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Institut für Agrarentwicklung in Mittel- und Osteuropa (IAMO)

Theodor-Lieser-Straße 2

06120 Halle (Saale)

Tel.: 49 (345) 29 28 0

Fax: 49 (345) 29 28 199

Email: iamo@iamo.de

Web site

<http://www.iamo.de>

Editors

Michael Kopsidis, Jörg Wunderlich

Production

Michael Kopsidis

Typesetting/layout

Margot Heimlich

Translation

Jamie Bulloch, London

Reproduction/Lithography/ Printing

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Introduction

Since its foundation in 1994, IAMO, with its numerous research projects, workshops and publications, has provided an important stimulus for the development of the agricultural and food economy in the countries of Central and Eastern Europe. The entry date for the ten EU accession countries in the first round has finally been established: 1 May 2004. These countries are now going to have to secure and improve their own market position in the face of increasing competition.

It is appropriate that this IAMO 2003 report should focus on the subject of food quality. To win acceptance among uncertain consumers and food retailers, it is absolutely essential to have transparent methods of safeguarding quality. Quality management has taken the place of quality control of the end product, where foodstuffs are divided between those of good and inferior quality. In a production chain that the consumer can understand as well, agreed quality standards are established and met in advance.

Fixed standards, reliable documentation and inspection of internal controls by neutral institutions uphold the quality safety systems that have become established on a broad basis in many EU countries. This gives the accession countries the opportunity to make use of the know-how and experiences that have been gathered so far. They still have to create the necessary supervisory authorities, however, compatible with the EU institutions that have been set up.

Besides the safeguarding of quality, the purchasing of regional produce is becoming increasingly significant in the larger, and thus ever more anonymous EU. Uncertain about food quality, and geographically removed from the place of production, the consumer places particular trust in food products from their region.

In times of increasing uncertainty, branding is also becoming more and more important. The CEE accession countries will not find it easy to establish real brands, as they might not be able to meet the high costs of advertising and sales promotion. In many instances the preferable way forward will be co-operation with a Western European partner. By choosing this path, the beer companies of Eastern Germany, for example, were even able to outstrip sales of Western German brands.

The competitiveness of the new EU partners in the domestic and export markets will, in future, depend to a large extent on whether they succeed in using EU adaptation aid intelligently to concentrate fragmented supply, establish effective systems of quality assurance, and create a modern system of agricultural marketing.



*Prof. Dr Antonius Nienhaus,
former director of the CMA in
Bonn*

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Foreword

In Copenhagen on 13 December, the European Council and the governments of Estonia, Latvia, Lithuania, Poland, Czech Republic, Slovakia, Hungary, Slovenia, Cyprus and Malta successfully concluded the negotiations for the entry of these states into the EU. Following the impending ratification of the accession treaties by the responsible organs in the future and current member states, the eight Central and Eastern European countries named above will join the European Union on 1 May 2004. This will provide these countries with a very visible acknowledgement of their transition to democratic and free-market social and economic systems. Even if the necessary restructuring processes are not quite complete – this is particularly true of the agricultural and food economy – we can assume that these countries are on the way to being able to withstand the pressure of competition within the EU. The negotiations over expansion have shown the high value that the EU places on the maintenance of production and product standards. This fifth edition of IAMO's annual publication concentrates, therefore, on the implementation and enforcement of quality standards in the accession countries. It is noticeable that in recent years clear progress has been made, although big differences exist between some of the countries in this respect.

The first article, *The long road from the adoption of EU standards to their enforcement in the food industry of the CEEC*, provides a general overview of the topic. Taking as a starting point the EU requirement that, in an expanded Union, EU food standards are binding for all members, Kristina Glitsch examines how this area has been dealt with in the accession negotiations, as well as the effects it has had on the food industry in the CEEC. The negotiations have shown how difficult this matter is. What makes it more complicated is that Community law with regard to food safety is currently undergoing fundamental changes. The European Commission is not only looking at how domestic legislation in individual countries is progressing, but also monitoring the implementation of effective food control systems. Most CEEC show shortfalls in this area, which will have to be made up by the entry date. For the food industry, considerable problems are caused by the high levels of investment needed to satisfy the EU processing and product standards. Other difficulties are caused by low capacity, problems with liquidity and, in many sectors, by a pronounced fragmentation, threatening the existence of a good number of businesses. Without direct foreign investment, therefore, it will often be almost impossible to modernise businesses under threat and make them competitive. Even if a number of accession countries and sectors have already made considerable progress towards complying with EU standards, many food producers in the CEEC are facing the threat that they will have to cease production after entry.

For this reason, IAMO held a conference in July 2000 on the following topic: 'The adoption of EU quality standards in the dairy and meat food chains in the accession countries: consequences for structural change and competitiveness.' In the second article, *Creation of institutions and structural change in the Bulgarian meat and dairy sectors*: challenges of EU entry, Heinrich Hockmann summarises the most important findings of the conference papers regarding Bulgaria, which probably will not join the EU until 2007. The negotiations for accession could not be completed because, amongst other things, there have been considerable delays in applying the *acquis communautaire*. There is still a general lack of efficient institutions in Bulgaria for the enforcement



Prof. Dr Dr h.c. Peter Tillack
is IAMO's director

of the Community's processing and quality standards as far as food is concerned. Structural change in the Bulgarian food economy is not yet so far advanced that the country could hold its own in the Common Market. At the heart of this article we see the reasons for the non-existent, or only hesitant development of efficient institutions concerned with food safety. In addition to serious holes in the inspection of food, which is symptomatic of the current general weakness of state institutions in Bulgaria, the heavily fragmented structure of Bulgarian agriculture represents a large obstacle. There is also the ongoing crisis in the processing industry leading to a lack of solvent businesses. The national SAPARD programme (Special Accession Programme for Agriculture and Rural Development), financed by the EU to support the structural changes in the food economy necessary for accession, can only supply a fraction of the funds needed for structural change. At present it is impossible to tell whether the modernisation of the Bulgarian food economy will have advanced sufficiently by 2007 to enable it to survive in the Common Market.

By contrast, the third contribution, *Eastern expansion and food safety: the example of Hungary*, by Zoltan Veres, Miroslava Bavorová and Michael Kopsidis, describes one case of preparation for EU entry that in many respects has been successful. The article focuses on the development of a Hungarian system of food safety which integrates all stages of the food chain, and which complies with EU requirements. It involves the co-operation of the relevant parties, from the Ministry of Agriculture including the veterinary services, via the state health authorities, national institutes and laboratories, public consumer protection agencies, to the processing industry. A National Food Authority will take over important co-ordinating functions in this system. The aim of this authority is to spot violations of food safety regulations at an early stage, and it should help provide efficient crisis management in the case of food scandals. The Hungarian system of food safety is already following the newest developments within the EU regarding the strict separation of risk assessment and risk communication on one hand, and risk management on the other. The implementation of internationally recognised quality control systems, of particular importance where export is concerned, is already far advanced in the Hungarian food industry.

Finally, in a case study entitled *Adopting EU quality demands for raw milk: costs for the dairy sector in Hungarian agriculture*, Peter Weingarten and Piroska Kiss examine questions of the implementation of EU standards from the perspective of the agricultural producer and processing industries. As there have been only isolated estimates up to now concerning the cost of the adoption of the *acquis communautaire*, the authors attempt to identify particular factors that cause an additional burden for producers and processors of raw milk. Around a third of all Hungarian cows are owned by small enterprises with, on average, between four and five cows. In spite of this unfavourable enterprise structure, in 1999 already 78% of all milk delivered to dairies complied with EU requirements. On the other hand, almost 90% of these milk deliveries came from larger than average enterprises. To ensure that all milk meets EU requirements, further investment is therefore required mostly in small farms. At the same time, there is a serious need to modernise the milk collection centres used by the small farms. Direct foreign investment in the dairy industry has hitherto concentrated primarily on the larger milk-processing enterprises. A necessary consequence of Hungarian entry into the EU will therefore be an acceleration of structural change,

with a drastic reduction of small businesses and of the number of milk collection points. EU funds ought to support this necessary structural change.

At this point we should mention some recent events that have an important bearing on the Institute's activity. Last year there was a drastic change in IAMO's management. The former executive director and head of the 'External environment for Agriculture and Policy Analysis' department, Professor Froberg, accepted a chair and directorship at the Centre for Development Research at the University of Bonn. The head of the 'Agricultural Markets, Marketing and World Agricultural Trade' department, Professor Hartmann, answered a call to fill the chair for Market Research at the University of Bonn. The Institute thanks both for their successful work at IAMO. They played an important part in establishing the Institute as a nationally and internationally recognised centre of expertise, as the German Scientific Council concluded in its positive assessment in 2000. Until these posts are occupied, Dr Peter Weingarten and PD Dr Heinrich Hockmann are deputising as departmental heads. The head of the 'Structural Development of Farms and Rural Areas' department, Professor Peter Tillack, was appointed director, and the department previously run by him has been chaired by Professor Alfons Balmann since 1 October 2002.

Last year IAMO's work was marked by continuity in all the important areas of its activity. Existing relations with scientific establishments were strengthened, while new contacts were made. Papers were delivered at conferences at home and abroad, new project proposals were submitted, visiting academics were looked after, and research findings were published. More information about these activities can be found in the IAMO portrait at the end of this publication.

As in previous years, in 2002 IAMO was also able to count on the support of the board of trustees and the scientific advisory board. Thanks are due to members of both bodies for their constructive comments and suggestions regarding the Institute's profile.



*IAMO-Directorate
Dec. 2002 (from left to right) :
PD Dr Heinrich Hockmann,
Prof. Dr Dr h.c. Peter Tillack,
MA (Econ) Hannelore Zerjeski,
Dr Peter Weingarten, Prof. Dr
Alfons Balmann*



Markethall in Budapest

The long road from the adoption of EU standards to their enforcement in the food industry of the CEEC

KRISTINA GLITSCH

Across the globe, food standards have a huge impact on food production. Essentially, their purpose is to protect the health of consumers by maintaining food safety standards, such as by imposing limits on harmful chemicals. Also, product standards and classification systems, in particular, help keep the search, information, negotiation and decision-making costs low for both processors and consumers. Internationally binding standards are furthermore essential for safeguarding honest practice in the trade of foodstuffs.

In principle the EU demands from the Central and Eastern European candidate countries that, following accession, EU standards for all food products – irrespective of whether they are destined for the domestic market or for export – must be upheld. This article will highlight the effect this principle has had on the accession negotiations, the significance it still has for the ongoing negotiations with Bulgaria and Romania, and the consequences it has for the food industries of the candidate countries. As foodstuffs of animal origin are particularly affected by risks, the focus will be on these.

Now that the accession date for the eight most advanced Central and Eastern European countries (Estonia, Latvia, Lithuania, Poland, Slovakia, Slovenia, Czech Republic, Hungary), as well as for Cyprus and Malta, has been fixed for 1 May 2004, a time frame has been established for the application of the rest of the *acquis communautaire*. In principle, the countries concerned must have adopted the entire *acquis* by the entry date. Before negotiations began, the European Commission carried out an evaluation – for each country and for each of the 31 negotiating chapters – of the legal, economic and administrative conditions in the accession countries compared with those in the EU (so-called ‘screening’). Both the EU and the accession countries worked out their negotiation positions individually, which were then discussed in several rounds, chapter by chapter, until a provisional conclusion was reached. A provisional conclusion of a negotiation chapter was not possible if:

- (a) there were applications for transitional arrangements, whose necessity and appropriateness could not be evaluated until a later phase of negotiation, or
- (b) the EU needed more information.

Regulations of the *acquis* concerning the quality and safety of foodstuffs are mainly to be found in negotiation chapters 1 ‘Free Movement of Goods’ and 7 ‘Agriculture’. The negotiations relating to chapter 1 were provisionally concluded with the eight CEEC entering in 2004 between December 1999 and May 2001. This negotiation chapter reached a provisional conclusion with Bulgaria in June 2002; the discussions with Romania are still ongoing. The ‘Agriculture’ negotiation chapter has proved to be one of the most difficult and there were still arguments over individual questions until the Copenhagen decision on 13 December 2002. Primarily these concerned issues relating to direct payments and milk and sugar quotas. By contrast, agreement was reached on veterinary and phytosanitary measures by summer 2002 with all of the CEEC entering in 2004 except

Accession negotiations and food safety

Need for considerable negotiation over the ‘Agriculture’ chapter

Poland. As the last of the CEEC, Romania did not open the chapter on agriculture until November 2002. The negotiations were complicated by the fact that, as a 'moving target', the *acquis* regarding food safety was undergoing permanent change or being rapidly expanded, such as during the BSE case.

Transitional arrangements only for exceptional cases

The Commission emphasises that EU eastern expansion must not lead to a reduction in the current level of safety. Every transitional arrangement must be an exception, with clear limits on how long and for what it is valid. It must also be accompanied by a detailed plan showing how future conformity to the *acquis* will be attained. The problematic areas regarding food safety that are the target of applications for transitional arrangements, are:

1. The ability of candidate countries to ensure adequate border controls.
2. Maintaining the high EU level of measures to protect against BSE.
3. Bringing food-processing businesses into line with EU standards.
4. Meeting EU legislation on animal protection.
5. Disposal of animal waste.

If the EU agrees to applications from processors of animal foodstuffs for transitional arrangements, products emanating from the businesses concerned must not be sold outside of that country. They must be clearly marked, so that they are identifiable from other products. In the case of Hungary, the EU consented to transitional arrangements for 44 slaughterhouses, who have another three years to adapt to the veterinary standards, and for 21 poultry producers, who do not have to satisfy EU demands until 6 years after entry. Polish and Czech businesses in the meat industry were also granted transitional arrangements.

The status of the food industry in the accession countries

The monitoring of the progress of the candidate countries in the sphere of food safety was closely linked with the accession negotiations. If at first the focus was on checking the integration of EU law into national law, it is now on how the new directives are being enforced in practice. In this, the EU's 'Food and Veterinary Office' (FVO) is playing an important role. The candidate countries must ensure that they have an efficient monitoring system as well as a sufficient number of appropriately equipped inspection facilities.

Like the agricultural sector, the food industry in the CEEC occupies a relatively important place in the economy, although this varies from country to country. In the accession countries, the food industry's share of GDP in 2000 varied between 2.8% and 6.6% (see table 1). There are also large differences in direct foreign investment (DFI) in the food sector. In 1997, for example, Hungary led the group of CEEC as far as DFI was concerned, with 238 US dollars per capita (about 63% of the Hungarian food industry is currently controlled by foreign capital), while Romania and Bulgaria brought up the tail with only 19 and 37 US dollars per capita respectively. DFI in the food sector as a proportion of total direct foreign investment was very low in Slovenia, 2%, while in Lithuania and Romania, 16% and 14% respectively of foreign investment was in the food economy.

Country	Food industry's share of GDP (%)	DFI in the food-processing industry (US dollar per head)	DFI in the food-processing industry as a proportion of all DFI (%)
Bulgaria	3.6	37	n.a.
Estonia	2.8	80	n.a.
Latvia	4.1	61	4.1
Lithuania	5.6	46	16.1
Poland	3.9	59	9.5
Romania	6.6	19	14.0
Slovakia	2.9	n.a.	n.a.
Slovenia	2.8	n.a.	2.0
Czech Republic	3.6	47	9.7
Hungary	6.5	238	10.3

Table 1:

Food industry's share of GDP (2000) and direct foreign investment (DFI) in the food-processing industry (1997)

Source: European Commission 1998, Agra Europe 2000, RWI 2001.

An important development over the last few years for the food sector in the CEEC is the increasing demand for foodstuffs from Western Europe. To put a brake on this development the Slovak government, for example, has adopted counter-measures by setting up a campaign to support domestic food producers with the motto 'Buy Slovak products'. It obliges food retailers with a minimum shop space of 1000m² to sell a certain proportion of domestic products. Shifts in the demand for domestic foodstuffs, e.g. the drop in consumption of beef and pork in favour of poultry, as well as the decrease in consumption of fresh milk in favour of processed (imported) dairy products, have exacerbated the – in some places huge – problem of overcapacity in the dairy and meat sectors.

In its most recent report of 2002 on the progress of the candidate countries towards accession, the European Commission emphasises that in almost all countries the administrative structures and border controls must be redeveloped or improved. It pays particular attention to laboratory and control capacities, as well as to the training of specialist personnel. The importance of a properly functioning food inspection system is shown by the fact that tests in Poland have shown violation of the limits on microbiological and chemical contamination (see table 2). Butter, fresh milk and meat/meat products, together with ready meals and bread/bakery products, form the product group that has the greatest risk of microbiological contamination. Compared with microbiological contamination, chemical residues are of lesser importance. In 2000, however, in the meat/meat products group, 6% of the samples contained chemical residues above the legal limit.

Development and expansion of administrative and control structures is urgently necessary

Table 2:
Food samples with excessive
contamination in Poland in
2000

Product Group	Microbiological Analysis	Chemical Analysis
	%	%
Meat, meat products	12.5	6.4
Fresh milk	16.6	2.3
Butter	25.2	4.7
Fish, fish products	13.0	3.7
Vegetable fats	1.0	1.8
Animal fats	0.0	5.8
Ready meals	24.0	4.5
Fruit, vegetables	2.2	4.9
Bread, bakery products	19.6	1.7
Non-alcoholic drinks	7.0	7.0

Source: SZPONAR, L. and WOJTON, B. (2002).

**Closure of businesses,
overcapacities in the
dairy sector**

Over the last few years the dairy sector in the CEEC has been hit by the closure of a considerable number of enterprises. Since the start of transition, a third of milk processors in the Czech Republic have had to close down. Today there are 64 dairies left, of which 22 satisfy the veterinary requirements of the EU. Following a state inspection of 596 milk-processing enterprises in Bulgaria in 2000, 146 were closed because of poor quality and 307 were given conditions to fulfil. The closure of businesses is also caused by low utilisation of capacity, which itself is due to a fall in demand and export. Czech milk-processing businesses are currently only working to about 60% capacity. In 1999, Slovak butter production was only at 39% capacity. With the exception of Romania and Slovenia, milk production in all CEEC is below the 1990 level – in some countries substantially below (see figure 1). In the Baltic states milk production has almost halved, following the collapse of their export market in the wake of the disintegration of the Soviet Union.

A peculiarity of the Central and Eastern European milk industry is that in some countries a substantial proportion of the milk is not processed by dairies. In Bulgaria, for example, 87% of the milk is processed directly by the producers. In the Baltic states, too, the proportion of milk taken to dairies is only between 48% and 65%. The most serious problems with the quality of fresh milk are caused by non-compliance with hygiene standards. The processing sector then suffers as a consequence of the poor quality of the raw product. On the other hand, there has been a noticeable improvement in the quality of milk in recent years, even if in some countries, where milk production is predominantly in the hands of small producers – such as Bulgaria, where 85% of the milk is produced by enterprises with between 1-5 cows – the quality still leaves a lot to be desired, and quality inspections controls are difficult to carry out. In Poland there was a significant increase in the proportion of milk – currently about 50% – of 'Extra' quality, which roughly corresponds to

the quality level of the EU. The Baltic states show huge differences in this respect. In Estonia already 83% of milk corresponds with the EU standards for fresh milk, whereas in Latvia and Lithuania the figures are 41% and 34% respectively.

By means of an empirical survey, SWINNEN and DRIES(2002) demonstrate that the proportion of high-quality milk in 1995 originating from Polish producers who worked together with foreign dairies was significantly higher than that of producers who delivered their milk to domestic dairies. In 2000, on the other hand, the proportion of high-quality milk from all enterprises under investigation – regardless of DFI – was about 80%. This result supports the argument that foreign milk-processing businesses are important in leading the way regarding the adoption of strategies to improve the quality of milk.

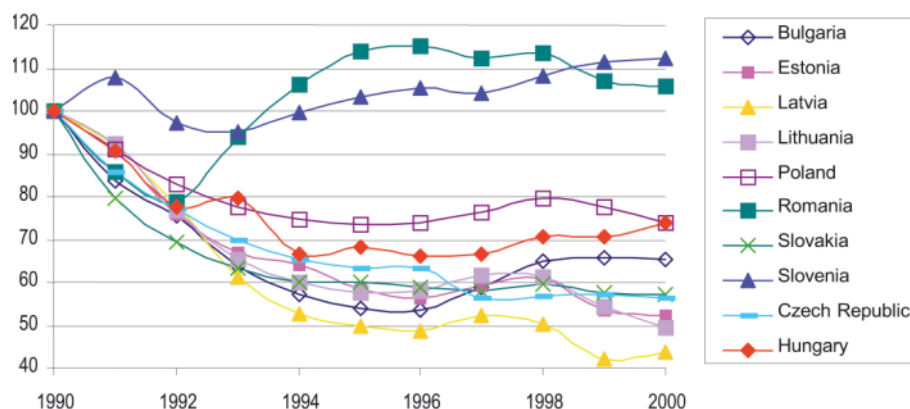


Diagram 1:
Production of cow's milk in
the CEEC (1990=100)

Source: ZMP 2001.

Between 1990 and 2000, meat production in the CEEC experienced an even more serious slump than milk production (see diagram 2). In the Baltic states, meat production sank by well over 50%. In recent years only Lithuania, Poland, Romania and Slovenia have shown a slight upward trend. Beef and veal were most affected by this drop in production, whereas in most CEEC poultry production is on the rise. The decreases in production were a response to a number of different economic shocks to both production and demand. At the same time as having to overcome a reduction, or even abolition of state subsidies, producers had to cope with drastic rises in the prices of animal feed, while the demand for animal products dropped due to falling incomes. Slovenia is an exception here, as high levels of protection still exist in both the dairy and meat industries. Production levels have therefore fallen only slightly; in the case of milk there has even been an increase on the 1990 level.

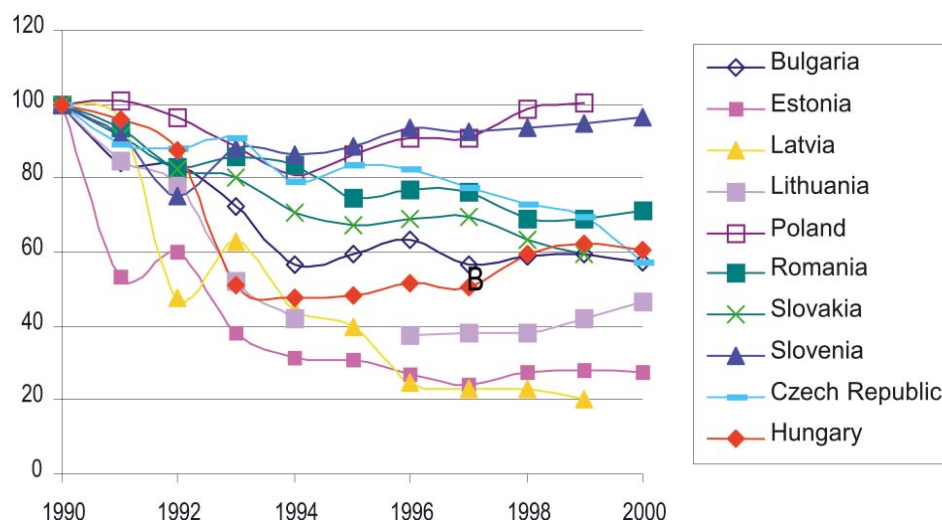
From the beginning of transition, the structure of the meat sector was subjected to radical changes. At first, meat producers continued to deliver to the state slaughterhouses or processing enterprises. The prices paid by these state businesses fell constantly, which meant that the meat producers

Serious slump in the meat sector

looked around for other market possibilities. The result of this in Poland was serious fragmentation; the number of abattoirs increased from a few hundred to 7,000 between 1990 and 1999.

Slovenia went in a different direction during the transition process; today the country has in total about 40 slaughterhouses and processing businesses that are working well to capacity. Hungary also has a relatively large number of businesses. There, state enterprises were transformed into relatively successful private concerns, with the result that almost half of today's abattoirs and processing firms are managed by foreign investors. In Romania, by contrast, most of the state-owned enterprises have continued production, some of them with serious problems of overcapacity. Poor utilisation of capacity is a characteristic of the meat industry in other CEEC, too.

Diagram 2:
Meat production in the
CEEC (1990=100)



Source: ZMP 2001.

**Obsolete technology
prevents the maintenance
of EU standards**

The meat sector is one of the most problematic areas as far as satisfying EU standards within the food industry of Central and Eastern Europe is concerned. Obsolete technology and a lack of funds often stand in the way of a modern system of production. With the exception of Slovenia, the proportion of businesses that meet EU quality requirements is still low. In Slovakia, for instance, only four of the 69 larger meat-processing firms, but none of the smaller ones, satisfy EU standards. Only one meat-processing firm applied for a transitional period. Meat processors worry that they will lose their market share during such a period, as they are only allowed to produce for the domestic market in this time. They hope that their own efforts will enable them to meet EU criteria by the end of 2003. A very important requirement for businesses to become competitive will be the implementation of the EUROP classification system for pork and beef, which has advanced to very different stages in the accession countries. For abattoirs in Hungary and Poland the system has been obligatory since 1996 and 1997 respectively. In Romania the classification will not be

introduced until 2004. The most recent European Commission progress report emphasises shortcomings in the disposal of animal carcasses in particular. In Poland, none of the rendering plants currently meets EU standards, and there is much concern about the heat treatment of animal waste. The Commission also judges the level of animal welfare and implementation of BSE tests to be less than satisfactory in most accession countries.

In order to be competitive in the future on the common European market, the fulfilment of EU requirements is absolutely essential. In exceptional cases the EU is granting transition periods. These are being taken up only hesitantly – businesses in the meat industry providing a good example – because of the fears of being stigmatised and excluded from foreign trade. At present, modernisation in the dairy sector, combined with the concentration of enterprises, has progressed well in most candidate countries. The meat sector, on the other hand, is characterised by greater fragmentation, and is faced with substantial overcapacity. The access to capital will be decisive for the future viability of these businesses.

Conclusion



A herd of cows in Hortobágy (Hungary)

Creation of institutions and structural change in the Bulgarian meat and dairy sectors: challenges of EU entry

HEINRICH HOCKMANN

Considerable delays in the application of the *acquis communautaire* has meant that Bulgaria has dropped out of the group of countries that will be joining the EU in 2004. The conditions for membership should, however, be satisfied by 2007. Focusing on the examples of the meat and dairy sectors, this article will outline the progress that has been achieved up to now, where there is need for further action, and how the processes of adaptation should be helped along by financial support from the state. There are two main areas of investigation here. First, the creation of institutions to achieve systems of agricultural production and processing that correspond to EU norms. Secondly, the necessary structural change in the agricultural and food sector and modernisation in production technology must occur in such a way that the Bulgarian meat and dairy economy can survive in the long term on the Common Market.

The Ministry of Agriculture and Forestry (MAF) is primarily responsible for harmonising national law with the *acquis* in the agricultural and food sector. It drafts bills and regulations and is also responsible for developing the administrative structure needed to implement the legislation. As far as animal husbandry is concerned, the veterinary law establishes the legal framework into which the fundamental veterinary regulations of the EU can be introduced. Amongst other things it regulates the scope of prescribed veterinary activities, their financing, training of specialists, and minimum requirements in production. The law aims at improving veterinary controls, as well as ensuring minimum sanitary and hygiene requirements in the production and trade of meat and dairy products. The improvement of animal health and the combating of animal diseases is also an important part of the veterinary law.

The enforcement of controls is carried out by secondary authorities. They have their own budget, but are responsible to the MAF. An example is the National Veterinary Service (NVS). The NVS has 28 regional veterinary stations, and veterinary checks are also carried out at state borders. The NVS's tasks include the inspection of animal-based foodstuffs, animal feeds, and of the centres in which these are produced, processed and stored. Quality control takes place at all stages of the food chain: production, processing, storing, and transport of agricultural raw materials and food.

The veterinary law provides for permanent health checks in abattoirs, large meat-processing centres, dairies, and canning factories. The inspectors are paid and trained by the MAF to improve the strictness of the checks. National and regional inspection offices, test stations, control commissions, specialist laboratories etc. are responsible for checking that standards are being met, and they issue certificates of quality.

Poor application of the *acquis* is delaying Bulgaria's accession

Ministry of Agriculture responsible for harmonisation of law

National veterinary service

Organisation of quality control

PHARE programme for the implementation of legislation

Although a large part of the *acquis* has already been converted into national law, there is still a lot to do as far as the question of food safety is concerned. This is particularly the case with the enforcement of national regulations. The measures that need to be adopted are supported financially by the national PHARE programmes (table 1). The aid lasts until the end of 2002. One must conclude, however, that a full conversion of the *acquis* will not be completed for a few years.

Only weak enforcement of new legislation

There are great difficulties with the registration of farmers as well as with the certification and identification of their livestock. In many cases, moreover, poor dissemination of information about new requirements and hygiene controls prevents the enforcement of quality standards. Outdated tests and technology, insufficient financing of inspection centres, a lack of co-ordination between different authorities, irregular checks, corruption, and weak sanction mechanisms represent other problems for the enforcement of legislation. In this way, a fairly large number of products have reached the market that do not meet legal quality requirements.

Example: poor quality control in milk production

The lack of effective controls allows, for example, milk producers and processors to deliver low-quality dairy products to retailers. In 1997, about 4,000 milk collecting centres were registered. Only about two-thirds of these had fulfilled the EU veterinary and health standards and had been authorised by the health authorities to collect milk. Because of insufficient observation of EU hygiene requirements, in 1997 the European Commission imposed an import ban on Bulgarian dairy products. It wasn't until 1999 that three businesses got their licences back, allowing them to export to the EU.

Table 1:

Projects financed by the national PHARE programmes to improve veterinary controls

PHARE programme	Projects	Funds	End of aid
1998	Animal health and diagnostics (identification and registration of animals, improvement of technical equipment in test laboratories, purchase of hardware and software for veterinary controls, help with the development of the national veterinary service)	4.6m €	2001
1999	Improvement of veterinary controls and of animal identification (improvement of veterinary inspection at the Bulgarian border with Turkey, construction of a wire fence along the length of the illegal border with Turkey, marking of sheep and goats with ear tags, improvement of animal identification and registration)	3.0m €	2001
2001-2006	National veterinary service and veterinary inspection institute (provision of the necessary equipment for three border checkpoints, establishment of a veterinary inspection institute)	3.3m €	2002

Source: REPUBLIC OF BULGARIA (2000), *National Agriculture and Rural Development Plan over the 2000-2006 period*.

It is not only administrative-legal problems of food safety that are hindering the modernisation of Bulgarian agriculture. A structural change and the modernisation of production technology is going to be essential for the long-term survival of the Bulgarian agricultural and food sector after accession, in the face of competition from other EU countries.

EU studies show that, in 2000, 81% of agricultural land in Bulgaria was farmed by legal persons, mostly co-operatives, with an average cultivated area of 536 ha. Most of these enterprises have specialised in crop production. Only 1% of Bulgarian livestock is to be found in these businesses. Around 6% of agricultural land is farmed by family businesses whose average holding is 6 ha. In many cases, three or four such businesses have merged together. These enterprises generally specialise in crop or animal production. 13% of land is shared between over 750,000 holdings with an average size of 0.6 ha. These are essentially subsistence farms that are continuing to work the plots allotted to them before 1990. They are characterised by labour-intensive farming with low specialisation and poor market orientation.

Extremely fragmented business structure in agriculture

With a share of 17% of total agricultural output, pork is the most important branch of meat production. In the 90s about half of total meat output was pork. Between 1992 and 2001 pork output fell from more than 300,000 tonnes to less than 200,000 tonnes per annum (diagram 1). Similar developments occurred with respect to poultry, lamb and mutton, and beef. In accordance with the falling production levels, the number of cattle also declined. But of all animals, it was pigs that registered the greatest drop in numbers.

Decreases in pork production ...

Between 1992 and 2001, the number of dairy cows fell by almost 30% to about 420,000 animals. Milk production decreased to about 80% of the 1992 level. Currently, the level of milk production per cow is only 56% the EU average. In spite of the drop in production, a high level of self-sufficiency was reached in all products. This was only possible, however, because the export markets collapsed considerably in the 90s and the economic depression caused a drop in demand for foodstuffs, particularly for high-quality animal products.

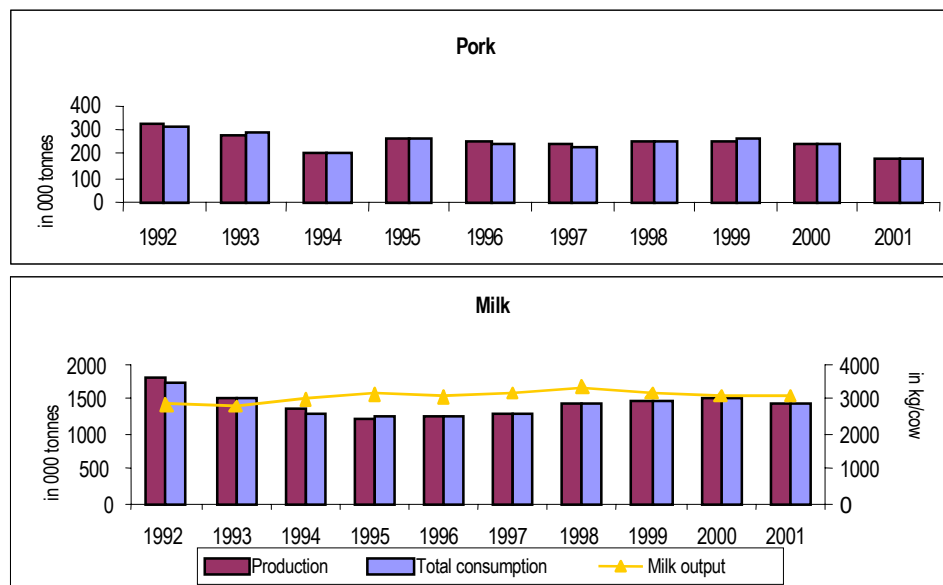
... and in milk production

The food industry is responsible for about 5% of the Bulgarian gross national product. Privatisation of this sector is largely complete. 84% of the former large state combines were transformed into joint-stock companies and other partnerships, or returned to their previous owners. The rest of the businesses were liquidated. Although a liberal policy prevailed as far as foreign investment was concerned, foreign investors showed little interest in the food industry. Only 5% of investment came from foreign sources of capital. As in other Eastern European states, this was concentrated on the soft drink industry and breweries, followed by the milling and sugar industries. In the meat and milk industries there has been hardly any foreign investment. In the era of the planned economy the food industry was geared towards export to Eastern European countries. During the process of transition the sector lost a large proportion of these export markets, while domestic demand fell as well. The food industry also suffers from outdated technology, high levels of debt, and lack of capital. This has meant that the majority of businesses have serious financial difficulties.

Pressure to adapt in the food industry

Diagram 1:

Bulgarian pork and milk
production 1992-2001



Source: EUROPEAN COMMISSION (2002): Agricultural Situation in the Candidate Countries, Country Report on Bulgaria.

Low utilisation of capacity in the meat industry ...

According to EU Commission figures, the meat sector in 2000 comprised 312 larger enterprises. In addition there were about 240 slaughterhouses, of which about 65% had a processing capacity of more than 1,000 cattle per annum. The general problems of the food industry enumerated above have been exacerbated by the drop in agricultural livestock numbers and by the weak quality controls. As a result, the successor businesses are operating at a very low level of their total processing capacity – about 15-20%. Some towns are beginning to see the need to establish modern processing enterprises, however. These enjoy a stable market share and use more than 50% of their capacity. Of the former state enterprises only three have been authorised by the EU to export red meat products to the Common Market.

... and in the milk industry

In 2000 there were 512 milk-processing businesses. Most of these were newly established small and medium-sized enterprises with a processing capacity of 1-5 tonnes of milk per day. They specialised in the cheese market. The processing capacity of businesses that took over state concerns is generally over 100 tonnes per day. In 2000, however, these were operating only at between 20%-30% capacity.

SAPARD: Improvement in productivity and product quality ...

The necessary structural adjustments in the agricultural and food sector should be helped along by three special measures within the national SAPARD programme. This involves investment in agricultural businesses, improving processing and marketing of agricultural and fish products, and the development and diversification of economic activities and incomes in rural areas. These measures exhausted 61% of the SAPARD funds for Bulgaria, which total about 385m €. In May

2001 the European Commission transferred the responsibility for the management of these funds into Bulgarian hands. In contrast to PHARE, however, the attention is not on the creation of institutions for the enforcement of EU regulations, but on supporting investment to enable the development of competitive structures.

From 2000 to 2006, SAPARD funds of 26m • and 10m • are earmarked for the modernisation of milk and meat production respectively. They are aimed at improving the breeding stock, feeding, hygiene conditions, and animal health. To encourage structural change, only registered farmers who are younger than 55 and have sufficient professional experience in agriculture can take part in the programmes. Moreover, the farmers must earn more than 50% of their income from agricultural production. Other requirements concern the minimum number of animals. This is 15 cows for milk production; 15 calves or 30 pigs for meat production. In addition, the state's share of the business capital must be less than 25%.

... in agriculture ...

To improve the processing and marketing of agricultural and fishery products, there will be aid for investment in the following areas in particular: storage, plant modernisation, the extension of quality controls corresponding to the HACCP system, equipment to improve hygiene and product quality. The SAPARD funds amount to about 16m • for milk processing and 15m • for meat processing. The enterprises that take part in the programme must satisfy certain minimum levels of processing capacity. As far as milk is concerned, it is 5 tonnes per day; the equivalent for slaughterhouses is 1,000 cattle per annum. Here, too, in order to be eligible for support, the state may not own more than 25% of participating businesses.

... and in the processing industry

The level of funds distributed is nowhere near sufficient to support all businesses satisfying the minimum requirement in such a way that they will be able to fulfil the quality criteria in the future. As far as milk is concerned, the SAPARD programme can only deal with about 35% of the necessary improvements in capacity. For slaughtering and meat processing the figures are 23% and 14% respectively. It seems that many slaughterhouses will find it impossible to operate according to EU norms on a permanent basis. For this reason, the SAPARD programme plans to close 67 businesses with a slaughtering capacity of over 1,000 cattle per annum, as well as 30 smaller slaughterhouses. These comprise about 60% of the enterprises within the sector. The studies make clear that only a small proportion of the required structural changes can be financed by the SAPARD programme. By being selective in giving grants to only some of those businesses that show a potential for development, a structural change is occurring which will drastically transform the face of the agricultural and food sector. From a current perspective, however, it is impossible to tell if this structural change will be sufficient for Bulgaria's agricultural and food sector to be able to compete in the Common Market.

Consolidation of the sector due to market correction

The experiences up to now have, moreover, revealed considerable problems with the drafting and implementation of the programmes. It requires a substantial bureaucratic effort to receive payments from the programme. Over 90 different documents must be prepared for an application, some of which are only valid for one month. If there are delays in the application, documents that are no longer valid need to be ordered again. Applications must be sent to the regional governments, who then pass them on to the Bulgarian SAPARD agency. Although the staff responsible for

Sobering experiences with SAPARD

administering applications have been trained, the change in personnel within the administration and problems relating to the flow of information have meant that farmers have been poorly informed about SAPARD. Even if the applications are approved by the SAPARD agency, this in no way means that the enterprises are able to carry out the measures. Because the businesses possess very little capital, the rest of the investment frequently has to be acquired on credit. But often the banks do not accept the promise of a SAPARD grant as security and refuse credit of the corresponding amount to the potential investors. Although 25% of the SAPARD funds are set aside for the modernisation of the milk industry, by the end of October only 4 projects had applied for grants. The total funds applied for amounted to roughly 1.4m €. This represents only about 2.9% of investment in the dairy sector up to now and is thus almost ten times behind what is needed. The corresponding figures for the meat sector are 16 projects and •10m. Here, 18% of total investment will be financed by the SAPARD programme.

This article has shown that a lot remains to be done regarding the enforcement of regulations, that the flow of information to farmers has to be improved, and that the acceptance of the programme must be promoted within the industrial sector. Several measures to improve this situation are currently being discussed; some have already been implemented. It remains to be seen to what extent these will lead to a more efficient utilisation of the funds in future.



Grazing on a single-owner farm in Bulgaria

Eastern expansion and food safety: the example of Hungary¹

ZOLTÁN VERES, MIROSLAVA BAVOROVÁ, MICHAEL KOPSIDIS

Questions of food safety are of great significance for the CEEC as they prepare for accession to the EU. From the EU's perspective it is very important to ensure that the Eastern expansion does not lead to a drop in food quality. Consumers must be confident that expansion will not lead to gaps in the monitoring process of foodstuffs, and that only safe food will be freely traded in the enlarged Union. The European Commission has therefore demanded that all the accession countries must work out and implement a strategy for meeting EU standards of food safety. This involves both a plan for the necessary legislative and administrative reforms, and the steps towards their implementation. Taking the example of the Hungarian meat industry, the following article will consider measures to improve the monitoring of foodstuffs and the problems associated with their implementation.

Food safety in an enlarged EU

On a general level one can say that food monitoring is a preventative measure for health protection. The control system for foodstuffs is responsible for spotting and ensuring the removal of dangers to health from harmful residues at an early stage. It should also provide objective information about the pollution of foodstuffs. According to the guidelines of a policy of integration at all levels of the food chain, as laid out by the EU in its white paper on food safety, under the motto 'from farm to fork', the Hungarian system is also being currently reorganised. Public food monitoring should now include all stages of production, import and sale of foodstuffs. All levels of the state veterinary service co-operate closely with the national health authorities – including the medical officers – and with consumer protection agencies in the control of foodstuffs. The National Food Investigation Institute (NFII) provides scientific and technical assistance for non-routine questions (complicated tests, the development or testing of new procedures etc.) The forthcoming National Food Authority (NFA) will fulfil important co-ordinating functions in the reformed Hungarian system of food safety.

Organisation of the food monitoring service

The Animal Health and Food Control Department (AHFCD) within the Ministry of Agriculture and Regional Development is the central institution for monitoring the quality foodstuffs in Hungary. The head of the state veterinary service, or chief veterinary surgeon, chairs the department. The AHFCD is responsible for enforcing regulations on animal health, animal protection and public health. The Animal Health and Food Control Department is also responsible for the central administration of food controls at state borders. It is divided into three sub-departments. One is the sub-department for food safety and quality control, which is responsible for the monitoring of foodstuffs. The official checks are carried out in the individual counties by the County Animal Health and Food Control Stations (CAHFCS). There are CAHFCSs in each county and in the capital (20 offices in total). It is the job of the CAHFCSs to enforce the regulations at a regional level. Food hygiene specialists, who are present in each CAHFCS, inspect the production process within the enterprises themselves. Their work takes place under the expert supervision of the

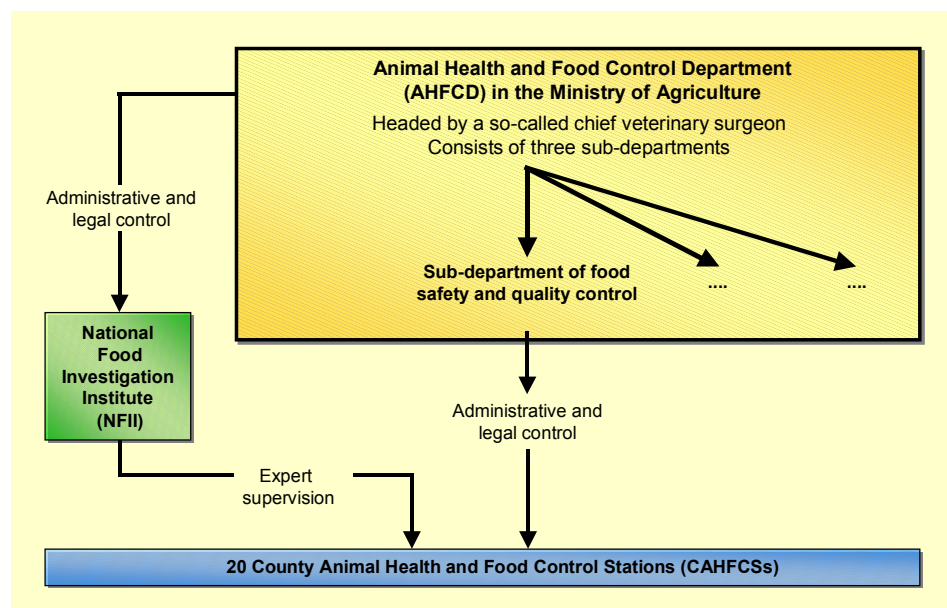
State veterinary service

¹ The article is based on a paper by ZOLTÁN VERES for the IAMO workshop on Eastern expansion and food quality standards in July 2002.

National Food Investigation Institute (NFII). In addition, around 800 vets work in the regional offices for County Animal Health and Food Control Stations.

The AHFCD, CAHFCSs and NFII together form the Veterinary and Food Control Service (VFCS, see diagram 1). Most of the cost of the service (78%) is covered by income (paid inspections, procedural fees); the rest of the financing (22%) comes from the government. Besides the VFCS, the local authorities can exercise their own authority in certain matters. These are mainly questions of animal health, such as controlling epidemics, imposing police restrictions on animal trade in the case of epidemics, cattle labelling, and animal protection. Bringing in the local authorities for matters of public authority at a local level allows rapid action in the case of obvious irregularities.

Diagram 1:
The development of the
Hungarian Veterinary and
Food Control Service (VFCS)



Source: Authors' depiction.

National Food Investigation Institute

The aforementioned National Food Investigation Institute (NFII) is divided into four departments with the following responsibilities:

- (1) The department for food hygiene monitors food hygiene in abattoirs producing items for export. The experts in food hygiene judge each business according to the Hungarian requirements regarding food quality, as well as the US and EU norms. In the obligatory inspections of Hungarian export goods by non-Hungarian agencies, the department works in close co-operation with the foreign institutions.

- (2) The department for the inspection of hygiene in production is responsible for the checking of machinery in abattoirs and in processing factories.
- (3) The department for food quality analyses the data from laboratory studies by the VFCS.
- (4) Forming a fourth department, an accredited laboratory for food monitoring deals with problems of food microbiology, the analysis of harmful residues and toxic substances in foodstuffs and animal feed. The NFII laboratory thus goes far further than the routine tests performed by the VFCS.

The National Food Investigation Institute (NFII) is also responsible for the supervision and quality control of regional laboratories, which work in the areas of animal health and the control of food. The work of the NFII itself undergoes regular international inspections as part of the Food Analytical Performance Assessment Schemes (FAPAS) and the Food Examination Performance Assessment Schemes (FEPAS), organised by the British Central Food Science Laboratory. These international quality controls serve as a basis and model for the supervision and quality control of Hungarian laboratories at a regional level.

Other tasks associated with food monitoring are performed by the National Public Health and Medical Officer Service (NPHMOS), under the direction of the National Office of the chief Medical Officer (NOMO). The latter reports to the Ministry of Health. The most important tasks of the (NPHMOS) are the identification and measuring of substances, including harmful ones, in foodstuffs, drinks, other consumables and drinking water; and the fixing of limits for substances harmful to human health. The (NPHMOS) also implements health protection measures food retail. It works preventively, seeking possible causes of diseases and epidemics and takes action to prevent the emergence of new health risks. There is an office of the NPHMOS in every county and large town.

National Public Health and Medical Officer Service

The Head Inspectorate for Consumer Protection (HICP) was established by the government in 1991. It is subordinate to the Ministry of Economics. The HICP and their regional offices in the counties also perform tasks relating to food quality control. The HICP's work encompasses the quality control of all consumer goods including foodstuffs. Its purpose is to protect the life, health and safety of the consumer, to protect consumer rights, and to inform and educate the consumer.

National consumer protection

The County Animal Health and Food Control Stations are responsible for approving the establishment of new food production plants, or the extension of existing ones. Permission from these CAHFCSs to begin production is granted in co-operation with other institutions (regional offices of the NPHMOS, regional environmental offices, national park management and, in special cases, other institutions). The production licence can be withdrawn in the case of poor processing quality or inadequate hygiene conditions. Each newly developed foodstuff for human consumption can only go into production when the official form relating to the processing of a product has been approved by the appropriate CAHFCS.

Authorisation procedures for production plants

The Codex Alimentarius Hungaricus lists all substances (raw materials) that are permitted in food production, as well as product definitions. In addition, the Codex contains the hygiene regulations for the production process, based on EU guidelines. The rules and regulations for foodstuffs produced or sold in Hungary are also listed here, as are recommendations from international

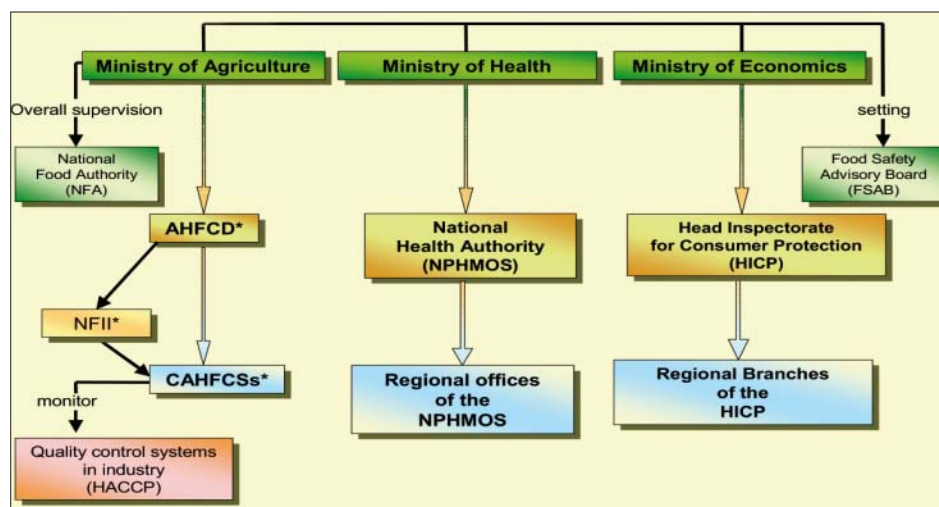
Codex Alimentarius Hungaricus

organisations on product definition and means of food control, based on the guidelines of the EU and on other national and international standards.

National Food Authority

The National Food Authority (NFA) will soon be established in co-operation with the European Food Authority, to aid the co-ordination of all agencies that are concerned with food safety. It should help improve preventative action and the flow of information. The NFA is to operate independently of economic and political interests. It is intended that the body should co-operate with the institutions responsible for food safety. The precise details of the responsibilities of the NFA have not yet been worked out, however. In general, they include the gathering and dissemination of information on food safety, and the exchange of data between all research institutes actively working in the area of food and animal feed safety. Together with the NFA, these institutes are to be responsible for risk assessment and communication. A further area of responsibility is the development of an early warning system for deficiencies in food safety and, closely related to this, an improved information policy vis-à-vis the media to discover and clear up misunderstandings at an early stage. The introduction of measures to deal with problems in food hygiene will also be one of the responsibilities of the NFA. In very general terms, the NFA will be responsible for risk assessment and communication, but not for risk management itself. The NFA is also to be active in providing scientifically based policy advice, and in charge of implementing the national food programme. Co-operation with European food authorities – as well as with those of other countries – will be an additional core task of the Office.

Diagram 2:
The complete Hungarian
system of food safety



Note: * = for an explanation of the abbreviations, see diagram 1; see the text for NPHMOS.

Source: Authors' depiction.

In 1997 the Hungarian Food Safety Advisory Board was established, on the initiative of the Ministries of Health and Agriculture. The legal basis for its constitution is directive no. 19 (2000) of the Ministries of Health, Agriculture and Economics. The board has 15 members, representing the three ministries, the Hungarian food control authorities, universities, research institutes and other national scientific institutions. The main job of the board is to provide scientific and administrative advice to allow a national programme for food safety to be worked out and implemented quickly. The comprehensive analysis of the current state of food safety in Hungary represents a first step in this direction. The FSAB launches scientific studies into the most important aspects of food safety. The board also makes recommendations to the ministers concerned about concrete issues and compiles reports on the most serious problems. It produces information brochures for the consumer as well. In addition, the board is concerned with the analysis and evaluation of risks in food safety, in order to be able to provide a basis for a comprehensive system of risk management.

***Hungarian Food Safety
Advisory Board***

The Hazard Analysis Critical Control (HACCP) quality control system is an internationally recognised procedure in the food industry for efficient self-regulation, so as to guarantee the production of safe food. Efforts are being made to introduce quality control system for the food industry introduced on a worldwide basis. Businesses that are HACCP-certified should be more competitive on international markets, as they can guarantee minimum standards of food safety.

The HACCP system concentrates on procedures of risk assessment and prevention. The Hungarian business that had a licence to export meat products to the USA were asked to develop and implement an HACCP system. As far as production centres are concerned, directive no. 1 (1996) on the enforcement of Law XC on food already demanded the introduction and application of self-regulation systems of biological, microbiological, chemical and physical analyses of risks, and of risk elimination. This regulation did not, however, include the obligation to introduce an HACCP system in full, only some of its basic elements. Regulation 1-2-18/1993 of the Codex Alimentarius Hungaricus recommended the introduction of the HACCP system from 1 January 1997. Directive no. 17 (from 1999), on the other hand, obliges all centres of food production, processing and distribution to develop a complete HACCP system by 1 January 2002. Directive no. 80 (1999) set 1 January 2002 as the deadline for the application of a complete HACCP system by all catering firms and public eating establishments.

***HACCP
in the meat industry***

Many recently established companies provide consulting services relating to the implementation of the HACCP system in the food industry. Producers have complete freedom in seeking out advice. The consulting firms also act as a private-sector supervisory authority, as they issue abattoirs and meat-processing centres with a certificate as soon as an HACCP system has been introduced. This certificate then has to be presented to a representative of the official monitoring agencies for food safety. Official veterinary inspectors make regular checks of businesses that have set up HACCP systems, to ensure that the system is in place, and that it is working effectively.

In the last few years, however, a number of complications have become evident, regarding both the introduction and application of the HACCP system. It has been shown, for example, that the required separate analysis for all products and raw materials in a business is a very difficult procedure to carry out. The cost of continually updating and monitoring an HACCP system is also reckoned to be very

***Complications with the
application of HACCP
systems***

high. Occasionally, businesses underestimate the funds and time needed to implement a time-intensive and cost-intensive HACCP system. This is particularly true of smaller abattoirs. These number between 600 and 700 in Hungary, many of which already officially comply with EU and US standards, however, and appear on so-called 'acceptance lists'.

Problems in the Hungarian monitoring system

The soon-to-be established National Food Authority (NFA) should help eliminate problems in the Hungarian food monitoring system. It was intended that the National Food Authority should work completely independently. Against this, however, is the fact that the NFA is to be under the control of the Ministry of Agriculture. One of the core tasks of the NFA in the near future will be the construction of a database – currently still lacking in Hungary – which will house data on all parties active in the Hungarian system of food monitoring, freely accessible to those involved. In addition, there is still the need for a better delimitation of the division of responsibilities between the human and veterinary services, so that they do not overlap. As a matter of urgency – another step towards improving the monitoring system – the clear organisational separation of the monitoring agencies for animal health and food (CAHFCs) from the laboratories is also necessary. While the former are primarily concerned with risk management, the laboratories should be able to provide risk analysis on an unconditional basis. This would satisfy one of the most important requirements of the EU white paper, namely the strict separation between risk management on the one hand, and risk analysis and communication on the other.



In conclusion one can say that Hungary has already succeeded to a considerable extent in establishing a modern monitoring system to safeguard the quality of foodstuffs. The adjustments have taken place in accordance with current EU standards. It is important to remember, though, that these requirements are continually evolving and thus other demands will be made in the future. At present, however, one can predict that Hungary is well prepared for EU entry. All remaining problems relating to food safety should be resolved, allowing the country to make its contribution to maintaining the high levels of public health and consumer protection in the EU.

Adopting EU quality standards for raw milk: costs for the dairy sector in Hungarian agriculture

PETER WEINGARTEN AND PIROSKA KISS

Accession to the European Union requires that candidate countries adopt and enforce the *acquis communautaire*, the EU's common body of legislation. This consists of between 60,000 and 70,000 pages of the Official Journal of the EU, about roughly half of which refers to agriculture. Over time, the *acquis* has continually evolved and increased in scope. This will probably continue in the future. The European Commission assumes that the common body of legislation is growing by between 4,000 and 5,000 pages per year. This means that, at the time of the accession negotiations with Austria, Finland and Sweden, members of the EU since 1995, the *acquis* was only half as voluminous as it is today.

Until now, there have been few estimates of the costs incurred by the accession countries in adopting the *acquis*. It is reckoned, for example, that the necessary investment for complying with environmental legislation in the ten Central and Eastern European candidate countries is close on 100 billion euros, or about 1,000 euros per capita. Looking at the dairy sector in Hungary, this article will examine the amount of investment needed to adopt EU process and product standards for raw milk. The situation in Hungary in the period 2000/01 will be used as a basis for comparison. The dairy sector has been chosen as a focus of study because, like the meat sector, it is in many respects more sensitive to such standards than vegetable products, for example. The safety and quality of milk and dairy products depends on many parties along the whole of the food chain, starting with the feed producers, then the agricultural enterprises, the transporters of raw milk, the dairies, until the products are sold. In its 2000 progress report on Hungary, the European Commission lamented the lack of progress in carrying out the necessary modernisation of abattoirs and dairies in order to maintain EU hygiene and health standards.

In the EU, directives 92/46/EEC and 89/362/EEC constitute the legal framework for the production and marketing of milk and dairy products. The first directive stipulates that the milk must come from healthy cows. The aerobic plate count per millilitre of milk must not exceed 100,000 and the somatic cell count must be under 400,000. Other regulations concern, amongst other things, cowsheds and techniques of milking, refrigeration and storing. The second directive sets out the general hygienic requirements that agricultural enterprises which produce milk have to fulfil. One of these is that all individuals involved in milking must be able to wash their hands and arms close to the place of milking. It is prescribed that milk must be refrigerated to a temperature of 8°C or less (or 6°C if it is not fetched every day). During transportation to the dairy the temperature must not exceed 10°C.

Increasing scope of the *acquis communautaire*

Milk: a quality-sensitive product



Cowsheds in Hortobágy
(Hungary)

Legal framework in the EU

***Hungarian legislation
harmonised to a
considerable extent***

The following laws are the most important for the Hungarian dairy sector. General veterinary matters are regulated by the ministerial decree (FM) No. 41/1997 (V.28). The common ministerial decree (FVM-EÜM) No. 17/1999 (II.10.) fixes hygienic requirements for producing foodstuffs and placing them on the market. Food Act No. XC and the regulation for its implementation contain, amongst other things, regulations for packing and identification. Decree No. 4/1998 (XI. 11) of the Ministry of Health concerns issues of food safety. All enterprises that deliver milk to dairies must be registered with the dairy product council. This registration is important to enable the realisation of the milk quota system, which has been in operation since 1996.

*Table 1:
Classes of quality for raw
milk in Hungary*

Category	'Extra' Category	Category I	Category II	Category III
Plate count (per ml.)	≤ 100,000	100,001 – 300,000	300,001 – 800,000	800,001 – 1,000,000
Somatic cell count (per ml.)	≤ 400,000	400,001 – 500,000	500,001 – 700,000	700,001 – 1,000,000

Source: Hungarian Standard No. 3698.

Hungarian legislation concerning the production and marketing of milk is already to a large extent co-ordinated with that of the EU. But there are two important exceptions. According to Hungarian Standard No. 3698 there are four categories of raw milk quality (see table 1). Out of these, only the 'Extra' category fulfils the requirements of EU law as far as the plate and cell count are concerned. In the worst category, 'III', these can be as high as 1,000,000 per millilitre. The second exception is the inspection of raw milk. EU law prescribes obligatory sampling of milk within holdings. In Hungary, by contrast, milk produced by small farms is often not checked until it has been mixed with that from other farms at milk collecting centres.

As diagram 1 shows, around a third of all (almost 400,000) Hungarian cattle belong to these small holdings. Co-operatives and enterprises own about another third each. The proportion owned by co-operatives is decreasing, however. Whereas in 1995, 42% of cows were still owned by this type of businesses, in 1999 the figure was only 31%. Although, in the last few years, the average 'size' of herd has clearly grown among the 30,000-plus small farms, this is a relative increase. In absolute figures, the average of 4.5 cows per farm in 1999 represented, as before, a very low level. By contrast, dairy co-operatives had 441 cows, enterprises 290 on average.

In the initial years of transition milk production decreased from 2.9m tonnes in 1989 to 1.9m tonnes in 1994. It has since risen again slightly; in 2000, 2.1m tonnes were produced, of which 1.7m tonnes were delivered to dairies. As diagram 2 shows, the quality of raw milk has been continually improving over the past decade. Whereas in 1991 only 28% of milk delivered to dairies satisfied all EU standards, the proportion was already 78% in 1999.

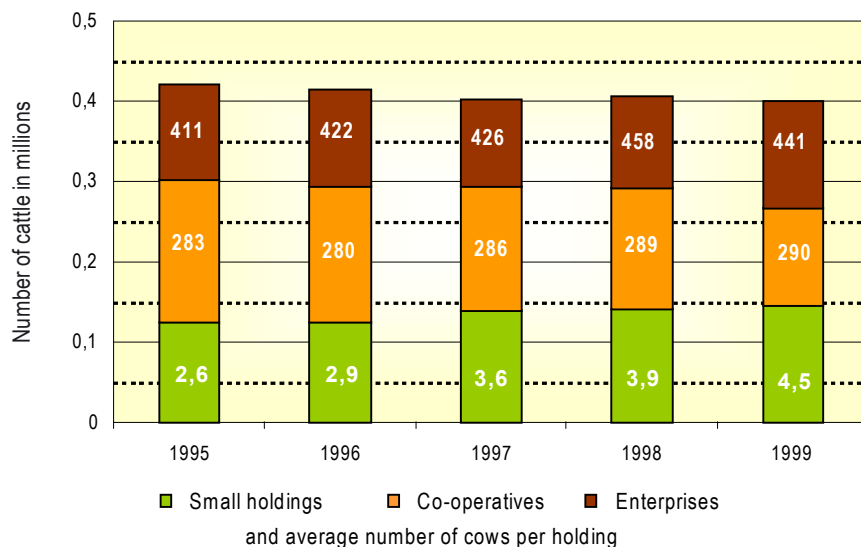


Diagram 1:
Structure of dairy farms in
Hungary, 1995-1999

Source: Central Statistical Office (various issues).

What investment is still needed for all milk to reach EU standards? The evaluation of this issue was carried out in two stages. First, Hungarian experts from the dairy product council were invited to divide milk-producing enterprises into three groups (good, medium, bad) depending on the extent to which they already fulfil EU standards. According to this expert estimate, 10% of farms demonstrate a good degree of harmonisation. These were larger than average firms, who provide 87% of milk deliveries. 81% of holdings were placed in the middle category, and 10% were ranked as 'bad'. On the basis of this classification a calculation was then made for the necessary investment in buildings and in milking and refrigeration technology for different farm sizes.

**10% of dairy farms
have adapted well to
EU standards**

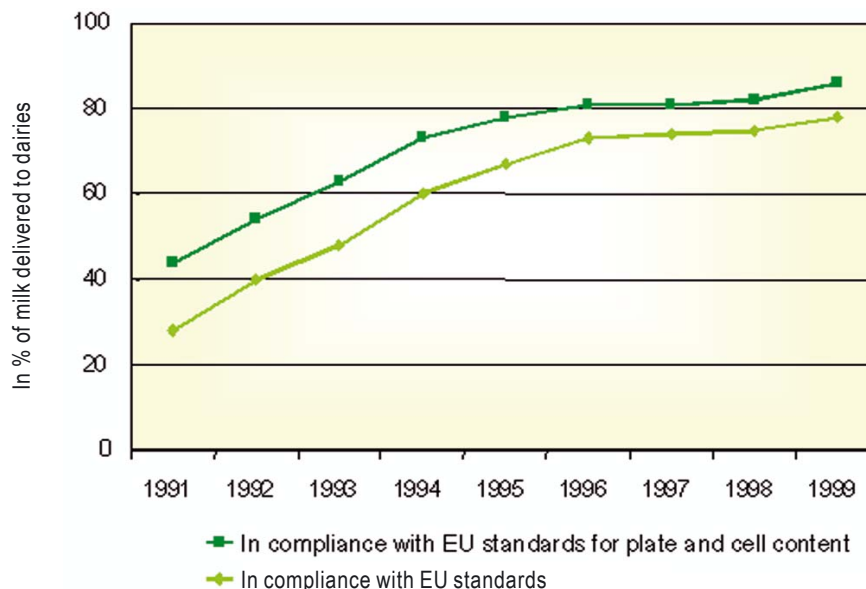
Taking all farms together, it is calculated that the investment needed to maintain EU standards for raw milk amounts to 82m euros. This represents annual costs for depreciation, maintenance of buildings and interest of 9m euros. If one relates this to the actual milk produced, it represents an average cost of 0.1 to 4.3 cents per litre of milk, depending on the starting situation and farm size.

In diagram 3 these annual costs per litre are represented in relation to the average producer price for milk in 2000 (24 cents per litre) and displayed according to farm size and the level of compliance at the outset. The two groups of holdings with the largest herds produce between them around 80% of all delivered milk and already satisfy EU standards to a large degree. For these enterprises the necessary additional investment incurs an annual cost per litre of milk of less than 0.8% of the average producer price, and is therefore almost insignificant. For smallholdings the modernisation costs are a far greater factor. Those whose degree of harmonisation was judged to be 'medium' have annual modernisation costs of between 6% and 10% of the milk price, depending on the

**Annual modernisation
costs as high as 18% of
the milk price**

farm size. The figures for those enterprises in the 'fewer than 5 cows' and '5 cows' categories, who showed a lower level of harmonisation at the outset, were respectively 18% and 13% of the producer price. These two groups only provide 1.4% and 0.2% of the milk deliveries, however. Nevertheless, these two groups comprise a total of 2,400 dairy farmers.

Diagram 2:
Share of raw milk in compliance
with EU standards



Source: Hungarian Dairy Research Institute.

Milk collecting centres still very important

In Hungary, around 25,000 smallholdings do not deliver their milk directly to the dairies, but to collecting centres. These filter and refrigerate raw milk, and then transport it on to the processing businesses. The technical provision of the 1,250 or so milk collecting centres is, for the most part, in a bad condition. If one assumes that, as a result of structural change, only 350 of these collecting centres will still be in existence in a few years time, the necessary investment for buildings, refrigeration technology and laboratory equipment is around 25m euros. This represents annual costs of 2.3m euros. The amount of money needed for improved milk collecting lorries should come to between 12m and 17m euros (1.6 to 2.3 euros per annum).

Successful modernisation in milk processing

Compared with the other countries of Central and Eastern Europe, the Hungarian food economy in the 1990s was very successful in attracting direct investment from foreign enterprises. This is also true of the dairies. In 2000, foreign enterprises owned about 70% of the capital of milk-processing businesses in Hungary. The influx of foreign capital and know-how has made the modernisation of the dairy sector considerably easier. In 2001, 19 of a total of 91 dairies were certified by the European Commission, meaning that they were allowed to export their products to the EU. Uniquely amongst the accession countries, Hungary traditionally exports more agricultural

goods and foodstuffs to the Union than it imports from there. In 2001 Hungary recorded a positive net trade figure with the EU for milk and dairy products for the first time since 1990. Yet trade in these products is only of minor significance. In 2001 Hungary imported milk and dairy products from the EU to a value of 18.5m euros, while exports of these goods to the Union amounted to 21m euros. The 19 dairies who had an EU export licence carried out around two-thirds of the total milk processing in Hungary. Compared with the dairy sectors of leading competitors in the EU, for example the Netherlands and Denmark, the structure of the Hungarian sector shows a dominant pattern of small businesses. Thus in 2000, 39 businesses processed less than 5m litres of milk. These businesses carry out only 3.5% of the total milk processing, however. There are 4 dairies in the category exceeding 100m litres of milk, which together process 37% of the milk deliveries. The investment needed to maintain standards for raw milk is reckoned to be low. According to estimates this works out at between 0.02 and 0.7 cents per litre of milk.

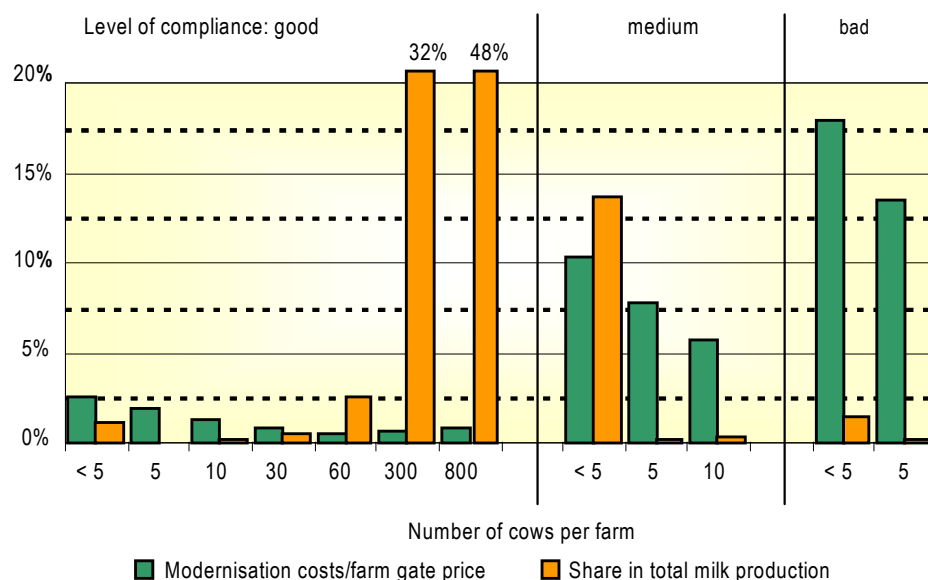


Diagram 3:
Annual modernisation costs
and share of different
farms in total production

Source: Hungarian Dairy Research Institute.

What conclusions can be drawn from the estimation of necessary investment levels and the resulting annual cash-outlay cost and the imputed costs for amortisation, interest and building maintenance? In the milk-processing sector little state subsidy is needed for modernisation. The situation is different, however, for agricultural enterprises. Out of the total 82m euros investment needed for modernisation, two-thirds would go to farmers with fewer than five dairy cows. Maintaining EU standards for raw milk will probably cause these farms huge problems, with

**Support for small farms:
close down or stock up**

regard to both liquidity and the profitability of milk production. In any case such smallholdings will not be viable in the medium to long term. For this reason, state intervention to support these farms should aim to either increase significantly the size of dairy cattle herds, or stop milk production completely. As far as milk collecting centres are concerned, one can assume that structural change will lead to a drastic reduction in their importance. Consequently, milk deliveries directly to dairies will increase. State modernisation subsidies should therefore only be granted to those few milk collecting centres that can be expected to continue to play an important role in the future collection and transportation of milk.



View of the building – the inner court at IAMO

IAMO – a brief portrait

IAMO was founded in 1994 to monitor the development of the agricultural and food sectors in the transition countries of Central and Eastern Europe. A non-university research centre, IAMO is a member of the 'Gottfried Wilhelm Leibnitz' academic network (WGL). It also maintains a close relationship with the Martin Luther University Halle-Wittenberg. The aim of the Institute is to establish a scientifically founded knowledge base for a thorough and socially balanced transition in the agricultural and food sector of the former socialist countries. The great complexity of a simultaneous transition of the economy and society towards market forces and democracy places a high demand on research.

The main tasks of the Institute are research into agricultural development in Central and Eastern European countries (CEEC), and the education and training of German and foreign scholars. IAMO also sees itself as a forum for debate and a provider of information on issues relating to the agricultural and food sector in this region. For this reason the Institute promotes the development of networks within the academic community. Following IAMO's appraisal in 2000, in which the Institute was judged to be 'good to very good', the implementation of the Scientific Council's recommendations has been a major focus over the last two years. Amongst other things these recommendations relate to an overdue revision of our medium-term research plan, the support services at IAMO, the web site and the in-house database. One of the chief aims of this brief portrait of IAMO is to give an overview of the progress in these important areas.

Even after more than a decade of transition in Central and Eastern Europe, the importance of the agricultural and food sector in most transition countries has scarcely diminished. At the same time agriculture is one of the most controversial issues, both in the negotiations for EU eastern enlargement, and in the attempts by the Central and Eastern European countries for greater integration amongst themselves. What makes the situation more complicated is that many CEECs, by joining the World Trade Organisation (WTO), have taken on obligations that are not easily compatible with moves towards inner European integration. It is a matter of importance for IAMO to devise solutions in this area, and also to calm the fears over economic integration expressed both in the East and West. The lack of alternative employment opportunities and insufficiently developed social security systems in the CEEC have accelerated the changeover to a subsistence economy. Although the extension of subsistence agriculture eases the social hardships of the transition process, it also hinders the development of a competitive agricultural sector. In all areas of the economy and society, therefore, transition must be advanced rapidly, with specifically targeted support for the agricultural and food sector. This is important to help ensure the well-balanced development of rural areas.

Integration into world markets promotes increased efficiency and competitiveness of the agricultural and food sector in the reforming countries. Only in this way can the agricultural potential of the CEEC be fully realised. These countries were traditionally net exporters of agricultural products, and will be so again in the future. For those countries that will be joining the EU in the next few years, the fulfilment of EU quality standards will be of critical importance for the international competitiveness of their agricultural and food economies.

IAMO's aims and core tasks

The agricultural and food sector in transition



A meeting during the IAMO Russia Conference

***The research centre at
Halle (Saale)***

Halle has a long tradition of research into agriculture, which is being continued by the close co-operation between IAMO and the agricultural faculty. Because the faculty is involved in an intensive study of the transition process in the new German federal states, our research has much in common. The connection does not just manifest itself in joint research projects, however. Amongst other things, we also collaborate in student education. As members of the agricultural faculty of the Martin Luther University Halle-Wittenberg (MLU), the heads of department at IAMO are included in the teaching and committee work of the faculty. The *PhD student seminar* and the *agro-economic colloquium* are also organised jointly by the agricultural faculty and IAMO. The following have agreed to address the colloquium during the winter semester of 2002-2003: Dr Thorsten Blümohr, Federal Office of Statistics, Bonn; Dr Gerhard Krupp, German-Ukrainian joint venture 'AGROS', Berlin; Dr habil. Stefan Mann, Swiss Research Institute for Agricultural Economics and Land Technology (FAT), Tänikon, Switzerland; Dr Yvonne Abicht, Faculty of Laws, University of Jena; and Dr Bernhard Brümmer, Institute of Agricultural Economics, University of Göttingen. IAMO academics regularly participate in the annual *university conference* on agricultural science, organised by the faculty.

The Institute also has a close relationship with the Institute for the Study of Co-operatives, which was founded in 1998. Together with the Halle Institute of Economic Research, IAMO organises the *Central and East European Seminar*, which discusses the research of both institutes. The seminar provides new stimulus for further co-operation. The variety of joint projects at the research

centre in Halle makes it possible to use the findings relating to the process of transition in Eastern German agriculture for research into the development of the agricultural and food sector in Central and Eastern Europe.

IAMO works closely with faculties of agriculture and economic sciences from other universities, particularly those in Berlin, Bonn, Hohenheim and Göttingen. IAMO and the Institute for Agro-economics at the Catholic University in Leuven, Belgium, exchange a wide range of scientific information on a regular basis. We also have a large number of links with agro-economic chairs and institutes at agricultural colleges and universities in Central and Eastern Europe. These include: in Poland, the Agricultural University of Szczecin, the Agricultural University of Warsaw, the Agricultural University of Cracow, and the Technical-agricultural Academy of Olsztyn; in Russia, the Timiryazev Academy in Moscow and the State Agricultural University of Kostroma; in Slovakia, the Agricultural University of Nitra; in Hungary, the University of Economic Sciences in Budapest; in Bulgaria, the Thracian University of Stara Zagora and the University of National and Global Economics; in Ukraine, the National Agricultural University of Kiev, the National Agricultural University of Sumy and the State Agro-ecological University of Ukraine in Zhitomir; in Lithuania, the University of Vilnius; and in Slovenia, the University of Ljubljana.

Links with other university institutions

The numerous contacts with non-university institutions are also very important for IAMO's work. We have links with the Institute for Business Economics, Agricultural Structures and Rural Areas and the Institute for Market Analysis and Agricultural Trade Policy at the Federal Research Institution for Agriculture (FAL) in Brunswick-Völkenrode, the Centre for Research into the Agricultural Landscape and Land Usage (ZALF) in Müncheberg/Mark, the Bornim Institute for Agricultural Technology e.V. in Potsdam-Bornim, the International Further Education and Development Company (Inwent, formerly CDG and DSE), and the Institute for Regional Geography (IfL) in Leipzig. In Northern and Western Europe IAMO's partners are the Agro-economic Research Institute (LEI-DLO) in the Hague, Netherlands; the INRA (Institut National de la Recherche Agronomique – France) in Paris, France; and the Austrian Federal Institute of Agro-economics in Vienna. Relationships with non-university institutions in Central and Eastern Europe also enrich IAMO's research. Of note here are: in Russia, the Pan-Russian Institute for Agricultural Problems and Computer Science, the Research Institute for Agro-economics at the Russian Academy of Agricultural Sciences, the Institute for Transition Economics in Moscow and the North-west Institute for Agro-economics in St Petersburg-Pushkin; in Slovakia, the Research Institute for Agricultural and Food Economics in Bratislava; in the Czech Republic, the Research Institute for Agro-economics in Prague; in Ukraine, the Institute for Agro-economics at the Academy of Agricultural Sciences in Kiev; in Hungary, the Research and Information Institute for Agro-economics in Budapest; and in Belarus, the Institute for Agro-economics in Minsk.

Links with non-university institutions



Visit to IAMO by a Ukrainian delegation

Summer school

Between 8-26/7/2002 the first summer school for agro-economists in higher education, agricultural practice and administration took place at the National Agricultural University of the Ukraine in Kiev. It was organised jointly by staff from the Institute for Agricultural Economics and Regional Planning of the Agricultural faculty and from IAMO, with the support of the DAAD (German Academic Exchange Service). The aim of this course was to support the transition process of Ukrainian agriculture by offering training to Ukrainian specialists in selected areas of agro-economics. Involved in the teaching were Professors Tillack and Froberg from IAMO and, from the university, Professors Ahrens, Grings, Petersen and Dr Kopprasch.

There were 40 applicants for the course, of which 21 were selected on the basis of their applications and interviews held in Kiev. The range of topics covered by the course included various aspects of agricultural policy (market, structural and social policy), the role of institutions, pricing in the agricultural and food sector, business management, structural change of agricultural enterprises, land markets, and investment financing. The educational programme also included several short excursions. An exam was sat at the end of the course, leading to a qualification. The presentation of certificates for successful participation in the programme marked the high point of the three-week event.

The high levels of concentration and intensive work in the various classes, as well as the views expressed by the participants in personal interviews point to the conclusion that the programme met with a good deal of interest and that the course content satisfied expectations. The participants found it particularly useful to be instructed in the theoretical background to particular economic processes, and in how to come up with general solutions based on these principles.

The summer school will be continued this year.

Doctoral students

One of the core tasks of IAMO is to help develop the next generation of academics. The Institute particularly supports PhD students. At present eight theses are being supervised – of which seven are internal – as well as two other pieces of work.

Together with the Institute for Agricultural Economics and Regional Planning at the Martin Luther University Halle-Wittenberg, IAMO holds a regular seminar for doctoral students. This provides a forum for discussing work in progress, methodology and for presenting results.

Our links with other research institutes were strengthened by the large number of study visits and research fellowships of foreign colleagues. In 2002 the following guests were hosted by IAMO:

Visiting scholars at IAMO

Prof. Dr A. **Sagaidak**, State University for Land Management, Agriculture and Land Division, Moscow, Russia, 10/01 - 10/02/2002

Dr A. **Sever-Koren**, Ministry of Agriculture and Forestry, Zagreb, Croatia, 26/02 - 02/03/2002

Prof. Dr E. **Krylatykh**, Pan-Russian Institute for Agricultural Problems and Computer Science, Moscow, Russia, 11/03 - 17/03/2002

Prof. Dr V. **Uzun**, Pan-Russian Institute for Agricultural Problems and Computer Science, Moscow, Russia, 11/03 - 17/03/2002

Dr L. **Ovchintseva**, Pan-Russian Institute for Agricultural Problems and Computer Science, Moscow, Russia, 11/03 - 17/03/2002

Dr N. **Shagaida**, Pan-Russian Institute for Agricultural Problems and Computer Science, Moscow, Russia, 11/03 - 17/03/2002

Prof. Dr D. **Ephstein**, North-west Institute for Agro-economics, St Petersburg-Pushkin, Russia, 31/03 - 19/05/2002 and 21/09 - 03/10/2002

V. **Drobot**, Ukrainian Ministry of Agricultural Policy, Head of Department for Agricultural Development Strategy, Kiev, Ukraine, 07/04 - 14/04/2002 and 06/10 - 13/10/2002

O. **Savitska**, Ukrainian Ministry of Agricultural Policy, Head of Department for Administrative Reform in the Agricultural Sector, 07/04 - 14/04/2002 and 06/10 - 13/10/2002

R. **Bodnar**, Ukrainian Ministry of Agricultural Policy, Department for Agricultural Development Strategy, Kiev, Ukraine, 07/04 - 14/04/2002

L. **Petryna**, Ukrainian Ministry of Agricultural Policy, Department for Agricultural Development Strategy, Kiev, Ukraine, 07/04 - 14/04/2002

Prof. Dr V. **Vitvitskiy**, Director General of the Centre for Employment Law, Kiev, Ukraine, 07/04 - 14/04/2002

Assoc. Prof. Dr O. **Kovtoun**, National Agricultural University of the Ukraine, Faculty for Agricultural Business Studies, Kiev, Ukraine, 07/04 - 14/04/2002

Prof. Dr E. **Majewski**, Agricultural University, Warsaw, Poland, 27/05 - 29/05/2002 and 12/08 - 22/08/2002

Dr Y. Y. **Kim**, Korean Institute for National Unification, Seoul, Korea, 10/06 - 07/09/2002

K. **Keszthelyi**, Szent Istvan University, Gödöllő, Hungary, 11/06 - 15/07/2002 and 07/10 - 12/10/2002

Dr S. **Bojnec**, Ljubljana University, Slovenia, 21/07 - 09/08/2002

E. **Turowska**, College of Economics, Warsaw, Poland, 03/08 - 31/08/2002

D. **Gajewska**, College of Economics, Warsaw, Poland, 03/08 - 31/08/2002

Dr L. **Michailowa**, National Agricultural University, Sumy, Ukraine, 21/09 - 03/10/2002

Dr A. **Kedaitiene**, Vilnius University, Economics Faculty, Chair of Marketing, Lithuania, 30/09 - 13/12/2002

J. **Makarova**, Pan-Russian Institute for Agricultural Problems and Computer Science, Moscow, Russia, 30/09 - 30/10/2002

A. **Ivanko**, Head of Agricultural Administration of the Chernigov Oblast region, Chernigov, Ukraine, 06/10 - 13/10/2002

O. **Pokotylo**, Deputy Head of Agricultural Administration of the Kiev Region, Kiev, Ukraine, 06/10 - 13/10/2002

Dr A. **Dibrova**, National Agricultural University of the Ukraine, Faculty of State Administration, Ukraine, 06/10 - 13/10/2002

Prof. Dr S. **Kvasha**, Dean of the Faculty of Agricultural Business Studies, National Agricultural University of the Ukraine, Kiev, Ukraine, 06/10 - 13/10/2002

M. **Romanovich**, Belarussian Agricultural Academy, Gorky, Belarus, 15/10 - 11/11/2002

Dr O. **Rodionova**, Pan-Russian Institute for Economics, Labour and Management in Agriculture, Moscow, Russia, 18/11 - 29/11/2002

N. **Karlova**, Institute for Transition Economics (ITE), Moscow, Russia, 20/11 - 15/12/2002

Dr V. **Valentinov**, Institute of Agricultural Economics, Kiev, Ukraine, 25/11 - 15/12/2002

J. **Choi**, National University Seoul, Institute for North Korean Agriculture, Seoul, Korea, from 12/12/2002

Selected externally funded projects

In 2002 applications for funding concentrated on those projects that are directly concerned with agricultural policy consulting. The GFA-Terra Systems GmbH project is looking at the adaptation of central and regional agricultural administrations in Ukraine, while IAMO carried out two projects commissioned by the GTZ. The first of these was agro-political consultancy work for the Albanian government, the second a model-based analysis for the Croatian ministry of agriculture of the effects of trade agreements on the national agricultural and food sector. Also in 2002, the 'Network of independent agricultural experts for the accession countries of Central and Eastern Europe', which is financed by the EU and advises the European Commission, continued its work. The research project financed by the German state of Saxony-Anhalt, which considered 'the relevance of the restructuring of agricultural businesses in Eastern Germany for the shaping of the transition process in Central and Eastern Europe', came to a successful conclusion in 2002.

Business restructuring: a country comparison

In conjunction with partners from Poland and Hungary, a joint working group of IAMO and the Martin Luther University Halle-Wittenberg examined the restructuring of agricultural businesses in Hungary, Poland and Eastern Germany during the 1990s. The project was finished in 2002. At the forefront of the study was the question whether, and to what extent, measures that supported restructuring in one country could be successfully applied in neighbouring countries. At the centre of the research were interviews of selected representatives from agricultural practice, consulting, agricultural administration, agricultural organisations and the scientific community. There were also case studies of agricultural businesses in Hungary and Poland, as well as an examination and evaluation of specialist publications. The main findings of the study were again debated at an international workshop held by the working group in September.

One definite conclusion of the project was that two factors had been of decisive importance for the development in Eastern Germany. First were the enormous financial transfers (in 2001 more than •16,000 per labour unit), and second the direct entry of the new states into a transparent, stable

and reliable political and institutional framework. It was demonstrated that, in these conditions, the success of an enterprise was predominantly dependent on the entrepreneurial skills of the management and not on the legal form or business size. The avoidance of discrimination against certain legal forms and business sizes in Germany can therefore be considered to provide a positive environment for enterprises.

The following recommendations can be inferred for a positive development in the agriculture of the CEEC. Agriculture, like other branches of the economy, needs efficient and dependable institutions that can guarantee, for example, rights of disposal and functioning rental and land markets. A recognised right of bankruptcy is also indispensable to continued economic development, as is inexpensive access to markets and credits. Agricultural policy should limit itself to actual agricultural matters and leave social issues to other policy areas that are better suited to them. Financial transfers should only be seen as a transitional measure. As soon as a subsidy is allocated it should be clearly agreed when it will end. At all events, one should not assume that structural change in the CEEC will be complete in a few years' time. It will be decades before competitive structures are in place. This calls for an agricultural policy with clear aims and direction.

As in the past, in 2002 academics from IAMO acted as co-ordinators for, and advisors to, the European Commission in the 'Network of independent agricultural experts for the accession countries of Central and Eastern Europe'. The Directorate-General for Agriculture of the European Commission established the Network at the end of 2000. It is made up of over 20 country experts (two to three per accession country) and the Advisory Body, composed of IAMO academics and a representative from Trinity College, Dublin. The job of the Advisory Body, headed by Prof. Dr Froberg, is to advise the European Commission on questions relating to the development of the agricultural economy and rural areas in Central and Eastern Europe. At the forefront of activities in 2002 was the development of two new areas: social security systems and demographic developments in the agricultural sector, and the development of the demand for animal products and animal feed. Three of the reports drawn up in 2001 were updated. These deal with areas of agricultural market and trade policy, subsistence farming and the food industry. The projects planned for 2003 will focus on the development of rural areas in Central and Eastern Europe.

Croatia has recently signed several bilateral trade agreements. In November 2000 it also joined the World Trade Organisation and, in October 2001, signed a stability and association pact with the EU. On behalf of the Society for Technical co-operation (GTZ), IAMO - in a study financed by the German Ministry for Economic Co-operation and Development - investigated the effects of bilateral and multilateral trade agreements on the agricultural and food sector in Croatia. Completed in 2002, the project was carried out in partnership with Croatian experts from the Ministry of Agriculture, the Ministry of European Integration, the Chamber of Commerce and the Institute for International Relations. The first findings were discussed in April 2002 at a workshop held in the Ministry of Agriculture in Zagreb with key representatives from politics and business. Thanks to the GTZ the final report has been translated into Croatian.

The quantitative analysis is based on a partial equilibrium model developed at IAMO. The model depicts the Croatian agricultural and food sector by means of a differentiated analysis of 13

IAMO advises the EU Commission in both 2002 and 2003

Effects of trade liberalisation in Croatia

products, considering bilateral trade with the EU, Bosnia-Herzegovina, Hungary, Slovenia and the rest of the world. According to the results of simulated agro-political scenarios for 2002 and 2005, trade liberalisation will lead to a general increase in welfare. The gains for the consumers will more than compensate for the slight decrease in agricultural incomes and duties. The processing industry will see changes in price structures and quality requirements as far as import and export markets are concerned. Trade liberalisation leads to a strengthening of competition in the agricultural and food sector but, on its own, cannot solve the existing structural problems of the sector. In addition to liberalisation, (agro)political measures that will contribute to a better functioning of the markets must be developed further or introduced. In order to ease social hardship, fixed-term compensation payments were considered for those disadvantaged by liberalisation and structural change.

Reform of Ukrainian agricultural administration

The last couple of years have seen an end to the continual economic decline of Ukraine. A growth in the gross domestic product and increasing direct investment both point to an economic turnaround. To stabilise this process and to continue the political and economic transition, further reforms are urgently necessary, especially in the state administration. The Ukrainian government has identified agricultural administration, both at a central and regional level, as a particular area to focus on.

For this reason, the Ukrainian Ministry of Agriculture approached the German Ministry for Consumer Protection, Food and Agriculture, requesting help in the restructuring of its agricultural administration. The Ukrainians are particularly interested in the reorganisation of the administrative structures in the new German states. In response, the German government commissioned IAMO to carry out an appropriate pilot project, which is being financed by the German Ministry for Consumer Protection, Food and Agriculture (BMVEL).



Ukrainian farmer at work in the field

The chief aim of the project is to develop administrative structures in the agricultural sector that are compatible with a free-market and democratic environment. Seminars in Ukraine and study visits to Germany for managers and specialists will offer an overview of the functions of the administration and the distribution of administrative tasks between different levels in the hierarchy. The various stages of decision-making processes in agricultural administration will also be demonstrated. It is planned to continue the project over the next few years.

Marie Curie grant

In 2000 IAMO's application to the EU for a highly valuable Marie Curie Host Fellowship grant was approved. This grant allows research institutes in the EU to employ outstanding young scholars for a fixed term, so that they can work on a key topic that has been little researched. The two-year grant will allow more detailed research at IAMO on the topic, 'Evaluation of transaction cost and the influence on the efficiency of agricultural enterprises in Central and Eastern Europe'. Until now there has been little empirical research into transaction costs in transition countries. The grant, which should start on 1 January 2003, will enable this gap to be filled.

For IAMO, conferences and seminars represent an important forum for the exchange of scientific knowledge with experts from Germany and abroad. The lectures and discussions, as well as the informal contacts on the fringe of these events, often forge new relationships or strengthen existing ones. The meeting of experts with decision-makers from politics and the food economy often provides an interesting stimulus for the task of restructuring the agriculture and food sector.

Conferences and seminars

During Green Week 2002, as part of the 9th East-West agricultural forum, there was a symposium that considered the effects on the food economy in the accession countries of the adoption of the EU's common body of legislation (*acquis communautaire*). IAMO and the working group 'Agricultural Research into the Transition Countries of Central and Eastern Europe' of the 'Study Group for Tropical and Sub-tropical Agricultural Research' (ATSAF) organised the symposium jointly.

Green Week 2002

Stimulated by four lectures that dealt with the example of milk production and marketing in Poland, Hungary and the EU in its current form, agricultural scientists and interested parties from politics and business in East and West discussed the consequences that EU eastern enlargement might have for the sector, and the extent to which the accession countries are prepared for the Common Market.



In Hungary almost 80% of milk delivered to dairies, the majority of which is produced and processed by large enterprises, already meets EU standards. Comparatively low investment is needed in these businesses for adaptation to EU standards. The situation is more complicated in Poland, where only about 60% of milk production is processed industrially, and where two-thirds of the 1.3 million milk producers own only between one and two cows, mostly for their own needs. The majority of even the larger producers need considerable investment to satisfy EU quality requirements and to become competitive. The lectures concluded with a portrayal of the European market for milk and dairy products, as well as the possible developments of this market after EU accession. It was clear from the lectures and discussions that quality problems, the development of milk prices, and quotas for the sector will continue to be key points of interest in the future. It was also evident that there are considerable structural problems to be solved in the agricultural sector of the accession countries, as well as social problems that arise from these.

From 22-23 July 2002, IAMO hosted an international workshop on the topic, 'Adopting Quality Requirements in the Meat and Dairy Sectors in Accession Countries: Consequences for Restructuring and Competitiveness'. The lectures and discussions demonstrated that the accession countries have made significant progress towards harmonisation with the *acquis communautaire*, but that much negotiation is still needed, especially in the countries of south-eastern Europe. Most national laws have been harmonised with EU norms. In many areas, however, there is a need to catch up in the monitoring and enforcement of the new standards. This is particularly true of hygiene and veterinary regulations, as the development or restructuring of the monitoring authorities is occurring only slowly, and it is conditional on access to more modern testing technology. Structural deficiencies in agriculture often impede the observance of EU norms. In this context the severe fragmentation of animal production can be seen as particularly problematic. It does not only complicate the registration of farmers and the identification of animals, but due to low profitability

Food Quality Workshop

there are also insufficient funds to modernise animal accommodation and production technology. National programmes to support modernisation and structural change in agriculture and the food industry will help ensure that considerable changes can be expected in the production structures of the meat and dairy sectors over the next few years. It is questionable, however, whether these changes will be sufficient to guarantee medium and long-term success on world markets. One advantage until now of the meat and dairy sectors in the CEEC has been a production system adapted to the national processing standards. Because of this, Central and Eastern European producers have been able to compete with the EU by exploiting cost advantages, and secure export markets for highly refined products, that is to say cost-intensive products with a high added value. Harmonisation with the *acquis communautaire*, by contrast, demands considerable investment by businesses in order to meet EU processing and product standards. One can expect that the current cost advantages in production will be reduced. There is a danger that the CEEC will be squeezed out of the market for highly refined goods and, in the long term, will only be able to produce a few standard refined goods. There is so much competition for such products on the world market, that it would negatively affect the balance of payments.

Together with the Centre for Development Research (ZEF) in Bonn, and the Institute for Regional Geography (IfL) in Leipzig, IAMO held a scientific conference on the topic: 'Success and failures of transition – the Russian agriculture between fall and resurrection'. The conference was linked to an agro-political forum on German-Russian economic relations in the agricultural sector. In addition to other well-known individuals, the Russian deputy Minister of Agriculture, Dr Dankwert, and the parliamentary state secretary



The deputy Minister of Agriculture of the Russian Federation, Dr Dankwert (r.) on the conference committee



Enterprise Conference 2002

in the German Ministry for Consumer Protection, Food and Agriculture, Dr Thalheim, took part in both of these. There was also an acknowledgement of the career of Prof. Dr Dr h. c. Peter Tillack, currently director at IAMO, to mark his 65th birthday. In total, 75 academics and experts from politics and business took part in the conference. Since the rouble crisis of 1998, Russian agriculture has developed in a positive direction. This process is expected to continue, although growth is expected to slow down and agricultural imports will increase again. At the same time, it is becoming ever more obvious that there is a

serious need for research into the new agro-industry holdings. Will they actually be the most efficient businesses of the future? How must property relations be structured? Analyses at the *rayon* (administrative district) level have shown a diverse picture as far as technical efficiency is concerned, although many districts are already registering an increase. By contrast, technical efficiency in industry has increased in almost all districts. The communications and services infrastructure developed in the Soviet era, which gave inhabitants of small and remote villages a connection into town, has largely collapsed due to cost factors. This has had negative consequences for agriculture and rural areas. With regard to WTO entry, it has been shown how different scenarios will have an effect on welfare. In the evaluation of the conference, it was requested that a joint effort should link Western theoretical and methodical know-how more closely to the local expertise of Russian scientists. A large number of other interesting findings can be found in the conference volume that will appear in 2003.



Congratulations to Prof. Tillack

A joint working group of IAMO and the Martin Luther University (MLU) Halle-Wittenberg has investigated whether, and to what extent, measures that have supported the restructuring of agricultural enterprises in one country, can also be applied successfully in a neighbouring state. The conclusion of the project was an international workshop on agricultural enterprises in transition that took place on 29-30 September in Halle. 130 experts from science, politics and business took part from 13 different countries. A copy of the conference proceedings can already be ordered from Vauk-Verlag (verlag@vauk.de).

Workshop on business restructuring

The introduction to the workshop highlighted the development of agricultural enterprises and rural areas in the CEEC from the perspective of the EU. The first topic – an overview of the transition of agricultural enterprises – dealt with the questions of allocating production quotas, direct payments, the different trends in animal husbandry in family businesses and large enterprises and the issue of the right type of business and legal form. It was thought to be a problem that the CEEC are showing considerable differences as far as their stages of agricultural development and convergence to the EU are concerned. Nevertheless, all the countries are being treated equally by the EU in the accession negotiations. A serious obstacle to business restructuring in many CEEC is the lack of continuity in agricultural policy, both regarding its content and the political and administrative personnel involved. The second topic area, agricultural policy, examined the analysis of the current situation in, and trends in development of, Hungarian and Polish agriculture. Some talks looked at both the change in enterprise structure and problems of poor management, as well as the causes of liquidity problems. There was also a comparison of agricultural support in the EU and in Hungary. The third topic area was concerned with business adaptation in the process of transition. Of particular interest here were the legal form, economics and organisation of large-scale agricultural enterprises. The development of animal stocks and economic viability are also influenced by the legal form. Another talk compared the efficiency and productivity of agricultural businesses in Western and Eastern Germany. In the last topic area, transition in agriculture, the speakers emphasised the need for separation of agricultural and social policy for a successful restructuring of businesses. The restructuring of the labour sector in the CEEC will not take place as rapidly as in the new states of Germany, because the latter benefited from special conditions.

Long Night of Science

On Friday 20 September an event that had already met with an excellent reaction in other towns had its debut in Halle – the first Halle ‘Long Night of Science’. For a whole night all those interested could get information on research directly from the institutes or departments. For the occasion IAMO organised a podium discussion on the topic, ‘Agriculture and food production in the Europe of the future’. Prof. Dr Heinz Ahrens and Prof. Dr Volker Petersen of the Institute of Agricultural Economics and Regional Development (IAA) of the agricultural faculty, and Prof. Dr Heinz-Ulrich Neue of the land research section of the Centre for Environmental Research (UFZ) were on the podium with Prof. Dr Klaus Froberg of IAMO, and also made themselves available for questions from the public.

*Scientific Conference
Green Week 2003*

The Scientific Conference on 17 January should prove to be one of the outstanding events of 2003. It is being organised by IAMO on behalf of the BMVEL to accompany the 10th East-West Agricultural Forum, which will itself be part of Green Week 2003. The theme of the Scientific Conference is ‘EU agricultural policy in the context of eastern enlargement’. Its aim is to present research findings to decision-makers in the agricultural and food sector, primarily from Central and Eastern Europe. In addition to a general plenary session, the conference will be in two sections. Also under the umbrella of the conference will be an event on rural areas in south-eastern Europe, which will be the responsibility of the GTZ and DLG. The two sections on sustainable agriculture, and process standards and product quality in animal production in Central and Eastern Europe will be organised by the ‘Central and Eastern European Sustainable Agriculture International Research Project’ (CEESA) of the Humboldt University in Berlin, and the Institute of Animal Husbandry of the German Research Institute for Agriculture (TZV/FAL).

Publications

IAMO staff publish their findings in scientific journals, monographs, collections of essays and discussion papers. A complete list of publications can be found on IAMO’s web site (www.iamo.de)

Discussion papers

The Discussion Paper series continued in 2002 with the following publications:

HOCKMANN, H., KASHTANOVA, E., KOWSCHIK, S.: Lage und Entwicklungsprobleme der weißrussischen Fleischwirtschaft, [The Status and Developmental Problems of the Belarussian Meat Economy], Discussion Paper No. 38, 2002

SCHULZE, E., TILLACK, P., PATLASSOV, O.: Einflussfaktoren auf Gewinn und Rentabilität landwirtschaftlicher Großbetriebe im Gebiet Omsk, Russland, [Influences on the Profitability of Large-scale Agricultural Enterprises in the Omsk Region, Russia], Discussion Paper No. 39, 2002

SCHULZE, E., TILLACK, P., PATLASSOV, O.: Faktory, vlijajušëie na pribyl’ i rentabelnost’ krupnykh sel’skochozjajstvennykh predprijatij v Omskoj oblasti v Rossii, [Influences on the Profitability of Large-scale Agricultural Enterprises in the Omsk Region, Russia], Discussion Paper No. 40, 2002

BAVOROVA, M.: Entwicklung des tschechischen Zuckersektors seit 1989, [Development of the Czech Sugar Industry since 1989], Discussion Paper No. 41, 2002

FROBERG, K., WEBER, G.: Auswirkungen der EU-Osterweiterung im Agrarbereich, [Effects of EU Eastern Enlargement on Agriculture], Discussion Paper No. 42, 2002

PETRICK, M.: Farm Investment, Credit Rationing and Public Credit Policy in Poland, Discussion Paper No. 43, 2002

KEDAITIENE, A., HOCKMANN, H.: Milk and Milk Processing Industry in Lithuania: an Analysis of Horizontal and Vertical Integration, Discussion Paper No. 44, 2002.

In the series of 'Studies on the Agricultural and Food Sector in Central and Eastern Europe' IAMO publishes monographs and conference proceedings that deal with agro-economic issues in Central and Eastern Europe. Ten conference volumes and six monographs have already appeared in the series. The following three studies were published in 2002:

AGATA PIENIADZ, Wettbewerbsprozesse und Firmenwachstum in der Transformation am Beispiel der polnischen Fleischindustrie, [Competitive Processes and Business Growth in the Transition Process: the Example of the Polish Meat Industry].

LUDGER HINNERS-TOBRÄGEL, JÜRGEN HEINRICH, Agricultural Enterprises in Transition: Parallels and Divergences in Eastern Germany, Poland and Hungary.

PETER TILLACK, ULRICH FIEGE, Agricultural Technology and Economic Development of Central and Eastern Europe. Results of the Workshop in Halle, 2nd –3rd July 2001.



Studies on the Agricultural and Food Sector in Central and Eastern Europe

In its *Annual Reports* IAMO provides information about the academic work of the Institute, the current research activity of its staff, events in which IAMO has participated, projects, joint projects, and personnel and financial details. The annual '*IAMO*' series, to which this publication belongs, also provides an introduction to the Institute. Aimed at a wider public, it gives an overview of IAMO's work, and of the current situation and expected developments in the countries of Central and Eastern Europe.

Other in-house publication series

It is impossible to get a full view of the Institute's work without visiting the in-house web site (www.iamo.de). It does not just provide a clear overview of current activity, but also serves as an 'electronic memory' of IAMO's publications and events. Events, conferences and workshops are advertised here, and the findings of previous events are logged. Increasingly, individual conference, seminar and workshop papers are available online at the earliest possible opportunity, which means that those interested do not have to wait until a complete volume is published. The Institute's publications are fully catalogued. Discussion Papers, annual reports and all editions of this annual '*IAMO*' series can be downloaded directly from the web site. Up-to-date press releases that are issued via the science information service can be seen by clicking the 'Press' link. Detailed 'Staff' pages. The 'Library' page offers the possibility of doing online research via OPAC.

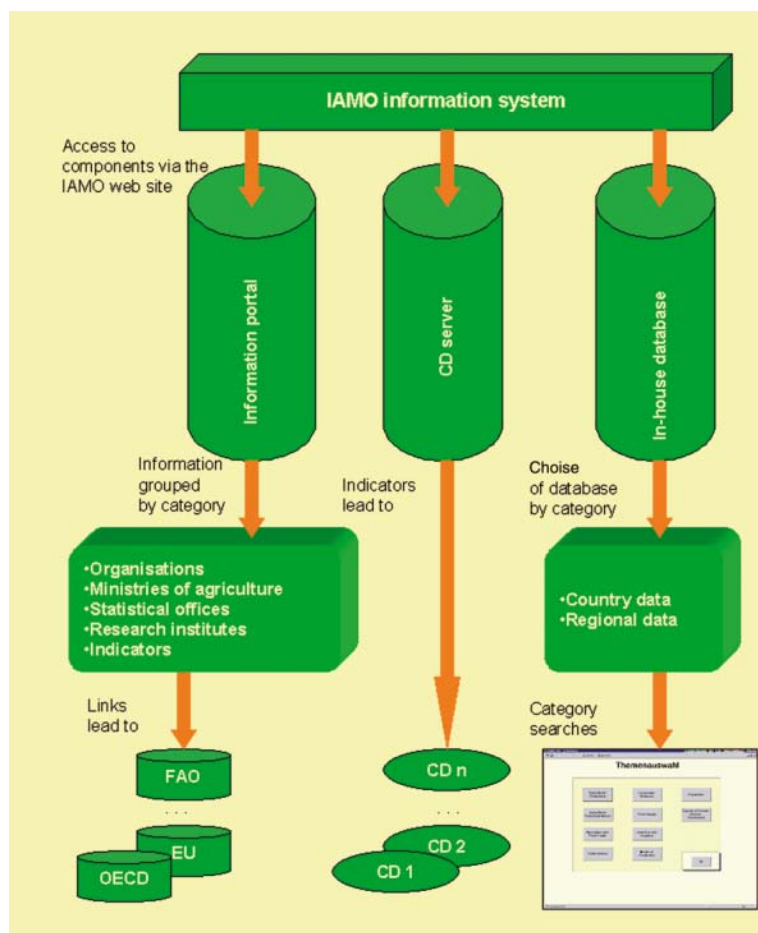
Web site

The English version of the web site also contains most of the information above and a concise Russian version will shortly appear on the Net. Multilingual and eye-catching advertisements of events, equipped with helpful links, provide an electronic method of easing the organisational process. They also improve academic communication by enabling submitted papers to be easily available to all interested parties at the earliest possible opportunity. It is IAMO's aim to use fully the potential that the Internet offers for efficient scientific research.

IAMO information system

In the age of the information society and the Internet, the main problem is no longer obtaining information and data. Increasingly, the challenge is to quickly find reliable data in the flood of information. Particularly in the field of economic sciences, institutions such as ministries of agriculture and statistical offices, organisations such as the FAO and OECD, and a variety of media such as the Fischer Weltalmanach (Fischer World Almanac) provide information relevant to research, not only in printed form but also on CD and the Internet. The staff at IAMO who are responsible for data provision find themselves increasingly confronted with the task of ordering this mass of information in a sufficiently clear way to minimise the time that individual researchers need to spend on data searches.

Diagram 1:
The IAMO information system



In close co-operation with the I.T. and Specialist Communication Faculty at Anhalt College, a blueprint was devised for an information system for IAMO. Its implementation is being carried out gradually, and those elements that already exist are being constantly revised. The information system is based on three components: information portal, CD server and in-house database. Access to all parts of the information system is provided via the web browser, so as to give researchers unified access to all available information. An extensive support system is in place.

The task of the information portal is to make generally accessible information available in a structured form. It includes links to external web sites with information and statistical data relating to political, macroeconomic and agronomical problems of European and CIS countries. The links were arranged under the following headings: Organisations, Ministries of Agriculture, Statistical Offices, Research Institutes and Indicators. The review of information available on the Internet accessible via the indicators is particularly user-friendly. Data provided by individual organisations and research institutes are linked by category. The user no longer needs to know which web site contains the desired information. They can search for specific data and will be automatically taken to the site of the relevant institution. The information portal thus provides all users with rapid access to data they are looking for. At present the information portal contains 260 links that are checked and maintained manually.

Increasingly, state authorities and private bodies are periodically making data available on CD. IAMO has an extensive collection of data CDs and digital reference works. It is proving complicated not only to maintain a rapid connection to the data that is being updated on a regular basis, but also to provide user-friendly access to this mass of information that can run to several hundred megabytes per CD. The chief task is to structure the information and to provide researchers with user-friendly access. For this reason a user interface was established for access to the CD server. Like the indicators in the information portal, it leads the user to the required information.

For their research, the academics at IAMO need a consistent collection of data that is not always available via the Internet or on CD. It takes a lot of effort to seek out these data both in statistical yearbooks produced by the respective national offices, and in other print media. Data are also needed in aggregated forms (e.g. EU15, CEEC, particular product groups). An in-house database is available to meet these requirements. At present, this database contains general information on the countries of Europe and the CIS, data concerning primary agricultural production, subsidy equivalents, exchange rates, and selected macroeconomic parameters. The database is still under development. With the help of the I.T. and Specialist Communication Faculty at Anhalt College, the database is being expanded.

IAMO is a public foundation. It is made up of the board of trustees, the directorate and the scientific advisory board. The current executive director of IAMO is Prof. Dr Dr h.c. Peter Tillack. In order to be able to cover a broad spectrum of areas of agro-economic research, the Institute is divided into three academic departments:

Institutional structure

External Environment for Agriculture and Policy Analysis; acting head of department is currently Dr Peter Weingarten (standing in for Prof. Dr Klaus Froberg, who is on a five-year secondment);

Agricultural Markets, Marketing and World Agricultural Trade; acting head of department is currently PD Dr Heinz Hockmann;

Structural Development of Farms and Rural Areas; head of department is Prof. Dr Alfons Balmann.

The executive director, the head of the three academic departments, and the head of the department of

Administration and Central Services, Hannelore Zerjeski,

form the directorate of the Institute. In co-ordination with the board of trustees, this collegiate body manages the Institute's business and directs the long-term research and development planning of IAMO. The scientific advisory board advises the directorate and the board of trustees on academic matters and carries out a regular appraisal of the Institute's work.

Co-ordination at IAMO

The weekly departmental meetings at IAMO have proved to be an efficient means of exchanging information. In these meetings academic and organisational matters are discussed. The regular Institute assemblies offer a forum for discussing matters above departmental level. They allow all staff to contribute in a variety of ways to decision-making at IAMO. The four interdepartmental working groups deal with the necessary tasks that crop up on a routine basis. These groups are: library, electronic information systems, publications and public relations.

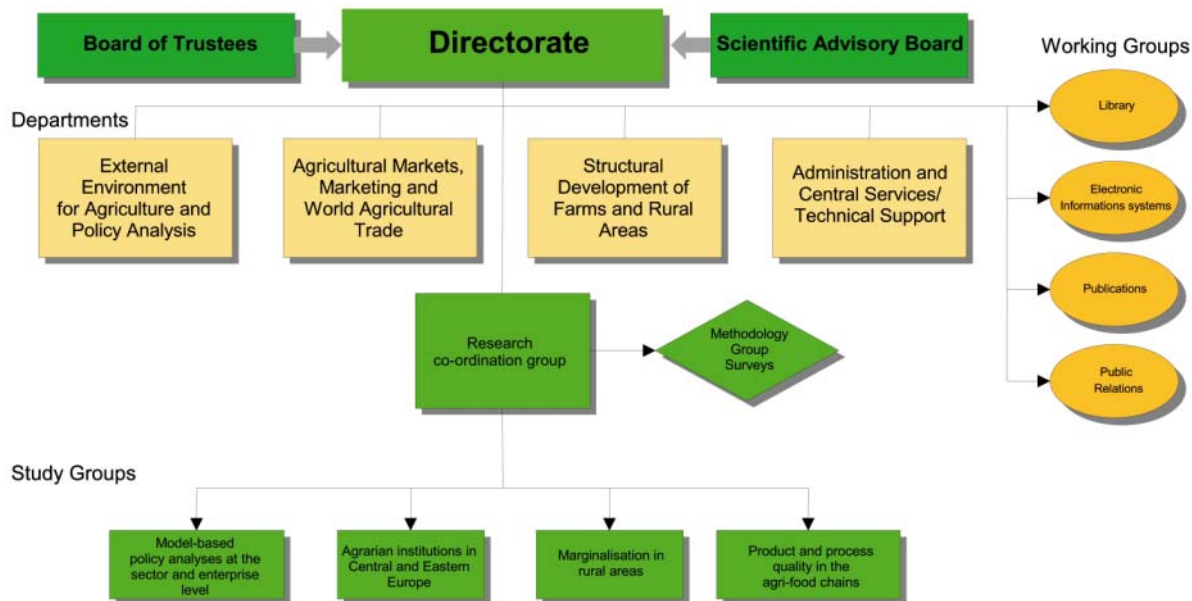
The entire spectrum of research in agricultural economics is required to analyse the process of transition of the agricultural and food economy. IAMO does not have the capacity, however, to cover this wide diversity. For this reason it concentrates on specific areas. It is believed that these deal with the most important problems. Current research at IAMO revolves around three main concepts: *institutions*, *integration* and *rural areas*. These give a thematic and spatial limit to the areas under study. For the medium-term work of the Institute, the following criteria were used when selecting areas of research: political relevance, urgency of the problems, acceptance and applicability of the findings, feasibility and long-term effects of the research projects.

Aims of academic work

In 2002 the Institute pushed ahead with implementing the new medium-term research agenda, which IAMO's scientific advisory board approved in its meeting on 17/10/2000, and which the board of trustees confirmed on 31/02/2002. The number of research areas was reduced from six to four. There have been shifts of emphasis in the content of research. IAMO is acknowledging the progress made in, and the changing problems of, the transition process. By reformulating and focusing its research areas, IAMO will sharpen its academic profile. IAMO's four areas of research are now:

1. Model-based policy analysis at sector and business level
2. Agrarian institutions in CEECs
3. Marginalisation in rural areas
4. Product and process quality in the agri-food chains

Flowchart of the Institute for Agricultural Development in Central and Eastern Europe



Each research area has a dedicated study group, headed by a well-qualified member of staff. Together with the heads of academic departments, the study group leaders make up the research co-ordination group. Its tasks are to select new research projects, organise interdepartmental and inter-institutional research activity, plan academic events, and to encourage further training for the Institute's staff.

Academic work at IAMO relies on efficient support services. The IT staff are constantly developing, as well as maintaining and updating the Institute's hardware and software. Interdepartmental working groups co-ordinate services and optimise their use for research activity. Via the *public relations* and *publications* working groups, IAMO staff are involved in the process of publicising details of the Institute's work and communicating research findings. The *electronic information systems* working group co-ordinates decisions regarding the provision of computer software, and deals with the establishment and maintenance of a database relating to the agricultural and food sector of Central and Eastern Europe. The *library* working group helps ensure that the collection and organisation of the library are geared towards research needs.

Central services

How to find us

By car

from the south

Take the motorway A9 (Munich-Berlin) to Schkeuditzer Kreuz. Then take the A14 in the direction of Halle/Magdeburg and leave at the Halle-Peißen exit. Follow the B100 to Halle until you reach the outskirts of the city (traffic lights at Dessauer Brücke). Get into the right-hand lane and turn left still following the B100, to 'Zentrum' (centre) and Magdeburg. Turn immediately to the right onto the B6 in the direction of Magdeburg and leave this at the next exit (Zoo, Wolfensteinstraße). Carry on straight along the Wolfensteinstraße (underpass, several traffic lights, crossing the Reilstraße to Große Brunnenstraße) until you reach Burgstraße. Turn right (you have no other option) and at the next crossroads (restaurant "Zum Mohr", Burg Giebichenstein) turn left and follow the main road over the bridge crossing the river Saale. Once over this bridge turn right, go right again under the bridge and continue along the riverside.. Turn left at the next crossroads towards the university and Weinbergweg, and follow the road until the next set of lights. Drive straight on into the Walter-Hülse-Straße. The building on the right-hand side is the IAMO. Now turn right into Theodor-Lieser-Straße and you are in front of the IAMO.

from the north

Leave the A9 at the Halle/Brehna exit and take the B100 towards Halle. See 'from the south' for further directions.

from the north-west

Coming from Magdeburg take the A14 (direction Leipzig or Dresden) to the Halle-Peißen exit and then take the B100 to Halle.
See 'from the south' for further directions.

from the west (on the B80)

Follow the B80 to the Rennbahnring crossroads and follow the signs to Peißenitz/Kröllwitz. After about 2 km, after the third set of traffic lights, you will see the IAMO building (sandy-coloured with a red roof) to the left. Take the next left into the old barracks. At the other end of the large square turn left into Theodor-Liese-Straße. The IAMO is in the last building on the left-hand side.

By train

Leave the station by the main exit and follow the signs to the tram stop 'Riebeckplatz/Hauptbahnhof'. From here trams 5 and 5E go in the direction of Heide. Alight at 'Weinbergweg' (about 20 minutes from the station). The Institute is on the left-hand side of the road.

By plane

Halle/Leipzig Airport is 20km from Halle. From there bus number 300 leaves for Riebeckplatz/Hauptbahnhof every 30 minutes (60 minutes in winter). Read the 'by train' advice to find the way from there. Bus 300 also takes you to the Hallmarkt from where you can take trams 5, 5A and also 6 towards Heide. Alight at 'Weinbergweg'.

