for applying the particular model in a specific country. This fact offers a lot of opportunities especially for the agricultural policy-making process. It is interestingly to note, furthermore, that simulations of EU accession impacts are a rather common aspect for model application. Besides this particular focus, selected other objectives are behind modelling, for instance competitiveness analysis, policy interpretations.

The fact that models are applied to conduct policy related analysis has to be considered as very targeted. The policy purpose behind modelling becomes even more clear when asking *"Who is using the results of the model?"*. Table 6 gives the answers for this question.

Table 6: "Who is using the results of the model?" – Results

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[4] Other data sources are; FADN for the Czech Republic, EAA for Latvia, and "calculations" for Slovenia.

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Candidate Country	Ministry of Agriculture	Others
Czech Republic	X	X
Hungary	X	X
Latvia	X	X
Poland	X	X
Slovakia	X	
Slovenia	X	X

All of the six countries are using the model results directly for the decision making process in the country's MoA. A close co-operation with research teams and other model users is apparently, moreover, when reflecting the remarks on "Others" provided by the counterparts. This has to be considered as an important step towards a well organised and targeted model use in the CCs and may have a positive influence on establishing a comprehensive AgrIS data base as well.

With part C of the questionnaire, again, answers have been requested for the following: *"How would you evaluate the model's capabilities?"* and *"Which suggestions do you have for the further development of the model?"*. The evaluation of the capabilities is different cross country! Whereas Latvia assesses the progress achieved in modelling so far as "Very good", Slovakia points at disadvantages of the models used first of all and considers its capabilities as "Not sufficient". Others are between, Poland did not evaluate the model but gave suggestions for further developments as the other five countries did. What are the three main recommendations given[5]?

- An improved formulation of policy and other (investment, etc.) measures and endogenous variables in the models (Latvia, Hungary, Poland, Slovakia);

- The integration of additional commodities into the models (Latvia, Poland);

- A better linking of different modelling approaches, including the transfer of data from and into various models (Czech Republic, Slovakia);

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[5] Only those recommendations are listed which are given at least twice!

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The above analysis shows, that different types of models are applied for a range of different purposes. This in fact is also the case within the EU member states. There exists no "master-model" which can be applied for all different aspects.

2.4   Suggestions / Comments on ASM in general

The ASM component of the overall project deals with the development of an integrated agricultural data base (AgrIS) for CC's. Moreover a further objective of the ASM part is formulated as follows: *The AgrIS data base for the Candidate Countries will build the basis for conducting further sector modelling exercises in the future.* In order to assess the sensitivity of this issue in the CCs, at least partially, it was asked with Part D of the questionnaire to make comments and suggestions in general on ASM. In particular the following request was formulated: *"Please let us know your opinion on model related issues. Do you have any further ideas / recommendations / suggestions / requests on model related issues?"*. The rather broad formulation aimed at giving enough space for the counterparts to express their views on modelling agricultural sector regardless the specific project. Anyhow, only limited use of this opportunity was made by the CC experts.

In total, eight of the thirteen CCs gave no or only limited answers, comments etc.! Three alternative reasons might be behind this: (1) the particular request was not or bad understood, (2) the counterparts responsible for filling out the questionnaire had only limited or no background information on model related issues, or (3) the partner institutions did not yet think about their objectives in modelling in detail.

Interestingly, three CCs which do not indicate the use of a model at all, made at least some valuable remarks: Bulgaria, Croatia, Estonia. They mentioned three aspects, worth to be considered as the very essentials of successful modelling. The first one points at the generation of a high-value data base, which is the particular objective of this project as well. The second aims at conducting valuable analysis concerning the state of the art of the agricultural sector, and the third one refers to ex ante analyses (simulations and forecasting).

2.5   Data Sources for ASM based on the ABTA Approach

By nature, the AgrIS data base is closely linked to the ABTA approach. Hence, it was necessary to evaluate the information available from ABTA based models in more detail. This has been done with Part E of the questionnaire. Two questions have been asked.

The first request is the following: *"Please specify which components of the data for ABTA are available in your country and which is the data source for the respective item!"*. A table indicating nine different data groups was provided for filling out: output generation, output use, production input, factor input, input use, area and livestock quantities, product prices, input prices, and labour input. Main results shall be presented here cross country in order to get an impression of what is available all over the CCs. Table 7 shows the major data source in the thirteen CCs for "output generation" and "output use", first.

Table 7: Data availability – Results for output generation and output use [a]

Candidate Country	EAA data		Other statistics		Model calculation		Expert estimation		FADN data		Book-keeping	
Bulgaria	+++	+++	+	+							+	
Croatia			+++					+				
Cyprus	+++	+++					+	+				
Czech Republic		+++	+++		+	+	+	+				
Estonia	+++	+++	+	+			+	+	+	+		
Hungary	+++	+++										
Latria	+++	+++	+	+				+				
Lithuania	+	+	+	+				+				
Macedonia	+		+++	+			+				+	
Malta	+	+	+++	+++								
Poland	+++	+++	+++	+++		+++	+	+			+	+
Slovakia	+++			+				+	+			+
Slovenia		+		+								

[a] The first (white coloured) column for each data source relates to output generation, the second (light grey coloured) column to output use. The sign "+++" marks a major data source, "+" a minor one!

Apparently, most of the CCs have output-related data available based on national and sector statistics (EAA data, other statistics). Expert estimations are another commonly used source of adequate data. The other sources have only a minor or no importance for generating output related ABTA data[6]!

When it comes to assess the data availability for input data, the picture is less clear, as indicated in table 8 showing the results for "factor input" and "labour input".

<u>Table 8:</u> Data availability – Results for factor input and labour input [a]

Candidate Country	EAA data		Other statistics		Model calculation		Expert estimation		FADN data		Book-keeping	
Bulgaria	+++			+++							+	
Croatia							+	+				
Cyprus	+++	+++					+	+				
Czech Republic	+++			+++	+		+	+		+		
Estonia				+++			+++	+	+	+		
Hungary							+++	+	+	+++		
Latria	+++		+	+			+		+			
Lithuania	+	+			+							
Macedonia				+++								
Malta	+++	+	+		+++							
Poland											+	
Slovakia				+	+				+	+		
Slovenia	+			+	+++	+						

[a] The first (while coloured) column for each data source relates to factor input, the second (light grey coloured) column to labour input. The sign "+++" marks a major data source, "+" a minor one!

Although EAA and other statistics are the major data sources with respect to the selected two input data groups, their dominance is not as obvious as for output data. Indeed, expert estimations are used as an important source as well, especially in countries which are named on

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6   One exception shall be mentioned, here: Slovenia made no marks for output generation, on the other side the country names an "other" source as the major data source for output use not indicated in the table above: balance sheets (which actually has to be considered as a typical statistical measure).

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top of table 8. And a second result is slightly different as compared to the results shown in table 7: Whereas for output related data quite often (in 21 cases) same marks have been used for a particular data source for both data groups, output generation and output use, different marks have been used quite often with respect to factor input and labour input. Only in nine cases same importance (major, minor) was indicated. This points at further consolidation needs with respect to input data in the CCs.

A third important data group besides input and output information are prices. Therefore, the results on price related data groups (output prices; input prices) are presented within table 9 of the paper.

<u>Table 9:</u> Data availability – Results for output prices and input prices [a]

Candidate Country	EAA data		Other statistics		Model calculation		Expert estimation		FADN data		Book-keeping	
Bulgaria			+++									
Croatia			+++			+++						
Cyprus	+++	+++					+	+				
Czech Republic			+++		+		+	+		+++		
Estonia	+++		+	+++			+	+	+	+		
Hungary	+		+++	+++								
Latria	+++	+++	+	+								
Lithuania	+	+	+++	+++								
Macedonia			+++	+++								
Malta	+	+	+++	+++								
Poland		+++	+++		+++		+					
Slovakia			+++	+				+				
Slovenia	+	+	+++	+								

[a] The first (white coloured) column for each data source relates to output prices, the second (light grey coloured) column to input prices. The sign "+++" marks a major data source, "+" a minor one!

The main data source with respect to output prices is "Other statistics". It is not always clear what has been summarised under this header by the a particular CC, but probably in most cases the country's agricultural Market Information System (MIS) is considered. Indeed, a well operating

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MIS should be able to provide prices for almost every agricultural and horticultural products. Few countries use EAA data as well. Other data sources are less important for generating output prices.

Similarities are obvious for input prices. However, here the data generation is facing more difficulties. Only five countries (instead of ten countries as with output prices) are able to use "Other statistics" as a major data source. This means, probably, that the countries' MIS's are much more related to prices for agricultural products and food than to factors of agricultural and horticultural production[7]. Model calculations, expert estimations and FADN data are made available only few times, bookkeeping data is not used at all, again.

The picture drawn here will not change when describing the results for the other three data groups covered with the questionnaire (area and livestock quantities, intermediate consumption, input use). Only slight modifications are apparent, which will be discussed country by country in the reminder of the project.

Finally, the following request was made with the questionnaire: *"Please specify which data groups of the data components for ABTA do not fit into the general characterisation and indicate whether the item is available and how the item is obtained!"*.

Unfortunately, only four of the thirteen CCs have added a reply to the request while filling out the questionnaire: Croatia, Hungary, Lithuania, and Malta. The question is, if the other nine countries face no problems with respect to the raised question or if the counterparts have no respective information. Therefore, it is difficult to assess the results of the last request of the questionnaire in more detail. Despite this, one aspect shall be highlighted here and finally: factor input data are crucial to obtain, at least in the CCs which gave an targeted answers.

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[7] Due to his involvement in several MIS related Phare and Twinning projects the author may confirm this aspect at least for Estonia, Hungary, Lithuania, and Slovakia.

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3. Next steps and conclusions

Having assessed the initial results from the questionnaire it is important to draw conclusions for the further development of AgrIS and the efficient use of agricultural sector models in the CCs. The following ten aspects may serve as a guideline for further discussions during the workshop in Riga as well as in the CCs in the aftermath of the workshop. They are formulated having in mind the key findings mentioned above.

1. The responses on the questionnaire did not always contain as much and as detailed information as it was expected. Moreover, the questionnaire was developed and answered in the year 2000, hence giving time for additional efforts towards ASM in the CCs. Therefore, the workshop participants should discuss possible additions to and modifications of the original information provided by the CCs if necessary. This will surely add value to the information summarised in this background paper.

2. This paper describes the results of the questionnaire cross country. However, in the reminder of the project, the results have to be summarised country by country as well. The participants should agree upon a common structure and the contents of small country specific reports in order to make the description comparable and, hence, meaningful against the greater project background.

3. Probably more agricultural sector models are applied in the CCs than described here. The question arises, if and how information on these "additional" models can be obtained in order to use the already existing and probably comprehensive knowledge in a particular country for the purpose of the project even better.

4. It seems to be obvious that CCs which are targeting to join the EU within the near future (3-5 years) are more active with regard to ASM than others. It should be discussed, if the existing gap between countries can be closed or, at least decreased, and how this can be done practically in future.

5. Only five CCs make use of ABTA based models which have a particular importance for developing AgrIS. The question arises, how the ABTA approach can be widespread throughout all CCs most efficiently and in a timely as well as suitable way.

6. The formulation of a particular agricultural sector model is developed quite far in some CCs. What is missing, is a clear understanding of what models really can do and what not. It should be discussed, how the full advantages of the models can be taken not only for AgrIS but for a targeted policy advice as well. Such a discussion has to be considered as very helpful and targeted for achieving the overall project objective: *The AgrIS data base for the Candidate Countries will build the basis for conducting further sector modelling exercises in the future*.

7. ABTA and non-ABTA based models show similarities as well as differences in terms of exogenous variables, algorithms and calculation procedures, and endogenous variables as well. Against this background it is important to consider a better linking of the different modelling approaches in order to use the full variety of modelling for own purposes and to compensate for a non-existing "master model".

8. In few CCs, the situation in terms of data availability is rather weak, at least from the modelling point of view. It should be discuss, how these countries may benefit in this respect from the experiences not only in the EU but in other CCs as well.

9. Probably, the availability of output data for AgrIS in some CCs is better than for input data. This bottleneck must be widen by consolidating data gathering especially for missing data. It should be discussed how to obtain additional input data, in particular. An investigation into apparently existing LP models may help to speed up the process of collecting specific input data and information.

10. The questionnaire provided first insights into the issue of ASM and the availability of data from various models for the purpose of this project. However, very detailed insights have not be gained due to missing information. Achieving the project objectives needs more detailed indications of available and non-available data. Therefore, the approach of addressing the data needs of AgrIS in a detailed manner, as it is done within the current workshop, seems to be the right approach.