TCP/BIH/7821

Technical Cooperation Programme

A MEDIUM-TERM AGRICULTURE SECTOR STRATEGY FOR REPUBLIKA SRPSKA

Prepared Jointly
by

Ministry of Agriculture, Forestry and Water Management
and
Food and Agriculture Organization of the United Nations

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

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FOREWORD

The 1995 Dayton Peace Accord, following three and a half years of war, laid the foundation for peace in Bosnia and Herzegovina. The international community supported a reconstruction programme, which initially addressed emergency needs across all sectors. The return of economic and political stability in the subsequent years provided the basis for a recovery phase to be initiated. In this context, the Ministry of Agriculture, Water Management and Forestry of the Federation of Bosnia and Herzegovina requested technical assistance from FAO in the formulation of a medium-term agriculture sector strategy. FAO, while evaluating the request positively, recognized the need for participation of the Republika Srpska , the second entity of Bosnia and Herzegovina, in the exercise. By end 1997, the Republika Srpska indicated that it was agreeing to participate in any technical projects implemented by FAO. A general change in the political climate in Bosnia and Herzegovina entailing a considerable degree of political and economic stability and cooperation between the two entities indicated that the time had come to undertake measures to enhance sector productivity and efficiency as a means to support overall recovery of the country.

FAO fielded a mission in early 1998 to formulate a technical assistance project for the elaboration of a medium-term development strategy for the agriculture sector in Bosnia and Herzegovina. In the formulation of the project, particular emphasis was given to the active involvement of national expertise. The objectives of the project were:

- to identify measures for the medium term which would help overcome structural problems in the agricultural and rural sectors of the Federation of Bosnia and Herzegovina and Republika Srpska, making them more competitive and market oriented in the European context; and

- to promote economic integration of the two entities by enhancing the complementarity of their strategies.

The project was approved in early May 1998 and by the middle of the same month a team of specialists consisting of international consultants and FAO staff visited Sarajevo and Bijeljina to participate in two project inception workshops during which national working groups were established, Terms of Reference discussed and agreed upon and working methodologies elaborated. Six groups in both the Federation of Bosnia and Herzegovina and the Republika Srpska were entrusted with the preparation of technical papers providing background material in their respective fields, identifying issues and constraints impeding development and proposing measures for their resolution or removal within current budgetary limitations The six working groups covered the following areas:

- Macroeconomic framework for agriculture policy;
- Land use and natural resource management;
- Crop production (including fruit and vegetables);
- Livestock production;
- Agricultural marketing and agro-processing;
- Agricultural institutions (research, extension, education and farmer/producer associations and cooperatives).

The national working groups completed the papers by mid-July 1998. These papers were discussed in two workshops with broad based participation of stakeholders from government and the private sector and with the participation of the FAO team. The purpose of these discussions was to agree on appropriate policy response to issues identified and formulate recommendations for

inclusion in the strategy to be proposed. On the basis of these discussions and analyses two strategy documents were formulated by mid-March 1999 and were circulated to the group coordinators of the national working groups, to policy makers in the Ministries of Agriculture and representatives of other ministries for comments in preparation for a concluding workshop. During the latter, the recommendations contained in the draft documents were discussed and consensus on strategic elements reached. Subsequently the strategy documents were presented to a larger audience comprising representatives of concerned ministries, academia, interest groups and the donor community.

While agriculture sector strategies were developed for each entity the entire work, was carried out in clear recognition that these strategies were established for one state and complementaries were stressed. In order to formalize this understanding and define areas of cooperation between the two entities a meeting was held on 11 August 1999 in Banja Luka chaired by the Minister of Foreign Trade and Economic Relations and with participation of representatives of the respective entity Ministries of Agriculture, representatives of the Ministry of Foreign Trade and Economic Relations and representatives of the donor community. Mr M. Arias, the representative in Banja Luka of the Office of the High Representative, acted as moderator. The meeting was concluded with the signing of a declaration of intent outlining those areas of collaboration for which a consensus was reached during the inter-entity consultation. The full text of this declaration is attached to this foreword.

M. Lindau
Regional Representative for Europe

BOSNIAN AND HERZEGOVINA – INTER-ENTITY CONSULTATION

DECLARATION OF INTENT

Under project TCP/BIH/7821 "Medium-term Strategy for Sustainable Agriculture Development for Bosnia and Herzegovina" agriculture sector strategies were developed for each entity. However, this work was undertaken in clear recognition that these strategies are for one state and complementarities were established between them. For development of the agriculture sector to take place, co-operation and joint efforts in key areas by both entities will be a crucial condition for success.

Prospective areas of collaboration were discussed with representatives of the respective entity Ministries of Agriculture, representatives of the Ministry of Foreign Trade and Economic Relations and representatives of the donor community. Agreement was reached that both entities would undertake to actively collaborate in the areas described in the attached addendum.

We, the undersigned undertake to facilitate and implement the recommendations described in the attached addendum.

Banja Luka, 11 August 1999

H.E. A. Smajic
Minister for Agriculture,
Water Management and
Forestry
Federation of Bosnia and
Herzegovina

H.E. M. Kurtovic
Minister of Foreign Trade
and Economic Relations
Bosnia and Herzegovina

H.E. M Savic
Minister for Agriculture,
Forestry and Water
Management
Republika Srpska

Note: The original document was signed by H.E. M. Kurtovic. For H.E. A. Smajic, Mr M. Ribic, Assistant Minister, MAWMF and for H.E. M. Savic, Mr N. Kesic, Deputy Minister, MAFWM signed.

BOSNIAN AND HERZEGOVINA AGRICULTURE SECTOR DEVELOPMENT

AGREED AREAS OF INTER-ENTITY COLLABORATION

(a) To develop a market information system which provides daily information on all major agricultural markets in Bosnia and Herzegovina for users in both entities; and which provides for the regular dissemination of information on agricultural imports and exports and the characteristics of agricultural trade between the two entities.

(b) To avoid the spread of infectious livestock and plant diseases in Bosnia and Herzegovina by establishing systems which ensure that all relevant national and international institutions and organizations are fully informed of actual and potential plant and animal health problems.

(c) To actively support the task forces established by the Ministry of Foreign Trade and Economic Relations, including those for:
- WTO accession;
- Adoption of the *Acquis Communautaire* of the the European Union; and
- Compliance with European Standards for livestock exports.

(d) To rationalize the development of public institutions for education, research and extension; and to avoid duplication of these institutions.

ACKNOWLEDGEMENTS

This report is the outcome of close collaboration between the Ministry of Agriculture, Forestry and Water Management and FAO. For the formulation of the strategy six working groups were established to deal with specific subsectorial issues. The themes and the composition of the national working groups was the following:

Working Group 1: **Economic Framework for Agriculture Sector Policy**

Mr Vaso Corluka (Group Coordinator)
Mr Milenko Vrachar
Mr Miladin Vidic
Mr Tihomir Spremo
Mr Marko Sarcevic

Working Group 2: **Land Use and Land Preservation**

Mr Dushko Komarcevic (Group Coordinator)
Mr Slobodan Koprivica
Mr Radomir Ninkovic
Mr Slavko Mitrovic

Working Group 3: **Crop, Vegetable and Fruit Production**

Dr Jojo Stojcic (Group Coordinator)
Dr Gavro Kremenovic
Dr Dragisha Lopandic
Mr Goran Perkovic

Working Group 4: **Livestock Production**

Mr Gojko Mirjanic (Group Coordinator)
Ms Novolina Ristic
Ms Vera Kanlic

Working Group 5: **Agricultural Marketing and Agro-processing**

Mr Zarko Krbanjevic (Group Coordinator)
Ms Rada Svitlica
Mr Vlado Mitrovic

Working Group 6: **Agricultural Institutions**

Mr Dragisa Markovic (Group Coordinator)
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Mr Drago Nedic

The FAO Team Leader was G.N. Christensen and the FAO specialists and international consultants included P. Finlayson (Livestock specialist), R. Keith (Rural Finance specialist), S. Keith (Land Tenure specialist/FAO), W. Lindley (Institutions specialist/FAO), J. Macartney (Agronomist), W. Sachers (Marketing and Agro-processing specialist) and B. d'Avis (FAO Coordinator).

FAO is grateful to the Ministry of Agriculture, Forestry and Water Management and the numerous specialist of Republika Srpska for the technical and logistical support it received at all stages of the preparation of the strategy. In particular, sincere thanks are due to H.E. M. Savic, Minister for Agriculture, Forestry and Water Management of RS and Mr. V. Corluka, National Project Coordinator for their keen interest, guidance and continuing support of the project. FAO is also grateful for the significant contribution of the national working groups and representatives of the academic community of Republika Srpska to the formulation of the strategy. In addition, the FAO team appreciated and benefited greatly from numerous contacts and constructive discussions with different representatives of Government agencies, business establishments and the farming community. The team is also very grateful for the frank and productive collaboration with representatives of the Office of the High Representative, of the EU Phare ASPU project and the entire donor community.

The generous support of the FAO Technical Cooperation Programme (TCP) in funding the project is gratefully acknowledged as are the inputs provided by concerned Technical Units/Division at FAO.

ACRONYMS AND ABBREVIATIONS

AI	Artificial Insemination
ARC	Agriculture Research Council
asl	Above sea level
BiH	The State of Bosnia and Herzegovina
CBBH	Central Bank of Bosnia and Herzegovina
CRPC	Commission for Real Property Claims
CSO	Central Statistics Office
FBiH	Federation of Bosnia and Herzegovina
DM	Deutsche mark
DP	Displaced Person
EU	European Union
FAO	Food and Agricultural Organization
GDP	Gross Domestic Product
GSP	Gross Social Product
GTZ	Deutsche Gesellschaft fuer Technische Zusammenarbeit (Germany)
HEP	Hydro-electric power
IEBL	Inter-Entity Boundary Line
IPTF	International Police Task Force
ISTA	International Seed Testing Association
LIBOR	London Inter Bank Offering Rate
MAFWM	Ministry of Agriculture, Forestry and Water Management (RS)
NPC	Nominal Protection Coefficient
OHR	Office of the High Representative
NGO	Non-governmental Organization
RRTF	Reconstruction and Return Task Force
RS	Republika Srpska
SFOR	Stabilization Force
UHT	Ultra-high temperature
UNHCR	United Nations High Commission for Refugees
USAID	United States Agency for International Development

EXECUTIVE SUMMARY

The agriculture sector of the Republika Srpska (RS) is now recovering steadily from the effects of war. Economic and political stability form the base of this recovery, together with the reconstruction programme supported by the international community. The challenge now is to obtain sustainable growth in agriculture production, productivity and competitiveness. Working together, FAO and the Ministry of Agriculture, Forestry and Water Management have responded to this challenge by formulating a medium-term strategy for agriculture sector development.

The *global objective* of the strategy addresses the basic constraints to sector development, and reflects the aim of RS to develop a market-oriented economy.

> To increase agricultural output and exports through measures which increase the efficiency, profitability and competitiveness of production, processing and marketing; to promote rural development and increase the opportunities for non-farm rural employment; to optimize land use and preserve the natural resource base; to strengthen agriculture sector institutions; and through these measures to achieve sustainable agriculture sector development.

A further set of *supplementary objectives* address the major consequences of war:

> To further the reconstruction process;
> To support the resettlement of refugees and displaced persons in rural areas;
> To strengthen economic relations and cooperation with the Federation of Bosnia and Herzegovina.

To focus and structure the strategy, these objectives will be applied to six areas of action: the efficiency and profitability of agriculture production, the marketing and processing of agricultural products, rural development, land use and natural resource management, agriculture policy and institutions and inter-entity trade and cooperation.

These areas of action are linked by the following common themes:

(1) The importance of small and large-scale commercial farmers as the group most likely to adopt improved management practices, and to obtain significant increases in agriculture production and marketed surplus;
(2) The widespread establishment of producer associations to facilitate the dissemination and adoption of new technology, reduce the diseconomies of small, fragmented farms and to link producers to market outlets;
(3) The need to increase rural non-farm employment as the basis for improving the welfare of rural households and strengthening rural communities;
(4) A significant allocation of resources to support the development of competitive agro-processing and agri-business enterprises and to strengthen marketing institutions;
(5) A clear definition of the role of government and the responsibilities of public and private institutions, support for the establishment of these institutions and recognition of the limited public resources available for direct support to agriculture.

Demonstrating its support for this framework, and the general process of economic reform, the MAFWM has already initiated a series of projects to implement various components of the strategy.

Strong support from the donor community will be essential for strategy implementation, especially in the areas of institutional development and support for private investment. The total cost

of sector recovery and development far exceeds donor capacity however. Given the limited resources of government, the consequent reality is that most of this cost will inevitably be borne by rural people. For this reason the strategy places considerable emphasis on measures to increase farm and non-farm incomes and to stimulate rural investment.

A ten year time frame has been designated for strategy implementation. Strategy action is based on short-term measures to be initiated over the next one to two years, and medium-term measures to be initiated within two to five years. Progress will be reviewed at the end of five years to determine the need for new approaches to strategy implementation.

Efficiency and Profitability of Agriculture Production

Agriculture production in RS is well below its potential, and productivity is less than half of the levels achieved in western Europe. To address these issues the strategy will promote the adoption of improved management systems as the basis for increasing the efficiency and profitability of production, and so farm output and farm income. The primary vehicles for supporting adoption of these management systems will be the establishment of an effective, gender-sensitive extension system, and the wide-spread development of producer associations (cooperatives, partnerships or companies).

Specific measures for crop production include programmes to expand the improved varieties of certified seed and seedlings to which farmers have access; development of low-cost extension packages to enable small-scale commercial farmers to increase crop yields and reduce production costs; further extension packages to encourage these farmers to diversify into more profitable crops (particularly high return, labour intensive crops); the modernization of fruit production systems and orchard management; promotion of low-cost irrigation systems; identification of more cost-effective cultivation techniques and associated farm machinery requirements and programmes to increase the availability of modern farm machinery and to give small-scale commercial farmers cost-effective access to this machinery. Where it is profitable, the strategy will also promote the production of organically grown, chemical-free fruit and vegetables.

The livestock sector will be supported by programmes to develop low-cost feeding systems suited to small-scale commercial farms as the basis for improving the growth rates of young stock, reducing the age of first parturition and shortening the breeding interval. This will entail measures to improve the quality and quantity of pasture and hay production, the use of mountain grazing resources and the introduction of alternative forage crops. The pre-war performance recording scheme will also be re-established, but as a self-financing entity. Programmes will also be developed to support fish and honey production.

Farmers will assume most of the responsibility for increasing livestock numbers. Budget restrictions permitting, this will be supported by a modest subsidy programme to encourage farmers to retain young dairy stock; legal and administration reforms designed to facilitate the private sector import of livestock and animal semen; and reduction of import tariffs on breeding stock. Continued donor support for the import of breeding stock will also be sought, but as a means to improve genetic potential and to assist small-scale commercial farmers to increase herd size.

Marketing and Processing of Agricultural Products

Effective development of market institutions, processing and agri-business is the basis for building competitive, demand-driven commercial agriculture and realizing the significant potential for agricultural exports. This infrastructure will be established by developing strong marketing

institutions, agri-business enterprises and agro-processors; and by promoting the formation of producer associations to link producers to market outlets and increase marketed surplus.

Rapid privatization of state-owned marketing agencies and agro-processors, in a viable form, is the starting point for this process. This will be supported by donor-financed credit lines for investment and working capital. Donor support for training in business management, marketing and accounting is also required; to assist managers in increasing production efficiency, and adapt output to the post-war level and characteristics of consumer demand. A market information system will be developed and supplemented with monitoring and analysis of trends in the prices of agricultural commodities on international markets. Product standards will be adjusted to EU standards. As a means of improving inter-entity trade and cooperation, the programmes to establish a market information system and to adopt EU standards will be implemented jointly by the two entities.

Additional more focused initiatives include: support for the re-establishment and restructuring of agricultural cooperatives; the re-establishment of assembly systems; reduction of the current import tariffs on maize and sugar to zero percent, as a means of improving competitiveness of local animal feed and fruit and vegetable processors; the construction of wholesale markets and improved facilities in local markets; and promotion of agricultural exports by the chamber of commerce. The production and processing of industrial crops will also be rationalized, with future support limited to those large-scale processors able to compete on international markets. Private sector processing of domestically produced oilseed for animal feed will also be encouraged.

Rural Development

Strong rural communities are essential for future political and economic stability, and these will not emerge without balanced support for both farm and non-farm income generation, and full access to high quality health and education. Rural development programmes will be initiated to achieve these objectives, with particular attention to measures which increase non-farm rural employment. By reducing reliance on farm income, increased access to non-farm employment will also allow an increase in the sale or lease of rural land and so facilitate an increase in farm size. The MAFWM will share responsibility for the design and implementation of these rural development programmes with other relevant Ministries and with the municipalities.

Strategy implementation will begin with the preparation of municipality-level rural development plans which reflect the needs and aspirations of local people and the local resource base. Local government, NGO's and donors will then use these plans as the basis for designing job and business training programmes and to establish micro-credit lines suited to small enterprise development. Resources will also be provided to relevant ministries and local government authorities to strengthen their capacity to develop and implement rural development programmes. Medium-term activities will focus on improving the quality and availability of rural health and education.

Land Use and Natural Resource Management

Given the limited availability of agricultural land, effective use of this land is essential for sector development. Within this context, the aim is to optimize land use and preserve the natural resource base by developing policies and institutions which balance public and private interests in land use and ownership and ensure effective stewardship of natural resources.

War-related issues are the immediate concern. Following the guidelines and programmes developed by the RRTF, the resettlement of rural land will be supported by ensuring that the returnees, re-locating families and residents in resettlement areas have full access to available credit, extension facilities and to rural development programmes to create opportunities for non-farm

employment. The international community will also be asked to increase its support for measures to facilitate land transactions within and between entities. The de-mining of agriculture land will be accelerated by establishing an administrative unit to identify and prioritize rural land for de-mining, obtain requisite donor finance and coordinate and monitor de-mining.

Increased land market activity will be the basis for addressing the problem of small farm size and fragmentation. Leasing will be encouraged by developing legally recognized, standard lease contracts which protect both lessee and lessor. Land sales will be promoted by removing the tax on land transactions, by making more information available on rural property available for sale, lease or exchange and on the support services available to effect land transactions. The efficiency and probity of land transactions will be improved by training valuers and property agents and establishing professional associations and codes of conduct for their activities. Land consolidation programmes will be continued, but land owners and/or donors will fund part of the cost of associated infrastructure.

In association with the privatization programme, the strategy recommends that government enact legislation to allow privatization of the land owned by the state farms and that it strengthen the existing legislation on property restitution. In the interim, the remaining assets of the state farms should be privatized, with the land to be occupied on the basis of medium-term lease agreements at market rentals. In order to improve their efficiency and productivity, the largest state farms should be divided into smaller commercial units, although this should not prejudice their capacity to practice modern, intensive management systems.

Institutional reforms include international community support for the process of updating and reconciling the land book and the land registry, computerizing land records and amendments to inheritance law to prevent further land fragmentation. As an alternative to municipality control, Land Development Boards should be established at local level for land use projects that require cooperative action (drainage, irrigation and land consolidation programmes, and the management of communal grazing areas). These Land Development Boards would consist of relevant land users and they would operate according to government legislation.

In order to structure this broad agenda the strategy will implement a comprehensive review of all aspects of rural land policy and the institutions responsible for policy implementation. Priority issues include the strengthening of land markets and the preservation of rural land, forest and water resources.

Agriculture Policy and Institutions

The strategy will develop policies which are consistent with the operation of a market economy and available public resources; establish appropriate roles for public and private sector institutions responsible for these policies and build the requisite capacity to operate these institutions. Longer term plans to join the WTO and accede to the EU will also be fully supported. As there is a natural distrust of change, the strategy provides for key sector people to travel outside BiH to learn about agriculture policies and institutions in central European and EU countries, and in the USA.

Support to the MAFWM will focus on strengthening capacity in its main future areas of responsibility: policy analysis, monitoring and enforcement of plant and animal health regulations, market information and stewardship of natural resources. While the agriculture budget is perceived as inadequate, the strategy recognizes that there is limited scope to increase it in the medium term, and that trade policy will be the principal form of intervention in agriculture markets. In this context the strategy endorses current trade policy, but finds there is a need to reduce existing tariffs on imported breeding cattle, maize and sugar to zero percent. To increase the impact of the agricultural budget, it will be used for activities which benefit as many farmers as possible. Direct price support will thus be

limited to wheat and milk and increased emphasis will be placed on the funding of agriculture extension and research. Current minimum prices for wheat and milk and the subsidy on milk will be maintained at their existing levels. All other subsidies will be phased out. As commodity markets strengthen the current controls on food prices and food price margins will also be phased out.

Once economic and political conditions stabilize, a more realistic basis will be developed for the management of wheat stocks and protection of the wheat floor price by the Commodity Reserves Agency. The Agency's responsibility for seasonal credit will eventually be assumed by private sector financial institutions and the system of parity ratios used to determine official prices for seasonal credit will become redundant.

Consistent with experience elsewhere in western economies, the strategy recommends that future financial support for the sector should derive from a diverse system of private sector financial institutions rather than a single state-owned financial institution. To establish this system, the presence of financial institutions which have special expertise in agriculture credit, such as the Raiffeisen Bank, will be encouraged as well as the establishment of Village Credit Unions to provide affordable financial services to small-scale farmers. To provide medium and long-term finance for agro-processors, agri-business enterprises and large-scale commercial farms, donor guidance and finance will be sought to establish a private sector Investment Bank whose role would be to provide finance for medium to large scale enterprises in all sectors of the economy.

The strategy recognizes that establishment of this financial system is a long-term objective. Pending reform and recovery of the banking system, agriculture sector development will rely heavily on the continued provision of credit lines for working capital and investment by the donor community. These credit lines will be administered by commercial banks, in conjunction with programmes of financial sector reform. Where appropriate, donors will also be asked to modify the loan repayment period for credit to agriculture enterprises, in order to improve borrower cash flow during the critical first 12 months of business operation.

The future extension system will consist of private extension agents employed by agriculture cooperatives, agri-business enterprises and agro-processors, plus a small, regional public extension service. Funded initially by the donor community, the aim is to finance the public extension service from state budgets and user fees by 2002 and to make it self-financing by 2005. An Agriculture Research Council (ARC) will be formed to define the agriculture research agenda and allocate research funds, with its operation and research fund to be donor-financed for the first three years of operation. In addition to academia and government, ARC membership will include small and large-scale farmers, the extension service and agri-business managers. Funding will be directed to the pre-war research institutions, along with donor support to strengthen research programmes on plant and animal husbandry for small-scale commercial farmers. To strengthen education, the international community will be asked for support to improve curricula and teaching capacity of the pre-war institutions responsible for training university students and technicians and to develop adult training programmes for farmers. A more appropriate institutional framework will also be developed to rationalize the current highly fragmented system of research, extension and education centres and to improve communication between them.

Direct public involvement in animal health will be limited to: licensing of veterinarians; monitoring and enforcement of regulations on animal products, import and export of live animals and animal semen, and funding and management of the veterinary institutes and diagnostic laboratories. Refurbishment of the pre-war veterinary institutes and diagnostic laboratories will also be completed. Most other aspects of livestock production will be transferred to the private sector. The veterinarian service will be privatized. Its monopoly over the acquisition and sale of animal semen and artificial insemination will also be removed and technicians will be trained and licensed to perform these services on a commercial basis. Those state-owned animal reproduction centres which have the

potential to operate as commercial enterprises will be privatized and given access to credit to develop as commercial stud farms, as found in western countries.

Public sector involvement in plant breeding and plant protection will be limited to preparation of the national seed list; seed testing, selection and certification; and the monitoring and enforcement of regulations for seed, plant materials and agriculture chemicals. Donor support for the development of modern seed certification facilities will continue and additional support will be sought for testing and selection procedures associated with expansion of the national seed list. Within the private sector commercial seed multiplication and sales will be encouraged, and involvement of agricultural research institutes in these activities discontinued. Private sector input suppliers will also be supported through access to credit and more efficient import procedures.

Inter-Entity Trade and Cooperation

While the economic benefits of inter-entity trade and cooperation are manifest, the strategy recognizes that realization of these benefits will require the agreement of both entities and the support of the Office of the High Representative (OHR), and will take time.

Measures to improve inter-entity trade are the immediate priority. To this end, the strategy will establish a system for collecting and disseminating information collected in major markets throughout Bosnia and Herzegovina. As there are no internal border controls, the resumption of trade will need to be accompanied by inter-entity cooperation in the monitoring and control of plant and animal health. The basis for such cooperation is the installation of equivalent facilities in each entity and the regular exchange of information between entity governments. To this end, the donor community will be asked to refurbish the relevant facilities in each entity to identical standards and to work with the respective entity governments to establish procedures for sharing relevant information.

Both entities should also participate more actively in the task forces which have been established by the Ministry of Foreign Trade and Economic Relations to formulate state level policy. Current issues under review include membership of WTO, customs policy, adoption of the *Acquis Communautaire* as a pre-condition for accession to the European Union and subsequent programmes to apply the product standards and trade, health and safety regulations applied in the European Union.

The need to rationalize development of public institutions for education, research and extension is a more controversial issue but must also be addressed. While the strategy respects the right of each entity to develop public institutions independently of the other, it does not endorse the current proliferation and duplication of institutional resources. At a minimum, there is a need to establish mechanisms for sharing research information, coordinating research programmes and to ensure that all people have full access to the services provided by these institutions. There is also a role for the establishment of state-level institutions, such as a programme to train extension agents from both entities. Finally, with assistance from the OHR, donors must coordinate their support for institutional development to ensure that it does not facilitate the current fragmentation and duplication of institutional resources.

PART A. THE CONTEXT FOR STRATEGY DESIGN AND IMPLEMENTATION

I. INTRODUCTION

The agriculture sector of Bosnia and Herzegovina (BiH) is gradually recovering from the impact of war. Crop and livestock production are increasing, agro-processors are re-starting production and markets for agricultural outputs and inputs are becoming more active. Increased economic and political stability have provided the foundation for this recovery, together with the reconstruction programme supported by the international community. Full recovery is a long-term objective however. The remaining cost of replacing capital and regenerating incomes is immense and recovery must be accompanied by the economic transition occurring elsewhere in central Europe.

Post-war policies and support for the agriculture sector have focused on reconstruction and resettlement - goals towards which there has been substantial progress. The challenge now is to build on this progress and achieve sustainable growth. A more forward-looking approach to agriculture sector policy is thus needed: to support continued recovery in the short-term, to guide growth and development in the medium to long term, and to make best use of the resources provided by government and the international community. This demands a comprehensive but realistic plan for agriculture sector development, based on clear objectives and priorities. It will also require a strong commitment to the creation of a market-oriented agricultural economy and eschewal of efforts to re-establish pre-war socialist policies and institutions.

Recognizing these issues, the entity governments of BiH each requested technical assistance from FAO during 1997, to help with the preparation of a medium-term strategy for sustainable, market-led development of the agriculture sector. FAO responded to these requests in February 1998 by formulating the project "A Medium-term Strategy for Sustainable Agriculture Development in Bosnia and Herzegovina - TCP/BIH/7821(A)", which was approved in May 1998 and initiated the same month.

Project implementation has been based on the Dayton Peace Accord which aims to promote inter-entity relationships while respecting the right of each entity to formulate and implement its own internal policies. Consistent with this theme, FAO has assisted the entity governments in preparing separate strategies for agriculture sector development, however the two strategies have been prepared in parallel and complementarity has been sought wherever possible. Special attention has been given to inter-entity trade and cooperation.

The ensuing document presents a framework for agriculture sector development in Republika Srpska, based on analysis by local and international experts. Part A begins by identifying relevant conditions and constraints within the sector and then considers how they might be addressed. Due consideration is given to both war-related issues and more fundamental issues and problems extant before the war. A strategy for development is then presented in Part B which outlines the objectives and priorities for the sector and the measures needed to realize these objectives.

In addition to its role as a planning device for the Ministry of Agriculture, Forestry and Water Management, this document also provides a comprehensive source of information for international organizations and for potential investors and donors in agriculture.

II. WAR AND RECONSTRUCTION

2.1 Losses and Dislocation

The three and a half years of war, from 1992-1995, devastated human and physical resources and shattered the economy. Approximately 1.2 million people left BiH and up to 200,000 are dead or missing, equivalent to thirty percent of the pre-war population of 4.38 million. Among the people who remained, more than one million were displaced by the war.

The current (resident) population of Bosnia and Herzegovina is estimated at 3.7 million of which 1.45 million are in Republika Srpska (RS) and 2.25 million in the Federation of Bosnia and Herzegovina (FBiH)[1]. This total includes an estimated 759,000 displaced persons (DP's) - almost one fifth of the population - of which 359,000 are in RS and 400,000 in FBiH. As of June 1999, some 538,000 of the refugees outside BiH had found durable solutions abroad and 332,000 had returned. Of the 330,000 refugees who remain outside the country it is estimated that 120,000 will be repatriated in 1999 (OHR, 1999). The international community has pledged their support for repatriation of the remaining refugees, although many are seeking permanent residence in other countries. Irrespective of future repatriation, the reality is a 15 percent fall in the total population and widespread dislocation of those who remain.

There is also growing evidence that the war will result in long-term demographic shifts which could have a major impact on the rural economy (RRTF, 1998). Many of the rural people who moved to the cities during the war are now reluctant to return to their farms, accentuating the high pre-war level of urban migration. Younger rural people looking for employment, and rural people from more isolated or less productive agricultural areas are most affected by this trend. Resettlement of rural areas that were heavily damaged by war is also proving slow and difficult, particularly where it involves minority returns and poor land. These factors, together with the 15 percent fall in overall population, suggest that the population of many rural areas will fall substantially. The nature and location of agricultural production will change accordingly.

War has also affected the economic transition that began before 1991 by accelerating the decline of state enterprises and so allowing more opportunities for the growth of private enterprise. The nature and distribution of employment opportunities throughout the country is thus changing, which will in turn lead to migration of the labour force. In future, even more of the population is likely to be concentrated in Sarajevo, Tuzla, Bihac and Banja Luka and the region of Herzegovina (RRTF, 1998). The size and nature of local domestic markets for agricultural products will change accordingly.

In pure economic terms, government authorities estimate overall damage from the war in BiH at US$50-70 billion and estimates of destroyed productive capacity range from US$15-20 billion (World Bank, 1997). High unemployment, the disruption of trade and supply channels and the loss of exports were equally important consequences. Together they led to a massive, war-time economic collapse. By 1994 GDP had shrunk to 20 percent of its level in 1991 and per capita GDP had fallen from US$1,980 to US$560.

Total damage to the agriculture sector was estimated at US$4.54 billion, of which US$1.59 billion occurred in RS. In some areas up to 70 percent of farm equipment and 60 percent of livestock were lost, farm buildings and irrigation systems were destroyed and food marketing systems were disrupted. By the end of the war the agro-processing sector was operating at less than 10 percent of

[1] Current population estimates vary from 3.7 million (CSO), to 4.05 million (OHR).

its pre-war capacity, owing to heavy damage to buildings and equipment, the fall of farm output and disruption of supply channels.

2.2 The Dayton Accord

The Dayton Accord of December 1995 marked the end of conflict. Under this Accord, Bosnia and Herzegovina has been divided into two political entities - the Republika Srpska and the Federation of Bosnia and Herzegovina. These entities report to a joint parliamentary assembly and are governed under a single presidency. The two entities are subject to common policies and institutions for monetary management, external borrowing and debt management, and customs and trade. Within their respective territories each entity government has exclusive responsibility for defence, internal affairs, economic and social sector policies, justice and tax and customs administration. All internal borders and customs posts have been dismantled to encourage a free flow of trade between the two entities. This framework has the following consequences for agriculture policy:

(1) External trade policy is the prerogative of the State, with a common system of customs taxes and tariffs on imports and exports. But each entity collects and administers these taxes on the commodities it trades.

(2) Each entity government sets its own agricultural policies, deciding on the form and level of direct support for agriculture (floor prices, subsidies etc.), the level of state involvement in the sector and the nature and organization of public institutions.

Allocation of land under the Dayton Accord has created significant differences in the agriculture resource base of the two entities (Table 1). Republika Srpska received more (57 percent) of the arable land, including most of the high quality land around Banja Luka; while FBiH received more (56 percent) of the meadows and pastures. As RS has a lower population, the area of arable land per person is also much higher than in FBiH. Thus, FBiH is more suited to livestock production and is likely to have a structural deficit for many agricultural products, while RS is likely to be a surplus producer of many agricultural products.

2.3 The Reconstruction and Recovery Programme

Following confirmation of the Dayton Accord the international community endorsed a medium-term priority reconstruction and recovery programme of US$5.1 billion to be spent over four years. Of this amount some US$4.2 billion had been pledged by the end of 1998, most on highly concessional terms, of which US$2.8 billion has been disbursed (World Bank, 1999). Seventy-three percent of disbursements were effected in FBiH, 14 percent were used for inter-entity activities, and 13 percent was disbursed in RS. The low disbursement in RS is due to an international embargo during the first part of 1996 and a consequent late start to reconstruction investment and a political environment which was less conducive to donor activity. The installation of a new government in RS in mid-1997 created a more favourable political environment and aid flows to RS are now increasing.

The four year reconstruction programme planned for the agriculture sector for all BiH was valued at approximately US$300 million and was to be used as follows:

Imported seasonal farm inputs	US$20 million
Livestock and farm equipment	US$85 million
Seed multiplication development	US$ 7 million
Fruit trees and vineyard rehabilitation	US$30 million
Forestry rehabilitation	US$40 million

Rural financial markets development	US$20 million
Rural industries and services	US$40 million
Farmer support services development	US$30 million
Agricultural policy development/TA	US$ 7 million
Incremental recurrent costs	US$21 million

Of this programme, US$191 million had been secured by the end of 1998, of which US$101 million was disbursed. Approximately 30 percent of disbursements were effected in RS. Initial priority was given to providing key inputs and equipment to small-scale farmers as a means of increasing food production and reduce dependency on food aid. This included importation and distribution of seeds, fertilizers and pesticides to provide seasonal farm inputs, provision of livestock and machinery to recapitalize farms and re-equipment of veterinary stations. Beginning in 1997, donors began shifting their emphasis to support for programmes to increase and sustain the capacity for agriculture production.

The US$50 million sought for 1999, the final year of the reconstruction and recovery programme, will be allocated as follows: US$10 million to continue the recapitalization of small farms, US$10 million for rural credit lines, US$17 million for agro-processing and marketing, US$10 million for forestry sector development and US$3 million for institutional development. This would bring total donor support for reconstruction and recovery of the agriculture sector to approximately US$240 million.

The entity governments estimate that a further US$600 million is needed to complete agriculture sector reconstruction in RS and US$1 billion for FBiH, representing requirements which vastly exceed donor capacity. Given the limited resources of government, the reality is that rural people will ultimately bear most of this cost. Recognizing this, both donors and government stress the need for a strategic framework for sector development that will lead to increased farm and non-farm incomes and stimulate investment, rather than continuing to place emphasis on physical reconstruction. This view, the associated need for continued strong support from the donor community and the importance of using available donor resources to best effect, were major factors in the formulation of the agricultural strategy.

III. THE MACROECONOMIC FRAMEWORK

3.1 Pre-war Economic Conditions in BiH

Before the war BiH's economy was fairly diversified, with a large industrial sector and a capable entrepreneurial class. More than half of its export products were sold to western markets for hard currency. The industrial sector was built on substantial reserves of energy, minerals and forestry and accounted for about half of GDP and employment. But this concentration of economic activity in heavy industry, all of it state owned, meant that BiH was one of the lower income republics of former Yugoslavia with GDP/capita of US$ 1,980 in 1990. Agricultural production and processing accounted for approximately 10 percent of GDP and 18 percent of employment.

The economy was stagnant from 1980 to 1986 and then contracted. GSP fell by an average of 2.9 percent per annum from 1986-1990 due to restricted access to external financing, a result of debt servicing problems and a deep recession among BiH's trading partners. The agriculture sector also contracted, although at a lower annual rate of 1.1 percent. Failure to implement structural adjustment measures compounded these problems, notably the reform of incentive and ownership structures and the financial system. This unfinished agenda continues to affect post-war macroeconomic conditions.

3.2 Post-war Recovery of RS

The economic recovery of RS did not begin until sanctions were removed in March 1996, but quickly gained momentum as access to international assistance increased and macroeconomic stability improved. Estimated GDP in 1998 was more than double GDP in 1995 (Table 2), and a vibrant informal sector has also developed. Yet overall economic activity and living standards remain very low relative to pre-war conditions. Current wages are less than one third of pre-war levels and official unemployment is 35-40 percent.

The economic recovery is also tenuous. There is a high dependency on aid, budgetary problems continue, the collapsed state sector imposes a huge drag on the economy and price instability remains high in areas where the Yugoslav dinar is widely used. The recent events in Kosovo will reduce growth for 1999, due to the close economic links between RS and Yugoslavia.

Sustainable growth is unlikely without monetary and fiscal reform to improve macroeconomic stability, and privatization of the state sector. Government must also establish the state-level institutional structures needed to implement new laws on foreign trade, fiscal management and monetary policy. Even with an optimistic outlook for continued external assistance and good progress with macroeconomic reform, institution building and rapid privatization, GDP is unlikely to exceed 35 percent of its pre-war level by 2000. Full recovery is unlikely to occur before 2010, even with subsequent (post-2000) GDP growth rates of 10 percent per annum.

3.3 Monetary Policy and the Banking System

A new, state-level Central Bank (the Central Bank of Bosnia and Herzegovina - CBBH) was established in April 1997 to effect monetary policy. In order to promote economic stability it will function as a currency board for its first six years of operation. Hence, domestic currency can only be issued in exchange for purchases of foreign exchange, at a fixed exchange rate. This policy became operational in July 1998 with the issue of the new domestic currency for BiH, the convertible marka (KM), which has been pegged to the Deutsch Mark at an exchange rate of 1:1. As currency board

operations also preclude lending by the Central Bank to any part of the economy, government will not be able to borrow from the CBBH to finance public expenditure.

Despite these reforms, the Yugoslav dinar continues to circulate in parts of RS. While this facilitates trade with Yugoslavia (its main trading partner), it also exposes the economy to the instability and inflation resulting from repeated devaluation of the Yugoslav dinar. Full adoption of the new state-level monetary policy and the new currency will provide a much more stable basis for economic growth.

The banking sector is extremely weak and credit is scarce, short-term and very expensive (50-80 percent interest rates). Of the twelve banks currently operating in RS, eight are majority-owned by the state and the four largest of these state-owned banks control 80 percent of banking assets. All of the state banks are deeply insolvent, the result of unpaid claims on pre-war foreign exchange deposits and non-performing loans to state enterprises. The private banks, although solvent, are very small and under-capitalized. All of these banks - public and private - face a crisis of public confidence which has decimated their deposit base. They thus rely largely on donor credit lines for their main source of capital and fees for most of their income.

The reform programme developed to address this situation is based on the “carve-out” of foreign exchange liabilities owed by the state banks and subsequent privatization, improved bank supervision and management, increased bank competition and measures to increase public confidence. The restructuring and privatization of state banks must be completed by August 2000. Any state banks which have not been privatized by this date, or state and private banks which fail to meet new capital requirements, will be liquidated or amalgamated. Bank numbers are expected to fall by half as a consequence. The remaining banks will be subject to increased supervision but will continue to receive technical assistance to improve management. Measures to boost public confidence and so increase deposit mobilization include a deposit guarantee scheme (for deposits of up to DM3,000) and efforts to promote the entry of foreign commercial banks.

Although appropriate and essential, this reform programme will not provide an immediate solution to the problem of tight credit supplies and high interest rates. The experience throughout eastern and central Europe has been that there are no “quick-fixes” to reform of the banking sector. Continued access to donor credit-lines will thus be critical for investment and working capital in the short and medium term.

3.4 External Trade

Trade policy is a state-level responsibility. Import duties are levied at state boundaries by state customs authorities and then assigned to the relevant entity government according to the origin of the importer. A country-wide trade law introduced in March 1998 replaces the former system of unit tariffs, levies, quotas and licences with a four-tier system of *ad valorem* tariffs (0 percent, 5 percent, 10 percent, 15 percent). To comply with this law all other trade protection measures, including the current system of temporary duties, must be removed by December 1999. Post-war trade agreements between RS-Yugoslavia and FBiH-Croatia must also be discontinued. Combined with improved border control and better customs procedures, these reforms provide the most appropriate basis for future trade policy.

Loss of export markets and the high reliance on imports, due to the post-war collapse of domestic production, have resulted in a very high trade deficit for BiH (Table 2). This deficit continues to increase, despite a strong recovery of exports. Until domestic production recovers sufficiently to reduce imports, continued external assistance will be essential to offset the impact of this trade deficit on BiH’s balance of payments. There are no official trade data for RS.

The recent decision to apply for membership of WTO further strengthens the commitment of BiH to establish a market-oriented economy. This process will be coordinated by the state level Ministry of Foreign Trade and Economic Relations. Membership in the European Union has also been accepted as a medium to long-term objective for BiH and preparation for this should be an integral part of the general process of economic reform.

3.5 Fiscal Policy

Fiscal policy is an entity-level responsibility, with tax revenues shared between the central budget (90 percent) and the municipalities (10 percent). Municipality revenues derive mainly from sales, wage and profit taxes and are used to finance solid waste disposal, some utility services and part of the social costs associated with DP's. Public expenditure in RS was DM518 million in 1998, equivalent to 27 percent of GDP. The budget deficit of DM76 million was 3.9 percent of GDP, excluding arrears to public institutions and state enterprises which were considerable. Budget expenditure for 1999 will increase by 23 percent to DM637 million, with a projected budget deficit of DM65 million, excluding arrears.

In future, the ban on public borrowing from the CBBH imposed by the currency board will place more pressure on government to balance its budget. Thus, further growth in public expenditure will come from reform of the tax base and from economic growth. In the short-medium term any increase in public expenditure will largely be absorbed by the need for high continued social outlays for DP's, refugees, war invalids and pensions, by the need to re-establish and strengthen public programmes for health, education and public order and by debt-servicing and defence. These commitments largely preclude any significant increase in the proportion of public expenditure allocated to programmes such as agriculture, forestry and water management.

3.6 Enterprise Privatization

As state enterprises are a significant part of the RS economy, the objective is to privatize those which are potentially viable and re-activate them as soon as possible. The legislative basis for privatizing these enterprises was completed in late 1998, but passage of related legislation for restitution has yet to be finalized. Within the agriculture sector, the assets of all state-owned farms, agro-processors, agricultural trading enterprises and agricultural cooperatives will be included in the normal privatization process, except for agriculture land which will remain under public ownership.

The privatization of state enterprises with less than 50 employees and/or DM300,000 in assets is scheduled to begin in late July 1999, with privatization of a second tranche of larger, non-strategic enterprises[2] to begin early in 2000. Prospective purchasers have the right to acquire part of a state enterprise, rather than being obliged to acquire it all. First round privatization will be effected with either cash or coupons linked to frozen foreign deposits; with a voucher system to be established by the end of 1999 to provide additional capital for the second round of privatization. These vouchers will be issued as compensation for unpaid wages, bank deposits (domestic currency), pensions and outstanding claims on public institutions. The privatization process will be managed on a decentralized basis, with support from USAID (except for bank privatization which will be managed centrally by the Ministry of Finance).

[2] "Strategic" enterprises excluded from privatization include those engaged in power, roads, water supply, mining, forestry, gambling and military activities.

3.7 Implications for Agriculture

These macroeconomic influences have the following implications for agriculture:

- The substantial fall in income, to levels well below those which prevailed before the war, the loss of traditional markets and the 15 percent fall in population have combined to significantly reduce aggregate demand for agricultural products;
- The shortage of credit and high interest rates limit the ability of farmers to finance recovery through investment in capital stock (livestock and machinery) and the ability to re-establish agro-processing activity;
- Current fiscal and monetary policies limit government's capacity to provide significant levels of direct public support for agriculture.

For these reasons, farmers and agro-processors will continue to rely on support provided by the international community in the short to medium term. Donors cannot finance the entire requirement for economic recovery however. Hence the emphasis must be on measures which improve the ability of rural people to finance recovery themselves, based on economic and institutional reforms which lead to increased incomes and improved access to credit for investment.

IV. AGRICULTURAL PRODUCTION

4.1 The Natural Resource Base

RS covers 2,505,300 ha, of which 1,298,619 ha is classified as agricultural land. The per capita availability of agricultural land (0.90 ha/capita) is reasonable by European standards, but there is limited high quality land. Forty-five percent of agricultural land is of medium quality, suited to semi-intensive livestock production. Mountain areas account for a further 30 percent but high altitude, steep contour and lower fertility karst soils limit use of this land to livestock grazing during spring and summer. Only 25 percent of agricultural land (340,000 ha) is suited to intensive production; most of it on fertile, slow draining, acidic soils along the Sava river. Natural water resources are more abundant, with many unpolluted rivers and readily accessible ground-water. Despite this abundance of water only 4,300 ha was irrigated before the war, an area which could be increased significantly.

Climate is generally continental with high summer temperatures, up to 41° C in Banja Luka, and cold winters with minimum temperatures as low as -28° C. Snow may lie for 3-4 months at altitudes above 700 m. Rainfall and temperature are conditioned by altitude, with higher rainfall and lower temperatures in the mountain areas. Annual rainfall ranges from 800-1400 mm, with half falling during the growing season from April-October. This distribution is marginal for optimum plant growth and drought stress is common, particularly for cereals grown on the lighter, valley-bottom soils. Nevertheless, these agro-climatic conditions allow most forms of temperate crop and livestock production. A small area around Trebinje in the south has a Mediterranean climate.

4.2 Farm and Household Characteristics

A dual farming structure characterized pre-war production in RS (Table 3). A handful of large, modern state farms cultivated 12 percent of agricultural land and accounted for 20 percent of production, while 258,500 small-scale private farms accounted for the remaining resource use and production. Agricultural policy emphasized support for the state farms, despite their limited contribution to aggregate production. A large and growing disparity thus characterized the crop and livestock performance of the two groups.

State farms achieved moderate production levels relative to western Europe before the war (Table 6), but socialist management practices made them heavily dependent on public subsidies and protection. Most of them now face operational problems due to the breakdown of government support mechanisms, damage suffered during the war and the reluctance of donors to provide support until privatization is effected. There is a wide-spread view among public officials that these farms should be privatized and operated in their existing form but change will need to go beyond this if they are to be commercially viable. Furthermore, as privatization will exclude the land that the state farms occupy, future use of this land should be based on medium- to long-term lease agreements at market rentals.

Among the small-scale private farms three broad groups are apparent (Table 4). *Commercial farmers* (> 5 ha) rely wholly on farm income and account for 16 percent of rural households and 50 percent of farm land. *Part-time farmers* (2-5 ha) represent 30 percent of rural households and use 35 percent of farm land. Their incomes derive from farm production and sales and from non-farm wage employment. *Rural residents* (< 2 ha) represent 54 percent of all rural households but use only 15 percent of farm land. These people, many of whom are elderly, rely heavily on non-farm income sources.

Household income and expenditure surveys for pre-war BiH indicate that per-capita incomes were similar for agriculture, mixed and urban households[3]. Income composition differed markedly however. Farm sales and remittances were the most important sources of cash income in agriculture households, while wage income and pensions were more important in mixed and urban households. As wages accounted for 45 percent of household income in mixed households (CSO, Sarajevo, 1998), these households have suffered heavily from the post-war loss of wage employment. Per capita expenditure was slightly higher in agriculture and mixed households but food accounted for 45-50 percent of total household expenditure (both cash and in-kind) in all groups.

Family farms typically average 3.5 ha spread over eight plots. Mixed livestock and cropping systems predominate and output is low. Maize (for livestock) and wheat are the main crops, supplemented by a few livestock. Most households consume a large proportion of what they produce. Animal products and fruit and vegetables are the main sources of cash income from agriculture. While the small size and high fragmentation of these farms are major constraints to production, there is also little use of modern farm technology and crop and animal husbandry practices are poor. The traditional emphasis on food self-sufficiency also leads farmers to grow crops that are not always well suited to local conditions. Low crop yields, poor animal performance (Table 6) and low profitability characterize these farms as a consequence.

Given the diverse income base of rural households, future support must include measures to increase both farm and non-farm incomes. Adverse, war-related changes in the level and composition of rural household incomes strengthen this imperative. Commercial farmers are most likely to respond to measures to improve crop and livestock management practices, and as a consequence, to increase agriculture production and marketed surplus. In contrast, part-time farmers and rural residents may respond more readily to measures designed to increase opportunities for rural non-farm employment. Both sets of initiatives will improve household food security, a major consideration, given that food is now an even higher proportion of household expenditure than it was before the war.

4.3 Crop Production

Post-war crop production has recovered quickly in RS. The area of cereals in 1997/98 exceeded the area before the war, and the area of vegetables, industrial crops and fodder crops was 85-90 percent of pre-war levels (Table 5).

Cereals

Cereal crops account for two-thirds of the total area cultivated in RS (Table 5). Maize grown for livestock feed is the most important, with more than 60 percent of the area planted to cereals, followed by wheat and oats.

Average cereal yields in BiH increased significantly from 1955-1990 due to less production in marginal areas and the use of higher yielding varieties and improved crop husbandry practices. Average yields were still very low by western European standards, as 60 percent of cereals were still produced in upland areas where conditions limited both actual and potential yields. Inadequate use of certified seed, outmoded cultivation and seeding practices and poor weed control and fertilizer use also reduced yields and lowered the profitability of production in more fertile areas. Yet, farmers still choose to grow wheat rather than more profitable crops, in order to be food self-sufficient.

[3] These categories do not correspond exactly to the preceding classification in that mixed households include both part-time farmers and rural residents.

Forage and Fodder Crops

A significant area is planted to forage and fodder crops to support livestock production. In addition to maize, large areas are planted to clover, alfalfa and legume mixes, and these areas have increased since the war (Table 12). Much could be done to increase the contribution that these crops make to livestock production through the introduction of new varieties and improved utilization and conservation techniques. A wider range of fodder crops is also needed, such as brassica and root crops that are suited to more intensive livestock production systems in the lowland areas.

Industrial Crops

Industrial crops were not a major component of crop production in RS, with only 2 percent of the area cultivated before the war (Table 8). Oilseed crops (mostly soybean and oilseed rape) accounted for 60 percent of the pre-war area, followed by tobacco and sugar beet. While the total post-war area of industrial crops remains much the same, the composition has changed markedly. Oilseeds now account for 75-80 percent of production, due to an increase in soybean production, and sugarbeet production has ceased. Yields are low by western European standards. There is considerable scope to expand oilseed production for livestock feed, but post-war output will depend on the profitability of oilseed crops and the availability of local processing facilities.

Vegetables

Vegetables account for only 10 percent of the total area cultivated, although potatoes are the fourth most important crop (after maize, wheat and oats) in RS. Other vegetable crops are grown in the lowland areas close to urban markets and/or processors, with beans, cabbage, onions, tomatoes and green pepper most prominent. Yields are very low by Western European standards, particularly for potatoes (Table 6).

Production conditions are excellent. Fertile, lowland soils and the potential for low-cost irrigation allow production of a wide range of crops. Rural labour is also abundant and wage rates are low. The main producing areas are also close to major markets in Banja Luka, Sarajevo, Belgrade, Zagreb and the Dalmatian coast. The relatively low demand for working capital, ready cash income and the limited need for farm machinery also make vegetable production well suited to those farmers who are trying to re-establish after the war.

Current vegetable production already exceeds domestic requirements and there is considerable scope for further increases in output. Further growth in production will require an increase in competitiveness through higher yields and efficiency, and better access to export markets if the increased output is to be sold. Attention should also be given to the introduction of “ecological” production systems to exploit the clean soils of RS.

Fruit

Pre-war fruit production was dominated by plums which accounted for two-thirds of all trees and half of output (excluding grapes and walnuts). Apples and pears accounted for a further 23 percent of trees and 33 percent of fruit production (Table 11). Pre-war yields were low by western European standards due to inadequate use of plant protection and fertilizer. Market competitiveness was also low, owing to high production costs and outdated varieties. Lack of maintenance reduced production during the war but the orchards are now being rehabilitated and production is recovering.

Current fruit production already exceeds domestic requirements and there is considerable scope to further increase output. Agro-climatic conditions are reasonable (despite occasional frost and hail), there is good potential for low-cost irrigation, low-cost labour and strong demand in local markets. However, competitiveness will need to be improved significantly and export markets will need to be developed for the additional production. This will require modern, more intensive management systems with higher yields, and varieties which are better adapted to consumer preferences. As with vegetable production, attention should also be given to the introduction of "ecological" production systems to exploit the clean soils of RS.

Berry Fruits

A profitable berry fruit industry operated before the war, producing 10,000 tonnes annually (Table 10). Twenty percent of this crop was exported to high-value markets in Europe. Some 60 percent of the pre-war area of 600-700 ha was damaged during the war.

Berry fruit production is ideally suited to the agro-climatic and economic conditions in RS. It generates high returns, has a high demand for seasonal labour, creates rural employment and is export-oriented. On-farm investment requirements are moderate and returns begin in the first year of investment. But significant associated investment is needed in processing facilities and cool-stores; and a considerable effort is required to develop exports, both to re-establish former export outlets and to increase added value (pre-war exports were mostly chilled raw fruit sold to European distributors).

Medicinal Plants

Medicinal plants - which are used for medicines, cosmetics and food additives - are a high value crop with a growing world market. The geography and climate of BiH are ideal for these plants which are found only in regions within 43°- 46° latitude, where the climate is moderately continental and/or partly Mediterranean. Over 400 varieties have been identified in BiH, of which 76 are recognized internationally. As the areas where they grow are free of agricultural chemicals, plant quality and value are particularly high. The eastern, mountain areas of RS are most suited to the harvesting and sale of medicinal plants. Currently these plants are harvested in their natural habitat, but there is also potential for commercial production. Most of the current output is exported, typically as raw plant material to processing plants in Croatia and Slovenia.

Farm Mechanization

The farm machinery complement in pre-war BiH included some 60,000 tractors and 32,000 cultivators, equivalent to 17 ha/tractor. Although this is a high level of mechanization by modern standards, farmers consider it inadequate. Their point of reference is the number of farms with adequate machinery not the number of machines per hectare. About 80 percent of the tractors and implements were of the IMT brand, produced under licence in Belgrade. This near monopoly led to a high level of standardization that in turn helped farmers and service outlets develop a strong body of skills for operation and maintenance. But it also inhibited the introduction of alternative cultivation technologies.

More than sixty percent of all tractors and equipment were lost during the war, due mostly to progressive deterioration and lack of replacement. Emergency reconstruction programmes have replaced a small part of these losses. The real post-war need is to improve the efficiency rather than the level of farm mechanization. Outmoded, pre-war equipment should be replaced and cost-effective systems established for sharing and hiring farm machinery.

4.4 Livestock Production

Small-scale farms dominate livestock production with 97 percent of cattle, 90 percent of pigs and poultry and 99 percent of sheep. Some 235,000 ha of meadows provide most of the grazing and hay for winter feed on these farms and a further 360,000 ha of natural pastures are used for grazing in the summer months (Table 1). Most of the natural pastures are state-owned, with grazing rights allocated according to local custom. Traditional management practices markedly reduce the quantity and quality of the hay and grazing from meadows and pastures, to the detriment of animal nutrition and production. Forage and fodder crops (mostly maize, alfalfa and clover) supplement the pasture resources (Table 12). Modern, intensive management systems characterise production on the large-scale, state-owned farms. An important livestock industry has been built on this resource base, with dairy, pig and poultry production as the dominant enterprises.

Pre-war livestock policy emphasized measures to increase production on the large state farms. Animal breeding programmes were thus the main policy focus and the modern, intensive production systems used, were viewed as the model for all livestock production. This approach was of limited value to the low input, small-scale farms which dominate livestock production. Poor animal nutrition rather than poor genetics was their basic constraint. Per animal performance on these farms thus remained very low (Table 6).

Restoration of the pre-war herds of cattle, sheep, pigs and poultry is also a major issue for the livestock sector, as war-related livestock losses were very high (Table 5). The animals imported by donors for reconstruction have had a limited impact on this problem. The numbers were small relative to total needs and most of the animals were distributed to poorer, non-commercial farmers for humanitarian reasons. These animals represent a significant addition to the genetic base nevertheless, particularly given the high war-related losses of high-performing exotic breeds. While some donor support for livestock imports will continue, the limited numbers involved mean that it should be viewed as a means to boost the genetic base rather than to reconstitute herds.

Cattle

Small-farm cattle production is characterized by small herds of dual-purpose cows and seasonal milk supply. Of the farmers in BiH who owned cattle before the war, 60 percent had only one cow, 30 percent had two and less than one percent had five or more cows. Most cows are either Simmental or Simmental crossed with the local Busha breed. Performance is very low (Table 6) due to poor nutrition, especially during the winter, late weaning of calves and slow rates of genetic improvement (only 32 percent of farmers use AI). Nevertheless, gross-margin analysis indicates that small-farm cattle production is profitable and the milk income improves household cash-flow. Before the war the five state-owned dairy farms in RS had herds of 400-1,700 Holstein cows, and achieved production levels close to those obtained in western Europe (Table 6). Animals were housed all year round and fed on green-cut in the summer and hay or silage in the winter. The state dairy farms sustained little direct damage during the war, but lack of capital led to the rundown of plant and buildings and livestock numbers fell by more than half.

Re-establishment of the dairy herd will depend largely on livestock retention and private sector imports, as donor support will not meet the full cost of herd replacement. Farmers themselves must assume most of this responsibility. Future livestock policy should thus ensure that farmers have adequate incentives to retain young heifers, the resources to retain or buy them and the ability to import stock, free of tariffs and without unnecessary bureaucracy. Support measures should be directed only to those farmers who have larger herds and a commercial orientation. But it could take more than five years to achieve self-sufficiency in milk production and ten years to rebuild the herd to its pre-war level.

Pigs and Poultry

RS accounted for approximately two-thirds of pre-war pig and poultry production in BiH, as a result of the more favourable conditions for maize production. Most of this pig and poultry production occurred on small-scale private farms where productivity was low - typically with two to three sows producing 10-15 weaners/sow/year and egg production of 50-60 eggs/hen/year. The few state farms were mostly involved in pig production, where they achieved production levels comparable to those obtained in western Europe (Table 6). Production levels on the state-owned poultry farms compared less favourably.

Lack of data precludes any assessment of post-war recovery. But it has doubtless been impeded by shortages of working capital for animal feed, the loss of traditional markets in FBiH and the lower demand for more expensive meat products such as pork caused by the substantial drop in household income. In the short-medium term these factors will continue to exert a major influence on pig and poultry production in RS.

Sheep

The local "Pramenka" breed accounts for more than 90 percent of the sheep flock, supplemented by Pramenka-Merino cross-breds. Ninety-five percent of production takes place on small, private farms and low-input management systems predominate. Ninety-three percent of pre-war farms had flocks of less than 20 sheep and less than 1 percent had flocks of more than 100. Most income is derived from meat (80 percent), and high-quality cheese (15 percent) for which there is a strong demand on local markets and long-term export potential. The coarse Pramenka wool is typically heavily cotted due to poor (winter) animal nutrition, and consequently, of little value.

Sheep production has long been falling in BiH. Total sheep numbers fell from 4.0 million in 1939 to 1.3 million in 1990 as the marginal hill and mountain areas which were the traditional domain of sheep production were steadily abandoned. There was also little concomitant improvement in the historically low levels of animal performance. War then accelerated this decline: sheep numbers in RS fell from 667,000 in 1990 to 317,000 in 1997. As profitability is low, sheep production is unlikely to recover to even pre-war levels unless performance and returns improve significantly. This will only come through major changes to production systems and better marketing of meat, cheese and wool.

Fish and Honey Production

The pre-war resource base for fresh-water fish production in BiH comprised 20,000 km of rivers and streams, 18,200 ha of reservoirs and 400 ha of natural lakes. There are 160 fresh-water species, of which 10 percent are harvested. The fresh-water catch of 4,620 tonnes, 76 percent of which came from state enterprises, was sufficient to meet 39 percent of domestic consumption of 2.6 kg/capita. In RS, most output came from four ponds covering an area of 2,700 ha, which produced 1,200-1,500 kg of carp per year. Little is known about the post-war status of fish production in RS. Pre-war experience suggests that much can be done to improve output however, through the introduction of modern feeding systems, improved health protection for fish stocks and better processing technology.

Apiculture is most commonly practised on a small-scale, with 80 percent of apiarists owning less than 5 hives. Pre-war production in RS was approximately 120 tonnes honey from 40,000 hives

(3.0 kg/hive), which was insufficient to meet domestic demand. Little is known about post-war honey production in RS, but it is clear that output could be increased significantly.

4.5 On-Farm Constraints to Increased Production and Profitability

A wide range of on-and off-farm constraints cause the low levels of farm production and profitability in RS. The core on-farm constraints identified below are among the most tractable of these problems, especially on small-scale farms.

Crop Production

- Management systems emphasize food self-sufficiency rather than comparative advantage. This leads to production of food crops that are not suited to local agro-climatic conditions and so generate very low returns. Production of more profitable cash crops, which are well suited to local conditions, is thus minimal.
- Inadequate use of improved varieties and certified seed, particularly for cereals, potatoes and fruit.
- Where improved varieties are used, they are not always suited to local agro-climatic conditions (cereals) or consumer tastes (fruit).
- Inadequate use of the potential for producing a more diverse range of crops.
- Sub-optimal use of fertilizer and plant protection.
- Outmoded cultivation practices (based on deep-ploughing) and excess seeding rates (especially for wheat) which raise production costs and reduce profitability.
- Inadequate access to low-cost mechanizms for hiring or sharing farm machinery.
- Inadequate use of low-cost irrigation systems.

Livestock Production

- Poor use of available pasture and meadow resources. Hay is harvested late (in order to increase bulk), which reduces digestibility and protein content, fertilizer is never used to boost pasture production and there is inadequate livestock water in mountain pasture areas.
- Inadequate use of protein supplements, especially during winter and for young stock.
- Late first calving (> 30 months) and long subsequent calving intervals (18-24 months).
- Late weaning of calves, which reduces income from milk sales.
- Limited use of AI or improved sires.
- Low per animal performance for pigs and poultry.

Many of the technical solutions to these problems are straightforward and are well-known to national experts. Yet, widespread implementation of these solutions will not be easy to achieve, especially in the short-term. Technical progress will be minimal unless it is preceded by fundamental changes to the pre-war approach to agriculture policy and to the institutional base for extension, research, and plant and animal selection and improvement.

V. AGRICULTURAL POLICY

5.1 Public Expenditure on Agriculture, Forestry and Water Systems

Total expenditure by the MAFWM in 1998 was DM0.49 million, sufficient only to cover salaries and direct operating costs. As a result, there was no finance for the subsidies announced for milk and breeding stock, or for agricultural research and extension. A further DM0.5 million was used by the Public Agency for Commodity Reserves to purchase fuel and fertilizer for wheat production on state farms[4], which was repaid in wheat at predetermined rates after the harvest, interest-free. A major increase in MAFWM expenditure has been budgeted for 1999, to approximately DM2.0 million. Of this amount, DM1.0 million has been allocated for subsidies. The final area of public expenditure on agriculture is the implicit cost of the arrears accumulated by state farms and state-owned agro-processors and agri-business enterprises, on which there is no information.

Even with the proposed increase in expenditure for 1999, this level of public expenditure on agriculture is extremely low in both absolute terms and as a proportion of total public expenditure (0.3 percent). In comparison, the agriculture sector currently accounts for approximately 33 percent of GDP. However, tight budget restrictions and the focus of public expenditure on defence, support for war victims and the re-establishment of health and education systems, preclude any major increase in the proportion of public expenditure allocated to agriculture in the medium term. Nominal expenditure on agriculture should be increased nevertheless. If economic growth meets current projections, the agriculture budget could be increased significantly, without exceeding 0.5 percent of public expenditure and allowing for total public expenditure of less than 25 percent of GDP. Support for agriculture extension and research should have priority for any such increase in the agriculture budget, plus limited support for milk production and livestock retention.

5.2 Post-war Recovery, Re-integration and De-mining

As with all parts of the economy, the agriculture sector has a responsibility to support post-war recovery. However, the cost of a rapid, full recovery far exceeds the means of both donors and government. Agriculture policy can best assist this process by initiating and supporting measures that help farmers increase incomes. In this context, support for the replacement of physical losses (livestock, farm machinery, buildings, equipment) and income regeneration is best effected through credit and extension programmes - measures which apply with or without the effect of war. Opportunities for non-farm employment should also be created as a means to increase non-farm incomes

Support for the return and re-integration of rural people should be implemented jointly with other ministries, not by the agriculture sector alone. The total cost of this process for all BiH is estimated at US$3-4 billion, of which donors are now seeking to raise US$520 million. Implementation is being coordinated by the OHR-chaired Reconstruction and Return Task Force (RRTF), with the support of the entity governments. As of May 1999, there were an estimated 359,000 displaced people and 130,000 refugees who had yet to return to their homes in RS (UNHCR, 1999). Although a high proportion of these people are from rural areas, the agricultural sector has yet to evolve a clear set of policies for contributing to their return and re-integration. Definition of these policies should be based on the following lessons learned by the RRTF to date:

[4] Of the total budget allocation of DM10 million for the Public Agency for Commodity Reserves, approximately 5 percent was to be allocated to state farms to support wheat production.

- Approximately half of all returning people have re-located to areas other than their original place of residence. Their decision to re-locate is in keeping with the Dayton Accord which stipulates that each citizen of BiH has the right to choose his/her place of residence in a free and informal manner.

- The decision to re-locate is driven by both war-related factors and longer-term demographic trends, including the pre-war movement of rural people to urban areas. Continuing this trend, a large number of displaced people and refugees from rural areas will probably re-locate to urban areas - particularly younger people and people from more isolated, low productivity farming areas.

- Economic assistance is crucial for re-integration but has little influence on the choice of people to re-locate or return to their place of origin. Hence, economic assistance should generally follow rather than precede the movement of people.

- Political environment and security are the main factors which influence where people choose to live. Where these are satisfactory, employment opportunities and accommodation become the main obstacles to successful return and re-integration. But people are not returning to areas which have limited economic prospects.

- Support should be directed to all people involved in the re-integration process, including residents who remained in their homes during the war, in order to minimize the widespread resentment of residents against returnees.

These insights suggest that rural credit, agricultural extension and employment creation programmes are the most appropriate means to support return and re-integration. These measures are basically demand driven and so follow rather than lead the movement of people. Demand is highest where land is productive and economic opportunities are strong and these programmes are equally accessible to all people involved in the re-integration process (residents, returnees and re-locating families).

In its current "Action Plan", the RRTF also recognizes the importance of measures to ensure that returnees have secure ownership or use rights to the land they occupy, that these rights are recognized and respected by law, and that returnees are able to buy and sell land freely and fairly throughout BiH. Such measures have particular relevance to rural land in that they help create an appropriate incentive structure for farmers to use their land productively and sustainably and encourage investment.

Currently, land abandoned during the war is leased to both resident and re-locating farmers by municipal authorities. These leases typically give the lessee a temporary use right at a nominal rental and are a valuable means of keeping land in production and preventing it from deteriorating. A longer term solution is now needed, based on returning this land to its former owners or transferring it to new owners. The Dayton Accord provides for a Property Fund, administered by the Commission for Real Property Claims (CRPC), to assume this role, but it has yet to be established. Hence, the onus is on the international community to either set this fund up or to identify and establish alternative mechanisms for effecting these land transactions.

A clear agriculture policy response to the tragic problem of land mines in rural areas has also yet to be developed. It is estimated that there are 17,000 mine fields and some 750,000 land mines in BiH, of which approximately 25 percent are in RS. These mines cause 30-35 civilian accidents per month throughout BiH and render approximately 237,000 ha of agricultural land unusable. Of this total area, an estimated 70,000 ha is in RS. As urban areas and infrastructure have priority for current

de-mining activities, only 1645 ha of rural land in BiH had been de-mined by the end of 1998. At this rate of progress, and with current de-mining costs of US$2.5-3.0 million/100 ha[5], it would take another 240 years and over US$6-7 billion to effect the de-mining of agricultural land in BiH.

The immediate need is to prioritize areas of agriculture land to be de-mined and to secure better access to available funding. A recent FAO study has prepared a workable mechanism for identifying high priority agricultural areas for de-mining based on land quality, population density, the importance of agriculture as a source of income to local people and the extent to which de-mining will facilitate the return and re-integration of DP's and refugees. These criteria were reviewed and accepted by all relevant levels of government and donor agencies and were used to identify an initial 400 ha of agricultural land in BiH for future de-mining, most of it along the IEBL. The study recommends that a permanent unit be set-up within the MAFWM to effect land prioritization, secure funding and monitor de-mining activities.

While the establishment of this structure will help to overcome the current lack of progress, it will not overcome the fundamental problem - inadequate financial resources available for de-mining. Even a relatively modest programme to de-mine 2,000 ha per year would cost US$50 million annually at current prices, as compared to the US$30 million which will be spent on all de-mining operations (urban and rural), during 1999. The difficulty of obtaining even this level of financial support means that land mines will remain a risk to human life and a constraint to agricultural production for a long time.

5.3 Land Policy

In a country where agricultural land is scarce, policies that promote optimal land use are fundamental to the future of the agricultural sector. Current policy remains largely as it was before the war, with a strong emphasis on private land ownership - an emphasis that is well suited to the operation of a market economy. Approximately 90 percent of agricultural land in pre-war BiH was owned by individual farmers, six percent by state farms and four percent was managed by farm cooperatives. Unimproved pasture land, although typically state-owned, is mainly used by private farmers. The privatization of state farm land would further strengthen this emphasis on private land ownership. Current policies pertaining to land use are less well suited to a market economy, particularly those policies which affect farm structure, land taxation and land conservation.

The major land policy issue is a farming structure characterized by small, fragmented farms, which contributes to the low level of farm productivity and limits the ability of farmers to adopt modern management systems. The pre-war policy response to this issue was based on land consolidation programmes to reduce land fragmentation and support for farm cooperatives as a means of creating larger farming entities. But these policies have had limited impact. Land consolidation programmes, although well designed and executed, had led to the consolidation of less than five percent of agriculture land in RS by 1990. Moreover, such programmes do not increase farm size. Cooperatives accounted for only four percent of farm land use in BiH in 1990, 85 years after they were introduced.

The high level of unused agriculture land in RS is a further constraint to optimal land use. Before the war, some 145,000 ha of arable land and 15,000 ha of mountain grazing were unused, due to the migration of rural people to urban centres and their abandonment of farming. This area has increased since the war as a result of war-induced migration, land-mines and the difficulty of effecting resettlement.

[5] Current de-mining costs are about US$2.5-3.0/m^2 depending on terrain, density of vegetation, residual metal content in the ground and the number of land mines discovered.

Minimal use has been made of land markets to address these issues, both before and after the war. Land sales and leasing were permitted but not encouraged in pre-war BiH. Indeed, prior to 1980, it was illegal for farmers to own more than 10 hectares of land. Land sales were (and still are) also subject to a high tax of 15 percent of sales value, which inhibited land market activity. Inheritance rather than land sale was thus the main mechanism for transferring land. Unfortunately this tends to increase land fragmentation due to inheritance laws and customs which facilitate the division of land between beneficiaries rather than encouraging its transfer to one person. As a result, less than four percent of all land changed hands annually before the war, most of it by inheritance, with little consequent scope of improving farm structure through land market mechanisms.

Farm structure is difficult to change quickly, especially in countries such as RS where land ownership has strong social connotations. Experience in western Europe suggests that it will take at least a generation to double average farm size. But public policy can do more to improve farm structure than it has in the past. Active land sale and rental markets should be promoted as a means of increasing farm size and farm consolidation, in addition to land consolidation programmes and the formation of producer associations. Inheritance laws should also be amended to prevent further land fragmentation.

The current system of cadastral taxation, in which land taxes are assessed on the basis of land quality, should also be reviewed. Cadastral taxes were introduced in Europe to raise tax revenue at a time when agriculture was a major part of the economy and land quality was the major determinant of agricultural output. But agriculture now accounts for a smaller part of the economy, modern management techniques (fertilizer, irrigation, drainage etc.) allow farmers to adjust for deficiencies in land quality, and location relative to roads and markets can be more important to agricultural output than land quality. Cadastral taxes as the basis for raising local government revenue thus focus on a relatively small component of the overall tax base. A broader system of property taxation based on either rental values or capital values may be more appropriate in post-war RS.

The major environmental issue is the pressure to use high quality arable land for non-farm purposes - notably roads and housing. New laws passed to address this issue are based on pre-war concepts of land policy and would benefit from further review based on the experience of western European countries. Soil and water conservation have traditionally been well-managed. There is minimal soil erosion, despite the high rainfall and steep slopes which characterize many areas and minimal pollution of rivers and lakes. This is attributable to the careful attention to maintenance of forests and the management of hill and mountain pastures. These policies must be continued.

The range and importance of these problems suggest the need for a comprehensive review of all aspects of land policy and the institutions responsible for land policy implementation. Priority issues should include land markets, the use and management of abandoned land and the protection of arable land against non-farm use.

5.4 Agricultural Trade

Most agricultural products fall within the five percent and 10 percent tariff bands specified by new trade laws (Table 13). These are modest levels of protection by any standards and will do much to facilitate the recent application for membership of WTO by the government of BiH. Leaky borders and the consequent inability to enforce these tariffs are the major trade issues and donors are working actively with government to address these problems.

There are no published data on imports and exports for RS, but most current trade is with Yugoslavia based on a free-trade agreement between the two. A significant part of this agricultural trade occurs on a barter basis, with RS agriculture exports being traded for Yugoslav agriculture inputs (animal feed, seed, young livestock, fertilizer etc). Inter-entity trade is still weak despite the

introduction of new vehicle licence plates and widespread use of the convertible marka (KM). Official data for the period April-June 1999 suggest that food products are the most important single component of inter-entity trade however, with 15-20 percent of the total value. Both entities recognize the need for additional, more specific measures to strengthen inter-entity trade.

5.5 Agricultural Prices

Responsibility for price policy rests with the Institute of Prices (Ministry of Internal Trade and Supply), which has retained most of the pre-war mechanisms and procedures for controlling producer and consumer prices. The broad policy objectives are to prevent monopoly pricing by setting maximum wholesale and retail price margins, and to protect producers and consumers from price instability by setting official prices for basic commodities and services. Where these policies affect agricultural commodities, decisions are made in association with the MAFWM.

Current producer price policy is based on: a guaranteed floor price for wheat, minimum producer prices for milk and barley, subsidies on both milk and young, high quality breeding stock, and maximum price margins for fertilizer and agricultural chemicals (Table 14). The guaranteed floor price for wheat has been set at DM270/tonne since 1998. As this price is close to import parity (NPC = 1.05) and as public purchases by the Agency for Commodity Reserves are limited (10,000 tonnes in 1998), this policy has little impact on market activity. There is no direct budget support for the producer prices for milk and barley, but buyers and processors are obliged by law to respect these prices. The current farm-gate price for milk is around DM0.65/litre (for 3.6 percent milk) which is well above import parity (NPC = 1.4). While this improves producer incentives, it does not address the more immediate supply-side constraints caused by inadequate milk collection systems and the inability of dairy companies to pay for milk in a timely manner. The subsidies for breeding stock are a legacy of pre-war policies to promote genetic improvement. To date there has been no provision in the MAFWM budget to pay for the subsidies on milk and breeding stock, but this will change following the increase in the 1999 budget.

Consumer price policy was liberalized somewhat after 1996 and is now based on controlled, maximum prices for flour, bread and milk[6]; plus maximum retail and wholesale price margins for flour, sugar and edible oil (Table 14). This policy framework has failed to prevent a significant increase in real food prices since 1997, as measured by trends in the Cost of Living Index (Table 15). Marked month-to-month variation in food prices also demonstrates its failure to ensure price stability. Both of these trends in consumer prices are due to the inability to obtain steady flows of food commodities through existing markets. Unrealistic official consumer prices and narrow margin controls encourage rather than discourage illegal market activity, and so weaken attempts to strengthen legitimate marketing institutions. Price instability thus increases rather than decreases.

There are strong grounds for reform of current consumer price policy. In the short to medium term, official price margins should be progressively widened as a means to encourage more market agents to engage in legitimate trading activities, and so strengthen and stabilize the flow of commodities. This will create a more effective basis for stabilizing prices. Once consumer prices stabilize within these wider margins, the system of margin controls can be discontinued.

Import tariffs provide the most effective mechanism for protecting and stabilizing producer prices. They transmit price signals in a more transparent way and allow prices to vary between regions and over time in a manner which facilitates private sector storage and trade. Their use as the principle means to support producer prices is also more consistent with a limited budget. Future,

[6] These price controls also extend to housing, electricity, coal, natural gas, postal services, petrol and petroleum products and forestry products.

direct support for producer prices should focus on a few key commodities such as wheat and milk and import protection should be the basis for supporting all other commodities.

5.6 Public Reserves and Rural Credit

Continuing pre-war policy, the Public Agency for Commodity Reserves (Ministry of Internal Trade and Supply) is responsible for the acquisition, storage and disposition of strategic commodities, including wheat, maize, rice, beans, edible oils and sugar. This involves the purchase of domestic wheat in order to support the wheat floor price. Following the breakdown of the pre-war credit system, the Agency has combined this reserves role with the provision of seasonal credit. Fertilizer and fuel are provided in kind to those state farms involved in the production of wheat and other basic commodities, this credit is repaid in kind at official parity ratios, interest-free. The parity ratios are set each year as the basis for keeping relative prices constant for official in kind transactions, with the wheat price as the numeraire (Table 16). Consumer price stabilization through intervention in commodity markets is the final responsibility of the Agency.

The ability to fulfil these three roles is severely limited by lack of funds. The total agency budget for 1998, for all agriculture and non-agriculture commodities was approximately DM10 million, equivalent to 2.2 percent of total public expenditure. Of this amount an estimated five to seven percent was used to fund agriculture activities. Some 10,000 tonnes of fertilizer were provided as in kind seasonal credit, of which 5,000 tonnes were obtained from donors. At 1998 parity ratios this 10,000 tonnes of fertilizer provided 9,000 tonnes of wheat for public reserves. Shortage of funds has also limited the Agency's capacity to become actively involved in price stabilization.

Once political and economic conditions stabilize and the banking system recovers, the activities of this Agency will need to be made more consistent with the operation of a market economy. Its role as a source of seasonal credit for agriculture should be phased out as soon as alternative credit lines are established through the banking system. Future activity should then focus on the cost-effective acquisition, storage and disposal of strategic reserves. Given that imported cereal and food products can be at the border within 10 days, a reserve equivalent to one month's consumption would be more than sufficient to meet reserve requirements under stable political conditions. The Agency's official role in price stabilization, should also be discontinued in association with the phasing out of margin controls. Price stability is best achieved by promoting active markets and removing barriers to trade, rather than by direct market intervention.

VI. INSTITUTIONAL SUPPORT TO AGRICULTURE

Weakened by the war and preoccupied with the immediate concerns of survival, many public institutions have yet to change significantly.

6.1 Ministry of Agriculture, Forestry and Water Management

The Ministry of Agriculture, Forestry and Water Management operates at both entity and municipality level, with an establishment of 116 people and a current staff of 70. It comprises four departments (agriculture, veterinary, water resources and forestry), each with its own inspectorate, plus a legal and administration section. Consistent with a sector- wide need to re-define public and private sector roles (Box 1), the MAFWM's current structure needs to be adapted to its main future areas of responsibility: policy analysis and formation, market information, monitoring and enforcement of plant and animal regulations and stewardship of the natural resource base.

Box 1. *The Future Roles of Public and Private Institutions and Civil Society in Sector Development*

ROLE	Public Sector	Private Sector	Public & Private	Civil Society
Agriculture Policy Analysis and Formation				
Policy Analysis	X	X	X	
Policy Formation	X			X
Strategic Reserves	X			
Agriculture Statistics	X			
Market Information Systems	X			X
Project Evaluation	X			
Plant and Animal Regulation				
Preparing Legislation	X			
Monitoring Compliance	X	X		X
Enforcing Compliance	X			
Veterinary Service				
Border Control	X			
Monitoring and Control of Infectious Disease	X			
Training and Licensing of Vets and Technicians	X			
Services to Farmers		X		
Plant Breeding				
Varietal Testing and Selection	X	X	X	
Seed Multiplication		X		
Animal Reproduction				
Performance Testing and Recording	X	X		
Artificial Insemination and Animal Breeding		X		
Agriculture Research				
Establish Research Priorities	X	X		X
Implementation	X	X	X	
Agriculture Extension	X	X		
Agriculture Education	X	X		
Natural Resource Management				
Policy Formation	X			X
Land, Forest and Water Conservation	X			X
Irrigation	X	X	X	
Mountain Land Management	X		X	X

Rural Finance		X		

To fulfil these roles the Ministry will also need to increase its capacity for the type of policy analysis necessary in a market-oriented economy.

In most of the 52 municipalities the Ministry is represented by an agricultural officer, an agricultural inspector, a veterinary inspector and a veterinarian. As government becomes more decentralised, local government authorities such as municipalities will need to become more active in numerous aspects of policy implementation.

The MAFWM's location in Bijeljina, 4 hours drive from the capital of Banja Luka, creates numerous logistic problems and reduces involvement in the process of government. Banja Luka would be a more appropriate location for the Ministry.

6.2 Rural Finance

Pre-war (public) rural finance consisted of primary emissions from the Central Bank for working capital, plus investment funds for agricultural development which were financed by special taxes. Most of this finance was distributed through the state-owned (Belgrade-based) Agrobank of former Yugoslavia, based on "credit needs" estimated by government ministries. State-owned farms and agro-processors were the main beneficiaries of this system of rural finance and to a lesser extent, agricultural cooperatives. Small-scale private farmers had minimal access to either public or private sources of finance.

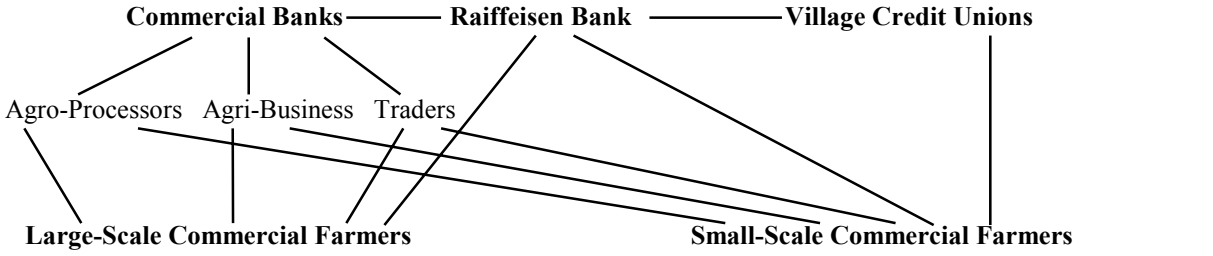
The post-war collapse of these state institutions and the commercial banking system has made rural credit very scarce and expensive. Donor programmes are now the major source of rural finance and will remain so for the short-to-medium term. These programmes operate at two levels: loans of DM40,000 to DM1.0 million for small-medium scale enterprise provided by the World Bank and USAID; and micro-enterprise loans of DM2,000 to DM50,000 provided by the World Bank, the EBRD backed Micro-Enterprise Bank and NGOs.

There is a need for review of the terms on which donor credit is provided. The large loan programmes provide credit for two to three years, with a 6-12 month grace period, and interest at 9-11 percent (LIBOR plus four to six percent). The micro-credit programmes offer loans for up to three years at 10-30 percent, often with no grace period. To improve cash flow during the first 12 months of operation and so improve the viability of investments, donors should either allow for a grace period of 12 months or extend the loan term.

A comprehensive policy on rural finance in RS has yet to be articulated. It is clear from experience elsewhere in Europe, however, that no single financial institution can meet all of the needs for agriculture. Sustainable agriculture sector development requires a broad-based system of financial institutions with the capacity of meeting the differing needs of small and large-scale farmers, agri-business and agro-processors. With donor support, pursuit of this objective should be based on: strengthening the capital base and institutional capacity of domestic private-sector financial institutions such as the commercial banks; promoting the entry of foreign financial institutions, like the Raiffeisen Bank, which have expertise in rural credit; and establishing village credit unions to provide credit for small-scale farmers. A private sector institution to provide medium to long-term finance is also required, but this institution should finance medium to large-scale enterprises from all sectors of the economy, not just agriculture. The system of rural financial institutions to be established through this process is presented in Figure 1. These measures should complement the reform of the banking system with its emphasis on restoring public confidence and creating viable, private-sector financial institutions.

As restoration and reform of the commercial banking system will be slow, the establishment of a viable rural financial system will inevitably be a long-term process. Thus, demand for agricultural credit will exceed supply in the short to medium term and donor credit lines will remain critical to sector development.

Figure 1. Framework for Rural Finance - Institutions and Financial Flows



6.3 Land Use

Land is administered by the Office of Land Registration and Geodetics which is responsible for the surveying and registration of all immovable property, public and private. In principle, administration is based on two recording systems: the *Land Registry* which is the repository of all geodetic and legal information for each plot (location, area, use rights etc.) and the *Land Book* which records ownership, encumbrances etc. Both recording systems must be complete in order to have full information on any land plot, a requirement which was not met in the past. The consequent administrative problems should be redressed by reconciling the two systems and combining them into a single register. But the complications created by war and the need to computerize the entire system will make this a time-consuming and resource-intensive endeavour.

Current land administration is based on the Land Register, and a separate certificate of title is issued if a change of ownership cannot be reconciled with Land Book records. There are, nevertheless, many parts of BiH where individuals find it impossible to obtain proof of ownership, or are unable to register property transactions. Donor support is needed to resolve these problems. In the long term, the land administration system should also become self-funding based on revenue from fees for registration and the sale of information on land transactions and registration.

Further significant institutional problems associated with land use, as discussed below, include:

- Inadequate support for war-related land transfers and property compensation.
- The lack of institutional support for land market activity.
- The need for grassroots institutions which allow farmers to initiate and manage land development and maintenance.

The Commission for Real Property Claims (CRPC) was established under the Dayton Accord to help restore property rights and resolve the legal problems which obstruct return and reconstruction. It reports to the OHR and is funded largely by donors. Claimants must first prove ownership, upon which they receive a CRPC certificate which guarantees their property rights. This certificate provides a legal basis for all transactions should claimants wish to sell, exchange or mortgage their property. Thus far the CRPC has registered some 155,000 claims of an expected 250,000, of which 50,000 claims have been processed. Most of these claims apply to urban land. No

compensation has been paid out and the CRPC has yet to become active in the process of property exchange.

Land markets have yet to play a major role in the post-war economy of BiH, whether or not people have CRPC certificates. In part this is a result of administrative and legal obstacles to land transactions, such as the current land registry system, the tax on property transactions, and the refusal of courts in each entity to recognize public documents issued in the other. But it also reflects fundamental institutional constraints in the private sector: notably the lack of accurate, readily available information on land market transactions and the paucity of lawyers, valuers and property agents, in whom people have confidence. Inter-entity land market transactions are especially difficult as a result of these institutional deficiencies. A well coordinated inter-entity approach is thus needed for all future measures designed to facilitate and regulate land markets.

The change to a market economy will create a role for many new private sector institutions, including those which allow groups of farmers to initiate and manage land development and maintenance projects that require cooperative action. Many land programmes currently implemented by local government could be transferred to such grassroots institutions; including drainage, irrigation and land consolidation schemes and the management of common grazing areas. These institutions would operate at Municipality level, subject to the control of the MAFWM.

6.4 Agricultural Extension, Research and Education

The pre-war system of education, extension and research provided an adequate stream of academics, researchers and extension agents for government, state farms and cooperatives. Three institutions - the Faculties of Agriculture in Sarajevo and Mostar, and the Agricultural Institute in Banja Luka - were the foundation for this system, training people for a wide range of production systems and implementing a diverse research programme (Table 17). But this training and research was oriented towards the needs of state farms, which led to an emphasis on training specialists rather than general agriculturists and to research on problems of modern, large-scale production systems. Measures to increase production were also given a higher priority than measures to increase profits. The small-scale mixed farms which dominated agriculture in BiH were thus poorly served. This highly fragmented institutional infrastructure also impeded communication between education, research and extension and reduced operational efficiency.

War decimated this system, with significant losses to facilities and staff. The pre-war network of institutions and people has also further fragmented along ethnic and political lines. Even worse, despite the limited availability of public finance, each entity has begun an *ad hoc* process of expansion and duplication of pre-war institutions. An independent university has been established in the Serbian part of Sarajevo to serve the eastern region of RS, university level training in agriculture has begun in Banja Luka and research stations are being established or expanded in Tuzla, Bihac and Trebinje.

Renewal of this vital institutional resource will be difficult. New approaches to extension, research and education are needed to redress pre-war problems and a more rational institutional structure is needed to make better use of the limited available human and physical resources.

Extension

As the state farms and cooperatives which were the basis of pre-war extension services have collapsed there is no current extension system. There is also no public finance for extension and, despite widespread agreement on the need for an effective extension service, an acceptable institutional framework has yet to be developed.

Future extension services should focus on the needs of small-scale farmers, while recognizing their limited ability to pay for extension services. They should thus take two forms: low-cost private systems operated by producer associations and agri-business enterprises, or a modestly-scaled, fee-based public service linked to the research centres in Prijedor, Banja Luka, Doboj, Bijeljina, Sokolac and Trebinje. Farmers will need to be involved in programme design but the general emphasis should be on crop and animal husbandry, marketing and profit maximization. Extension programmes must also be gender-sensitive and recognize the need to allocate household resources between farm and non-farm sources of income. Given the lack of public finance and institutional resources, farmer groups will be the most cost-effective form of service delivery. But even with this approach, the short-term reality will be a modestly scaled extension service able to meet the needs of a relatively small proportion of rural households. A high priority should thus be given to those farmers most likely to respond to new management systems and to increase production, incomes and marketable surplus.

Research

The diverse system of research centres in pre-war BiH ensured good coverage of all major ecological zones and cropping systems: temperate cereal crops at the Agriculture Institute in Banja Luka, temperate fruit and vegetable crops at the Agriculture Faculty in Sarajevo and Mediterranean crops and production systems at the Agriculture Institute in Mostar. All conducted some animal research. The links between these centres were weak, as Banja Luka was affiliated closely with Serbia and the Mostar Institute with Croatia. Research publications and informal exchanges were the main forums for sharing information within BiH. Research focused on plant and animal breeding, even though crop and animal husbandry were the major constraints to production, a focus that was reinforced by state farm support for the research budgets of the Agriculture Institutes. Public funds and commercial seed multiplication and sales were the other sources of institute revenue.

There has been no public funding for research since the war began. The pre-war research centres continue to operate, nevertheless but there is limited inter-entity communication and interaction between research centres in the eastern and western parts of RS is quite inadequate.

In order to serve small-scale commercial farmers, future research in RS should focus on crop and animal husbandry and constraints to increased farm profitability. Public resources for research must also be increased. Both these goals could be achieved by the establishment of an Agriculture Research Council to set research agendas and allocate research finance. This Council would be donor-financed initially and would include representatives of producers, agri-business, academia, extension and government.

Education

Some 20 percent of rural primary schools included agriculture in their curricula before the war, but this has now stopped. The pre-war system of secondary and professional schools of agriculture continues with one school in Banja Luka and a second in Bijeljina. These schools train students for employment as farmers or agricultural technicians.

There is little justification for making agriculture a compulsory part of all primary and secondary curricula. Young people in a transition economy need an education which equips them to find employment in the more progressive, growing sectors of the economy. Those who are interested in agriculture are best served by “Young Farmer” clubs run in association with local extension services, and by a limited number of secondary and professional schools in agriculture. These secondary and professional schools should also develop short-term adult education programmes, as a

means of educating farmers. The donor community has a wealth of experience in this general approach to agriculture education which could be readily mobilized.

The University of Sarajevo established the faculties of agriculture and veterinary science shortly after World War II. By 1991, the Agriculture Faculty employed some 210 staff and was attended by 1000 students. Undergraduate programmes were taught in crop production, animal production, fruit and wine production and food technology. Post-graduate study was available in numerous fields. The Veterinary Faculty employed 190 staff by 1991 and was attended by over 700 students. Many students also studied in Serbia and Croatia. There was no pre-war teaching at the Agriculture Institutes in Banja Luka or Mostar, which operated solely as research centres.

Post-war institutional development has been characterized by an ill-conceived process of expansion and duplication. Within RS separate Agriculture Faculties were established in Banja Luka in 1992 and in Serbian Sarajevo in 1994, with a current enrolment of 100 and 70 students respectively. Inevitably, both lack the facilities and resources needed to provide an adequate tertiary education. More importantly, the emphasis on creating new institutions has been at the expense of initiatives to adapt curricula to small-scale, private-sector agriculture enterprises, and to replace and retrain an ageing teaching staff. These reforms are critical to agriculture sector development. There are also plans to establish a new research centre at Trebinje for Mediterranean crops, the domain of the Mostar Institute. This use of scarce resources weakens the entire education and research structure and will reduce and dissipate the impact of donor support.

Linking Education, Research and Extension

As measures to create strong links between education, research and extension must be an integral part of institutional reform, representatives of all three areas of interest should be involved in all stages of reform. Numerous measures must also be used to sustain these linkages: the extension service should be involved in the setting of research agendas and university curricula, research publications should be widely circulated to universities and extension personnel and extension agents should involve researchers and teachers in their meetings with producers whenever possible.

6.5 Plant Breeding and Seed Supply

Pre-war plant breeding programmes in BiH centred on wheat and maize seed at the Agriculture Institute in Banja Luka and potato seed at the Potato Institute in Sokolac. Seed multiplication programmes were implemented jointly by these institutes and state farms. Both breeding programmes operated on a modest scale, as most plant breeding and seed multiplication in the former Yugoslavia was done in Serbia and Croatia.

These traditional sources of improved, certified seed supply broke down completely during the war. FAO responded to this situation by providing seed early in the recovery process and subsequently by establishing a seed testing laboratory and introducing new laws on seed quality and plant breeders rights. All seed certification tests are now carried out according to ISTA (International Seed Testing Association) rules.

While varietal limitations and seed quality are a major factor in low crop yields, there is no need to expand the institutional capacity for plant breeding in post-war RS. Seed demand rather than supply-side problems are more fundamental issues. Even before the war small-scale farmers preferred to use their own seed rather than certified, improved varieties. The public institutions responsible for ensuring that farmers have access to high quality, certified seed, need support nevertheless to adjust to post-war conditions.

Accordingly, new policies for seed supply are now being developed with the support of FAO. A broader base for seed supply will be established by importing from a wider range of countries and by encouraging private sector involvement in seed import, multiplication, processing and distribution. The official seed list is also to be upgraded and expanded to include a wider range of modern varieties suited to conditions in RS. Future government activity will be limited to seed testing, certification and quality control of domestically produced and imported seed. This approach needs further donor support to ensure that appropriate legal and institutional structures are established and maintained and that the varietal testing needed to expand the national seed list is adequately financed.

6.6 Animal Health and Breeding

Before the war some 600 veterinarians plus support staff were employed in BiH to control animal health, advise farmers on livestock health and husbandry and implement artificial insemination (AI) programmes. Some 110 of these were employed on state livestock farms. A further 150 government veterinary inspectors monitored and controlled the quality of livestock and animal products sold and consumed. Backed by wide-ranging legislative powers this veterinary service supervised most aspects of livestock production. In RS, war reduced this service to 250 veterinarians and support staff, plus the veterinary inspectors of the MAFWM. Many of the laboratories, veterinary stations and clinics from which they operate are also in disrepair and lack equipment.

Rather than recreating the pre-war system, the emphasis should now be on redefining the responsibilities of a public veterinary service and on creating a viable, private sector veterinary service. The privatization of veterinary services is a valuable first step in this process, but it will need to be supported by credit lines for working capital and new equipment. Future public responsibilities should be limited to border control and the monitoring and regulation of animal health.

Diagnostic and research support for the pre-war veterinary system were provided by three regional diagnostic laboratories (Brcko, Sarajevo, Zenica) and four Veterinary Institutes (Banja Luka, Sarajevo, Tuzla, Mostar), which focused on more serious and/or lesser known problems. The dispersed location of these facilities ensured good coverage of all major livestock producing regions in BiH. Inadequate post-war cooperation between Bosniak, Croatian and Serbian authorities has now compromised this coverage and exposed the livestock sector to increased health risks. Uneven support for post-war refurbishment has further prejudiced the quality and coverage of these services. This situation has led both entity governments to establish additional diagnostic and research facilities in order to be self-sufficient. Given the general adequacy of pre-war services and the shortage of finance for investment this is difficult to justify. Rather than duplicate existing facilities, the emphasis should be on finding ways to use them jointly.

A small cattle breeding centre at Banja Luka is ostensibly still responsible for the production, import and sale of semen for all BiH and for the collation and analysis of performance records for dairy cattle. Eighty percent of pre-war operating costs were met from public finance and the balance from semen sales. These sales and AI are still controlled by the veterinary service which buy the semen at subsidized prices for sale to farmers. A ban on commercially imported semen reinforces this role. War damage was minimal and the centre continues to operate but weak public support and lost markets (in FBiH) make survival difficult.

Farmer use of the dairy breeding service has always been limited, despite laws which made it compulsory. Although the dairy breeding programme and the use of AI began in 1955, only 25.3 percent of breeding cows were inseminated in 1990 and a further 4.0 percent covered by licensed bulls. State farms were the main recipients of this service. Current demand is even lower, due to the heavy livestock losses incurred during the war (especially on state farms) and the lack of cooperation between RS and FBiH.

In the short term, it is difficult to justify high levels of public financial support for this animal breeding centre. Farmer interest is low and national dairy production would increase more by improving animal nutrition. At a minimum, semen and services such as performance recording should be sold to farmers at cost. Once adequate import and quality control measures for semen are in place, the ban on commercial semen imports should also be lifted to broaden the base for genetic improvement. These measures would raise the cost of semen, however, recall that the low (subsidized) pre-war price did not lead to high levels of demand. Farmers should be able to buy animal semen and AI as any other farm input. The monopoly which veterinarians hold over these inputs should thus be removed. Programmes should also be developed to train technicians how to perform AI and qualified trainees should be licensed to provide this service on a commercial basis. Future public support for animal breeding should focus on support for research and re-establishment of the pre-war dairy performance recording scheme.

As with other aspects of livestock production, responsibility for breeding programmes will be transferred to the private sector. Within this context the strategy will support the establishment of commercial stud farms, as in western countries. This process will begin with privatization of the animal breeding programmes currently operated by the state farm reproduction centres. Those breeding operations that have the potential to be commercially viable will be given access to credit to help establish their operations. Once complete these changes will further increase farmer choice by giving them access to a range of private stud farms in addition to artificial insemination.

6.7 Agricultural Cooperatives

Agricultural cooperatives have a long history in BiH, although not in the form found in western countries. Prior to the war there were 124 such cooperatives in RS and 72 in FBiH, with approximately 30,000 founder members and 110,000 cooperants. They were promoted by government as a means of creating employment and to link small-scale farmers to the production and marketing operations of state farms. In 1990-91 they accounted for four percent of agricultural land use and seven percent of agricultural production.

These cooperatives were typically established by a small group of ‘’founder members’’ who provided initial capital in the form of cash or property, often supplemented with land provided by the state. In pure economic terms the cooperative operated as a local agri-business and marketing agency, buying and/or marketing farmers’ products, providing extension advice and selling farm inputs. But any profits were used to create further employment, often by diversifying into retailing and processing activities. The cooperative’s services were available to anyone, with no requirement of becoming a member, and the people who used these services were referred to as ‘’cooperants.’’

The cooperatives are now struggling to remain operative. Marketed surplus is negligible, market outlets are difficult to find for the limited surplus that is available, working capital is scarce and many traditional input supply sources are no longer accessible. They are, nevertheless, a potentially valuable core of small-scale agri-business enterprises with a good local knowledge of producers, production systems and experience in the acquisition and marketing of agricultural output and inputs.

Support for these enterprises should begin with restructuring, as their current structure is incompatible with either western cooperative activity or private enterprise. An initial decision will thus have to be made by founder members as to whether they should become a western style cooperative or a private business. All options should be accessible and should receive active support from government and donors. Whichever option is chosen, support will be needed to reduce personnel, shed peripheral activities and for training in business management.

More generally, producers should be encouraged to work together on a wide range of production and marketing issues, but without any compulsion to form a cooperative. The only pre-conditions for establishing any form of producer association should be that members work together of their own free will and that they have equal rights.

VII. AGRICULTURE MARKETING AND AGRO-PROCESSING

Pre-war agriculture marketing and processing in BiH focused on the domestic market, with exports limited to processed fruits and vegetables and speciality products such as baby-beef, berry fruits and medicinal plants. State enterprises dominated, competing with imports from elsewhere in the former Yugoslavia and a small private sector. Production for export markets should be given a much higher priority in post-war RS. As the resource base for agriculture is productive and the domestic market is small, RS has the capacity to produce an exportable surplus of most agriculture commodities.

The challenge will be to develop markets for these commodities and improve the ability to compete on these markets. Traditional markets in FBiH should be the initial focus, as they are free from trade barriers, readily accessible and well-known, but markets outside BiH must also be developed. Improved competitiveness will be essential at all stages of the production process, both on and off the farm, a goal well served by the widespread establishment of Producer Associations (Box 2). This need to increase competitiveness applies equally to post-war domestic markets, which will be characterized by increased private sector activity, less protection from imports and new patterns of consumer demand.

Box 2. *Producer Associations: Linking Producers, Markets and Processors*

Producer associations, in the form of agricultural cooperatives or private business entities, are a powerful vehicle for achieving growth in agricultural production and processing. These associations aid farmers to increase on-farm production and efficiency, by serving as a focus for agriculture extension programmes and by facilitating the joint use of machinery. They also facilitate production contracts with processors and retailers, and the organization of assembly systems, measures which improve the incentives for both to invest and increase output. Finally, they provide a framework for joint action to improve product quality and presentation, and to respond more effectively to consumer preferences. Once firmly established, producer associations can develop their own extension capacity, often in conjunction with processors or retail outlets. They can also serve as a means to secure credit for their members, often from the processors with whom they contract. Provided that the members themselves decide on the most appropriate organizational form, this framework can be adapted to the production, marketing and processing of all agricultural commodities.

7.1 Cereal Products

Wheat

Domestic production supplied 375,000-450,000 tonnes of total wheat consumption requirements of 550,000 tonnes in pre-war BiH. Less than one third of output was marketed, usually through agricultural cooperatives working together with state farms. The balance (200,000-300,000 tonnes) was imported from Serbia and Croatia. Pre-war milling capacity was adequate (455,000 tonnes for BiH, operating at 70-80 percent of capacity), most of it derived from large mills owned by the five major agrokombinats (Table 19). A Wheat-Millers Association formed by these mills organized wheat imports to profit from economies of size and discounts on purchases and transport. Sales of flour and bakery products were channelled through the marketing outlets of the respective agrokombinats, which also owned most of the 20 major bakeries. Small private, urban bakeries provided strong competition for the agrokombinat bakeries, due to their better location and consumer oriented output. Output from the agrokombinat bakeries fell by more than half from 1986-1991 as a result.

Post-war wheat production in RS is now comparable to pre-war levels, and exceeds estimated domestic needs of 217,500 tonnes. As war damage to the mills was minimal, current processing capacity (221,500 tonnes) is more than adequate. The state-owned milling sector faces serious problems nevertheless. Capacity utilization is low (Table 19), especially in the larger mills, working capital is scarce and the bakers prefer cheaper Yugoslav flour. This paralysis will continue until privatization is effected. The smaller, private mills are able to compete more effectively with Yugoslav flour and to operate profitably.

Future post-war wheat demand for RS is difficult to estimate. The population has fallen by 15 percent, and per capita consumption may also fall due to the larger post-war Serbian population. Consumption in Romania, Poland, Croatia and Yugoslavia averages 114 kg/capita for instance; versus an average of 187 kg/capita in middle-income Muslim countries such as Morocco, Tunisia, Jordan and Turkey (Table 18). With consumption of 125 kg/capita, total demand would be 180,000 tonnes of wheat per year, which would result in a significant exportable surplus. Sale of this surplus will rely on measures to improve wheat quality and competitivity, including: better screening and standardisation of varieties, improved baking scores and more cost-effective production.

Lower domestic demand would also create excess processing capacity. This suggests that future investment should be restricted to the privatization and upgrading of viable public and private sector mills, with the potential to significantly increase their competitiveness. Within the baking industry the pre-war growth of small urban bakeries has accelerated in the post-war environment, a trend which should be supported. Few of the public-sector bakeries are viable, due to their poor location (outside urban centres), inappropriate product mix (mostly low value-added products) and lower efficiency.

Maize/Animal Feed

Maize is grown primarily for animal feed, with domestic production of 550,000-800,000 tonnes meeting 75-85 percent of feed requirements in pre-war BiH. Imports from elsewhere in former Yugoslavia provided the balance. Less than five percent of output was marketed, most of it through agricultural cooperatives. Processing capacity (479,000 tonnes) was adequate, although outdated technologies predominated and production costs were high. Output was 250,000-300,00 tonnes of animal feed (65-75 percent of capacity), of which half was poultry feed. Most of this capacity was owned by the major agrokombinats which used a large part of the feed output for their own animal production enterprises. Traders were also active in the import of processed animal feed, either for sale to the *Apotheka* or directly to farmers.

Post-war maize production in RS now exceeds pre-war levels, and as the livestock population has fallen significantly, it also exceeds domestic requirements (estimated at 450,000 tonnes). It is unclear how this surplus is being used. The animal feed industry itself faces a difficult future, despite having sustained limited damage during the war. Production from the state-owned mills has fallen precipitously, capacity utilization is very low and they are unable to compete with Yugoslav imports. When fully implemented, the new trade laws which impose a 10 percent tariff on imported maize and a five percent tariff on imported animal feed concentrates will make it even harder to compete. Private feed mills have increased output despite this handicap, although they still account for less than 15 percent of domestic production.

In order to survive, the animal feed sector will need to rescale and restructure its output. Not only have livestock numbers fallen, but also consumer demand for animal products due to the 15 percent fall in population and a significant drop in consumer incomes. Consumer preferences have also switched to lower priced animal products such as chicken, eggs and milk. While pig and poultry numbers are increasing steadily, cattle numbers are unlikely to reach pre-war levels before 2010 and sheep numbers will stabilize at less than pre-war levels. The milling industry thus needs more

appropriately scaled mills, able to respond to a different demand structure. Support for private sector investment initiated in this context should continue. The future of the state mills will depend on their ability to adapt to this new structure of demand and to rapidly effect full privatization.

7.2 The Dairy Industry

State farms (with 1 percent of total cows) accounted for three to four percent of pre-war milk production in BiH and supplied one-third of the milk sold to dairy processors. Small-scale farms accounted for the remaining cows and production but sold only six to seven percent of their output to dairy processors (Table 20). While these farmers also sold a significant (but unknown) quantity of milk and dairy products on local markets, the overall marketed surplus of 10-15 percent of total milk production was still very low. It was also highly seasonal, with surplus production in the summer months and pronounced deficits during the winter - which were met with limited imports of raw and processed milk.

Small-farm production destined for the processors was usually sold to agricultural cooperatives, which organized assembly at collection points equipped with lacto-freezers, for delivery to the processors. State farms delivered direct. Pre-war processing capacity of 130 million litres/year was adequate for the 110-120 million litres of milk processed annually, with 95 percent of this capacity owned by state enterprises. Processing efficiency was generally low due to outdated equipment and technology, excess labour and the seasonal fluctuation of milk supply. Most dairy products were produced but the emphasis was on lower priced, less profitable products such as pasteurized milk. The state processors also managed their own distribution and sales to shops and supermarkets but their marketing was weak and product presentation was poor. Local Green Markets provided an important alternative market outlet for both producers and consumers, particularly for higher value farm-processed products such as cheese. Imported dairy products were typically obtained and distributed by state-owned wholesale and marketing enterprises.

The consequences of war have been severe for the dairy industry in RS. With fewer cows, total milk production fell to 149.9 million litres in 1997. This, nevertheless, met 90 percent of domestic needs, as demand also fell in response to a lower population and a drop in per capita consumption (from 190 kg/capita to 132 kg/capita) caused by lower incomes. Marketed surplus also fell due to the breakdown of agricultural cooperatives and consequent loss of the small-farm assembly system, losses of lacto-freezers and trucks and a lack of working capital which limits the ability of processors to pay producers. As a result, processed output was only 10 million litres and capacity utilization was 25 percent. There are no data on cow numbers or milk production in RS for 1998 or 1999, but both have certainly increased.

Local processors currently dominate the market for low-priced, low-profit products such as pasteurized milk, while most high-value goods, such as UHT milk and packaged cheese, are imported. This pattern corresponds to current demand, which is dominated by low-income consumers who can only afford cheaper products. But as incomes and so demand for higher-valued products increase, the industry's inability to produce competitively priced, attractively presented products will become a more pressing issue. Increased capacity utilization will improve competitiveness by lowering unit production costs, but it will not be enough. New technology is needed to broaden the product base (all processors should have UHT lines) and marketing and management must improve. The private sector is responding to this challenge. Small-scale processors produce a range of competitively priced high-value dairy products and Green Markets continue to provide a ready outlet for farm-produced cheeses, cream, and butter.

Recovery will take time. Cow numbers and so milk production will increase slowly, and demand is unlikely to return to pre-war levels before 2007. The dairy industry must move quickly nevertheless, to re-establish and strengthen its position in domestic markets. Rehabilitation of the

assembly system is the immediate priority, as the basis for increasing milk supply and capacity utilization. The consequent increase in supply should be accompanied by measures to improve marketing. In the long term, extensive restructuring and modernization of the processing sector is

needed, beginning with the privatization of viable state-owned dairies. Further investment by private processors should also be actively supported.

7.3 Meat and Wool

The pre-war livestock industry in BiH was characterized by well-developed formal and informal marketing systems and a vigorous private sector. Producer sales outlets included: weekly livestock markets in each municipality, informal sales to local restaurants and butchers, Green Markets (for the sale of slaughtered animals, eggs etc.) and meat processors. Pork and beef dominated meat production and consumption, followed by poultry and sheep meat, but only sheep meat production met most of domestic consumption needs (Table 21). More than 200 small-scale slaughter houses for cattle, sheep and pigs (of which 60 percent were private), processed most of the meat sold in butcher shops and Green Markets. Most of the meat processors were state-owned and relied on older technology, but three modern, private meat processors were able to meet European export standards. Livestock was procured from farms, owned by the processors themselves, through contracts with agricultural cooperatives and farmers and from local markets and imports.

High war-related livestock losses have led to substantially reduced meat output in post-war RS. Production met 90 percent of domestic needs in 1997 nevertheless, due to a 40 percent fall in the demand for meat (Table 21). There are no data on livestock numbers or meat production in RS for 1998 or 1999, but both have continued to increase. Processed meat output fell from 27,000 tonnes in 1991 to 8,000 tonnes in 1997. The structure of domestic consumption has also changed with lower demand for higher priced beef, sheep and pig meat due to lower incomes and increased consumption of less expensive chicken meat. Most of the small-scale slaughter houses remain operational despite these changes; and new, privately-owned meat processors are being established. In contrast, the larger state-owned processors are struggling to survive in the face of low capacity utilization and the scarcity of working capital. The meat processing industry is thus characterized by significant surplus capacity in the state sector, concomitant with private sector investment in additional processing capacity.

As current production already meets most of the requirement for domestic consumption, future investment in the meat processing sector should be directed towards production for export markets. The new generation of private sector meat processors are most likely to succeed in these markets. With their more advanced processing technology, they have the ability to produce more competitively priced products and to meet export standards. Privatization and investment in state-owned meat processors should be limited to those enterprises with the potential to achieve the same export-level quality standards and competitiveness. In addition to financial resources for investment, support for the development of export markets should also be an integral part of donor assistance.

In the short-to-medium term, the industry will also need increased access to livestock to improve capacity utilization and satisfy growth in domestic demand. Better access to livestock from FBiH is the most cost-effective means to this end, and would benefit considerably from an inter-entity market information system. More streamlined and effective veterinary control of livestock imports along the entire BiH border is also needed, based on close cooperation between the veterinary services of each entity. Border control measures for imported meat products should also be improved to ensure that processors and consumers are protected from unsafe and/or illegal imports.

The wool industry received little attention in pre-war BiH. Systems for assembly and marketing were poor and attempts to establish a processing sector were unsuccessful. Apart from limited home consumption, the wool output was thus largely unused, to the detriment of farm incomes. There is a ready world market for the coarse, carpet-style wool produced by the local Pramenka sheep, but access to this market will require changes to farm management and fleece preparation and the establishment of a marketing and processing system. Farmers should reduce the

high level of cotting and vegetable matter which lowers current wool quality by adjusting their grazing patterns and shearing times; and should be trained to class their wool into different categories for sale. An assembly and marketing system should also be developed for this wool.

7.4 Fruit and Vegetables

Small-scale private farmers produced a wide range of fruit and vegetable crops in pre-war BiH, particularly around Tuzla and Mostar and along the Sava river. Potatoes and plums were the only crops, for which pre-war production exceeded domestic demand. Marketed surplus was low, particularly for potatoes and fruit (Table 22), despite access to a range of well-developed market outlets. Approximately 60 percent of sales were direct to Green Markets, itinerant traders and retail outlets. The rest was sold to agricultural cooperatives which assembled it for the state-owned processors.

All of the fruit and vegetable processors were state-owned. Fruit products (juice, pulp, jams etc.) accounted for 85-90 percent of processed output, followed by processed vegetables. Potato processing was minimal. Processing capacity was generally adequate and there was enough cool storage space to keep capacity use high (70 percent), despite a short (5 month) growing season. However, older technologies predominated. Most output was sold on the domestic market but a small, well-developed trade with eastern and western Europe made export sales second in importance to livestock and meat products.

In RS the sector has recovered steadily since the war, despite the breakdown of state processors and agricultural cooperatives and the consequent disabling of assembly systems, damage to processing facilities and orchards and the loss of traditional export markets. This recovery is due to the relative ease with which small-scale farmers can re-establish production, the high demand for (low-priced) fruit and vegetable products when consumer incomes are low and the vitality of local market institutions. Production for 1997 exceeded domestic consumption requirements by 80 percent for vegetables and 45 percent for fruit, and continued to increase in 1998.

The priority is thus to expand market outlets for surplus production, an issue on which there has been little progress. As there has been no public or private investment in marketing institutions, the main market outlets are still the wholesale market in Bijeljina and the “Arizona” market established by SFOR in the inter-entity zone near Gradacac. Most of the state-owned processors remain paralysed by the combination of scarce working capital, low capacity use and the loss of supply. There has been no private sector investment in processing. Processed output was 6,000 tonnes in 1997, compared to 31,000 tonnes in 1991, with a consequent capacity utilization of 10 percent. There are no data on the output of processed fruit and vegetables in RS for 1998 and 1999.

Measures to expand exports are the key to realizing the potential for increased fruit and vegetable production. Given a competitive processing industry, the export of processed fruit and vegetable products is also a powerful means to raise rural employment and add value to agricultural products. Rapid privatization of the viable state-owned processors is the starting point, but it should be limited to those enterprises with the potential to produce export quality products at competitive prices. Producer associations should be established in parallel, as a vehicle for obtaining raw materials and boosting marketed surplus. Other marketing institutions must also be strengthened, with the same objective, particularly assembly systems and green and wholesale markets. Support for export marketing and inter-entity trade should also be a part of donor assistance, along with programmes to raise product standards to meet export requirements.

7.5 Industrial Crops

Tobacco, sugar beet and oilseeds are the main industrial crops in RS. Their future is dependent on the ability of state-owned processing facilities to become viable private sector enterprises, able to offer appropriate incentives to farmers for raw materials and to produce competitively priced commodities for sale on domestic and export markets.

Tobacco

RS accounted for 25 percent of pre-war tobacco production in BiH, with an area of 1,690 ha in 1991 (Table 23), and was the site of one of the three state-owned processing facilities (capacity 2,000 tonnes). Processed output from this plant was 1,591 tonnes in 1991, 80 percent of capacity. Post-war production in RS is in decline, due to lower on-farm returns and the financial difficulties faced by all state-owned agro-processors. Processed output was 854 tonnes in 1997. As a high-value export crop suited to small-scale, labour intensive production systems, tobacco is nevertheless well-suited to conditions in RS. However, these advantages must be translated into the ability to compete on domestic and international markets if production is to continue.

Privatization of processing is the starting point for increased competitiveness. The industry is well-suited to joint-ventures in this regard and government should encourage this route to privatization, although without committing itself to any increase in direct or indirect public support. Tobacco producers should also be consulted to assess their willingness to continue production in a new market environment. Failure to effect privatization, with or without outside capital, would be a powerful sign that the industry is unable to compete. Under these circumstances there would be no grounds to continue providing any direct or indirect public support to production or processing.

Sugar beet

A state-owned sugar processor was established near Bijeljina in 1988, to serve adjacent sugar beet producing areas in Serbia, Croatia and Hungary as well as north-east BiH. Approximately half of the raw material for this plant thus came from outside BiH. Annual capacity was 38,000 tonnes of refined sugar (Table 23) and the plant employed 650 people when in operation. Cheap coal from FBiH was used as energy. Production peaked in 1990 at 40,000 tonnes, sufficient to provide 30 percent of consumption requirements for pre-war BiH[7]. The balance was imported from elsewhere in the former Yugoslavia.

The breakdown of border controls during the period prior to the war (1990-92) led to a flood of sugar imports into BiH. Priced at approximately DM0.60/kg, these imports were half the price of domestically produced sugar (DM1.00-1.20/kg) and the sugar plant was obliged to accept heavy losses in order to dispose of its output. Thus production virtually ceased even before the war started. No damage occurred during the war and the plant is still operational, although unused.

Current world sugar prices are 40 percent lower than they were in 1990-92, and are forecast to fall even further, as world production continues to exceed consumption and stocks continue to accumulate. The plant would not be viable at these prices. Strong public support for production and processing is also precluded by budget constraints and the new trade laws, which set import tariffs at 10 percent. Moreover, increased public support would impose a significant cost on consumers in RS, with producers outside RS receiving much of the benefit of this support. The higher cost of sugar for fruit and vegetable processing would also prejudice the development of an industry which has the potential to make a much greater contribution to sector development than sugar production. There is thus no compelling rationale to re-establish sugar production and processing.

[7] Household consumption of 15 kg/capita, plus 20 kg/capita for fruit and vegetable processing.

Oilseed Crops

Oilseed production and processing is centred on the operation of a state-owned processor at Brcko, which employed some 700 people and processed 60,000-70,000 tonnes of raw oilseed per year before the war. As oilseed production in pre-war BiH was less than 15,000 tonnes, 70-80 percent of raw material came from other parts of the former Yugoslavia. Annual output of 25-30 million litres of refined oil was sufficient to meet 70 percent of the consumption requirements of pre-war BiH (Table 23), although part of this output was exported to other parts of the former Yugoslavia.

War forced the plant to shutdown due to lack of raw material. Some damage was sustained but this has now been repaired with finance from the RS and Japanese governments. Approximately 5,000 tonnes of oilseed rape (total production in RS since 1995) was used to re-start production in 1998, but no other supply of either oilseed or raw oil had been secured and domestic production in RS is unlikely to exceed 10,000 tonnes for 1998-99. Slow progress with restoration of the rail system will further complicate the securing of adequate raw materials at competitive prices.

The government's objective is to privatize the plant and re-establish pre-war operations. Given that domestic oilseed production in RS is unlikely to increase significantly, this will mean securing access to 50,000 - 60,000 tonnes of raw oilseed from outside RS annually. As RS would only consume half of production (14 million litres), export markets will need to be found for the remaining output. The efficiency of processing will thus have to be increased substantially, not only to compete on export markets but also to sell on domestic markets, given that import tariffs on edible oils will be 5 percent. Budget constraints preclude substantial direct public support. The feasibility of re-establishing the plant as a viable private sector enterprise under these conditions, should be the subject of a full economic and business analysis. This should be conducted by a team of local and international experts who would determine the costs and benefits to producers and consumers and the net impact on exports.

In the short-to-medium term, resources and expertise should also be directed to increasing the domestic production of oilseed for animal feed. The demand for animal protein in RS is high (most of it is currently imported from Yugoslavia) and many areas along the Sava river valley are well suited to soybean and oilseed rape production. Support should be based on measures to increase the yields and profitability of oilseed produced for direct sale to animal feed processors, and to assist the animal feed processors to finance small-scale oil extraction units for producing animal protein.

7.6 Agricultural Inputs

With the exception of nitrogen fertilizer and some wheat and potato seed, most agricultural inputs were imported from other parts of the former Yugoslavia before the war, particularly from Croatia and Serbia. Farmer choice was thus limited largely to the inputs produced by former socialist countries. The state-owned wholesale distributor, POLJOPREMA, held a virtual monopoly over the import and marketing of these inputs, thus dominating sales to the agrokombinats and agricultural cooperatives and to an extensive network of small retail suppliers (*Apotheka*). Some of these *Apotheka* were owned by the cooperatives and POLJOPREMA itself, but most of them were privately owned.

The agrokombinats and cooperatives had ready access to low interest seasonal credit from the Central Bank to finance input purchase. But only the 110,000 small-scale farmers involved in the cooperative system benefited from this credit. This credit constraint, together with the low-input, low-return farming systems practised by most small-scale farmers severely reduced aggregate

demand for inputs (total fertilizer use was 95 kg/ha of arable land). Demand rather than supply-side factors were thus the major constraints to agricultural input use in pre-war BiH.

Input demand has fallen in post-war RS due to the fall in livestock numbers, the collapse of state farms and agricultural cooperatives, and the breakdown of the banking system and consequent lack of seasonal credit. An active market for agricultural inputs continues nevertheless. Barter exchange with Yugoslavia (RS farm outputs for Yugoslav inputs) still accounts for part of this trade but private-sector wholesalers are now importing bulk commodities such as fertilizer. The *Apotheka* also remain in operation but at a low level as they too are constrained by low demand and lack of seasonal credit. Import tariffs are low (zero or 5 percent) but most inputs are still imported from Yugoslavia which limits farmer choice.

Demand-side factors will continue to be the major constraint to agricultural input use for the medium term. Credit constraints will not be overcome quickly and small-scale farmers will be slow to adopt more intensive management systems. But demand could be enhanced by broadening the product base so as to increase farmer choice, and by including a range of low-cost home-processing equipment (for dairy, meat, fruit and vegetables) to encourage farmers to add value to their output. The current controls on price margins should be removed to encourage increased competition among wholesalers and retailers, as the basis for moderating input prices and to allow them to import a wider range of inputs. Government's role should be limited to the enforcement of appropriate quality standards for farm inputs, particularly seeds, animal semen, fertilizer and chemicals.

7.7 Common Issues and Constraints

A number of common issues and constraints emerge from the preceding review which are important for the marketing and processing of all agricultural commodities, and which should be an integral part of the agricultural strategy. They are summarized below.

Development of Export Markets

Post-war agriculture production in RS already satisfies domestic demand for most commodities and there is considerable potential to produce an exportable surplus. Future agriculture sector growth will depend largely on the identification of export markets for this surplus and measures to improve the ability to compete on these export markets.

Credit

Given that the demand for credit will greatly exceed supply for the short-medium term, it is essential to focus available credit on activities and investments which generate rapid returns to the benefit of many. Financial support for restructuring and developing strong agricultural marketing institutions and competitive agro-processors is consistent with this objective, as it will benefit producers and consumers and boost rural employment. The greatest benefit will come from support for the production, processing and marketing of vegetables, fruit, meat and dairy production.

Privatization

Current private sector development is already exposing the inability of state-owned enterprises to compete, and eroding their resource base. Rapid privatization of these enterprises is essential if they are to survive. However privatization by itself does not ensure future viability. Thus it must be implemented with the understanding that many enterprises will not be viable in their

present form and some will not be viable in any form. Experience from other economies in transition demonstrates that privatization which is slow, inflexible or based on unrealistic asset prices inevitably results in the abandonment of many state enterprises, an outcome which benefits nobody.

Producer Associations

The assembly and marketing activities performed by agricultural cooperatives were, and are, critical to small-farm involvement in agricultural markets and to the growth of agro-industry. A high priority should be given to re-establishing similar institutions. However, producers must be free to choose the organizational form which best suits their needs, whether as a cooperative, a partnership or a company.

Market Information

The degree to which producers, processors and consumers benefit from market-oriented reform, depends to a large extent on their access to relevant market information. Development of a framework for collecting and disseminating such information will be a major challenge for both public and private sectors and an essential part of the agriculture strategy. This market information system should cover both entities.

Technical assistance should also be sought for more detailed analysis of specific agricultural commodity markets, in order to discern current and future patterns of consumer demand and measures to increase the competitiveness of domestic production. These analyses would be used to guide private sector investment in production and processing.

Inter-Entity Trade

The re-establishment of inter-entity trade will benefit producers, processors and consumers in both entities and should be actively promoted by the international community and the two entity governments. Improvements to the main roads and telecommunications linking the two entities, access to information on all markets in BiH and the ability to effect inter-entity bank transfers will all enhance this trade.

State Border Control

Rather than controlling prices and price margins, the public sector should now concentrate on enforcing the new schedule of import tariffs and establishing and enforcing adequate product quality standards for both imports and exports. This will require effective inter-entity cooperation, not only among customs officials, but also between veterinary and plant protection services.

Training in Business Management

While education levels are high in RS and managers are generally well-trained, the traditional approach to business management will need to change if enterprises are to be viable and competitive. The socialist emphasis on meeting production targets and maximizing employment will need to be replaced by structures and systems designed to maximize profit and respond to consumer demand. Managers will need to be trained to operate in such an environment.

PART B. STRATEGY PRESENTATION

VIII. A STRATEGY FOR AGRICULTURE SECTOR DEVELOPMENT

The ensuing strategy is designed to guide agriculture sector development in RS in a manner consistent with the requirements of a market-oriented economy. It thus departs from the pre-war approach to economic planning. Government ownership of production and processing is precluded and there are no government derived production targets. In a market economy, private-sector producers and processors determine the level and composition of agricultural production in response to consumer demand. The government's role is to ensure that producers, processors and consumers have complete choice as to what they produce or consume, that they have the resources to effect these choices and that they have the information needed to choose according to their preferences.

8.1 General Strategy Objectives

The *global objective* of the strategy addresses the fundamental constraints to sector development, most of which were present before the war:

> **To increase agricultural output and exports through measures which improve the efficiency, profitability and competitiveness of production, processing and marketing; to promote rural development and increase opportunities for non-farm rural employment; to optimize land use and preserve the natural resource base; to strengthen agriculture sector institutions; and through these measures, to achieve sustainable agriculture sector development.**

The following *supplementary objectives* address the major consequences of war:

> **To further the reconstruction process;**
> **To support the resettlement of refugees and displaced persons in rural areas;**
> **To strengthen economic relations and cooperation with the Federation of Bosnia and Herzegovina.**

8.2 Strategy Design

In order to focus and structure the strategy, these general objectives will be applied to six areas of action:

- The efficiency and profitability of agriculture production;
- The marketing and processing of agricultural products;
- Rural development;
- Land use and natural resource management;
- Agriculture policy and institutions;
- Inter-entity trade and cooperation.

These areas of action are linked by the following common themes:

(1) The importance of small- and large-scale commercial farmers as the group most likely to adopt improved management practices and to obtain significant increases in production and marketed surplus;

(2) The widespread establishment of producer associations to facilitate the dissemination and adoption of new technology, to reduce the diseconomies of small, fragmented farms and to link producers to market outlets;
(3) The need to increase rural non-farm employment as the basis for improving the welfare of rural households and strengthening rural communities;
(4) A significant allocation of resources to support the development of competitive agro-processing and agri-business enterprises and to strengthen marketing institutions;
(5) A clear definition of the role of government and the responsibilities of public and private institutions, support for the establishment of these institutions and recognition of the limited public resources available for direct support to agriculture.

Demonstrating its support for this framework and the general process of economic reform, the MAFWM has already initiated a series of projects to implement various components of the strategy.

The ensuing discussion defines relevant objectives for each of the six areas of action and outlines the strategy responses to these objectives[8]. Strategy action is based on short-term measures to be implemented over the next one to two years, and medium-term measures to be initiated within two to five years, with a ten year time frame designated for strategy implementation. Progress will be reviewed at the end of five years to determine the need for new approaches to strategy implementation.

Strong support from the donor community will be essential for strategy implementation, especially in the areas of institutional development and support for private investment. The total cost of sector recovery and development far exceeds donor capacity however. Given the limited resources of government, the consequent reality is that most of this cost will inevitably be borne by rural people. For this reason the strategy places considerable emphasis on measures to increase farm and non-farm incomes and to stimulate rural investment.

8.3 Efficiency and Profitability of Agriculture Production

Agriculture production in RS is well below its potential. Farm incomes are low as a result, particularly on small-scale farms and the productivity of these small-scale farms has fallen further and further behind the levels achieved on state farms.

Objective

To increase farm output and farm incomes through the adoption of management practices which improve the efficiency and profitability of agriculture production.

Most of the direct strategy responses to this objective involve the transfer of improved management technologies to small-scale commercial farmers. With appropriate support from the international community these technologies can be adapted to local conditions and technology transfer initiated within the next one to two years. A related set of institutional responses (credit, extension, research etc.) are described in the discussion of "agriculture policy and institutions."

Short-Term Strategy Responses - Crop Production

(1) Based on standard seed selection and certification procedures, increase the range of varieties to which farmers have access by expanding the national seed lists for cereals, potatoes, vegetables, industrial crops, fruit and berry fruit, forage crops and pasture.

[8] Where these responses apply to more than one area of action they are repeated for the sake of completeness.

(2) Encourage the private sector import, multiplication and distribution of improved, certified seeds by increasing the efficiency of relevant administrative procedures.
(3) Develop recommendations for lower, more cost-effective seeding rates for cereals, as a means of reducing production costs and raise profitability.
(4) Based on current trends in commodity and input prices and knowledge of soils and fertilizer response, determine the profit-maximizing levels of fertilizer use for all major crops in the main crop producing areas of RS.
(5) Based on current trends in commodity and input prices, and knowledge of crop protection techniques, identify low-cost systems of weed and pest control suitable for small-scale production of cereals, vegetables, industrial crops, fruit and berry fruit.
(6) Based on a realistic assessment of the production responses likely to be achieved by small-scale commercial farmers, determine the returns to adoption of these technologies - for all crops in all major crop production areas. For those crops and those areas where profitability increases significantly, develop management recommendations for farmers and extension agents on varietal choice and input use.
(7) Encourage commercial farmers to diversify into more profitable crops by developing extension packages which: show the comparative returns to different crops, inform farmers as to the management requirements for new crops (through demonstration farms, farm visits etc.) and inform farmers as to the range of market outlets available for new crop products and the type of product sought on these markets. Give particular attention to high-return, labour-intensive crops such as vegetables, fruit, berry fruits and tobacco.
(8) Support the establishment of private-sector nurseries for fruit and berry fruit.
(9) Introduce new fruit varieties and modern systems of orchard management as the basis for increasing the efficiency of fruit production.
(10) Promote the widespread establishment of producer associations (in the form of cooperatives, partnerships or companies) as a vehicle for disseminating and supporting the adoption of improved management practices, reducing the diseconomies of small, fragmented farms and diversifying into more profitable crops.

Medium-Term Strategy Responses - Crop Production

(1) Identify low-cost irrigation systems suited to intensive fruit and vegetable production on small-scale commercial farms, develop management guidelines to assist farmers to install and operate these systems and establish credit lines to finance them.
(2) Promote the production of organically grown fruit and vegetables.
(3) Review the suitability and cost-effectiveness of traditional cultivation systems, develop recommendations as to the most cost-effective cultivation systems for small farms, and the type of farm machinery and equipment which these cultivation systems require.
(4) Use these recommendations to guide donor and private sector purchase of new agricultural machinery and equipment and to prepare extension messages designed to increase the efficiency of farm machinery use on small-scale farms.
(5) Increase the access of small-scale farmers to modern farm machinery and equipment by establishing farm machinery rings, credit lines for farm machinery sales outlets (for both new and second hand machines) and machinery contractors.

Short-Term Strategy Responses - Livestock Production

(1) Develop recommendations for improving the quality of pasture and hay production based on improved grazing management and earlier harvesting times for hay.
(2) Identify low-cost systems of silage making, and the associated requirements for farm machinery as an alternative means of improving the quantity and quality of winter feed.
(3) Introduce alternative forage and fodder crops as a means of improving livestock production on lowland areas.

(4) Based on current trends in commodity and input prices, knowledge of soils and fertilizer response, determine the profit-maximising levels of fertilizer use for pasture in the main livestock producing areas of RS.
(5) Develop low-cost feeding recommendations suited to small-scale commercial farms as the basis for improving the growth rates of young stock, reducing the age of first parturition and shortening the breeding interval.
(6) Develop recommendations on grazing management and shearing times to improve wool quality. Train farmers to class wool as the basis for improving wool quality and marketability and the returns to wool production.
(7) Promote fish and honey production.
(8) Promote the widespread establishment of producer associations (in the form of cooperatives, partnerships or companies) as a vehicle for disseminating and supporting the adoption of improved management practices for livestock production.
(9) Continue donor support for the import of high quality breeding stock as a means of improving the genetic potential of livestock in RS, but under the following conditions:

- All stock to be distributed to commercial farmers.
- Donor support to be in the form of low-interest loans to farmers, but farmers to pay a portion of the purchase price.
- Beneficiary farmers to pay for performance recording as the basis for optimizing the genetic value of these animals and re-establishing pre-war breeding programmes.

(10) Budget restrictions permitting government to replace the programme to subsidize breeding stock with a modest programme to encourage farmers to retain young dairy stock. Payments to be made for those animals retained above the minimum requirement for herd replacement (i.e. not for all young stock), and to be made only after first calving.
(11) Establish private sector stud farms as the basis for breed improvement, through support for the privatization of state-owned reproduction centres and their subsequent development.

Medium-Term Strategy Responses - Livestock Production

(1) Government to facilitate increased private sector import of livestock and animal semen by improving border controls and the efficiency and accessibility of relevant administrative procedures and removing the current tariff on breeding cattle.
(2) With donor support, re-establish the pre-war performance recording scheme but make it self-financing by the year 2002.
(3) Train and licence technicians to perform artificial insemination and remove the monopoly control of veterinarians on the provision of animal breeding services.
(4) Increase the use of mountain grazing resources by establishing locally managed Land Development Boards to manage them (see Land Use) and by increasing the number of livestock water points.

8.4 Marketing and Processing of Agricultural Products

Effective development of marketing, processing and agri-business is the key to future agriculture sector development in RS. A wide range of efficient marketing agents (producer associations, traders, agri-business enterprises, agro-processors, Green Markets, wholesale markets etc.) provide the best platform for sending clear price signals to farmers on what they should produce. They also compete among themselves to offer the best prices to farmers, compete with imports to offer the best prices to consumers and drive the expansion of agricultural exports.

Strong support for this relatively small component of the sector can have enormous sector-wide impact. However, a major transformation of existing marketing institutions and market agents will need to occur for this to happen. Consumer demand in domestic and export markets must drive

post-war production and marketing decisions. The pre-war structure of heavily protected state-owned processors and marketing institutions must be replaced by privately owned enterprises able to survive with lower levels of protection. A new generation of marketing agents and processors must evolve in response to these changes, with the ability of developing new products and face increased competition.

Objective

To increase the competitiveness of domestically produced agricultural products and their share in domestic and international markets, through the establishment of strong marketing institutions and viable marketing agents and agro-processors.

Short-Term Strategy Responses

(1) Encourage the rapid privatization of state-owned marketing agencies and agro-processors. With the support of the international community, ensure that these privatized enterprises are appropriately structured, scaled and staffed and reasonably priced.
(2) Establish donor-financed credit lines for purchase, construction, upgrading of plant and equipment and for working capital, with lending restricted to those agro-processors and agri-business enterprises able to adapt to current market conditions.
(3) International community to provide training in business management, marketing and accounting and to assist managers to increase production efficiency, assess the level and characteristics of current and future consumer demand and develop suitable products.
(4) Establish producer associations as a vehicle for linking producers to marketing outlets and improving the incentives for producers to increase output and marketed surplus.
(5) Support the re-establishment and restructuring of agricultural cooperatives, and where appropriate, their development as privately owned local agri-business centres.
(6) Re-establish milk assembly systems by providing finance for lacto-freezers, establishing producer associations to coordinate the collection and sale of milk, and encourage the prompt payment of farmers by dairy processors.
(7) Reduce the current import tariff on maize to zero percent, as a means to lower animal feed costs and improve the competitiveness of local animal feed processors.
(8) Support the production of oilseeds for animal feed and investment by animal feed manufacturers in small-scale oil extraction units.
(9) Determine the economic feasibility of re-establishing operation of the oilseed processor at Brcko and the implications of this for producers, consumers and exports.
(10) Discontinue support for sugarbeet production and processing and reduce the current import tariff on sugar to zero percent to support fruit and vegetable processing.
(11) With the support of the international community, improve the enforcement of border controls and the collection of import taxes.
(12) Develop systems to provide market information on agriculture commodity prices in all major markets in both entities and supplement this system with regular monitoring and analysis of trends in the prices of agricultural commodities on international markets.

Medium-Term Strategy Responses

(1) Working with municipalities, construct wholesale markets in the major urban centres and producer areas.
(2) Working with municipalities, improve the standard of facilities in local Green Markets.
(3) Assist the chamber of commerce to promote domestically produced agricultural commodities on international markets.
(4) With support from the international community implement an inter-entity programme to align product standards and trade, health and safety regulations with those applied by the European Union.

8.5 Rural Development

Strong rural communities are essential for future political and economic stability, and these will not emerge without balanced support for both farm and non-farm income generation and access to high quality rural education and health services. Rural development programmes will be initiated to achieve these objectives, with particular attention to measures that increase non-farm rural employment. By reducing the reliance on farm income, increased access to non-farm employment will also allow an increase in the sale or lease of rural land, and hence facilitate an increase in farm size. Responsibility for the design and implementation of these programmes will be shared by the MAFWM and other relevant ministries, with the involvement of municipality government.

Objective

To improve the welfare of rural households and strengthen rural communities through measures that increase non-farm rural employment and improve the quality of rural health and education services.

Short-Term Strategy Responses

(1) Prepare municipality level rural development plans that reflect the needs and aspirations of local people and the nature of the local resource base.
(2) With the support of donors, NGOs and municipality government, establish job and business training programmes and micro-credit lines as the basis for encouraging small enterprise development in rural areas.
(3) With donor support, strengthen the institutional capacity of municipality government to support rural development programmes.

Medium-Term Strategy Responses

(1) Together with other relevant ministries, develop programmes to improve the quality of rural education and rural health services.

8.6 Land Use and Natural Resource Management

Given the limited availability of agricultural land in RS, effective use of this land is essential for agriculture sector development. However, the predominance of small, fragmented farms has long obstructed this mandate, an issue made worse by the pre- and post-war abandonment of rural land. The national tradition of protecting forest and water resources must also be supported as the basis for sustainable natural resource management.

Objective

To optimize land use and preserve the natural resource base by developing policies and institutions which balance public and private interests in land use and ownership and ensure effective stewardship of RS' natural resources.

Short-Term Strategy Responses

(1) Support the resettlement of rural land, according to the guidelines and programmes developed by the RRTF, by ensuring that the returnees, relocating families and residents in resettlement areas have full access to available credit, extension facilities and rural development programmes designed to create opportunities for non-farm rural employment.

(2) Establish a unit within the MAFWM to: identify agriculture land for de-mining (based on the system of prioritization developed by FAO), obtain donor finance to effect this de-mining and coordinate and monitor de-mining activities.
(3) Encourage the leasing of rural land as a means of enlarging and consolidating farms, by developing legally recognized, standard lease contracts that provide adequate protection for both lessee and lessor. Amend current land laws to state that in the absence of any formal lease agreement, the conditions of these standard leases will apply.
(4) Promote increased land market activity through the following measures (see also medium-term responses):

- Remove the current tax on land transactions.
- Establish readily accessible information systems which describe the characteristics, location and price of rural property available for sale, lease or exchange.
- Establish readily accessible registers of lawyers, valuers and property agents who can provide the administrative and technical services needed to effect land transactions.
- Prepare six monthly reports that indicate the level of activity in the various sectors of the land market in different locations and relevant land market prices.

(5) Privatize all of the state farms, with the land to be occupied on the basis of medium-term lease agreements at market rentals.
(6) With the support of the international community, continue the process of updating and reconciling the land book and the land registry and computerizing land records.

Medium-Term Strategy Responses

(1) Under the auspices of the OHR, the international community to provide financial support and technical assistance to strengthen the legal and institutional basis for effecting land transactions (sales and exchanges) within and between entities. Implementation of this programme will respect the principles that people must have complete freedom of choice as to where they live and whether to sell or otherwise transfer their land, and that land transactions should not be used as a means to achieve political objectives.
(2) The international community to help improve the efficiency and probity of land transactions by: developing training programmes for valuers and property agents, establishing codes of conduct for their activities and establishing professional associations of trained people who agree to these codes of conduct. Government to establish legal recognition of these professional associations, their expertise, their codes of conduct and procedures for licensing their members.
(3) With the assistance of the international community, review the policies that determine the ownership of ex-state farm land and the efficiency with which it is used. This review should consider: the need for eventual privatization and sale of this land, the extent to which it could be divided into smaller farms without prejudicing their capacity to practice modern, intensive management systems, and its potential use to enlarge and consolidate neighbouring small-scale farms.
(4) Review and amend inheritance laws to prevent further land fragmentation.
(5) Donor community to support the process of property restitution, following the passage of appropriate legislation.
(6) Continue the pre-war system of land consolidation programmes, but land owners and/or donors to fund part of the cost of associated infrastructure.
(7) With donor support, promote the establishment of Land Development Boards to initiate and manage land development and maintenance projects that require cooperative action. Activities to be implemented by these Boards include the drainage, irrigation and land consolidation programmes currently directed by local government authorities and the management of communal grazing areas.
(8) With support from the international community, review the current legislation on natural resource management and the institutional base for implementing this legislation. Where appropriate, modify this legislation to comply with international standards on acceptable levels of pollution, and strengthen relevant institutions.

(9) With the support of the international community, review the current policies and institutions relating to land tenure, land administration and land management. On the basis of this review, develop a comprehensive framework for guiding: the operation of land markets, the management of unused land, the use of rural land for non-farm purposes, the use of value-based land taxation instead of cadastral taxes, the roles of the institutions which administer land policy and measures to increase their institutional capacity.

8.7 Agriculture Policy and Institutions

The transformation from a socialist to a market-oriented economy will mean new roles for government, less intervention in economic management and the acceptance of a wider role for the private sector. This transformation will not be easy. While policies can be changed quickly, the associated process of institutional change takes much more time as people must learn to think in different ways about institutional roles and to acquaint themselves with new approaches to policy analysis and policy formulation.

The human dimension of institutional change is especially pertinent in RS. The country lost many capable people during and after the war, and the remainder were isolated from the rest of the world for more than five years. Hence, there is a limited knowledge of the changes resulting from international trade reform, agricultural policy reform in the USA and the European Union and the economic transformation of eastern and central Europe. This isolation has also heightened the natural distrust of change. The strategy thus provides for key sector personnel to learn more about agriculture policies and institutions elsewhere, particularly in situations where resource constraints are severe. The five central European countries that have recently begun accession to the EU should be a major part of this experience, plus visits to the EU and the USA to learn more about their programmes of policy and institutional reform.

Objective

To establish policies which are consistent with the operation of a market economy and available public resources, to establish appropriate roles for the public and private sector institutions responsible for implementing these policies; and to build the requisite capacity to operate these institutions.

As this area of action covers a broad field, the ensuing strategy measures are grouped according to the agricultural policies and institutions concerned.

Short-Term Strategy Responses - MAFWM

(1) With the support of the international community, restructure the MAFWM to strengthen its capacity in its main future areas of responsibility: policy analysis, the monitoring and enforcement of plant and animal health regulations, market information, and the stewardship of natural resources. Where pre-war roles will be transferred to the private sector (e.g. veterinary services, plant and animal breeding), the relevant resources should be reallocated within the Ministry.
(2) Donor community should organize and finance visits to central European and EU countries to inform RS policy makers of current agricultural policies in these countries, their management of agricultural policy reform and the organizational structures of their ministries of agriculture.
(3) Reform agricultural price policy such that it is based largely on import protection, with direct intervention limited to support for a small number of key commodities.
(4) Retain the system of guaranteed prices for wheat and the minimum producer price for milk, and maintain these prices at their current levels.
(5) Maintain the subsidy on milk production at its current level.
(6) Phase out the system of maximum consumer prices for flour, bread and milk. These consumer prices to be completely liberalized as markets strengthen.
(7) Progressively widen maximum retail and wholesale margins as markets strengthen and discontinue them, once prices stabilize.
(8) Budget restrictions permitting government should replace the programme to subsidize breeding stock with a modest programme to encourage farmers to retain young dairy stock. Payments should be made for those animals retained <u>above the minimum requirement for herd replacement</u> (i.e. not for all young stock) and be made only after first calving.
(9) Reduce the current tariffs on imported breeding cattle, maize and sugar to zero percent.

(10) Establish and fund MAFWM budget lines for agricultural extension and research.
(11) Replace the current system of seasonal credit provided by the Commodity Reserves Agency with donor financed credit lines for seasonal credit, administered by the commercial banks, and discontinue the Agency's involvement in price stabilization.

Medium-Term Strategy Responses - MAFWM

(1) Transfer the MAFWM to Banja Luka.
(2) Once the political and economic situation stabilizes, review the policies and operations of the Commodity Reserves Agency and develop a more cost-effective basis for the management of strategic stocks and protection of the wheat floor price.

Short-Term Strategy Responses - Rural Finance

(1) The international community should finance further credit lines for working capital and investment to support the establishment and growth of private sector agri-business and marketing agencies, agro-processors and commercial farmers. These credit lines should be administered by commercial banks in conjunction with current programmes of financial sector reform and the improvement of commercial bank management.
(2) The international community to modify the conditions of donor funded loans to agriculture enterprises in order to improve borrower cash flow during the critical first 12 months of business operation. As the current interest rates are moderate, these modifications should focus on the length of the loan term and any grace period.
(3) The international community should encourage the presence of financial institutions such as the Raiffeisen Bank, which have special expertise in agriculture credit.
(4) Initiate a pilot programme to establish Village Credit Unions as the basis for providing affordable financial services to small-scale farmers.

Medium-Term Response – Rural Finance

(1) Donor community should establish a private sector financial institution to provide medium to long-term credit for medium to large-scale enterprises from agriculture and other sectors of the economy.

Short-Term Strategy Responses - Agricultural Extension, Research and Education

(1) With international support, develop gender-sensitive extension packages appropriate for small-scale commercial farmers which emphasize improved farm business management and enterprise profitability, the use of improved crop varieties, the cost-effective use of inputs for crop production, diversification into new crops, the use of irrigation, pasture and forage crop management and feeding systems for livestock.
(2) With international support, develop training programmes for extension agents that focus on meeting the needs of small-scale commercial farmers and train them in the use of modern extension methods. This training to be conducted in a new centre for the training of extension agents from both entities.
(3) Ensure that all public and private sector extension agents have access to these extension messages and training programmes, including the agricultural extension agents employed by producer associations, agri-business enterprises and agro-processors.
(4) Establish a modestly scaled public extension service linked to the research centres in Prijedor, Banja Luka, Doboj, Bijeljina, Sokolac and Trebinje. This service to be funded initially by the donor community, but to be fully funded by government and user fees by the year 2002 and to be self-financing by 2005.
(5) Establish an Agriculture Research Council (ARC) to be responsible for defining the agriculture research agenda for RS and allocating research funds. This Council and its research fund

to be donor-financed for its first three years of operation. Council membership should encompass small and large-scale farmers, the extension service, private sector agro-processors and agri-business enterprises, marketing agencies, academia and government.

(6) Direct ARC and other international community support to the pre-war research centres to strengthen their programmes in plant and animal husbandry, with particular emphasis on: fertilizer use, cultivation practices, weed and pest control, pasture and forage management and animal nutrition. This research to address the problems of small-scale commercial farmers.

(7) As increased funding becomes available for research, the crop research centres to phase out their involvement in commercial activities such as seed multiplication and sales.

(8) With international support, improve the curricula and teaching capacity of the pre-war institutions responsible for training agriculture technicians, and assist them to obtain new teaching materials and to develop adult education programmes for farmers.

(9) With international support, improve the curricula and facilities of the pre-war institutions responsible for university education in agriculture; and assist them to retrain and replace staff.

(10) Donor community should organize and finance visits to central European and EU countries and the USA to acquaint key personnel involved in agriculture extension, research and education with the policies and public and private institutional structures used in these countries.

(11) Under the auspices of the OHR, review the current proliferation of research and education institutions in both entities and develop guidelines for donors as to which institutions should have the highest priority for support.

Medium-Term Strategy Responses - Agricultural Extension, Research and Education

(1) Develop an institutional framework that links: the agriculture research centres, public and private extension services and agriculture education and training programmes.

(2) Increase the agricultural research budget (from all sources) to one percent of agriculture GDP by 2009. (Two percent of agriculture GDP is generally considered the minimum for successful agriculture sector development).

(3) Resources permitting, expand the public extension programme to encompass family issues and measures to generate non-farm income.

Short-Term Strategy Responses - Animal Health and Breeding

(1) Limit direct government involvement in the management of animal health to: specification of the minimum educational requirements for veterinary practitioners and the licensing of veterinarians and veterinary technicians, the specification of minimum hygiene standards to be observed in enterprises which process animal products, the specification of minimum health and quality standards for domestic and imported animal products, the specification of conditions for the import and export of live animals and animal semen, the monitoring and enforcement of these regulations within RS and on national borders and the funding and management of the veterinary institutes and diagnostic laboratories.

(2) Support full privatization of the veterinarian system with the following measures:

- Ensure that veterinarians have access to credit to acquire necessary facilities, including the purchase of municipal veterinary stations and equipment.
- Establish a professional association of veterinarians as the basis for representing veterinarians at government level, developing a code of ethics and developing guidelines as to the fees which veterinarians should charge for their services.

(3) With international support, develop programmes to train technicians to perform artificial insemination and establish procedures for licensing successful trainees to perform these services on a commercial basis.

(4) Establish administrative procedures that facilitate the commercial import and distribution of animal semen.

(5) Remove the monopoly control which veterinarians have over the acquisition and sale of animal semen and artificial insemination, and allow these inputs to be provided by approved private sector agents.
(6) With international support, re-establish the pre-war performance recording scheme, placing initial emphasis on performance recording of high quality breeding stock imported under the reconstruction and recovery programme. Farmers should pay for this service, with the aim of making it self-financing after three years of operation.
(7) Establish private sector stud farms as the basis for breed improvement, through support for the privatization of state-owned reproduction centres and their subsequent development.
(8) Donor community to organize and finance visits to central European and EU countries and the USA to acquaint key personnel involved in animal health and breeding with the policies and public and private institutional structures used in these countries.

Medium-Term Strategy Responses - Animal Health and Breeding

(1) With donor support, complete the refurbishment of the veterinary institutes and diagnostic laboratories responsible for monitoring and advising on animal health.

Short-Term Strategy Responses - Plant Breeding and Protection

(1) Limit public sector involvement in plant breeding and plant protection to:
- Review and updating of the national seed list;
- Seed testing, selection and certification, in particular the specification, monitoring and enforcement of health and quality standards for domestic and imported seed for multiplication and commercial sale; imports and exports of plant material; and agriculture chemicals and fertilizer.

(2) Continue donor support for the establishment of modern standards for seed certification and the institutional structures responsible for this activity.
(3) Increase donor support for the seed testing and selection procedures associated with expansion of the national seed list. Where this testing and selection process is unduly slow, consider allowing the import of seeds approved by EU member countries as a temporary measure.
(4) Promote private sector commercial seed multiplication and sales and discontinue the involvement of agricultural research institutes in these activities.
(5) Support private sector input suppliers through access to credit and more efficient import procedures
(6) Donor community should organize and finance visits to central European and EU countries and the USA to acquaint key personnel involved in plant breeding and protection with the policies and public and private institutional structures used in these countries.

Short-Term Strategy Responses - Producer Associations

(1) With international community support, promote the widespread establishment of all forms of producer associations (partnerships, cooperatives, machinery rings, business enterprises etc.). The choice of the most appropriate structure to be made by the members, according to their preferences and the activities of the association.
(2) Support the privatization and re-structuring of existing agricultural cooperatives, and their adoption of the changes required by the new legislation on cooperative governance and membership.
(3) Donor community should organize and finance visits to central European and EU countries and the USA to acquaint key personnel with the policies, organizational structures, activities and legal status of producer associations in these countries.

8.8 Inter-Entity Trade and Cooperation

Inter-entity trade has obvious benefits for all producers and consumers in BiH. The establishment of an inter-entity market information system will do much to enhance this trade, but it must be accompanied by inter-entity cooperation in the monitoring of plant and animal heath and the control and eradication of plant and animal diseases. At the institutional level there is much to be gained from a programme to align product standards in both entities with those applied by the European Union. The two entities should also participate more actively in the various task forces set up by the Ministry of Foreign Trade and Economic Relations to develop state level policy on issues such as customs procedures, international trade and membership of WTO and the European Union.

Other issues may be more controversial, including measures to establish a more rational approach to the use and development of research, extension and education facilities. Under these circumstances the strategy recognizes that cooperation will require the agreement of both entities and the support of the Office of the High Representative (OHR), and will take time.

Objective

To establish mechanisms to improve inter-entity trade and cooperation in areas which benefit both entities.

Short-Term Strategy Responses

(1) The international community should support the establishment of a system for collecting and disseminating information from the major markets in Bosnia and Herzegovina.
(2) With the support of OHR, the donor community should refurbish the pre-war veterinary institutes in Sarajevo, Banja Luka, Tuzla and Mostar and the diagnostic laboratories in Sarajevo, Zenica and Brcko to identical standards, should retrain staff in order to ensure equivalent levels of analysis and should establish mechanisms which ensure the regular exchange of information on issues of animal health.
(3) With the support of OHR, the donor community should refurbish the public institutions in each entity responsible for seed certification, seed selection and plant protection to identical standards, should retrain staff in order to ensure equivalent levels of analysis and should establish mechanisms which ensure the regular exchange of information on issues of plant protection.
(4) Under the auspices of the OHR, the donor community and the ministries of agriculture in each entity will review the current proliferation of research and education institutions in both entities and develop guidelines as to which institutions should have the highest priority for support.
(5) The international community should support the establishment of a centre for the training of extension agents from both entities.
(6) Ministry of Agriculture representatives from both entities should participate actively in the task forces set up by the Ministry of Foreign Trade and Economic Relations to formulate state level policy, including customs procedures, international trade and membership of WTO and the European Union.

Medium-Term Strategy Responses

(1) With support from the international community implement a programme to align product standards and trade, health and safety regulations throughout BiH with those applied by the European Union.

STRATEGY MATRIX

The preceding strategy outline has also been summarized and presented in matrix form to enhance understanding of its structure and content.

AGRICULTURE SECTOR STRATEGY MATRIX

FOCUS: EFFICIENCY AND PROFITABILITY OF CROP PRODUCTION			
OBJECTIVE	**ISSUES/CONSTRAINTS**	**STRATEGY RESPONSE**	
		SHORT-TERM	**MEDIUM-TERM**
Increase crop yields	- Inadequate use of improved varieties. - Improved varieties not always appropriate. - Low fertilizer use and inadequate weed and pest control.	- Expand the national seed list. - Encourage private sector import, multiplication and distribution of certified, improved seed varieties. - Support the establishment of private sector nurseries for fruit trees and berry fruit. - Develop recommendations for the profitable use of fertilizers and agricultural chemicals.	- Strengthen the institutional capacity for seed certification and selection.
Reduce production costs	- Excessive seeding rates (cereals). - Inefficient and outdated cultivation practices and inappropriate machinery.	- Develop recommendations for cost-effective cereal planting.	- Develop recommendations for modern, cost-effective cultivation practices and the type of machinery required. - Use these recommendations to guide donor and private sector purchase of farm machinery.
Increase the use of improved technology by small-scale farmers	- Inadequate extension messages and services, particularly for small-scale commercial farmers. - Diseconomies of small fragmented farms. - Outmoded management systems for fruit production.	- Develop extension recommendations for small-scale commercial farmers on the use of low-cost measures to improve productivity and profitability. - Train private and public extension agents to disseminate these messages. - Promote the widespread establishment of producer associations as a vehicle for disseminating extension messages and reducing diseconomies of scale. - Introduce new fruit varieties and modern systems of orchard management.	- Support the establishment of private sector extension facilities by producer associations, agro-processors and agri-business enterprises. - With donor and government support establish a modestly scaled public extension service linked to the regional research centres, which should be self-financing by the year 2005.
Diversification into higher returning crops	- Farmer focus on food self-sufficiency. - Inadequate information.	- Review the profitability of alternative crops grown under small-scale farm conditions and develop extension programmes which encourage commercial farmers to diversify into new crops.	- Promote the production of organically grown fruit and vegetables.
Increased use of irrigation	- Inadequate information on irrigation systems suited to small farms. - Inadequate finance for small-scale commercial farmers.		- Identify low cost irrigation systems suited to small-scale commercial farms and develop management guidelines to promote their use. - Establish credit lines for investment in irrigation.
Improve the efficiency of farm machinery use	- Adequate machinery per hectare but inadequate machinery per farm.		- Promote the establishment of farm machinery rings. - Establish credit lines for farm machinery sale outlets and farm machinery contractors.

AGRICULTURE SECTOR STRATEGY MATRIX

FOCUS: EFFICIENCY AND PROFITABILITY OF LIVESTOCK PRODUCTION			
OBJECTIVE	**ISSUES/CONSTRAINTS**	**STRATEGY RESPONSE**	
		SHORT-TERM	**MEDIUM-TERM**
Increase the profitability and diversity of livestock production	- Poor livestock nutrition and low consequent animal productivity. - Inadequate use of improved management systems by small-scale farmers. - Low returns to sheep production and decline of the national flock. - Potential for increased fish and honey production.	- Develop low-cost feeding recommendations suited to small-scale commercial farmers as the basis for improving the growth rates of young stock, reducing the age of first parturition and shortening the breeding interval. - Promote the widespread establishment of producer associations as a vehicle for increasing the adoption of improved management techniques. - Develop recommendations on grazing management and shearing times to improve wool quality and train farmers to class wool. - Promote fish and honey production.	
Improve the quality and quantity of pasture, fodder and forage production and its utilization.	- Low production and inefficient use of pastures and forage crops. - Inadequate use of mountain grazing resources.	- Develop extension recommendations for: (i) improving the quality of pasture and hay; (ii) the cost-effective use of fertilizer on pastures; (iii) low-cost systems of silage making. - Introduce alternative forage and fodder crops as a means of improving lowland livestock production.	- Increase the use of mountain grazing resources by establishing Land Development Boards to manage them (see Land Use). - Increase the number of livestock water points in mountain pastures.
Increase livestock numbers and improve the genetic base for livestock production	- War-related losses of livestock in general and improved breeding stock in particular. - Low genetic potential of traditional breeds and low use of AI. - War-related breakdown of dairy performance recording system.	Continued donor support for the import of young, high quality breeding stock as a means of improving the genetic potential of livestock in RS, but: (i) stock to be distributed to commercial farmers; (ii) farmers to pay a portion of the purchase price and to pay for performance recording of these animals. - Budget restrictions permitting, government to replace the programme to subsidize breeding stock with a modest programme to encourage farmers to retain young dairy stock. Payments to be restricted to animals retained above the minimum requirement for herd replacement. - Remove the import tariff on breeding cattle - Establish private sector stud farms through support for privatization and development of the state-owned animal breeding and reproduction centres.	- Government to facilitate the private sector import of livestock and animal semen by improving the efficiency of administrative procedures. - Train and licence technicians to perform AI and remove the monopoly control of veterinarians over the provision of animal breeding services. - Re-establish the dairy performance recording scheme on a self-financing basis.

AGRICULTURE SECTOR STRATEGY MATRIX

FOCUS: MARKETING AND PROCESSING OF AGRICULTURE PRODUCTS			
OBJECTIVE	**ISSUES/CONSTRAINTS**	**STRATEGY RESPONSE**	
		SHORT-TERM	**MEDIUM-TERM**
Rapid, appropriate privatization of state-owned agro-processors and agri-business enterprises	- The increasing weakness of state-owned enterprises due to their limited ability to restructure and poor access to donor funds. - The risk of privatizing unviable business entities.	- Relevant ministries to effect rapid privatization. - The international community to assist state enterprises to determine which components are commercially viable and the associated optimal level of staff; government to facilitate this restructuring.	
Increase the efficiency and competitiveness of private sector agro-processors and agri-business enterprises and expand their share in domestic and international markets	- Limited ability to compete with imports due to excess capacity, outdated plant and equipment and inadequate management. - The need to link production decisions more closely to consumer demand; and adjust to war-related changes in the characteristics and level of consumer demand. - The shortage of credit for working capital and investment.	- The international community to provide training in business management, accounting and marketing and to assist managers to increase production efficiency, assess the level and characteristics of current and future consumer demand and to develop suitable products. - Donors to provide credit lines for investment and working capital for those enterprises able to adapt to current market conditions. - Government to reduce the import tariff on maize to zero percent to support the development of a domestic animal feed industry. - Improve the enforcement of border controls and the collection of import duties.	- Assist the Chamber of Commerce to promote domestically produced agricultural products on international markets.
Increase marketed surplus and farm incomes	- Low marketed surplus for most agricultural commodities. - The breakdown of pre-war assembly and marketing mechanisms.	- Promote the establishment of producer associations as a vehicle for linking producers to marketing outlets and increasing marketed surplus. - Re-establish milk assembly systems by providing finance for lacto-freezers, and establishing producer associations to coordinate collection and sales. - Ensure that producers are paid promptly by dairy processors.	
Strengthen market institutions and infrastructure	- The collapse of state and cooperative marketing institutions. - The lack of market information within and between entities. - The alignment of product and health standards with the EU.	Re-establish and restructure agriculture cooperatives, and where appropriate, support their development into private agri-business enterprises. - Develop systems to collect and disseminate market information in both entities, and to follow trends in agriculture prices in international markets.	- Working with municipalities, construct wholesale markets in the major urban centres and producer areas. - Working with municipalities, improve the standard of facilities in local Green Markets. - Align product standards and health and safety regulations in both entities with those in the EU.

FOCUS: MARKETING AND PROCESSING OF AGRICULTURE PRODUCTS (continued)			
OBJECTIVE	**ISSUES/CONSTRAINTS**	**STRATEGY RESPONSE**	
		SHORT-TERM	**MEDIUM-TERM**
Rationalize the production and processing of industrial crops	- The ability of privatized tobacco, sugar and oilseed processors to compete on international markets. - The heavy reliance of sugar and oilseed processors on external supplies of raw materials. - The benefits of re-establishing sugar and oilseed processors for producers, consumers and trade.	- Seek outside capital as the basis for privatizing the tobacco processing facilities. - Discontinue public support for the production and processing of sugar beet. Reduce import tariffs on sugar to zero percent. - Assess the economic feasibility of re-establishing the oilseed processor at Brcko and the implications of this for producers, consumers and exports. - Support the production of oilseeds for animal feed, and investment by animal feed manufacturers in small-scale oil extraction units.	

AGRICULTURE SECTOR STRATEGY MATRIX

FOCUS: RURAL DEVELOPMENT			
OBJECTIVE	**ISSUES/CONSTRAINTS**	**STRATEGY RESPONSE**	
		SHORT-TERM	**MEDIUM-TERM**
To improve the welfare of rural households and strengthen rural communities	- The need to increase access to opportunities for non-farm employment in rural areas. - The need to improve the quality of rural health and education services.	- Prepare municipality level rural development plans that reflect the needs and aspirations of local people and the nature of the local resource base. - With the support of donors, NGOs and municipality government, establish job and business training programmes and micro-credit lines as the basis for encouraging small enterprise development in rural areas. - With donor support, strengthen the institutional capacity of municipality government to support rural development programmes.	- Together with other relevant ministries, develop programmes to improve the quality of rural education and rural health services.

AGRICULTURE SECTOR STRATEGY MATRIX

FOCUS: LAND USE AND NATURAL RESOURCE MANAGEMENT			
OBJECTIVE	**ISSUES/CONSTRAINTS**	**STRATEGY RESPONSE**	
		SHORT-TERM	**MEDIUM-TERM**
Support the resettlement of displaced persons and refugees according to the guidelines established by the RRTF	The social and economic imperatives to re-establish rural families.	- Ensure that returnees, re-locating families and residents in resettlement areas have full access to credit and extension facilities, and to rural development programmes designed to create opportunities for non-farm rural employment.	
Accelerate the de-mining of agricultural land	- The low priority given to de-mining agricultural land, lack of an institutional framework and limited consequent progress.	- Establish a unit within the MAFWM to: identify and prioritize agriculture land for de-mining, obtain the requisite donor finance and coordinate and monitor de-mining activities.	
Promote the enlargement and consolidation of small-scale farms	- The constraints to agricultural production caused by the predominance of small fragmented farms in RS. - The constraints to land market transactions as a vehicle for addressing this problem. - Inheritance laws and customs. - The high cost of land consolidation programmes.	- Encourage the leasing of rural land by developing legally recognized, standard lease contracts which protect both lessee and lessor. - Promote increased land sales by: (i) Removing the current tax on land transactions; (ii) Establishing information systems which describe the location, characteristics and price of rural property available for sale or exchange; (iii) Establishing registers of lawyers, valuers and property agents who provide the technical and administrative services needed to effect land transactions. (iv) Prepare six monthly property reports that indicate the current level of activity and prices in the main sectors and locations of the land market.	- Provide technical and financial support to strengthen the legal and institutional basis for effecting land transactions within and between entities. - Amend current land laws such that, in the absence of any formal lease agreement the conditions of the standard lease agreement will apply. - Improve the efficiency and probity of land transactions by: training valuers and property agents, establishing codes of conduct for their activities and establishing relevant professional associations. - Government to establish legal recognition of these associations and procedures for licensing members. - Review and amend inheritance laws to prevent further land fragmentation. - Continue the pre-war system of land consolidation programmes, but land owners and/or donors to fund part of the cost of associated infrastructure.
To privatize state farms and ensure that ex-state farm land is used efficiently	- The need for policies to optimize the current and future use of ex-state farm land.	- Privatize all state farms, with the land to be occupied on the basis of medium-term lease agreements at market rentals.	- Review the policies that determine the ownership of ex-state farm land and the efficiency with which it is used. Consider the need for: privatization of this land; dividing it into smaller, but fully commercial farms; and its use for enlarging small-scale farms. - Donor community to support the process of land restitution following the passage of appropriate legislation.

FOCUS: LAND USE AND NATURAL RESOURCE MANAGEMENT (continued)			
OBJECTIVE	**ISSUES/CONSTRAINTS**	**STRATEGY RESPONSE**	
		SHORT-TERM	**MEDIUM-TERM**
Develop an appropriate legislative and institutional basis for land use management, and strengthen the institutions responsible for land policy implementation	- The appropriateness of current policies and procedures on land tenure, land administration and land management. - The limited capacity of the institutions responsible for implementing these policies.	- Continue the process of updating and reconciling the land book and the land registry and computerizing land records.	- Promote the establishment of Land Development Boards to initiate and manage land development and maintenance projects that require cooperative action. Activities to be implemented by these Boards include the drainage, irrigation and land consolidation programmes currently directed by local government authorities, and the management of communal grazing areas. - Review the current legislation on natural resource management and the institutional base responsible for implementing this legislation. Where appropriate, modify this legislation to comply with international standards on acceptable levels of pollution and strengthen relevant institutions. - Review the current policies and institutions relating to land tenure, land administration and land management. On the basis of this review, develop a comprehensive framework for guiding: the operation of land markets, the management of unused land, the use of rural land for non-farm purposes, the use of value-based land taxation instead of cadastral taxes, the roles of the institutions which administer land policy, and measures to increase their institutional capacity.

AGRICULTURE SECTOR STRATEGY MATRIX

FOCUS: AGRICULTURE POLICIES AND INSTITUTIONS - MAFWM			
OBJECTIVE	**ISSUES/CONSTRAINTS**	**STRATEGY RESPONSE**	
		SHORT-TERM	**MEDIUM-TERM**
Define the new roles and responsibilities of the MAFWM and strengthen its capacity to fulfil these responsibilities	- The redefinition of MAFWM responsibilities consistent with the operation of a market-oriented economy and the increased role of private sector institutions. - The need to inform and train MAFWM personnel and enhance their capacity to fulfil these new responsibilities. - The need to reorganize the MAFWM and reallocate its resources to reflect its new roles and responsibilities.	- Restructure the MAFWM to strengthen its capacity in its main future areas of responsibility: policy analysis, monitoring and enforcement of plant and animal health regulations, market information and stewardship of natural resources. - Transfer responsibility for veterinary services, and plant and animal breeding to the private sector: - Donor community to organize and finance visits to central European and EU countries to inform RS policy makers of current agricultural policies in these countries, their management of agricultural policy reform and the organizational structures of their ministries of agriculture.	- Transfer the MAFWM to Banja Luka. - With donor support, strengthen the capacity of municipality governments to support rural development programmes.
Minimize the level of intervention in agriculture markets, consistent with the operation of a market-oriented economy	- The role of trade policy rather than price policy as the basis for influencing agriculture prices and markets. - The need to focus intervention in agriculture markets on a small number of key commodities.	- Retain the system of guaranteed prices for wheat, the minimum producer price for milk and maintain these prices at their current levels. - Maintain the subsidy on milk production at its current level. - Phase out the system of maximum consumer prices for flour, bread and milk. These prices to be completely liberalized as markets strengthen. - Progressively widen maximum retail and wholesale margins as markets strengthen and then discontinue them once prices stabilize. - Reduce the current tariffs on imported breeding cattle, maize and sugar to zero.	
Allocate the limited agriculture budget to activities which have maximum impact on sector development	-The limited budget allocation for agriculture, any increase of which is dependent on economic growth. - The need to use this limited budget for public activities which benefit a broad range of farmers and/or key subsectors, in order to maximize its impact. - The lack of budget support for agriculture research and extension.	- Budget restrictions permitting, replace the programme to subsidize breeding stock with a modest programme to encourage farmers to retain young dairy stock. Payments to be made for animals retained above the minimum requirement for herd replacement and to be made after first calving. - Establish and fund MAFWM budget lines for agricultural extension and research.	

FOCUS: AGRICULTURE POLICIES AND INSTITUTIONS - MAFWM (continued)			
OBJECTIVE	**ISSUES/CONSTRAINTS**	**STRATEGY RESPONSE**	
		SHORT-TERM	**MEDIUM-TERM**
Rationalize the involvement of the Agency for Commodity Reserves in agricultural markets	- The establishment of strong private sector marketing and financial institutions as the basis for assuring stable markets and access to rural finance. - The development of cost-effective public systems for holding strategic reserves.	- Replace the current system of seasonal credit provided by the Commodity Reserves Agency with donor-financed credit lines for seasonal credit, administered by the commercial banks. - Discontinue the Agency's involvement in price stabilization.	- Once the political and economic situation stabilizes, review the policies and operations of the Commodity Reserves Agency and develop a more cost-effective basis for the management of strategic stocks and protection of the wheat floor price.

AGRICULTURE SECTOR STRATEGY MATRIX

FOCUS: AGRICULTURE POLICIES AND INSTITUTIONS - RURAL FINANCE			
OBJECTIVE	**ISSUES/CONSTRAINTS**	**STRATEGY RESPONSE**	
		SHORT-TERM	**MEDIUM-TERM**
Pending recovery of the financial sector, to assure access to suitable sources of credit to finance agriculture sector recovery and development	- The collapse of the pre-war system of rural credit and the commercial banking system, and the consequent shortage of credit. - The need to support reform of the banking sector.	- The international community to finance further credit lines for working capital and investment, to support the establishment and growth of private sector agri-business and marketing agencies, agro-processors and commercial farmers. - Donor credit lines to be administered by commercial banks in conjunction with concurrent programmes of financial sector reform and the improvement of commercial bank management. - The international community to modify the conditions of donor-funded loans to agriculture enterprises in order to improve borrower cash flow during the first 12 months of business operation. These modifications should increase the length of the loan term and any grace period.	
To establish a broad-based system of rural financial institutions, located in the private sector, as the basis for providing financial services to large- and small-scale farmers, agro-processors and agri-business enterprises	- Measures to encourage the establishment of rural financial institutions able to deliver reasonably priced financial services to the rural population. - The need to locate this framework in the private sector and for the relevant institutions to be viable and sustainable.	- The international community to encourage the establishment of financial institutions such as the Raiffeisen Bank, which have special expertise in agriculture credit. - Initiate a pilot programme to establish village credit unions as the basis for providing affordable rural financial services to small-scale farmers.	- Donor community to establish a private sector financial institution to provide medium to long-term credit for medium- to large-scale enterprises from agriculture and other sectors of the economy.

AGRICULTURE SECTOR STRATEGY MATRIX

FOCUS: AGRICULTURE POLICIES AND INSTITUTIONS - AGRICULTURE EXTENSION, RESEARCH AND EDUCATION			
OBJECTIVE	**ISSUES/CONSTRAINTS**	**STRATEGY RESPONSE**	
		SHORT-TERM	**MEDIUM-TERM**
Establish a cost-effective extension service able to respond to the interests of small-scale commercial farmers	- The focus of pre-war extension on state farms and the lack of any post-war extension services. - The current lack of extension messages suited to small-scale commercial farmers. - The lack of public resources for extension and the corresponding emphasis on moderately scaled, cost-effective services. - The limited ability of farmers to pay for extension services.	- Develop gender-sensitive extension packages appropriate for small-scale commercial farmers, to improve farm productivity and profitability through the adoption of simple, cost-effective technologies. - Develop training programmes for all public and private sector extension agents. This training to be conducted in a new centre for training extension agents from both entities. - Establish a moderately scaled, regional public extension service. To be funded initially by the donor community, fully funded by government and user fees by the year 2002, and self-financing by 2005.	- Resources permitting, expand the public extension programme to encompass family issues and measures to generate non-farm income.
Establish a research system which responds to the interests of small-scale commercial farmers	- The focus of pre-war research on the interests of state farms, plant and animal breeding and the maximization of production rather than profits. - The post-war collapse and fragmentation of research institutions and the absence of public funding for research. - The severe shortage of human and material resources for research.	- Establish an Agriculture Research Council to define the agriculture research agenda for RS and allocate research funds. The Council and its research fund to be donor-financed for its first three years of operation. Membership to include producers, processors, extension, academia and government. - International community to provide assistance to the pre-war research centres to strengthen their research programmes in plant and animal husbandry, with particular emphasis on: fertilizer use, cultivation practices, weed and pest control, pasture and forage management and animal nutrition. This research to address the problems of small-scale commercial farmers. - As more funding becomes available for research, the crop research institutes to phase out their involvement in commercial activities such as seed multiplication and sales.	- Increase the agricultural research budget (from all sources) to 1 percent of agriculture GDP by 2009. (Two percent of agriculture GDP is considered the minimum for successful agriculture sector development).
FOCUS: AGRICULTURE POLICIES AND INSTITUTIONS - AGRICULTURE EXTENSION, RESEARCH AND EDUCATION (cont)			

OBJECTIVE	ISSUES/CONSTRAINTS	STRATEGY RESPONSE	
		SHORT-TERM	MEDIUM-TERM
Establish appropriate, high quality vocational and university education programmes in the agriculture sciences	- The focus of pre-war education on the intensive production systems on state farms and the maximization of production rather than profits. - The need for generalists rather than specialists to work with small-scale commercial farmers. -The need to re-train and replace teaching staff.	- With international support, improve the curricula and teaching capacity of the institutions responsible for training university graduates and agricultural technicians. - Assist these institutions to obtain new teaching materials and to develop adult education programmes for farmers. - Donor community to support the retraining and recruitment of teaching staff.	
Strengthen the institutional capacity of the extension, research and education systems	- Limited awareness of comparable systems in western and central Europe and in the USA. - Weak links between education, research and extension to the detriment of producers and agriculture sector development. - The post-war tendency for each entity to duplicate facilities at a time of scarce human and financial resources.	- Donor community to organize and finance visits to central European and EU countries and to the USA to acquaint key personnel involved in agriculture extension, research and education with the policies and public and private institutional structures used in these countries. - Develop an institutional framework to ensure effective communication between extension, research and education centres. - Under the auspices of the OHR, review the current proliferation of research and education institutions in both entities and develop guidelines for donors as to which institutions should have the highest priority for support.	

AGRICULTURE SECTOR STRATEGY MATRIX

FOCUS: AGRICULTURE POLICIES AND INSTITUTIONS - ANIMAL HEALTH AND BREEDING			
OBJECTIVE	**ISSUES/CONSTRAINTS**	**STRATEGY RESPONSE**	
		SHORT-TERM	**MEDIUM-TERM**
Define the new roles and responsibilities of the public animal health service and strengthen its capacity to fulfil these responsibilities	- The redefinition of MAFWM responsibilities, consistent with the operation of a market-oriented economy and the increased role of private sector institutions. - The need for key sector personnel to learn more about comparable public and private sector roles in other countries, and how these countries structure relevant public and private sector institutions.	- Limit direct government involvement in the management of animal health to: licensing of veterinarians and veterinary technicians, specification of minimum hygiene standards to be observed in enterprises which process animal products, minimum health and quality standards for domestic and imported animal products and conditions for the import and export of live animals and animal semen, monitoring and enforcement of these regulations in RS and on national borders; and management of the veterinary institutes. - Re-establish the national performance recording scheme on a self-financing basis. - Donor community to organize and finance visits to central European and EU countries and to the USA to acquaint key personnel involved in animal health and breeding with the policies and public and private institutional structures used in these countries.	- With donor support, complete the refurbishment of the veterinary institutes and diagnostic laboratories responsible for monitoring and advising on animal health.
Broaden and strengthen the private sector capacity to provide cost-effective services for animal health and animal breeding	- The need to ensure that private sector agents involved in animal health and animal breeding are adequately trained professionals, and have the resources to provide cost-effective services. - The need to remove any monopoly control associated with the provision of animal breeding services, and to ensure that farmers have complete choice as to the source and type of service obtained.	- Support privatization of the veterinarian system by: ensuring that veterinarians have access to credit to acquire necessary facilities, and establish a professional association to guide the provision of veterinary services. - Train technicians to perform artificial insemination and license trainees to perform these services on a commercial basis. - Establish administrative procedures to facilitate the commercial import and distribution of animal semen. - Remove the monopoly control which veterinarians have over the acquisition and sale of animal semen and the provision of artificial insemination. - Establish private sector stud farms through support for privatization and development of the state-owned animal breeding and reproduction centres.	

AGRICULTURE SECTOR STRATEGY MATRIX

FOCUS: AGRICULTURE POLICIES AND INSTITUTIONS – PLANT BREEDING AND PROTECTION			
OBJECTIVE	**ISSUES/CONSTRAINTS**	**STRATEGY RESPONSE**	
		SHORT-TERM	**MEDIUM-TERM**
Define the new roles and responsibilities of the public institutions involved in plant breeding and plant protection and strengthen their capacity to fulfil these responsibilities	- The need to modernize the public institutional structures responsible for seed certification and selection. - The need for key sector personnel to learn more about comparable public and private sector roles in other countries and how these countries structure relevant public and private sector institutions.	- Government to be responsible for seed testing, certification and selection; the national seed list; the specification and enforcement of regulations for the export, import and distribution of plant materials and agriculture chemicals. - Continue donor support for the establishment of modern standards for seed certification and the public institutions responsible for this activity. - Increase donor support for the testing and selection procedures for expansion of the national seed list. - Donor community to organize and finance visits to central European and EU countries and to the USA to acquaint key personnel involved in plant breeding and protection with the policies and public and private institutional structures in these countries.	
Broaden and strengthen the private sector capacity to provide cost-effective input services	- The constraints which current price and margin controls impose on the provision of input services. - The need to ensure that farmers have complete choice as to which farm inputs they buy and from whom they buy them.	- Phase out the price margin controls on agricultural inputs. - Promote private sector commercial seed multiplication and sales and discontinue the involvement of research institutes in these activities. - Support private sector input suppliers through access to credit and more efficient import procedures.	
FOCUS: AGRICULTURE POLICIES AND INSTITUTIONS - PRODUCER ASSOCIATIONS			
Promote producer associations as a means of reducing diseconomies of small farm size, improve access to markets, the efficiency of machinery use and facilitate agriculture extension	- The numerous potential roles for these institutional structures. - The need to broaden the existing focus on cooperatives and to better inform key personnel of the alternatives. - The need to restructure existing cooperatives according to new legislation.	- Promote all forms of producer associations to allow members to choose according to the activities of the association. - Support the privatization and restructuring of agric. cooperatives, and their adoption of new legislation on cooperative governance and membership. - Donor community to organize and finance visits to central European and EU countries and to the USA to acquaint people with the structures, activities and legal status of producer associations elsewhere.	

AGRICULTURE SECTOR STRATEGY MATRIX

FOCUS: INTER-ENTITY TRADE AND COOPERATION			
OBJECTIVE	**ISSUES/CONSTRAINTS**	**STRATEGY RESPONSE**	
		SHORT-TERM	**MEDIUM-TERM**
Increase inter-entity trade	- The benefits to producers and consumers of re-establishing traditional patterns of internal trade.	- Establish a mechanism for collecting and disseminating market information throughout both entities.	
Improve inter-entity cooperation relevant to the monitoring of animal and plant health	- Once inter-entity trade resumes, the risk of serious plant and animal diseases will increase unless there is effective cooperation between the public institutions responsible for plant and animal health.	- With the support of OHR, the donor community to refurbish all pre-war veterinary institutes and diagnostic laboratories in BiH to identical standards; to retrain staff in order to ensure equivalent levels of analysis and to organize the regular exchange of information on issues of animal health. - With the support of OHR, the donor community to refurbish the public institutions in each entity responsible for seed certification, seed selection and plant protection to identical standards, to retrain staff in order to ensure equivalent levels of analysis and to organize the regular exchange of information on relevant issues of plant protection.	
Improve entity level participation in the formation of state level policy relevant to agriculture	- Weak entity level involvement in the activities of task forces established by the state ministries to formulate state-level policy.	- Ministry of Agriculture representatives from both entities to participate actively in the task forces set up by the Ministry of Foreign Trade and Economic Relations to formulate state level policy; including customs procedures, international trade and membership of WTO and the European Union.	- With the support of the international community implement a programme to align product standards and trade, health and safety regulations throughout BiH with those applied by the European Union.
Establish a more rational basis for the use and development of public institutions for agriculture research and education	- The waste of scarce human, institutional and financial resources caused by the unnecessary fragmentation and duplication of the institutions for agriculture research and education.	Under the auspices of the OHR, review the current proliferation of research and education institutions in both entities and develop guidelines for donors as to which institutions should have priority for support. - The international community to support the establishment of a centre for training extension agents from both entities.	

Table 1: Land Resources of Bosnia and Herzegovina

Land Type	Land Area (ha)		Land Area (percent)	
	RS	FBiH	RS	FBiH
Total Area	2505300	2607579	49.0	51.0
Arable Land	671599	508062	56.9	43.1
Field Crops	616548	461360	57.2	42.8
Orchards	54358	41395	56.8	43.2
Vineyards	693	5307	11.5	88.5
Meadows	236922	248291	48.8	51.2
Pastures	358734	502443	41.7	58.3
Other (Ponds etc)	31364	0	na	na
Total Agric Land	1298619	1258796	50.8	49.2
Population[a]	1450000	2250000	38.4	61.6
Pop Density (/km^2)	57.9	86.3	na	na
Agriculture Land/Person	0.90	0.56		
Arable Land/Person	0.46	0.23	na	na

Sources: MAFWM, FBiH; MAFWM, RS.
[a] Resident population for 1998

Table 2: Macroeconomic Indicators

	1990	1991	1995	1996	1997	1998	1999
State of Bosnia and Herzegovina						estimate	estimate
GDP (US$ million)	10633	8670	1867	2741	3423	4082	4533
GDP (million DM)	17225	14392	2873	4189	5803	6900	7935
GDP Growth $ US (%)	na	-19	na	47	25	19	11
GDP Growth DM (%)	na	-16	na	46	39	19	15
Per Capita GDP US$	2444	1979	445	653	815	972	1054
External Current Account (US$ m)							
Exports	1990	2120	152	336	575	817	1043
Imports	1700	1673	1082	1882	2333	2573	2625
Trade Surplus/Deficit	290	447	-930	-1546	-1758	-1756	-1582
Current Account Balance	na	na	-193	-748	-1060	-1127	-944
External Debt							
External Debt ($US million)	na	na	3361	3620	4076	2879	3055
External Debt (% of GDP)	na	na	180	132	119	71	67
Debt Service Ratio (%)	na	na	118	53	16	17	8
Republika Srpska							
GDP (million DM)	6088	na	911	1140	1614	1944	na
GDP Growth DM (%)	na	na	na	25	42	20	5
Per Capita GDP DM	2320	na	651	814	1153	1389	na
Budget Deficit (DM million)	na	na	-9	-1	-2	-76	-65
Revenues and Grants	na	na	188	365	465	442	574
Expenditures	na	na	197	366	463	518	637
Budget Deficit as % GDP	na	na	-1.0	-0.10	-0.10	-3.9	na
External Trade (US$ m)							
Exports	na	na	na	na	na	na	na
Imports	na	na	na	na	na	na	na
Trade Balance	na	na	na	na	na	na	na
Industrial Production (annual % change)	na	na	-13	20	31	24	na
Food Production	na	na	na	na	na	na	na
Employment and Wages (December)							
Employment	na	na	na	193574	244267	250000	na
Registered Unemployment	na	na	na	121904	142524	142152	145250
Official Unemployment Rate (%)	na	na	na	39	37	36	na
Average Monthly Net Wage DM	na	666[a]	22.5	68.2	113	195	201[b]
Prices (DM based index)							
% Change in Retail Prices (Ann Average)	594[a]	114[a]	21	17	-7	2	5

Sources: IMF and Donor Conference Reports; USAID Reports; Central Statistical Office, Banja Luka; State Agency for Statistics, Sarajevo.
[a] State of Bosnia and Herzegovina
[b] Mid-year data, 1999

Table 3: Pre-War Structure of Agricultural Production and Resource Use in BiH

	Private Farms	Ex-Social Sector Farms	Private Farms as % of Total
Number of Farms	571,207[1]	300	99.9%
Total Area Farmed ('000 ha)	2376[2]	155	6.1%
Average Farm Size	2.9	517	na
Land Use[2] ('000 ha)			
Cereal Crops	426	30	93.%
Industrial Crops	11	7	61.1%
Vegetables	115	1	99.1%
Fodder Crops	193	9	95.5%
Orchards	89	3	96.7%
Vineyards	2	3	40.0%
Meadows	448	23	95.1%
Pastures	870	62	93.5%
Livestock[3] ('000 head)			
Cattle	923.9	29.8	96.9%
Pigs	465.3	110.2	80.9%
Poultry	4211.0	2499.0	62.7%
Sheep	1304.0	13.0	99.0%
Tractors	41400	18600	69.0%

Source: World Bank, (Harrison), 1995; Chamber of Commerce, Sarajevo
[1]Census of Agricultural Holdings, 1991.
[2]For the 1991 crop year; [3]As at January 1992.

Table 4: Distribution of Rural Households and Land Ownership in BiH, 1981

	Number of Farms	Percent of Farms	Estimated Area (ha)	Percent of Area
Less than 1 ha	186445	34.5%	81709	5.3%
1.01 ha - 2.00 ha	105146	19.5%	152462	9.8%
2.01 ha - 5.00 ha	159260	29.5%	521878	33.6%
5.01 ha - 10.00 ha	73774	13.7%	511055	32.9%
10.01 ha - 15.00 ha	9499	1.8%	118738	7.6%
15.01 ha - 20.00 ha	2664	0.5%	46620	3.0%
Over 20 ha	3506	0.6%	122710	7.9%
Total	540294	100%	1555172	100%

Source: World Bank, (Harrison), 1995

Table 5: Pre and Post-war Agriculture Production in RS

					Change	
Crops[a] (ha)	**1990-91**	**1995/96**	**1996/97**	**1997/98**	**97/91 %**	**Δ Ha**
Cereal crops	236875	176108	237001	264017	124.7%	30582
Vegetables	46105	33382	38368	41786	90.6%	-4319
Industrial Crops	7820	5688	6725	6874	87.9%	-946
Fodder Crops	84863	67881	72641	73552	86.7%	-11311
Total	375663	283059	354735	386229	102.8%	10566
Livestock[b]	**1990**	**1996**	**1997**	**1998**	**97/90 %**	**Δ No.**
Total Cattle	426234	na	200973	na	-47.2%	-225261
Cows & In-Calf Hfrs	na	na	150000	na	na	na
Other	na	na	50973	na	na	na
Total Sheep	666854	na	316712	na	-47.5%	-350142
Breeding ewes	na	na	238000	na	na	na
Others	na	na	78712	na	na	na
Pigs	434298	na	291789	na	-67.2%	-142509
Sows & 1st farrow	na	na	50000	na	na	na
Other	na	na	241789	na	na	na
Poultry	5760555	na	2087183	na	-36.2%	-3673372
Horses	53175	na	26494	na	-49.8%	-26681

Source: CSO, Sarajevo (1990); Agency for Statistics of Bosnia and Herzegovina, 1999; MAFWM
[a] Area harvested; [b] As of December 31st

Table 6: Crop and Livestock Performance Indicators

Item	Unit	Western Europe	State Farms (BiH)	Small Farms (BiH)
Cereals[ab]				
Wheat	mt/ha	7.5	4.4	2.9
Maize	mt/ha	8.4	4.6	2.9
Barley	mt/ha	5.8	3.7	2.2
Oats	mt/ha	5.0	2.4	1.7
Industrial Crops[bc]				
Sugarbeet	mt/ha	54.9	43.1	38.2
Soybean	mt/ha	2.7	2.2	1.6
Sunflower	mt/ha	2.2	1.0	na
Oilseed Rape	mt/ha	2.95	2.0	0.9
Tobacco	mt/ha	2.7	2.1	1.15
Vegetables[bc]				
Potatoes	mt/ha	36.8	11.7	5.8
Cabbage	mt/ha	28.9	3.9	7.9
Onions	mt/ha	36.1	5.6	3.6
Tomatoes	mt/ha	320.1	na	6.8
Fruit[bc]				
Plums	mt/ha	10.8	na	na
Apples	mt/ha	29.7	na	na
Pears	mt/ha	21.7	na	na
Cherries	mt/ha	5.4	na	na
Dairy Production[ad]				
Milk	lt/cow	5500-8500	4700	1440
Calving Interval	months	13	14	18-24
Calf-Weaning age	days	7-10	7-10	40-60
Sheep Production[ad]				
Milk	lt/sheep	150-300	na	30
Lambing	%	145	130	90
Wool	kg/sheep	3.0-4.0	na	1.3
Poultry Production[ad]				
Eggs	#/hen/year	273-292	140	55
Pig Production[ad]				
Weaners/sow/year	#	21	19	8-10
Goats[ad]				
Milk	lt/head	500-900	na	100
Prolificacy	%	140-180	na	na

Sources: BiH: CSO, Sarajevo; Crops: FAOSTAT; Livestock: International Farm Comparison Network, Federal Agricultural Research Centre, Germany.
[a] BiH: Average for 1987-1991;
[b] W Europe (France, Germany, Bel-Lux, Italy, Netherlands, UK; Average for 1993-1997)
[c] BiH: 1990/91 Crop Year
[d] Livestock Data: International Farm Comparison Network, Germany.

Table 7: Characteristics of Cereal Crop Production in RS

Crop	1990/91	1995/96	1996/97	1997/98
		Area Harvested (ha)		
Maize	123982	123506	145453	154564
Wheat	73205	30323	58924	71126
Rye	2792	401	1802	2118
Barley	15346	7088	9761	11887
Oats	21550	14790	21061	24322
All Cereal	236875	176108	237001	264017
		Production (mt)		
Maize	na	435379	616995	499863
Wheat	na	78084	197744	245258
Rye	na	739	4283	5617
Barley	na	16335	27914	34713
Oats	na	27191	48506	57901
All Cereal	na	557728	895442	843352
		Yield (mt/ha)		
Maize	na	3.5	4.2	3.2
Wheat	na	2.6	3.4	3.4
Rye	na	1.8	2.4	2.7
Barley	na	2.3	2.9	2.9
Oats	na	1.8	2.3	2.4

Source: CSO, Sarajevo (1990/91); Agency for Statistics of Bosnia and Herzegovina, 1999

Table 8: Characteristics of Industrial Crop Production in RS

Crop	1990/91	1995/96	1996/97	1997/98
		Area Harvested (ha)		
Tobacco	1690	1480	1242	1630
Soybean	2641	3162	3751	4466
Oilseed Rape	1784	1018	1558	555
Sunflower	134	28	174	223
Sugarbeet	1571	0	0	0
Total	7820	5688	6725	6874
		Production (mt)		
Tobacco	na	2098	1781	2739
Soybean	na	5776	6504	7165
Oilseed Rape	na	1049	1904	811
Sunflower	na	32	102	178
Sugarbeet	na	0	0	0
Total	na	8955	10291	10893
		Yield (mt/ha)		
Tobacco	na	1.4	1.4	1.7
Soybean	na	1.8	1.7	1.6
Oilseed Rape	na	1.0	1.2	1.5
Sunflower	na	1.1	0.6	0.8
Sugarbeet	na	na	na	na

Source: CSO, Sarajevo (1990/91); Agency for Statistics of Bosnia and Herzegovina, 1999

Table 9: Characteristics of Vegetable Crop Production[a] in RS

Crop	1990/91	1995/96	1996/97	1997/98
		Area Harvested (ha)		
Potatoes	22104	15682	19237	21618
Beans	6450	5533	5154	5578
Cabbage/Kale	na	2615	3116	3511
Onions	na	1689	1955	2045
Green Pepper	na	2440	2656	2562
Tomatoes	na	1967	2336	2216
		Production (mt)		
Potatoes	na	133134	184108	181888
Beans	na	8801	7731	8758
Cabbage/Kale	na	30615	36721	32942
Onions	na	9785	14230	11462
Green Pepper	na	15191	22443	21585
Tomatoes	na	15763	24516	21359
		Yield (mt/ha)		
Potatoes	na	8.5	9.6	8.4
Beans	na	1.6	1.5	1.6
Cabbage/Kale	na	11.7	11.8	9.4
Onions	na	5.8	7.3	5.6
Green Pepper	na	6.2	8.4	8.4
Tomatoes	na	8.0	10.5	9.6

Source: CSO, Sarajevo (1990/91);. Agency for Statistics of Bosnia and Herzegovina, 1999.
a: These six crops account for approximately 90 percent of all vegetable production

Table 10: Pre-War Production and Exports of Berry Fruit in BiH

Fruit	Average Production 1988-91 (mt)	Average Exports 1988-91 (mt)
Strawberry	6930	1305
Raspberry	2322	495
Blackberry	1071	225
Total	10323	2025

Source: Agriculture Institute, University of Sarajevo

Table 11: Pre and Post-war Fruit Production in RS[a]

Crop	1988-1989 #	1988-1989 Composition	1995-1996	1996-1997	1997/98 #	1997/98 Composition
			Number of Trees ('000)			
Plum	7723	67.8%	5325	5393	5679	67.1%
Apple	1435	12.6%	1368	1279	1336	15.8%
Pears	1015	8.9%	614	718	671	7.9%
Cherry	414	3.6%	280	287	287	3.4%
Sour Cherry	325	2.9%	190	179	182	2.1%
Peach	115	1.0%	55	59	60	0.7%
Quince	55	0.5%	41	51	50	0.6%
Apricot	32	0.3%	21	26	23	0.3%
Walnut	272	2.4%	161	186	178	2.1%
Almond	na	na	0	0	0	na
Total	11386	100.0%	8055	8178	8466	100.0%
Grapes	na	na	947	976	977	na
			Production (mt)			
Plum	96578	62.7%	121577	67046	90406	60.3%
Apple	25503	16.6%	35957	29447	34042	22.7%
Pears	15713	10.2%	13081	13282	15673	10.5%
Cherry	7468	4.9%	4771	3938	4472	3.0%
Sour Cherry	3496	2.3%	1567	1585	1807	1.2%
Peach	1613	1.0%	544	374	481	0.3%
Quince	550	0.4%	426	647	749	0.5%
Apricot	456	0.3%	310	194	168	0.1%
Walnut	2567	1.7%	2663	1992	2128	1.4%
Almond	na	na	2	1	1	na
Total	153944	100.0%	180898	118506	149927	100.0%
Grapes	na	na	1161	1370	1859	na
			Yield (kg/tree)			
Plum	12.5	na	22.8	12.4	15.9	na
Apple	17.8	na	26.3	23.0	25.5	na
Pears	15.5	na	21.3	18.5	23.4	na
Cherry	18.0	na	17.0	13.7	15.6	na
Sour Cherry	10.8	na	8.2	8.9	9.9	na
Peach	14.0	na	9.9	6.3	8.0	na
Quince	10.0	na	10.4	12.7	15.0	na
Apricot	14.3	na	14.8	7.5	7.3	na
Walnut	9.4	na	16.5	10.7	12.0	na
Almond	na	na	na	na	na	na
Grapes	na	na	1.2	1.4	1.9	na

Source: MAFWM, RS; Agency for Statistics of Bosnia and Herzegovina, 1999
[a] Post-war statistics should be treated with caution.

Table 12. Characteristics of Fodder Crop Production in RS

Crop	1990/91	1995/96	1996/97	1997/98
		Area Harvested (ha)		
Clover	na	34713	36233	36733
Lucerne	na	14365	18453	19824
Grass/Legume	na	12602	12966	11599
Cereal/Legume	na	531	549	617
Maize for Fodder	na	4389	3194	3416
Beet for Fodder	na	943	939	1038
Vetch	na	338	307	325
Total	na	67881	72641	73552
		Production (mt)		
Clover	na	125273	125147	110628
Lucerne	na	52862	76094	71564
Grass/Legume	na	46883	37658	29924
Cereal/Legume	na	1024	1459	1266
Maize for Fodder	na	59865	28956	38655
Beet for Fodder	na	3848	6685	7283
Vetch	na	724	846	643
Total	na	290479	276845	na
		Yield (mt/ha)		
Clover	na	3.6	3.5	3.0
Lucerne	na	3.7	4.1	3.6
Grass/Legume	na	3.7	2.9	2.6
Cereal/Legume	na	1.9	2.7	2.1
Maize for Fodder	na	13.6	9.1	11.3
Vetch	na	4.1	7.1	7.0
Beet for Fodder	na	4.1	7.1	2.0

Source: CSO, Sarajevo (1990/91); Agency for Statistics of Bosnia and Herzegovina, 1999.

Table 13: Import Tariffs for Agricultural Products: BiH March 1998

Wheat and Rye	5%
Maize Grain	10%
Maize Seed	5%
Wheat Flour	10%
Soybeans	0%
Oilseed Rape	5%
Sunflower	5%
Soybean Oil	5%
Rape Oil	5%
Sunflower Oil	5%
Raw Sugar	10%
Processed Sugar	10%
Tomatoes	10%
Onions	5-10%
All other vegetables	5%
Apples and Pears	10%
Apricots, cherries, peaches, plums	10%
Berries	5%
Processed and semi-processed fruits and berries	10%
Milk and Milk Products	10%
Eggs for consumption	0%
Live Animals	
All Horses	0%
Breeding heifers	5%
Other breeding cattle	10%
Live cattle for slaughter (< 300 kg)	5%
All other cattle for slaughter	10%
Maiden Breeding Sows	0%
All other live pigs	10%
Breeding stock for sheep and goats	0%
All other live sheep and goats	10%
Breeding poultry	0%
All other live poultry	10%
Meat and Meat Products	
All fresh and chilled meat	10%
Except fresh and chilled meat for horses and mules	5%
Meat by-products	5%
Except meat by-products for poultry	10%
Animal Feed	
Oil cakes and by-products of cereals and sugar	5%
Concentrates, pre-mixes, vitamins & minerals	0%
Fertilizers	
Organic	0%
Urea and ammonium-nitrate	0%
Superphosphate, DAP, MAP	5%
Complex and mixed fertilizers	5%
All Agricultural Chemicals	0%

Table 14: RS: Price Policy Parameters, 1998/99

Policy	Unit Price	
Guaranteed Floor Price		
Wheat	270 DM/mt	
Minimum Producer Prices		
Barley	na	
Milk (3.2% fat)	0.42 DM/litre	
Producer Subsidies		
Milk (3.2% fat)	0.09 DM/litre	
Subsidies for Breeding stock		
Heifers	335 DM/head	
Bulls	1000 DM/head	
Breeding sows	110 DM/head	
Breeding Boars	225 DM/head	
Trade Margin Restrictions	**Wholesale %**	**Retail %**
Flour (Type 500 and 850)	10	22
Bread and pasta	10	22
Milk and dairy products	10	22
Sugar	10	22
Edible oil	10	22
Fertilizer	12	27
Agriculture chemicals	12	27

Sources: MAFWM, Institute of Prices, RS.

Table 15: Post-war Trends in Consumer Prices in RS (COL Index)

	Dec-95	June-96	Dec-96	June-97	Dec-97	June-98	Dec 98	June 99
Total Index	100.0	103.0	105.9	116.6	127.3	132.8	180.1	na
Food Commodities	100.0	98.0	95.2	100.4	112.7	142.3	163.1	na

Source: CSO, Banja Luka; MAFWM

Table 16: RS: Parity Ratios for Agricultural Commodities and Inputs

Commodity/Input	Ratio
Wheat (Numeraire)	**1.00**
Maize	0.85
Barley	0.80
Soya	1.70
Oilseed Rape	1.60
Pigs (90-130 kg)	8.00
Sheep	8.00
Mineral Fertilizer	
KAN (27% N)	1.00
Urea (46% N)	1.40
NPK (15-15-15)	1.40
Diesel (DS)	2.0

Source: MAFWM, RS

Table 17: Inventory of Pre-War Institutions in BiH Involved in Agriculture and Veterinary Research, Extension and University Education

Agriculture Faculties
- Agriculture Faculty, University of Mostar
- Agriculture Faculty, University of Sarajevo

Veterinary Faculties
- Veterinary Faculty, University of Sarajevo

Agriculture Institutes
- AIPK Agriculture Institute, Banja Luka
- APRO Research and Development Institute, Mostar
- UPI Research and Development Institute, Sarajevo

Veterinary Institutes
- Banja Luka
- Mostar
- Sarajevo
- Tuzla

Veterinary Laboratories
- Brcko
- Sarajevo
- Zenica

Agriculture Research Centres
- Agro-Pedological Institute, Sarajevo
- Banja Luka Research Centre
- Bijeljina Research Centre
- Doboj Research Centre
- Sokolac Research and Development Centre for Mountain Agriculture
- Tuzla Research Centre

Agriculture Extension Stations
- Banja Luka
- Bihac
- Brcko
- Glamoc
- Prijedor
- Srebrenik

Animal Reproduction
- Animal Reproduction Centre, Banja Luka

Table 18: Food Consumption Levels (kg/capita): Selected Middle Income Countries

Country	**BiH**	**FBiH**	**RS**	**Yugoslavia**	**Morocco**	**Romania**	**Jordan**	**Tunisia**	**Turkey**	**Poland**	**Croatia**
Year	1990	1997	1997	1996	1996	1996	1996	1996	1996	1996	1996
GDP/capita (US$)	2445	1390	885	na	1290	1600	1650	1930	2830	3230	3800
Commodity											
Wheat	189.1	125	150	107.2	198.3	142.9	145.7	210.9	194.4	111.0	93.4
Potatoes	45.8	80	na	28.5	35.5	79.5	29.6	26.9	61.6	136.1	118.1
Other Vegetables	75.5	80	120	93.7	80.0	112.5	180.1	143.9	183.3	122.1	85.5
Fruit	71.2	70	70	138.9	84.7	64.4	97.7	103.6	151.9	48.1	105.5
Sugar (Raw equiv.)	42.2	25	15	21.5	34.9	24.0	35.7	30.3	29.5	42.3	27.2
Vegetable Oils	12.8	15	10	10.8	12.7	7.2	16.5	19.5	19.0	12.0	9.8
All Meat	71.6	30.0	35	101.7	16.2	51.0	30.2	19.7	19.5	70.5	28.4
Beef and Veal	17.8	10.0	15	24.1	4.1	7.4	2.3	5.2	5.2	10.0	5.4
Mutton and Goat	2.8	1.5	2	3.0	3.7	2.6	5.3	5.8	5.2	0.1	0.7
Pig Meat	38.2	3.0	10	63.2	0.0	27.4	0.0	0.0	0.0	49.9	15.5
Poultry	12.5	15.5	8	11.3	6.9	12.9	22.4	7.8	9.1	10.2	6.9
Eggs (kg/capita)	9.9	11.1	na	7.7	6.2	9.9	9.2	5.8	8.5	9.8	8.5
Milk and Butter	179.4	132	132	178.5	30.9	193.5	39.7	74.0	145.6	194.9	161.9

Sources: GDP Data: World Development Indicators, 1998; World Bank
Consumption Data: Ministries of Agriculture for FBiH, RS; FAOSTAT Food Balance Sheets for other data.

Table 19: Cereal Production, Sales and Processing in RS

	1990	1996	1997
Wheat and Flour			
Wheat Production (mt)	298214	78084	197744
Marketed Surplus (mt)	na	na	na
MS as % of production	na	na	na
Consumption (kg/capita)	189	150	150
Number Processors	18	18	18
Private	7	7	7
State	11	11	11
Processing Capacity (mt/year)	234250	221500	221500
Private	54250	54250	54250
State	180,000	167250	167250
Wheat Milled (mt/year)	180000	na	130000
% Capacity Utilization	77%	na	59%
Flour Production (mt)	na	27242	na
Bread and Bakery Product (mt)	na	na	na
Animal Feed			
Maize Production (mt)	489410	435379	616995
Marketed Surplus (mt)	na	na	na
MS as % of production	na	na	1-3%
Number Feed Processors	11	11	11
Private	4	4	4
State	7	7	7
Processing Capacity (mt/year)	102260	28340	26714
Private	960	3130	3680
State	101300	25210	23034
Animal Feed Production (mt)	na	12696	na
% Capacity Utilization	58%	45%	31%
Private	86%	na	58%
State	49%	na	16%

Sources: CSO, Sarajevo; Reports of International consultant and Working Group, 1998.

Table 20: Milk Production, Sales and Processing

	1990		1997
	BiH	**RS**	**RS**
Cattle Numbers	873605	426234	200973
Cow numbers	632371	na	150000
% Private	99%	na	na
% State	1%	na	na
Milk Production (m lt)	880118	na	149900
% Private	3.9%	na	na
% State	96.1%	na	na
Marketed Surplus (m lt)	92933	na	na
Private	58413	na	na
State	34520	na	na
As % of Total Production	10.6%	na	na
Consumption (kg/capita)	190	190	132
Number Processors	na	na	na
Private	na	na	na
State	na	na	na
Processing Capacity (lt/day)	514000	158000	158000
Private	36000	24000	24000
State	478000	134000	134000
Annual Processing Output (m lt)	110.0	24.0	10.0
Pasteurised Milk (m lt)	na	na	na
Sterilised (UHT) Milk (m lt)	na	na	na
Other Milk Products (m lt)	na	na	na
% Capacity Utilization	80%	61%	25%

Sources: CSO, Sarajevo; Reports of International consultant and Working Group, 1998.

Table 21: Meat Production and Processing

	Beef	Pork	Poultry	Sheep	Total
BiH (1991)					
Livestock Numbers	852990	616700	10607000	1317000	na
% Private	96.4	80.0	55.8	99.5	na
% State	3.6	20.0	44.2	0.5	na
Meat Consumption kg/capita)	14.5	32.0	10.0	2.5	59.0
Meat Production (kg/capita)	11.3	10.8	5.5	2.0	29.6
Animals Slaughtered (hd)	171000	269000	na	128000	568000
Meat Processed (mt)	44500	47500	25500	13500	131000
Small-Scale Slaughter Houses (30 head/day: beef, pigs, sheep)					211
# Private					123
# State					88
Total Capacity (hd/year)					1582500
Meat Processing Capacity					
FBiH (hd/year)	137500	165000	19750000	297500	na
RS (mt/year)	na	na	na	na	206000
RS (1997)					
Livestock Numbers	200973	291789	2087183	316712	na
% Private	na	na	na	na	na
% State	na	na	na	na	na
Meat Consumption kg/capita)	na	na	na	na	35.0
Meat Production (kg/capita)	na	na	na	na	30.7
Animals Slaughtered (hd)	na	na	na	na	na
Meat Processed (mt)	na	na	na	na	8000
Small-Scale Slaughter Houses (30 head/day: beef, pigs, sheep)					na
# Private					na
# State					na
Total Capacity (hd/year)					na
Meat Processing Capacity					
mt/Year	na	na	na	na	206000
% Private	na	na	na	na	30%

Sources: CSO, Sarajevo. Reports of International consultant and Working Group, 1998.

Table 22: Fruit and Vegetable Production, Sales and Processing

	Potatoes	Vegetables	Fruit	Total
BiH (1991)				
Production (mt)	331422	145000	148100	624522
Marketed Surplus (mt)	18000	34400	18100	70500
MS as % Production	5.4%	23.7%	12.2%	11.3%
MS sold on Green Markets	na	na	na	62%
MS sold to Agric Coops	na	na	na	38%
Consumption (kg/capita)	60	86	65	na
Number Processors	1	17		18
Private	0	0		0
State	1	17		18
Processing Capacity (mt/yr)	14700	216700		231400
Private	0	0		0
State	14700	216700		231400
Processed Output (mt/yr)	1400	17100	144000	162500
Capacity Utilization	9.5%	74%		70.25
RS (1997)				
Production (mt)	184108	114562	139400	438070
Marketed Surplus (mt)	na	na	na	na
MS as % Production	na	na	na	na
Consumption (kg/capita)	120		70	na
Number Processors	na	na	na	11
Private	na	na	na	0
State	na	na	na	11
Processing Capacity (mt/yr)	na	na	na	58000
Private	na	na	na	0
State	na	na	na	58000
Processed Output (mt/yr)	na	na	na	6000
Capacity Utilization	na	na	na	10%

Sources: CSO, Sarajevo; CSO, Banja Luka; Reports of International Consultant and Working Group, 1998.

Table 23: Industrial Crops: Production, Processing and Consumption

	BiH 1991	RS 1991	RS 1997	BiH 1991	RS 1991	RS 1997	BiH 1991	RS 1991	RS 1997
		Tobacco			Sugarbeet			Oilseed Crops	
Production									
Area (ha)	6171	1690	1242	2371	1571	0	8065	4559	5483
Output (mt)	7132	na	1781	95365	na	0	13839	na	8510
Processed Output (mt)	na	1591	854	21000	21000	0	15 m litres	15 m litres	0 m litres
Processing Capacity (mt)	na	2000	2000	38000	38000	38,000	25 m litres	25 m litres	25 m litres
Capacity Utilization (%)	na	79.6%	42.7%	55.3%	55.3%	0%	60%	60%	0%
Consumption									
Household (kg/capita)	na	na	na	15	15	15	10	10	10
Processing (kg/capita)	na	na	na	20	20	5	0	0	0
Aggregate (mt/mil lit)	na	na	na	153,000	57,050	28,000	43.8 m litres	16.3 m litres	14.0 m litres

Sources: CSO, Sarajevo; CSO, Banja Luka; Reports of International Consultant and Working Group, 1998.