TRADE SIA OF THE ASSOCIATION AGREEMENT UNDER NEGOTIATION BETWEEN THE EUROPEAN COMMUNITY AND MERCOSUR

AGRICULTURE SECTOR STUDY

FINAL REPORT

Revised

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<th>Description</th>
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<tbody>
<tr>
<td>CAP</td>
<td>Common Agricultural Policy</td>
</tr>
<tr>
<td>CGE</td>
<td>Computable General Equilibrium</td>
</tr>
<tr>
<td>CCA</td>
<td>Causal chain analysis</td>
</tr>
<tr>
<td>CGE</td>
<td>Computable General Equilibrium</td>
</tr>
<tr>
<td>CoC</td>
<td>Chain of Custody</td>
</tr>
<tr>
<td>CSR</td>
<td>Corporate Social Responsibility</td>
</tr>
<tr>
<td>CTA</td>
<td>Technical Centre for Agricultural and Rural Cooperation ACP-EU</td>
</tr>
<tr>
<td>DDA</td>
<td>Doha Development Agenda</td>
</tr>
<tr>
<td>DFID</td>
<td>UK Department for International Development</td>
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<tr>
<td>DG</td>
<td>Directorate General</td>
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<tr>
<td>EBA</td>
<td>Everything But Arms</td>
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<tr>
<td>EC</td>
<td>European Commission</td>
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<td>EFTA</td>
<td>European Free Trade Area</td>
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<tr>
<td>EU</td>
<td>European Union</td>
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<tr>
<td>ERRT</td>
<td>European Retail Round Table</td>
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<tr>
<td>FAO</td>
<td>Food and Agricultural Organization of the United Nations</td>
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<tr>
<td>FDA</td>
<td>Food and Drugs Administration</td>
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<tr>
<td>FDI</td>
<td>Foreign Direct Investment</td>
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<tr>
<td>FERN</td>
<td>Forests and the European Union Resource Network</td>
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<tr>
<td>FLEGT</td>
<td>Forest law Enforcement, Governance and Trade</td>
</tr>
<tr>
<td>FOB</td>
<td>Free On Board</td>
</tr>
<tr>
<td>FTAA</td>
<td>Free Trade Area of the Americas</td>
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<tr>
<td>GATS</td>
<td>General Agreement on Trade in Services</td>
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<td>GATT</td>
<td>General Agreement on Tariffs and Trade</td>
</tr>
<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
</tr>
<tr>
<td>GNP</td>
<td>Gross National Product</td>
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<tr>
<td>GFT</td>
<td>Government Financial Transfers</td>
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<td>GFW</td>
<td>Global Forest Watch</td>
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<tr>
<td>GTAP</td>
<td>Global Trade and Protection</td>
</tr>
<tr>
<td>HPDC</td>
<td>Highly Protected Developing Country</td>
</tr>
<tr>
<td>HACCP</td>
<td>Hazard Analysis Critical Control Point</td>
</tr>
<tr>
<td>IDPM</td>
<td>Institute for Development Policy and Management</td>
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<tr>
<td>IARC</td>
<td>Impact Assessment Research Centre</td>
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<tr>
<td>IEEP</td>
<td>Institute for European Environmental Policy</td>
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<tr>
<td>IISD</td>
<td>International Institute for Sustainable Development</td>
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<tr>
<td>ICTSD</td>
<td>International Centre for Trade and Sustainable Development</td>
</tr>
<tr>
<td>IFF</td>
<td>Intergovernmental Forum on Forests</td>
</tr>
</tbody>
</table>
IFPRI International Food Policy Research Institute
IPF Intergovernmental Panel on Forests
ITC International Trade Commission
ITTA International Tropical Timber Agreement
ITTO International Tropical Timber Organisation
IMF International Monetary Fund
LDC Least Developed Country
LIDC Low Income Developing Country
M and E Mitigation and Enhancement
MFN Most-favoured-nation
MOU Memorandum of Understanding
MEAs Multilateral Environmental Agreements
MEDC Major Exporting Developing Country
MENA Middle East and North Africa
MFA Multifibre Arrangement
MFN Most-favoured-nation
MOU Memorandum of Understanding
NAFTA North American Free Trade Agreement
NAMA Non-agricultural Market Access
NGOs Non-governmental Organizations
NSDS National Sustainable Development Strategies
NTB Non-Tariff Barriers
NTM Non-Tariff Measure
ODC Other Developed Country
ODI Overseas Development Institute
OECD Organization for Economic Co-operation and Development
PPP Public Private Partnerships
RA Representative Agent
ROO Rules of Origin
SADC Southern African Development Community
SCM Subsidies and Countervailing Measures
S & D Special and Differential
SD Sustainable Development
SIA Sustainability Impact Analysis
SME Small and Medium-sized Enterprises
SPS Sanitary and Phytosanitary Measures
SSA Sub-Saharan Africa
TBT Technical Barriers to Trade
TD/BU Top Down/Bottom Up
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOR</td>
<td>Terms of Reference</td>
</tr>
<tr>
<td>TRIPS</td>
<td>Trade-Related Aspects of Intellectual Property Rights</td>
</tr>
<tr>
<td>TRQ</td>
<td>Tariff Rate Quota</td>
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<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>UNCED</td>
<td>United Nations Conference on Environment and Development</td>
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<tr>
<td>UNCTAD</td>
<td>United Nations Conference on Trade and Development</td>
</tr>
<tr>
<td>UNDESA</td>
<td>UN Department of Economic and Social Affairs</td>
</tr>
<tr>
<td>UNDP</td>
<td>United Nations Development Programme</td>
</tr>
<tr>
<td>UNEP</td>
<td>United Nations Environment Programme</td>
</tr>
<tr>
<td>US</td>
<td>United States of America</td>
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<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
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<tr>
<td>USDA</td>
<td>United States Department of Agriculture</td>
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<tr>
<td>WHO</td>
<td>World Health Organization</td>
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<tr>
<td>WTO</td>
<td>World Trade Organization</td>
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<tr>
<td>WWF</td>
<td>World Wide Fund for Nature</td>
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</table>
EXECUTIVE SUMMARY

The recommendations made in this draft report represent the views of the consultants and should not be interpreted as being endorsed by the European Commission. They are intended to form the basis for discussions among stakeholders and the practical implications of the recommendations will need to be examined in depth in order to evaluate their feasibility.

This report is the Final Report for Phase One of the trade SIA for the agriculture sector of the Association Agreement under negotiation between the EU and Mercosur. This report aims to inform trade negotiators and other interested parties on the potential economic, social and environmental impacts of the EU Mercosur negotiations with respect to the agricultural sector. The report is also intended to identify and assess potential flanking and preventive measures that can be implemented to enhance positive impacts, mitigate negative impacts, and more fully integrate the trade reforms with wider actions to promote sustainable development.

The SIA analyses the impacts of a postulated trade liberalisation scenario for the agricultural sector between the EU and Mercosur. The assessment employs two scenarios: a baseline scenario (no change in current trade measures and a continuation of existing trends), and a further liberalisation scenario (strongest probable implementation of an EU-Mercosur trade agreement for agriculture).

Main Findings

European Union

For the EU, economic impacts are expected to be positive, but not significant in terms of normal growth rates. The principal long term welfare impact would come from the dynamic effects of switching resources to more competitive sectors of the economy, with an overall expected decline in the agricultural sector. Social impacts in the EU will correspondingly be greatest for rural employment. In the accession countries in particular, additional difficulties may be felt in the short term, where social policies have not yet been fully put in place. Environmental impacts are not expected to be significant; an overall beneficial effect is expected in areas where resources are scarce as there will be decreased pressure on production. Increased imports from Mercosur may encourage greater intensity of production in order to increase yields, but the overall effect on soil and water resources is expected to be small and beneficial. Less significant impacts that are identified include potential for the spread of plant diseases and threats to animal welfare.

Mercosur

The overall economic impacts of increased trade between the EU and Mercosur is expected to be positive for the Mercosur countries. While employment in this sector is expected to rise proportionally with output in the short run, there is some risk of reduced employment in the long run as incentives for mechanisation may result in demand for higher skill levels and lower agricultural employment. Increased trade between the EU and Mercosur will lead to some positive social impacts and some that are negative, especially for land tenure and the welfare of indigenous farmers. The expansion of commercial farming, particularly for beef, could displace informal farmers, leading to higher levels of unemployment and increased...
poverty. Liberalisation also offers potential for a reduction in rural poverty as employment could rise to satisfy increased agricultural demand, although measures will be necessary to counter potentially adverse effects on small farmers and labour standards. Improved export performance is expected to lead to an increase in public finance and could lead to higher health expenditure. Agricultural production is expected to rise significantly in all the Mercosur countries, placing pressure on both land and water. As outlined in the beef and ethanol studies, expansion in these sectors could impact significantly on deforestation, contributing to a reduction in biodiversity as production expands, particularly in the Amazon and Cerrado regions. Projected expansion of beef production and sugarcane for ethanol are both expected to have an adverse impact on deforestation and thus a loss in biodiversity in the Amazon and Cerrado regions.

Flanking Measure Proposals

The analysis of Mitigation and Enhancement (M&E) measures is part of the SIA methodology and, on the basis of identified impacts, an SIA should propose mitigation and enhancement measures in different areas of public policy, including trade policy.

This SIA study has identified significant impacts that could result from increased trade between the EU and Mercosur with respect to agriculture. The study also proposes a number of potential measures that could reduce negative impacts to an acceptable level, while potentially enhancing beneficial impacts expected from increased trade between the EU and Mercosur.

Based on the expected impacts identified in the SIA, increased environmental regulation is proposed in order to offset adverse impacts of expansion in agricultural production, while exploiting potential gains. In particular, the role of improved land use, ownership and conservation, as well as careful management of land and soil under increased intensity are discussed as key mechanism to provide incentives for farmers to avoid the need for additional land conversion in meeting increased production demands.

The increased use of dual purpose and beef herds, as well as greater control of fertilisation of lands, are explored as mechanisms to improve economic returns under existing conditions. An increased use of high yielding crop varieties and genetically modified varieties which demand fewer inputs, while potentially increasing output, is also discussed. Increased shares of organically produced crops can lead to reduced consumption of harmful agrochemical usage, as well as reduced consumption of water and land. Likewise, the role of property rights in reducing environmental degradation is explored as ownership has been found to improve natural resource use, while leading to higher land productivity and profitability.

With increased trade between the EU and Mercosur, there will be pressure for increased productivity and thus the potential for increased use of agrochemicals. To ensure increased production does not lead to further contamination of lands, increased cooperation between the EU and Mercosur will be key to ensuring appropriate and sufficient regulation of agrochemical use.

Also addressed in this report is the need to promote cost-effective reductions in carbon emissions through sequestration of atmospheric carbon. Such an approach reduces harmful emissions, while leading to conservation and restoration of areas high in biodiversity. Likewise, there is a need for certification processes which reward products that are produced
sustainably, thus creating a market for environmental quality and the welfare of production workers.

Due to the use of forced labour in the Mercosur countries, as well as high levels of poverty among farmers and rural populations, a number of important regulatory measures were identified to address the treatment of agricultural labour in Mercosur. Both the EU and Mercosur could cooperate to combat the occurrence and potential expansion of this practice through the improved enforcement of international labour standards.

With overall economic welfare expected to rise in the Mercosur and EU with increased trade liberalisation, it is necessary to ensure potential negative impacts on employment and income levels are addressed. Increased education and training would allow for mobility to other sectors; increased protection of farmers and agricultural labours in the form of non-farm employment opportunities would increase welfare and overall social capital.
1 INTRODUCTION

The trade SIA of the Association Agreement under negotiation between the European Union (EU) and Mercosur analyses the impacts of a proposed trade liberalisation scenario of an EU Mercosur trade agreement. The Mid-Term Report SIA discussed the potential implications of both the baseline—business as usual—with no agreement, and a further liberalisation scenario—where the strongest probable implementation of the EU-Mercosur trade negotiations for agriculture occurs. A full liberalisation scenario is unlikely, and it is expected that tariff rate quotas will be agreed or revised, rather than a complete removal of current tariffs. However, in order to facilitate a quantitative assessment of the proposed trade negotiations, a full liberalisation scenario is assumed for the economic modelling and used in the report. This allows an outer bound of potential impacts to be seen and, as discussed in detail in the MTR, helps to identify more sensitive sub-sectors in both the EU and Mercosur.

The agricultural sector is a key area under negotiation for both the EU and Mercosur countries, as both are leaders in world agricultural markets. The European Community (EC) as a whole is a net importer of agricultural products from Mercosur, with food and agricultural commodities accounting for more than 30% of Mercosur exports and representing more than 50% of Mercosur exports to the EU. At present, Mercosur agricultural exports are concentrated on a small number of products, of which soybean and coffee occupy the largest share. These key products also face zero or very low tariffs. Other products in which the Mercosur countries have the comparative advantage over the EU include “sensitive” products, such as sugar, beef, and dairy. These sensitive products are heavily protected by the EU and, therefore, the outcome of current negotiations will have the biggest impact on these sectors. Most trade in these products takes place under tariff-rate quotas (TRQs), some of which are open to high quality products only (such as ‘Hilton’ beef). Within the current framework of the negotiations for a freer trade area, the EU has offered increased access for Mercosur agricultural products under a larger set of TRQs.

For the Mercosur countries, agriculture accounts for more than 10% of GDP. Employment from this sector, either directly or indirectly, accounts for between 9% and 33% of the total labour force across the countries. Rural inhabitants engaged in agriculture are also some of the poorest in Mercosur and thus developing this sector could play a major role in improving social development in the region. Unequal land distribution is an important social and economic issue in most of the Mercosur countries and a key contributing factor to rural poverty. Land conversion to pasture for cattle likewise can displace landless farmers, and is a potential threat to the environment in the Mercosur countries, particularly for the Amazon forest and the high biodiversity of the Cerrado.

Agriculture in the EU accounts for a smaller share of GDP, however, it remains a key economic sector, particularly in the new member states. Historically, there has been a high level of protection applied to many agricultural commodities in the EU. With the implementation of the CAP reform and WTO agreement on agriculture, the EU share of world markets for wheat, beef, poultry, sugar and milk powder has decreased, leading to greater competition on the world market for these goods. While the EU is a main export destination for Mercosur, Mercosur is not a primary destination for European agricultural exports, and exports to the region have been in decline in recent years. The principle exports from the EU to Mercosur at present are whiskies, wines, olive oil and malt.
This Final Report on the potential impacts resulting from the EU Mercosur Association Agreement was undertaken using CGE modelling, case study material and secondary literature. The impacts are assessed in terms of economic, social, environmental, and process impacts for the EU and Mercosur countries. In addition to detailed discussion on the potential impacts to sustainability with respect to the proposed liberalisation scenario on agriculture, this final report emphasises potential mitigation, and enhancement (M&E) measures in relation to impacts on sustainable development. In the following section, we present a brief summary of the methodology used in the MTR. In Section 3, an overview of the agricultural sector is presented, followed by a summary of the CETM modelling results in Section 4. The SIA studies for the beef and ethanol sectors are presented in Section 5, followed by the overall SIA results for agriculture in Section 6. In Section 7 we discuss opportunities for enhancement, prevention or mitigation of potential impacts on the agricultural sector. A key component of the SIA process is stakeholder consultation; in particular, the importance of involving developing country stakeholders is emphasised and to this end, Section 8 presents a discussion on stakeholder involvement and consultation. Section 9 concludes.
2 METHODOLOGY

2.1 The EC’s Trade SIA Programme

The European Commission has been engaged in conducting Trade SIAs as part of its trade policy-making process since 1999. The European Union’s approach to the impact assessment of trade policy goes beyond assessment of the effects in Europe, to assessing the impacts of proposed trade agreements on all aspects of sustainable development for its trading partners. The approach aims to make a significant contribution to regional and global governance, although to achieve this many challenges have to be overcome. As well as the general methodological difficulties of undertaking ex ante impact assessment at the policy level, the assessment has to evaluate the significance of economic impacts as well as social and environmental ones, and find appropriate entry points into complex decision-making processes.¹

The purpose of SIA is to support better policy making, by providing decision makers with an evidence-based assessment of the potential positive and negative consequences of their policy choices. To achieve this, the analysis needs to be credible, evidence-based, and transparent. The results of the assessment also need to be provided to decision-makers at an early stage in the policy cycle, if they are to inform the decision-making process.

The initial methodology for SIA of trade agreements was developed in early 1999, building on earlier North American experience of assessing the environmental impacts of trade policy.² The methodology was subsequently refined and developed further for more detailed assessments³, and the European Commission has issued a handbook describing its current status.⁴ With further refinements for each of the studies undertaken, the extended methodology has been applied to the WTO negotiations mandated by the WTO Ministerial Meeting in Doha, and to regional trade negotiations and agreements to which the EU is a party.⁵

The European Commission has defined the objective of its SIA studies as a means of integrating sustainability into European trade policy:⁶

1. By analysing the issues of a trade negotiation with respect to sustainable development;
2. By informing negotiators of the possible social, environmental, and economic consequences of a trade agreement;
3. By providing guidelines to help in the design of possible flanking measures, the sphere of activity of which can exceed the commercial field (internal policy, capacity building, international regulation), and which makes it possible to maximise the positive impact and to reduce the negative impact of the trade negotiations in question.

In 2006, DG Trade awarded a contract to a consortium led by the Impact Assessment Research Centre at Manchester University to undertake a Trade SIA of the Association Agreement under negotiation between the European Community and Mercosur. The first

¹ See Kirkpatrick and George (2006) for a detailed discussion of these issues.
² Kirkpatrick, Lee and Morrissey 1999
³ Kirkpatrick and Lee 2002, George and Kirkpatrick, 2004
⁴ European Commission 2006
⁵ Details of the Trade SIA work programme and completed reports are provided on the DG Trade website.
⁶ European Commission 2002
phase of the programme provides for an update of the initial preliminary Overview SIA of the proposed EU-Mercosur trade agreement that was undertaken for DG Trade in 2003.7

In addition to the Overview SIA, the current phase includes three detailed sectoral SIA studies:

- Automobile Sector
- Forestry Sector
- Agricultural Sector

Strong interactions occur between the forestry and agriculture sectors. The sectoral SIA for agriculture presented in this report makes use of the findings of the forestry sector study.

2.2 The SIA Methodology

The main components of the SIA methodology are:

- Screening and scoping
- Scenarios
- Assessment of impacts
- Evaluation of alternative preventative, mitigation and enhancement measures
- Consultation and stakeholder engagement

The ongoing process of refinement and development of the SIA methodology has been maintained in the current study by incorporating economic modelling as one of the analytical tools that is used to inform the assessment of potentially significant sustainability impacts.

2.2.1 Causal Chain Analysis

Causal Chain Analysis (CCA) is the fundamental building block for the SIA methodology, and is used to identify the significant cause-effect links between the proposed trade measure (scenario) and its final economic, social and environmental impacts. CCA aims first at (i) linking changes in a trade measure to changes in the incentives (prices) and opportunities (expanded market access), which can influence the production system and trade flows; and then at (ii) linking changes in the production system to sustainability impacts. The CCA draws on a range of sources for the evidence that informs the analysis, including:

- Theory, including international trade theory
- Quantitative data analysis
- Evidence from earlier studies
- Qualitative analysis based on the analysis of anticipated changes in the production system and trade flows;
- Case studies;
- Consultations and expert opinions.

7 Planistat, 2003
Successful application of the causal chain method requires separating the trade-related causes from other causes, which implies adopting a “systems model” of all the main factors affecting sustainability. A conceptual framework for the SIA is presented in Figure 2.1.

**Figure 2.1: Basic Principles of the Casual Chain analysis**

![Diagram of the causal chain method]

**2.2.2 Scenarios**

Scenarios are used in assessing the potential impacts of trade negotiations on sustainable development. For the EU Mercosur trade negotiations, two scenarios are used:

- Base scenario: no change in the current negotiated trade measures affecting EU and Mercosur trade, including no agreement on the trade liberalisation measures being discussed within the WTO Doha Development Agenda negotiations. The baseline scenario assumes, therefore, a continuation of existing trends in trade flows and current levels of tariff and non-tariff measures.
- Further Liberalisation scenario: this represents the strongest probable implementation of the EU–Mercosur trade negotiations, including economic modelling of full tariff removal. Negotiating options for the actual trade agreement cover a range of intermediate scenarios, involving different degrees of liberalisation for each type product or service, differing for each form of trade measure.
2.2.3 Core Indicators

Core indicators are used to assess the sustainability impacts (Table 2.1). For each of the core indicators, second tier indicators can be used to specify the core indicators in more detail.

**Table 2.1: Sustainability Indicators**

<table>
<thead>
<tr>
<th>Sustainability dimension</th>
<th>Core indicator</th>
<th>Second tier indicator</th>
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</thead>
<tbody>
<tr>
<td>Economic</td>
<td>Real income</td>
<td>Sector specific</td>
</tr>
<tr>
<td></td>
<td>Fixed capital formation</td>
<td></td>
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<td></td>
<td>Employment</td>
<td></td>
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<tr>
<td>Environmental</td>
<td>Biodiversity</td>
<td>Sector specific</td>
</tr>
<tr>
<td></td>
<td>Environmental quality</td>
<td></td>
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<td></td>
<td>Natural resource stocks</td>
<td></td>
</tr>
<tr>
<td>Social</td>
<td>Poverty</td>
<td>Sector specific</td>
</tr>
<tr>
<td></td>
<td>Equity</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Health and education</td>
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</tbody>
</table>

In addition to the nine core sustainability indicators, the methodology allows for two process indicators. Long term economic, social and environmental impacts may arise from the impact of the EU-Mercosur Association Agreement on underlying economic, social or environmental processes. Any effect that the trade agreement may have on accelerating, decelerating or otherwise altering any of these processes may have significant long term cumulative impacts on the economic, social or environmental aspects of sustainable development. The SIA methodology identifies two aggregative process indicators for such potential effects:

- Consistency with sustainable development principles
- Institutional capacity for effective sustainable development strategies

The significance of the potential impact is shown using the following symbols:

\[\text{↑↑ positive greater significant impact} \]
\[\text{↓↓ negative greater significant impact} \]
\[\text{↑ positive lesser significant impact} \]
\[\text{↓ negative lesser significant impact} \]
\[\text{↑↓ positive and negative impacts likely to be experienced according to context (may be lesser or greater as above)} \]
\[\text{- impact has been evaluated as non-significant compared with the base situation} \]

Greater and lesser significance are defined in the SIA methodology as:

- lesser significant impact – marginally significant to the negotiation decision, and if negative, a potential candidate for mitigation
- greater significant impact – significant to the negotiation decision, and if negative, merits serious consideration for mitigation.
Distinctions between greater and lesser significance are based on the importance of an impact for the particular economic, social or environmental factor concerned. They give no indication of relative importance of different impacts. The following factors are taken into account in evaluating significance:

- The extent of existing economic, social and environmental stress in affected areas;
- The direction of changes to base-line conditions;
- The nature, order of magnitude, geographic extent, duration and reversibility of changes;
- The regulatory and institutional capacity to implement mitigation and enhancement measures.

The impacts resulting from trade liberalisation occur over time, and in many instances there is a period of adjustment during which the significance or magnitude of the impact will change. This is allowed for in the SIA methodology by distinguishing between short term and long term impacts.

The SIA methodology also allows for evaluation of possible preventative, mitigation or enhancement measures, subsequent to the assessment of potential impacts. These measures can be categorised as follows:

- Trade-related measures, which can be integrated into the trade agreement
- International and regional measures to improve the policy environment and strengthen national regulatory capacity
- National sectoral policy measures to remedy or regulate market imperfections
- National policy measures to mitigate adjustment costs.
3 OVERVIEW OF THE AGRICULTURAL SECTOR

3.1 European Union

The agricultural sector is a key area under negotiation for both the EU. The European Community (EC) as a whole is a net importer of agricultural products from Mercosur, with food and agricultural commodities accounting for more than 30% of Mercosur exports and representing more than 50% of Mercosur exports to the EU. At present, EU imports from Mercosur are concentrated on a small number of products, of which soybean and coffee occupy the largest share. These key products also face zero or very low tariffs. Other products in which the Mercosur countries have the comparative advantage over the EU include “sensitive” products, such as sugar, beef, and dairy. These sensitive products are heavily protected by the EU and, therefore, the outcome of current negotiations will have the biggest impact on these sectors. Most trade in these products takes place under tariff-rate quotas (TRQs), some of which are open to high quality products only (such as ‘Hilton’ beef). Within the current framework of the negotiations for a freer trade area, the EU has offered increased access for Mercosur agricultural products under a larger set of TRQs.

Agriculture remains economically important across the EU, but in particular for Poland, Slovakia, Lithuania, Latvia, Greece, and Estonia, of which Gross Value Added (GVA) was from 4% to 5% in 2005. In the accession countries, agriculture is an important economic sector, with a GVA up to 9.3% for Bulgaria and 10.1% for Romania. Where agriculture may be less important at the national level, it remains an important activity in rural areas across the EU. It is also important to appreciate the cultural significance of agriculture and foods derived from domestic farm products which, in many member states, has a strong influence on consumer demand and public policy, as demonstrated by the increasing use of the EU’s protected food names.

Agriculture represented almost 9.5 million Annual Work Units (AWU) in the EU-25 in 2005 (Table 3.1). In the EU-15, agriculture provided 7.1 million AWU in 1997, declining to 6 millions AWU in 2005. In the EU-10, the farm labour force decreased more rapidly in the same period, from 5 million AWU in 1997 to 3.5 million AWU in 2005. From 1997 to 2005, the total farm labour force declined by 16% in the EU-15, against 30% in EU-10, and 22% in the EU-25.

---

8 Eurostat
9 These food names as the Protected Designation of Origin (PDO), Protected Geographical Indication (PGI) and Traditional Speciality Guaranteed (TSG)
Table 3.1: Evolution of farm labour force in the EU (in thousands of Annual Work Unit)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Poland</td>
<td>3,170.1</td>
<td>2,190.9</td>
<td>2,273.6</td>
<td>-28%</td>
<td>Austria</td>
<td>177.6</td>
<td>175.4</td>
<td>166.4</td>
<td>-6%</td>
</tr>
<tr>
<td>Italy</td>
<td>1,798.1</td>
<td>1,476.0</td>
<td>1,374.3</td>
<td>-24%</td>
<td>Latvia</td>
<td>175.2</td>
<td>140.9</td>
<td>137.3</td>
<td>-22%</td>
</tr>
<tr>
<td>Spain</td>
<td>1,099.0</td>
<td>997.8</td>
<td>992.6</td>
<td>-10%</td>
<td>Finland</td>
<td>125.7</td>
<td>97.5</td>
<td>83.5</td>
<td>-34%</td>
</tr>
<tr>
<td>France</td>
<td>1,079.9</td>
<td>913.8</td>
<td>855.5</td>
<td>-21%</td>
<td>Slovenia</td>
<td>114.3</td>
<td>95.4</td>
<td>95.0</td>
<td>-17%</td>
</tr>
<tr>
<td>Hungary</td>
<td>735.1</td>
<td>525.8</td>
<td>462.7</td>
<td>-37%</td>
<td>Denmark</td>
<td>97.9</td>
<td>60.7</td>
<td>58.4</td>
<td>-40%</td>
</tr>
<tr>
<td>Germany</td>
<td>656.8</td>
<td>688.8</td>
<td>643.2</td>
<td>-2%</td>
<td>Sweden</td>
<td>81.8</td>
<td>70.7</td>
<td>71.1</td>
<td>-13%</td>
</tr>
<tr>
<td>Greece</td>
<td>597.3</td>
<td>614.3</td>
<td>601.1</td>
<td>1%</td>
<td>Belgium</td>
<td>79.1</td>
<td>72.5</td>
<td>69.6</td>
<td>-12%</td>
</tr>
<tr>
<td>Portugal</td>
<td>519.8</td>
<td>455.2</td>
<td>398.1</td>
<td>-23%</td>
<td>Estonia</td>
<td>67.6</td>
<td>37.5</td>
<td>36.9</td>
<td>-45%</td>
</tr>
<tr>
<td>UK</td>
<td>416.0</td>
<td>352.2</td>
<td>336.3</td>
<td>-19%</td>
<td>Cyprus</td>
<td>40.0</td>
<td>32.2</td>
<td>28.7</td>
<td>-28%</td>
</tr>
<tr>
<td>Lithuania</td>
<td>310.3</td>
<td>222.1</td>
<td>221.6</td>
<td>-29%</td>
<td>Luxemburg</td>
<td>5.0</td>
<td>4.0</td>
<td>4.0</td>
<td>-20%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>208.7</td>
<td>186.3</td>
<td>173.9</td>
<td>-17%</td>
<td>Malta</td>
<td>4.5</td>
<td>4.5</td>
<td>4.1</td>
<td>-9%</td>
</tr>
<tr>
<td>Ireland</td>
<td>202.3</td>
<td>160.0</td>
<td>152.4</td>
<td>-25%</td>
<td>EU15</td>
<td>7,145.0</td>
<td>6,325.2</td>
<td>5,980.4</td>
<td>-16%</td>
</tr>
<tr>
<td>Czech R.</td>
<td>192.8</td>
<td>166.4</td>
<td>151.9</td>
<td>-21%</td>
<td>EU10</td>
<td>4,999.5</td>
<td>3,534.3</td>
<td>3,510.6</td>
<td>-30%</td>
</tr>
<tr>
<td>Slovakia</td>
<td>189.6</td>
<td>118.6</td>
<td>98.8</td>
<td>-48%</td>
<td>EU25</td>
<td>12,144.5</td>
<td>9,859.5</td>
<td>9,491.0</td>
<td>-22%</td>
</tr>
</tbody>
</table>

Source: Eurostat

In 2003, more than 10% of the labour force was employed in agriculture (including agriculture, forestry and fisheries) in Greece, Latvia, Lithuania, Austria, and Slovakia, and this rate was 20% in Poland.\(^{10}\) Farm employment is concentrated in only a few Member-States and in 2005, it accounted for nearly two thirds of the total EU labour force in Poland, Italy, Spain, France and Hungary.\(^{11}\)

In 2005, five Member States (France, Italy, Spain, Germany and UK) accounted for 70% of the GVA of agriculture in the EU-25 (Table 3.2). Agricultural GVA is concentrated in the EU-15. Poland; the first EU-10 Member States in terms of GVA is only ranked eighth out of the EU-25, despite its large farm labour force, indicating a lower level of agricultural productivity in the EU-10 compared to the EU-15.

\(^{10}\) European Commission, 2006
\(^{11}\) Eurostat
Table 3.2: Gross Value Added at basic prices of the agricultural industry in the EU-25 (€m)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>30,952</td>
<td>30,576</td>
<td>28,372</td>
<td>19.8%</td>
<td>Sweden</td>
<td>1,595</td>
<td>1,496</td>
<td>1,100</td>
<td>0.8%</td>
</tr>
<tr>
<td>Italy</td>
<td>28,432</td>
<td>28,070</td>
<td>26,329</td>
<td>18.4%</td>
<td>Finland</td>
<td>1,093</td>
<td>1,445</td>
<td>1,353</td>
<td>0.9%</td>
</tr>
<tr>
<td>Spain</td>
<td>23,084</td>
<td>25,022</td>
<td>24,910</td>
<td>17.4%</td>
<td>Czech R.</td>
<td>920</td>
<td>1,043</td>
<td>949</td>
<td>0.7%</td>
</tr>
<tr>
<td>Germany</td>
<td>15,221</td>
<td>19,918</td>
<td>12,810</td>
<td>9.0%</td>
<td>Lithuania</td>
<td>540</td>
<td>365</td>
<td>605</td>
<td>0.4%</td>
</tr>
<tr>
<td>UK</td>
<td>10,759</td>
<td>10,606</td>
<td>7,471</td>
<td>5.2%</td>
<td>Slovakia</td>
<td>483</td>
<td>440</td>
<td>450</td>
<td>0.3%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>9,072</td>
<td>8,920</td>
<td>8,532</td>
<td>6.0%</td>
<td>Slovenia</td>
<td>465</td>
<td>397</td>
<td>485</td>
<td>0.3%</td>
</tr>
<tr>
<td>Greece</td>
<td>7,979</td>
<td>8,101</td>
<td>8,423</td>
<td>5.9%</td>
<td>Cyprus</td>
<td>315</td>
<td>365</td>
<td>330</td>
<td>0.2%</td>
</tr>
<tr>
<td>Poland</td>
<td>5,084</td>
<td>5,896</td>
<td>6,107</td>
<td>4.3%</td>
<td>Latvia</td>
<td>185</td>
<td>246</td>
<td>277</td>
<td>0.2%</td>
</tr>
<tr>
<td>Denmark</td>
<td>2,931</td>
<td>3,843</td>
<td>2,512</td>
<td>1.8%</td>
<td>Estonia</td>
<td>152</td>
<td>173</td>
<td>208</td>
<td>0.1%</td>
</tr>
<tr>
<td>Ireland</td>
<td>2,880</td>
<td>2,674</td>
<td>2,159</td>
<td>1.5%</td>
<td>Luxemburg</td>
<td>122</td>
<td>123</td>
<td>101</td>
<td>0.1%</td>
</tr>
<tr>
<td>Belgium</td>
<td>2,650</td>
<td>2,620</td>
<td>2,245</td>
<td>1.6%</td>
<td>Malta</td>
<td>66</td>
<td>71</td>
<td>57</td>
<td>0.0%</td>
</tr>
<tr>
<td>Austria</td>
<td>2,578</td>
<td>2,812</td>
<td>2,365</td>
<td>1.7%</td>
<td>EU25</td>
<td>151,816</td>
<td>159,974</td>
<td>143,095</td>
<td>100.0%</td>
</tr>
<tr>
<td>Portugal</td>
<td>2,206</td>
<td>2,680</td>
<td>2,559</td>
<td>1.8%</td>
<td>EU15</td>
<td>141,553</td>
<td>148,905</td>
<td>131,241</td>
<td>91.7%</td>
</tr>
<tr>
<td>Hungary</td>
<td>2,053</td>
<td>2,073</td>
<td>2,386</td>
<td>1.7%</td>
<td>EU10</td>
<td>10,263</td>
<td>11,069</td>
<td>11,854</td>
<td>8.3%</td>
</tr>
</tbody>
</table>

Source: Eurostat

Agricultural production in the EU-25 is relatively well-balanced among sub-sectors. In 2004, crop products accounted for the largest share of total agricultural output (57%), followed by animal products (43%) (Table 3.3).
Table 3.3: Value of agricultural production in EU-25, millions euros, in 2003

<table>
<thead>
<tr>
<th>Country</th>
<th>Crop production</th>
<th>Animal production</th>
<th>Total</th>
<th>Country</th>
<th>Crop production</th>
<th>Animal production</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>30,794</td>
<td>21,613</td>
<td>55,306</td>
<td>Sweden</td>
<td>1,740</td>
<td>2,152</td>
<td>4,013</td>
</tr>
<tr>
<td>Italy</td>
<td>25,030</td>
<td>13,772</td>
<td>40,157</td>
<td>Finland</td>
<td>1,385</td>
<td>1,664</td>
<td>3,175</td>
</tr>
<tr>
<td>Germany</td>
<td>16,811</td>
<td>18,100</td>
<td>36,302</td>
<td>Czech R.</td>
<td>1,370</td>
<td>1,444</td>
<td>2,856</td>
</tr>
<tr>
<td>Spain</td>
<td>22,292</td>
<td>13,361</td>
<td>36,116</td>
<td>Slovakia</td>
<td>603</td>
<td>732</td>
<td>1,379</td>
</tr>
<tr>
<td>Netherlands</td>
<td>10,473</td>
<td>7,290</td>
<td>19,555</td>
<td>Lithuania</td>
<td>683</td>
<td>473</td>
<td>1,166</td>
</tr>
<tr>
<td>UK</td>
<td>7,450</td>
<td>11,243</td>
<td>19,269</td>
<td>Slovenia</td>
<td>398</td>
<td>484</td>
<td>898</td>
</tr>
<tr>
<td>Poland</td>
<td>5,646</td>
<td>5,506</td>
<td>11,495</td>
<td>Latvia</td>
<td>246</td>
<td>204</td>
<td>456</td>
</tr>
<tr>
<td>Greece</td>
<td>5,993</td>
<td>2,488</td>
<td>8,481</td>
<td>Estonia</td>
<td>162</td>
<td>201</td>
<td>372</td>
</tr>
<tr>
<td>Denmark</td>
<td>2,596</td>
<td>4,411</td>
<td>7,374</td>
<td>Luxemburg</td>
<td>78</td>
<td>147</td>
<td>233</td>
</tr>
<tr>
<td>Belgium</td>
<td>3,076</td>
<td>3,280</td>
<td>6,401</td>
<td>Malta</td>
<td>42</td>
<td>69</td>
<td>111</td>
</tr>
<tr>
<td>Portugal</td>
<td>3,693</td>
<td>2,016</td>
<td>5,716</td>
<td>Cyprus</td>
<td>na</td>
<td>na</td>
<td>Na</td>
</tr>
<tr>
<td>Hungary</td>
<td>2,685</td>
<td>2,239</td>
<td>5,227</td>
<td>EU25</td>
<td>146,848</td>
<td>118,805</td>
<td>275,968</td>
</tr>
<tr>
<td>Ireland</td>
<td>1,321</td>
<td>3,552</td>
<td>5,117</td>
<td>EU15</td>
<td>135,013</td>
<td>107,453</td>
<td>252,008</td>
</tr>
<tr>
<td>Austria</td>
<td>2,281</td>
<td>2,364</td>
<td>4,793</td>
<td>EU10</td>
<td>11,835</td>
<td>11,352</td>
<td>23,960</td>
</tr>
</tbody>
</table>

Source: Eurostat

The EU-25 is one of the primary cereal producers in the world (excluding rice and maize), as well as sugar, some fruits and vegetables (potatoes for instance), meats (beef, poultry and pigs) and dairy products. Cereals, vegetables and horticultural products, fruits, wine, cattle and pigs, account for more than 50% of the total output of the agricultural industry in the EU-25 (Table 3.4).

Table 3.4: Share of world production for main EU agricultural products

<table>
<thead>
<tr>
<th>EU-25 Production (Millions of t)</th>
<th>% world production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereals (2004-2005)</td>
<td>283.8</td>
</tr>
<tr>
<td>Pig meat (2004)</td>
<td>21.1</td>
</tr>
<tr>
<td>Beef meat (2004)</td>
<td>8.0</td>
</tr>
<tr>
<td>Poultry meat (2004)</td>
<td>9.7</td>
</tr>
<tr>
<td>Fresh milk (2004)</td>
<td>142.3</td>
</tr>
<tr>
<td>Potatoes</td>
<td>67.4</td>
</tr>
</tbody>
</table>

Source: Cyclope, Les marchés mondiaux 2005
Within the EU-25, the food and drink industry is the largest manufacturing sector, accounting for 13.6% of total manufacturing. Seventy percent of EU-25 agricultural production is processed by EU food and drink industries. The food and drink industry is the largest grouping in the manufacturing sector, ahead of automobile and chemical industries. Small and medium enterprises (defined as having fewer than 249 employees) dominate this sector (involving 99.1% of enterprises and 61.3% of labour force in this sector), but account for less than half of the value-added of the food and drink industry. Food and drink businesses account for 13% of employment in the manufacturing sector which, as a whole, is the largest industrial sector in the EU-25, employing 3.8 million employees. Sixty-five percent of employment is concentrated in 5 countries, including Poland (Table 3.5). The EU-25 is the world’s largest food and drink exporter (before the US and Brazil) and the world’s second largest importer (after the US and before Japan). The EU-25’s share of the world food and drinks market decreased slightly from 24% in 1997 to 20% in 2005.

Table 3.5: Employment in food and drink industry per Member State (‘000 employees)

<table>
<thead>
<tr>
<th>Country</th>
<th>Employment</th>
<th>Country</th>
<th>Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>517.0</td>
<td>Austria</td>
<td>58.5</td>
</tr>
<tr>
<td>Spain</td>
<td>481.7</td>
<td>Ireland</td>
<td>46.0</td>
</tr>
<tr>
<td>Poland</td>
<td>464.3</td>
<td>Slovakia</td>
<td>39.1</td>
</tr>
<tr>
<td>UK</td>
<td>462.0</td>
<td>Finland</td>
<td>37.2</td>
</tr>
<tr>
<td>France</td>
<td>420.0</td>
<td>Latvia</td>
<td>35.3</td>
</tr>
<tr>
<td>Italy</td>
<td>258.0</td>
<td>Slovenia</td>
<td>18.1</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>131.4</td>
<td>Estonia</td>
<td>16.7</td>
</tr>
<tr>
<td>Netherlands</td>
<td>130.3</td>
<td>Luxemburg</td>
<td>na</td>
</tr>
<tr>
<td>Hungary</td>
<td>113.4</td>
<td>Cyprus</td>
<td>na</td>
</tr>
<tr>
<td>Portugal</td>
<td>103.1</td>
<td>Lithuania</td>
<td>na</td>
</tr>
<tr>
<td>Belgium</td>
<td>90.4</td>
<td>Malta</td>
<td>na</td>
</tr>
<tr>
<td>Denmark</td>
<td>73.5</td>
<td>EU25</td>
<td>3622.5</td>
</tr>
<tr>
<td>Greece</td>
<td>67.8</td>
<td>EU15</td>
<td>2804.2</td>
</tr>
<tr>
<td>Sweden</td>
<td>58.7</td>
<td>EU10</td>
<td>818.3</td>
</tr>
</tbody>
</table>

Source: CIAA. Data for year 2005, except the Netherlands, Poland, Portugal and the UK (year 2004).

3.2 Mercosur

The agricultural sector is key to the Mercosur economies, accounting for more than 10% of GDP for all countries. Moreover, agriculture is a major source of employment in Mercosur countries, either directly (through primary production on farms) or indirectly (upstream and downstream activities). In 2003, the farm labour force in Argentina was 1.5 million people (9% of the total labour force), 0.75 million people in Paraguay (33% of the total labour force),

12 CIAA (Confederation of the food and drink industries of the EU), 2005
0.19 million people in Uruguay (12% of the total labour force) and 12 million in Brazil (15% of the total labour force). A high share of the population on low incomes lives in rural areas and, as a result, maintaining and developing agriculture plays a major role in social cohesion policy, with the level of farm incomes being a central issue.

Agriculture in Mercosur ranges between two extremes. At the one end, agriculture is technologically developed. At the other extreme, subsistence-based farming involving family labour and landless farmers is common. In Brazil, commercial agriculture occupies 240 million hectares, and family farms constitute 85.5% of all agricultural holdings and 77% of the farm labour force. Family farming occupies 30.5% of land area and provides 37.9% of agricultural GDP. Unequal land distribution is an important social and economic issue in most of the Mercosur countries, and one of the main factors contributing to rural poverty. In Brazil alone, 12 million farmers are landless and 50,000 people use 44% of the agricultural land. Exacerbating this problem, land conversion to pasture for cattle continues to cause displacement of many landless farmers.

Mercosur is one of the world’s largest producers of crops and animals products with Argentina and Brazil dominating Mercosur production (Table 3.6). Mercosur, excluding Venezuela, accounts for 39% of soybean world production, and the region’s production increased by 58% between 1999 and 2004. Argentina specialises in sunflower production, representing more than 10% of world production. However, since 1999, sunflower production in Argentina decreased substantially, from 7 to 3 million tons, while soybean production increased from 20 to more than 30 million tons. Brazil is the world’s largest sugarcane producer, accounting for 416 millions of tons, and has increased production by more than three-fold since 1999.

13 Source: FAO
Table 3.6: Crops production in Mercosur (‘000 tons)

<table>
<thead>
<tr>
<th></th>
<th>Wheat</th>
<th></th>
<th></th>
<th>Maize</th>
<th></th>
<th></th>
<th>Soybeans</th>
<th></th>
<th>Sugarcane (raw equivalent sugar)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>15,478.66</td>
<td>16,146.62</td>
<td>15,427.82</td>
<td>12,300.00</td>
<td>14,530.00</td>
<td>14,560.00</td>
<td>13,504.10</td>
<td>16,781.40</td>
<td>15,365.05</td>
<td>15,000.00</td>
</tr>
<tr>
<td>Brazil</td>
<td>2,461.86</td>
<td>1,611.53</td>
<td>3,364.95</td>
<td>3,105.66</td>
<td>6,029.40</td>
<td>5,726.20</td>
<td>32,037.62</td>
<td>31,879.39</td>
<td>41,955.26</td>
<td>35,932.96</td>
</tr>
<tr>
<td>Paraguay</td>
<td>187.90</td>
<td>220.06</td>
<td>359.24</td>
<td>359.24</td>
<td>500.00</td>
<td>715.00</td>
<td>817.23</td>
<td>647.27</td>
<td>947.17</td>
<td>867.27</td>
</tr>
<tr>
<td>Uruguay</td>
<td>383.90</td>
<td>324.40</td>
<td>143.60</td>
<td>205.80</td>
<td>326.00</td>
<td>532.60</td>
<td>242.50</td>
<td>64.70</td>
<td>262.83</td>
<td>163.40</td>
</tr>
<tr>
<td>World</td>
<td>587,661.32</td>
<td>586,059.62</td>
<td>590,026.60</td>
<td>575,085.26</td>
<td>560,886.66</td>
<td>632,594.72</td>
<td>607,643.42</td>
<td>592,790.11</td>
<td>614,984.51</td>
<td>604,249.07</td>
</tr>
<tr>
<td></td>
<td>Wheat</td>
<td>Maize</td>
<td>Soybeans</td>
<td>Sugarcane</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brazil</td>
<td>2,461</td>
<td>1,611</td>
<td>3,364</td>
<td>3,105</td>
<td>6,029</td>
<td>5,726</td>
<td>32,037</td>
<td>31,879</td>
<td>41,955</td>
<td>35,932</td>
</tr>
<tr>
<td>Paraguay</td>
<td>187</td>
<td>220</td>
<td>359</td>
<td>359</td>
<td>500</td>
<td>715</td>
<td>817</td>
<td>647</td>
<td>947</td>
<td>867</td>
</tr>
<tr>
<td>Uruguay</td>
<td>383</td>
<td>324</td>
<td>143</td>
<td>205</td>
<td>326</td>
<td>532</td>
<td>242</td>
<td>64</td>
<td>262</td>
<td>163</td>
</tr>
<tr>
<td>World</td>
<td>587</td>
<td>586</td>
<td>590</td>
<td>575</td>
<td>561</td>
<td>632</td>
<td>608</td>
<td>593</td>
<td>615</td>
<td>604</td>
</tr>
</tbody>
</table>

Source: FAOSTAT
Accounting for more than 10 million tons of bovine meat, Mercosur produces almost 20% of the world’s beef meat. Production increased by almost 10% from 1999 to 2004 in Brazil, Uruguay and Argentina, while it decreased for Paraguay (Table 3.7).

Chicken meat production is also increasing in Brazil, although in other Mercosur Member States, chicken production has remained stable. Brazilian chicken meat production increased by almost 20% from 1999 to 2004, and accounted for 13% of world production in 2004. In contrast, pig production is comparatively under developed in Mercosur, accounting only for 3% of world production. However, pig meat production in Brazil, grew by 30% between 1999 and 2004, accounting for the largest share of production in Mercosur.

Dairy production has increased significantly in Brazil in recent years, from 20 to 23 million tons between 1999 and 2004. In the same period, dairy production decreased in Argentina and Paraguay, remaining quite stable in Uruguay.
Table 3.7: Processed animal products in Mercosur (‘000 tons)

<table>
<thead>
<tr>
<th></th>
<th>Bovine meat</th>
<th>Pig meat</th>
<th>Chicken meat</th>
<th>Milk, whole, fresh</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1999</td>
<td>2000</td>
<td>2001</td>
<td>2002</td>
</tr>
<tr>
<td>Argentina</td>
<td>2,719.78</td>
<td>2,718.00</td>
<td>2,461.00</td>
<td>2,493.00</td>
</tr>
<tr>
<td>Brazil</td>
<td>6,413.30</td>
<td>6,578.80</td>
<td>6,823.60</td>
<td>7,139.30</td>
</tr>
<tr>
<td>Paraguay</td>
<td>246.00</td>
<td>238.62</td>
<td>200.00</td>
<td>205.00</td>
</tr>
<tr>
<td>Uruguay</td>
<td>457.70</td>
<td>453.12</td>
<td>317.00</td>
<td>411.84</td>
</tr>
<tr>
<td>World</td>
<td>56,351.9</td>
<td>56,950.61</td>
<td>56,147.72</td>
<td>57,816.92</td>
</tr>
<tr>
<td></td>
<td>1999</td>
<td>2000</td>
<td>2001</td>
<td>2002</td>
</tr>
<tr>
<td>Argentina</td>
<td>214.58</td>
<td>213.97</td>
<td>197.50</td>
<td>165.29</td>
</tr>
<tr>
<td>Brazil</td>
<td>2,400.00</td>
<td>2,600.00</td>
<td>2,637.00</td>
<td>2,798.00</td>
</tr>
<tr>
<td>Paraguay</td>
<td>120.00</td>
<td>114.00</td>
<td>102.60</td>
<td>78.00</td>
</tr>
<tr>
<td>Uruguay</td>
<td>27.00</td>
<td>26.00</td>
<td>22.60</td>
<td>19.52</td>
</tr>
<tr>
<td>World</td>
<td>65,217.57</td>
<td>68,982.38</td>
<td>71,733.65</td>
<td>74,581.87</td>
</tr>
<tr>
<td></td>
<td>1999</td>
<td>2000</td>
<td>2001</td>
<td>2002</td>
</tr>
<tr>
<td>Argentina</td>
<td>982.86</td>
<td>1,000.26</td>
<td>993.12</td>
<td>742.31</td>
</tr>
<tr>
<td>Brazil</td>
<td>5,646.80</td>
<td>6,124.75</td>
<td>6,380.15</td>
<td>7,239.21</td>
</tr>
<tr>
<td>Paraguay</td>
<td>41.63</td>
<td>34.64</td>
<td>37.78</td>
<td>36.71</td>
</tr>
<tr>
<td>Uruguay</td>
<td>57.66</td>
<td>52.66</td>
<td>53.20</td>
<td>53.70</td>
</tr>
<tr>
<td>World</td>
<td>65,217.57</td>
<td>68,982.38</td>
<td>71,733.65</td>
<td>74,581.87</td>
</tr>
<tr>
<td></td>
<td>1999</td>
<td>2000</td>
<td>2001</td>
<td>2002</td>
</tr>
<tr>
<td>Argentina</td>
<td>10,649.20</td>
<td>10,121.33</td>
<td>9,768.73</td>
<td>8,793.40</td>
</tr>
<tr>
<td>Brazil</td>
<td>19,802.22</td>
<td>20,526.99</td>
<td>21,283.80</td>
<td>22,452.70</td>
</tr>
<tr>
<td>Paraguay</td>
<td>445.00</td>
<td>329.80</td>
<td>331.00</td>
<td>375.13</td>
</tr>
<tr>
<td>Uruguay</td>
<td>1,479.38</td>
<td>1,421.75</td>
<td>1,495.00</td>
<td>1,490.00</td>
</tr>
<tr>
<td>World</td>
<td>569,274.28</td>
<td>578,686.52</td>
<td>588,876.19</td>
<td>602,229.23</td>
</tr>
</tbody>
</table>

Source: FAOSTAT
Agricultural production in Mercosur has increased rapidly in recent years. For soy bean, sunflower, beef and chicken meat and sugar cane, Mercosur accounts for a large share of world production and exports. Within the region, Brazil is the most dynamic and important market. Argentina plays an important role for beef and soya beans. Paraguay’s small size produces relatively low agricultural production but it has experienced significant increases in sugarcane and soybean production. Uruguay is less agriculturally developed, but has seen strong growth in soya bean production.

3.3 Trade in the Agricultural Sector

3.3.1 EU/Mercosur trade overview

Food and agricultural raw materials represent more than 50% of Mercosur exports to the EU (Table 3.8). While the EU is a key consumer of Mercosur exports, Mercosur is not a main destination for European food and agricultural exports. Mercosur is one of the main suppliers to the EU for food products (accounting for 20% of EU agricultural and food imports), but represents less than 3% of EU exports. Mercosur exports to the EU have been increasing steadily in recent years, whereas EU exports to Mercosur have declined over the same period (Figure 3.1). Likewise, levels of intra-regional trade in food and agricultural products differ markedly between the EU and Mercosur. Most of EU trade is intra-EU, whereas intra-Mercosur trade represents only 10% of Mercosur exports.

<table>
<thead>
<tr>
<th>Table 3.8: Trade flows between the EU, the world and Mercosur, (€bns 2004)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EU TRADE IN GOODS</strong></td>
</tr>
<tr>
<td><strong>Trading partner</strong></td>
</tr>
<tr>
<td>World</td>
</tr>
<tr>
<td>Mercosur</td>
</tr>
<tr>
<td><strong>EU TRADE IN FOOD AND AGRICULTURAL PRODUCTS</strong></td>
</tr>
<tr>
<td><strong>Trading partner</strong></td>
</tr>
<tr>
<td>World</td>
</tr>
<tr>
<td>Mercosur</td>
</tr>
</tbody>
</table>

Source: COMEXT database
Figure 3.1: EU-Mercosur agricultural trade, in millions of Euros

![EU-Mercosur agricultural trade, in millions of Euros](image)

Source: COMEXT database

3.3.2 EU exports to Mercosur

EU exports to Mercosur are dominated by whiskies (14%), wines (9%), olive oil (7%) and malt (7%). With the exception of malt, EU exports of these products to Mercosur have been in overall decline since 1999 (Table 3.9).

Table 3.9: Main exports from EU to Mercosur (‘000 €)

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whiskies</td>
<td>144,206</td>
<td>128,055</td>
<td>117,407</td>
<td>76,152</td>
<td>79,180</td>
<td>79,672</td>
</tr>
<tr>
<td>Olive oil</td>
<td>45,845</td>
<td>64,974</td>
<td>56,721</td>
<td>47,654</td>
<td>43,802</td>
<td>57,069</td>
</tr>
<tr>
<td>Malt</td>
<td>29,304</td>
<td>43,029</td>
<td>81,262</td>
<td>58,704</td>
<td>69,324</td>
<td>52,742</td>
</tr>
<tr>
<td>Wines</td>
<td>83,539</td>
<td>87,921</td>
<td>72,354</td>
<td>47,963</td>
<td>48,871</td>
<td>48,267</td>
</tr>
</tbody>
</table>

Source: COMEXT database

3.3.3 Mercosur exports to the EU

Food and agricultural commodities account for more than 30% of Mercosur exports, and represent more than 50% of Mercosur exports to the EU.

To the EU, Mercosur agricultural exports are concentrated on a small number of products. Table 3.10 shows the percentage of each main product among the total exports from Mercosur to the EU. The main export products (soya and coffee) have free access to the EU market.
Table 3.10: Share of Mercosur main products in exports towards the EU (% of worth)

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oilcake from soya bean</td>
<td>23.52</td>
<td>28.40</td>
<td>30.15</td>
<td>29.88</td>
<td>28.99</td>
<td>32.23</td>
</tr>
<tr>
<td>Soya bean</td>
<td>15.45</td>
<td>15.20</td>
<td>20.40</td>
<td>19.36</td>
<td>19.84</td>
<td>19.25</td>
</tr>
<tr>
<td>Coffee</td>
<td>11.35</td>
<td>9.92</td>
<td>7.44</td>
<td>6.41</td>
<td>5.95</td>
<td>5.94</td>
</tr>
<tr>
<td>Fresh or chilled meat of bovine animals</td>
<td>3.80</td>
<td>3.88</td>
<td>2.06</td>
<td>3.50</td>
<td>3.86</td>
<td>4.50</td>
</tr>
<tr>
<td>Orange juice</td>
<td>0.35</td>
<td>0.44</td>
<td>2.17</td>
<td>5.38</td>
<td>5.21</td>
<td>4.26</td>
</tr>
<tr>
<td>Maize</td>
<td>2.54</td>
<td>2.79</td>
<td>2.45</td>
<td>1.92</td>
<td>3.25</td>
<td>3.18</td>
</tr>
<tr>
<td>Frozen meat of bovine animals</td>
<td>3.02</td>
<td>2.79</td>
<td>2.16</td>
<td>2.38</td>
<td>2.04</td>
<td>2.43</td>
</tr>
<tr>
<td>Raw tobacco</td>
<td>3.89</td>
<td>4.04</td>
<td>3.46</td>
<td>3.39</td>
<td>3.43</td>
<td>2.96</td>
</tr>
<tr>
<td>Preparations of poultry meat</td>
<td>0.65</td>
<td>0.97</td>
<td>1.30</td>
<td>1.24</td>
<td>1.71</td>
<td>1.94</td>
</tr>
<tr>
<td>Poultry meat</td>
<td>1.11</td>
<td>1.11</td>
<td>1.23</td>
<td>1.04</td>
<td>1.66</td>
<td>1.92</td>
</tr>
<tr>
<td>Preparations of bovine meat</td>
<td>2.38</td>
<td>2.00</td>
<td>1.70</td>
<td>1.68</td>
<td>1.42</td>
<td>1.65</td>
</tr>
<tr>
<td>Apples</td>
<td>1.01</td>
<td>0.77</td>
<td>0.84</td>
<td>0.90</td>
<td>1.08</td>
<td>1.14</td>
</tr>
<tr>
<td>Lemons and limes</td>
<td>0.94</td>
<td>0.80</td>
<td>0.86</td>
<td>0.86</td>
<td>1.19</td>
<td>1.00</td>
</tr>
<tr>
<td>Pears</td>
<td>0.89</td>
<td>0.86</td>
<td>0.79</td>
<td>0.86</td>
<td>0.82</td>
<td>0.69</td>
</tr>
<tr>
<td>Oranges</td>
<td>0.81</td>
<td>0.41</td>
<td>0.96</td>
<td>0.38</td>
<td>0.55</td>
<td>0.60</td>
</tr>
<tr>
<td>Frozen orange juice</td>
<td>7.98</td>
<td>7.26</td>
<td>3.02</td>
<td>0.32</td>
<td>0.07</td>
<td>0.07</td>
</tr>
</tbody>
</table>

Source: COMEXT database

Figure 3.2: Mercosur food and agricultural exports to the EU (%), in worth (1999-2004)

Source: COMEXT Database

Soya bean and soya bean oilcake

Soya bean and soya bean oilcake represent the two main products exported by Mercosur countries, among which Brazil and Argentina are the principal suppliers. Table 3.11 and 3.12 show that the share shipped to Europe and measured in thousands of euros steadily increased between 1999 and 2004.
Table 3.11: EU Imports from Mercosur for oilcake from Soya bean (‘000 €)

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>985 303</td>
<td>1 447 143</td>
<td>1 917 075</td>
<td>1 768 044</td>
<td>1 711 552</td>
<td>2 178 188</td>
</tr>
<tr>
<td>Argentina</td>
<td>1 176 638</td>
<td>1 553 488</td>
<td>1 712 768</td>
<td>1 871 819</td>
<td>1 839 358</td>
<td>2 184 594</td>
</tr>
<tr>
<td>Mercosur</td>
<td>2 162 074</td>
<td>3 002 821</td>
<td>3 630 476</td>
<td>3 640 026</td>
<td>3 564 503</td>
<td>4 363 450</td>
</tr>
</tbody>
</table>

Source: COMEXT database

Table 3.12: EU Imports from Mercosur for Soya bean (‘000 €)

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>1 111 547</td>
<td>1 428 676</td>
<td>2 149 134</td>
<td>2 015 775</td>
<td>2 124 918</td>
<td>2 242 955</td>
</tr>
<tr>
<td>Paraguay</td>
<td>132 733</td>
<td>90 917</td>
<td>146 179</td>
<td>56 755</td>
<td>193 601</td>
<td>232 486</td>
</tr>
<tr>
<td>Argentina</td>
<td>172 228</td>
<td>87 640</td>
<td>157 029</td>
<td>261 114</td>
<td>70 638</td>
<td>45 856</td>
</tr>
<tr>
<td>Mercosur</td>
<td>1 420 436</td>
<td>1 607 524</td>
<td>2 456 412</td>
<td>2 358 505</td>
<td>2 439 383</td>
<td>2 605 947</td>
</tr>
</tbody>
</table>

Source: COMEXT database

**Bovine and poultry meat**

Brazil and Argentina are the main exporters of bovine and poultry meat, accounting for more than 1.6 billion Euros in 2004. Meat exports have increased significantly between 1999 and 2004, particularly for poultry meat and its preparation.

Table 3.13: Main meat EU imports from Mercosur (‘000 €)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh or chilled bovine meat</td>
<td>349 740</td>
<td>410 200</td>
<td>248 452</td>
<td>425 871</td>
<td>474 792</td>
<td>609 040</td>
<td>74</td>
</tr>
<tr>
<td>Frozen bovine meat</td>
<td>277 899</td>
<td>294 651</td>
<td>259 506</td>
<td>290 434</td>
<td>251 342</td>
<td>329 513</td>
<td>19</td>
</tr>
<tr>
<td>Preparations of bovine meat</td>
<td>219 225</td>
<td>211 841</td>
<td>205 022</td>
<td>204 716</td>
<td>174 621</td>
<td>223 061</td>
<td>2</td>
</tr>
<tr>
<td>Poultry meat</td>
<td>101 893</td>
<td>117 739</td>
<td>147 874</td>
<td>127 044</td>
<td>203 514</td>
<td>260 420</td>
<td>156</td>
</tr>
<tr>
<td>Preparations of poultry meat</td>
<td>59 623</td>
<td>102 695</td>
<td>156 508</td>
<td>150 518</td>
<td>209 775</td>
<td>262 703</td>
<td>341</td>
</tr>
<tr>
<td>Total</td>
<td>1 008 380</td>
<td>1 137 126</td>
<td>1 017 362</td>
<td>1 198 583</td>
<td>1 314 044</td>
<td>1 684 737</td>
<td>67</td>
</tr>
</tbody>
</table>

Source: COMEXT database

**Fruits**

Brazil is the main exporter for oranges and orange juice; Argentina for lemons and pears. Apple exports are split between the two countries. Apple exports have increased by 66% between 1999 and 2004.
Table 3.14: Main EU imports for fruits and juices from Mercosur (‘000 €)

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apples</td>
<td>93 033</td>
<td>81 095</td>
<td>101 646</td>
<td>109 106</td>
<td>132 480</td>
<td>154 003</td>
</tr>
<tr>
<td>Pears</td>
<td>81 932</td>
<td>90 526</td>
<td>95 717</td>
<td>104 422</td>
<td>101 174</td>
<td>93 790</td>
</tr>
<tr>
<td>Oranges</td>
<td>74 017</td>
<td>43 821</td>
<td>115 563</td>
<td>46 811</td>
<td>67 406</td>
<td>81 279</td>
</tr>
<tr>
<td>Lemons and limes</td>
<td>86 214</td>
<td>84 408</td>
<td>103 673</td>
<td>105 356</td>
<td>146 807</td>
<td>135 472</td>
</tr>
<tr>
<td>Frozen orange juice</td>
<td>733 237</td>
<td>767 419</td>
<td>363 230</td>
<td>39 415</td>
<td>9 222</td>
<td>9 203</td>
</tr>
<tr>
<td>Orange juice</td>
<td>31 820</td>
<td>46 565</td>
<td>260 817</td>
<td>654 883</td>
<td>640 788</td>
<td>576 556</td>
</tr>
</tbody>
</table>

Source: COMEXT database

Other products

Brazil is an export leader for both coffee (accounting for more than 99% of Mercosur production) and tobacco (varying between 80% and 90%). Maize exports are split between Argentina and Brazil (in 2004).

Table 3.15: Other exports from Mercosur to the EU (‘000 Euros)

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw tobacco</td>
<td>357 928</td>
<td>427 105</td>
<td>416 974</td>
<td>413 240</td>
<td>422 067</td>
<td>400 176</td>
</tr>
<tr>
<td>Coffee¹</td>
<td>1 043 262</td>
<td>1 049 056</td>
<td>896 313</td>
<td>780 776</td>
<td>731 307</td>
<td>803 838</td>
</tr>
<tr>
<td>Maize²</td>
<td>233 283</td>
<td>295 354</td>
<td>294 657</td>
<td>233 850</td>
<td>399 100</td>
<td>430 242</td>
</tr>
</tbody>
</table>

Source: COMEXT database

Notes: 1: Coffee excluding decaffeinated and roasted; 2: Maize excluding seed

3.4 EU agricultural policy

The Common Agricultural Policy (CAP) was established following the Treaty of Rome in 1957. At the beginning, the CAP aimed to increase agricultural production in order to ensure food self-sufficiency. Main instruments were guaranteed prices, variable levels of border duties and export subsidies. The CAP was successful, and production increased quickly, leading to surpluses in many agricultural commodities from the middle of the 1970s. In 1992, the process of CAP reform started, shifting support from guaranteed prices to direct aids to farmers. This process has continued, with further changes in 2000 and since 2003 involving increasing cuts in guaranteed prices, import tariffs and export subsidies and the introduction of ‘decoupled’ support to farmers (‘decoupled’ in the sense that it is not conditional on levels of agricultural production). The reforms have gradually encompassed all the major agricultural commodities from cereals and beef, to dairy and sugar production.

The cuts in expenditure on export subsidies and volumes of subsidised exports have been dictated by the EU’s commitments under WTO trade agreements. Since the implementation of both CAP reform and WTO agreement on agriculture, the EU share on world markets of wheat, beef meat, poultry meat, sugar and milk powder has decreased, allowing more
competitive exporters (among them Brazil and Argentina depending on products) to gain entry onto the world market.\textsuperscript{14}

3.5 Mercosur agricultural policy

At the Mercosur level, there is no pan-regional agricultural policy, nor are there plans to develop one. The establishment of regional sectoral policies has not been an objective of Member States and Mercosur remains a custom union with no willingness for an in-depth integration process towards full economic union.\textsuperscript{15} Each Member State thus has its own national agricultural policies.

3.6 Trade measures

Tariffs

The implementation of the Mercosur Common external tariff has led to a decrease of upper tariff levels. Currently, no Mercosur tariff applied on agricultural products exceeds 20\%, but individual Mercosur countries may apply lower or higher tariffs in derogation from the Mercosur common external tariff under certain conditions. Bound tariffs of Mercosur member states under the WTO framework may exceed this rate for some products. Whiskies and wines, EU’s main exports towards Mercosur, are both subject to the rate of 20\% (Table 3.16). Olive oil (except exports to Argentina which are subject to a 31.5\% import duty) and malt benefit from lower tariffs. Many products exported by Mercosur countries such as soya bean, soya bean oilcake or any kind of ‘tropical’ products (coffee, cocoa, mangoes) are subject to few or no tariffs when entering the European market. However, other Mercosur exports in competition with European production are subject to import tariffs, entry prices and seasonal tariff rates (See Tables 3.17-3.19). In-quota tariffs, so-called “Hilton quota”, provides a market access with 20\% duty for the following quantities; Brazil 5000T, Uruguay 6300T, Argentina 28000T, Paraguay 1000T.\textsuperscript{16}

<table>
<thead>
<tr>
<th>Products</th>
<th>Tariff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whiskies</td>
<td>20%</td>
</tr>
<tr>
<td>Wine</td>
<td>20%</td>
</tr>
<tr>
<td>Olive oil</td>
<td>10% (except Argentina, 31.5%)</td>
</tr>
<tr>
<td>Malt</td>
<td>10%</td>
</tr>
</tbody>
</table>

\textit{Source: Mercosur website}

\textsuperscript{14} Alpha et al, 2006
\textsuperscript{15} Hugon 2003
\textsuperscript{16} Commission Regulation (EC) No 936/97 of 27 May 1997
Table 3.17: Sugar and Ethanol

<table>
<thead>
<tr>
<th>Products</th>
<th>In quota tariffs</th>
<th>Off-quota tariffs</th>
<th>Representative price</th>
<th>Additional duty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw cane sugar for refining</td>
<td>98 €/ton</td>
<td>339 €/ton</td>
<td>307.4 €/ton</td>
<td>+ 20.6€/ton</td>
</tr>
<tr>
<td>Raw cane sugar, other</td>
<td>Not applied</td>
<td>419 €/ton</td>
<td>307.4 €/ton</td>
<td>+ 61.6 €/ton</td>
</tr>
<tr>
<td>White sugar</td>
<td>Not applied</td>
<td>419 €/ton</td>
<td>381 €/ton</td>
<td>+ 29.1€/ton</td>
</tr>
<tr>
<td>Ethanol, denaturated</td>
<td>Not applied</td>
<td>102 €/m³</td>
<td>Not applied</td>
<td>Not applied</td>
</tr>
<tr>
<td>Ethanol, undenaturated</td>
<td>Not applied</td>
<td>192 €/m³</td>
<td>Not applied</td>
<td>Not applied</td>
</tr>
</tbody>
</table>

Source: EC website: Export Helpdesk, European Commission

Notes: Additional duties (special safeguard clause for the CMO) are applied when the representative price falls below the ‘trigger’ price (set at 531 € per tonne for white sugar, 418 for raw sugar for refining and 552 for raw sugar not for refining). The representative price is the cif import price excluding the fixed duty. It is close to the world price and therefore well below the ‘trigger’ price. Consequently, the safeguard clause has been applied permanently since 1995. (source: European Commission)

Table 3.18: Bovine meat tariffs

<table>
<thead>
<tr>
<th>Products</th>
<th>In-quota tariffs</th>
<th>Off-quota tariffs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh or chilled, boneless</td>
<td>12.8% + 3034 €/ton</td>
<td></td>
</tr>
<tr>
<td>Fresh or chilled, carcasses</td>
<td>12.8% + 1768 €/ton</td>
<td></td>
</tr>
<tr>
<td>Frozen, boneless</td>
<td>12.8% + 2211 €/ton</td>
<td></td>
</tr>
<tr>
<td>Frozen, carcasses</td>
<td>12.8% + 1768 €/ton</td>
<td></td>
</tr>
</tbody>
</table>

Source: EC website: Export Helpdesk, European Commission

Table 3.19: Chicken meat tariffs

<table>
<thead>
<tr>
<th>Product</th>
<th>In-quota tariffs</th>
<th>Off-quota tariffs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chicken cuts frozen and boneless</td>
<td>795 €/ton</td>
<td>1024 €/ton</td>
</tr>
<tr>
<td>Chicken cuts fresh or chilled and boneless</td>
<td>512 €/ton</td>
<td>1024 €/ton</td>
</tr>
</tbody>
</table>

Source: EC website: Export Helpdesk, European Commission

Note: safeguard measures may apply resulting in additional duties.

Non tariffs measures

EU exports need also to comply with Mercosur regulations. Mercosur countries also apply some SPS trade restrictions, in particular with respect to the movement of live bovine animals, beef, pig meat and poultry. In order to preserve the identity of Mercosur wine and wine products, sale of wine in containers exceeding a five-litre capacity is prohibited in Argentina and Paraguay. The limit is up to one-litre capacity in Uruguay, and sixteen-litre capacity in Brazil.\(^\text{17}\)

To enter the EU market, Mercosur products have to comply with EU requirements, primarily focusing on SPS aspects concerned with ensuring a high level of security for EU public,

\(^\text{17}\) MERCOSUR/GMC/RES.n°12/02
animal and plant health and environment. The main EU regulations relevant for food imports are presented and summarised in Table 3.20.

**Table 3.20: Main EU regulations on food products**

<table>
<thead>
<tr>
<th>Regulation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Council Directive 2000/29/EC of 8 May 2000 on protective measures against the introduction into the Community of organisms harmful to plants or plant products and against their spread within the Community</td>
<td>Organisms harmful to plants or plant products= insects and mites, bacteria, fungi, viruses and parasite plants. This Directive subjects certain plants and plant products from other countries to a check on entry into EU territory. This involves a documentary check, an identity check and a plant-health check.</td>
</tr>
<tr>
<td>Regulation 396/2005 of the European Parliament and of the Council of 23 February 2005 on maximum residue levels of pesticides in products of plant and animal origin.</td>
<td>The Regulation establishes the maximum quantities of pesticide residues permitted in products of animal or vegetable origin that are intended for human or animal consumption. These maximum residue levels (MRLs) * include, on the one hand, MRLs that are specific to particular foodstuffs that are intended for human or animal consumption and, on the other, a general limit that applies where no specific MRL has been set.</td>
</tr>
<tr>
<td>Commission Directive 2002/63/EC of 11 July 2002 establishing Community methods of sampling for the official control of pesticide residues in and on products of plant and animal origin</td>
<td>Set the analyzing process</td>
</tr>
<tr>
<td>Regulation 178/2002 of the European Parliament and of the Council of 28 January 2002 on food safety, which establishes traceability for food products</td>
<td>Traceability was defined as the ability to identify a unique product, and the raw materials used in its production, and to follow the progress of that product right through the production and distribution process. Operators in the food sector are now required to have product withdrawal systems as well as records identifying the source of their raw material and the businesses they supply.</td>
</tr>
</tbody>
</table>
4 SUMMARY OF THE CETM MODELLING RESULTS

4.1 Output

The Copenhagen Economics Trade Model (CETM) aggregates agricultural production into four product groups as shown in Table 4.1.

Table 4.1: Product aggregation used in the economic model

<table>
<thead>
<tr>
<th>Sector</th>
<th>GTAP sector</th>
<th>Corresponding ISIC/CPC codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grains</td>
<td>Paddy rice; Wheat; Cereal grains nec.</td>
<td>CPC 0111-0116, 0119</td>
</tr>
<tr>
<td>Crops</td>
<td>Vegetables, fruit, nuts; Oil seeds; Sugar cane, sugar beet; Plant-based fibers; Crops nec</td>
<td>CPC 012-017, 019</td>
</tr>
<tr>
<td>Animal Products</td>
<td>Bovine cattle, sheep and goats, horses; Animal products nec; Raw milk</td>
<td>CPC 0211-0212, 0291-0295, 0297-0299</td>
</tr>
<tr>
<td>Processed Foods</td>
<td>Bovine meat products; Meat products nec; Vegetable oils and fats; Dairy products; Processed rice; Sugar; Food products nec; Beverages and tobacco products</td>
<td>CPC 2111-2114, 216-218, 22-25</td>
</tr>
</tbody>
</table>

The results of the modelling indicate liberalisation would globally increase agricultural and food output in the Mercosur region, while output would decrease in the EU (Table 4.2). The estimates are for full liberalisation. Lesser degrees of liberalisation, including the introduction or revision of tariff rate quotas, would have smaller effects in the same direction.

Table 4.2: Changes in agriculture and processed output, perfect competition model, full liberalisation. Result of the CETM (% change)

<table>
<thead>
<tr>
<th></th>
<th>Argentina</th>
<th>Brazil</th>
<th>Paraguay</th>
<th>Uruguay</th>
<th>EU15</th>
<th>EU10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grains</td>
<td>11.3</td>
<td>15.1</td>
<td>10.8</td>
<td>8.6</td>
<td>-4.4</td>
<td>-1.5</td>
</tr>
<tr>
<td>Crops</td>
<td>1.7</td>
<td>0.4</td>
<td>-7.8</td>
<td>1.2</td>
<td>0.2</td>
<td>-0.4</td>
</tr>
<tr>
<td>Animal Products</td>
<td>4.1</td>
<td>31.9</td>
<td>36.6</td>
<td>4.6</td>
<td>-3.5</td>
<td>-1.0</td>
</tr>
<tr>
<td>Processed foods</td>
<td>6.1</td>
<td>46.6</td>
<td>72.9</td>
<td>17.1</td>
<td>-5.1</td>
<td>-2.7</td>
</tr>
</tbody>
</table>

Source: CETM

Within the EU, the EU 15 will be relatively the most affected by liberalization of agriculture and food products. The projected output decrease for full liberalisation is highest for food products (-5.1% for the EU15 and -2.7% for the EU10). Grain output is projected to decrease in the EU 15 by 4.4% and in the EU 10 by 1.5%. The effects for animal products are estimated as -3.5 % (EU15) and -1% (EU10). It should be noted that in the EU, a high proportion of grains are fed to cattle. This is less the case in Mercosur where grass and grass forage currently form a higher proportion of beef cattle diets. An increase in animal product imports to the EU, and a corresponding fall in domestic livestock production, will therefore see a significant fall in EU demand for grains fed to livestock. This is likely to account for
the projected decrease of grain output in the EU, as well as an increase of wheat imports from Mercosur.

The consequences on crops estimated by the model varies: the EU-15 output is projected to increase slightly (by 0.2%) and decrease for the EU-10 by 0.4%. The main EU exports to Mercosur, wines, spirits, malt and olive oil, are produced from crops in this category. This result (for full liberalisation) tends to indicate that expansion of those products will compensate a cut in sugar beet production.

Mercosur agriculture and food output are expected to increase through liberalization. The model indicates that production in Brazil and Paraguay would increase particularly for animal products, with 31.9% and 36.6% for full liberalisation, respectively. Food products would develop strongly in Paraguay (72.9%) and Brazil (46.6%), while Uruguay would increase its food products output by 17.1%. Grains would develop more equally in the four countries, although the increase in Brazil (15.1%) is projected to be twice that in Uruguay (8.6%). It should be noted that any significant rise in chicken production in the Mercosur states would increase demand for grains, in these countries, particularly wheat. Changes in output for crops are projected to be less than 2% for Brazil, Argentina and Uruguay, and even negative for Paraguay (-7.8%). The modelling results are surprising, as sugar is in this category and Brazilian sugar production would be expected to increase after full liberalisation through better access to the EU market.

4.2 Export quantity

The results of the modelling for export quantities indicate that Mercosur countries would increase their exports of food products to the EU, with a high percentage of growth (Table 4.3). EU exports would fall in the EU10, with limited gains for EU15 exports.

The modelling results for animal products, which indicate a decrease in exports of living animals and raw milk from Mercosur to the EU, need to be treated with caution: animal products, under the definition of the GTAP database, are only traded in a very limited way, and so exports are small and are strongly dependent on factors other than tariffs, such as sanitary measures.

Based on the model, food exports would expand due primarily to increased output in the food processing sector. Changes in output would be reduced for less than full liberalisation (as shown in Table 4.4), however, a significant increase is expected. According to the modelling results, the largest change in export quantity in processed foods would come from Paraguay and Brazil, followed by Uruguay and Argentina.

<table>
<thead>
<tr>
<th>Table 4.3: Change in Export Quantity, full liberalisation. Result of the CETM ( % change)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grains</td>
</tr>
<tr>
<td>--------</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Crops</td>
</tr>
<tr>
<td>Animal Products</td>
</tr>
<tr>
<td>Processed foods</td>
</tr>
</tbody>
</table>

Source: CETM
4.3 Employment

Under full liberalisation, employment will follow the same trend as output. The model projects a considerable increase in output in animal products in Brazil (37.5%) and Paraguay (43%), and this is likely to occur mainly in poultry farming and cattle breeding. Employment in the grains sector is estimated to grow up to 10% to 20% for full liberalisation, varying between countries. This may be the result of increasing wheat production for export to the EU, and increasing maize production for animal feeding. Employment in the food industry, will increase mainly in Brazil and Paraguay, clearly linked to the expansion of food products output and exports.

With the EU, employment in the agricultural and food sector is expected to decrease in the short-run. Employment is likely to decrease in all agricultural sectors, and particularly in the EU 15. Employment in animal products is likely to fall as a result of increased meat imports from Mercosur. The expansion of food product imports from Mercosur will lead to a contraction of food processing within the EU, and thus declines in employment (Table 4.4).

Table 4.4: Employment Effects, full liberalisation. Result of the CETM (% change)

<table>
<thead>
<tr>
<th></th>
<th>Argentina</th>
<th>Brazil</th>
<th>Paraguay</th>
<th>Uruguay</th>
<th>EU15</th>
<th>EU10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grains</td>
<td>14.2</td>
<td>19.1</td>
<td>14.2</td>
<td>11.1</td>
<td>-4.8</td>
<td>-1.9</td>
</tr>
<tr>
<td>Crops</td>
<td>3.6</td>
<td>3.3</td>
<td>-6.1</td>
<td>3.0</td>
<td>-0.1</td>
<td>-0.7</td>
</tr>
<tr>
<td>Animal Products</td>
<td>6.3</td>
<td>37.6</td>
<td>43.3</td>
<td>6.7</td>
<td>-3.9</td>
<td>-1.4</td>
</tr>
<tr>
<td>Processed foods</td>
<td>5.9</td>
<td>47.4</td>
<td>76.7</td>
<td>17.1</td>
<td>-5.2</td>
<td>-2.6</td>
</tr>
</tbody>
</table>

Source: CETM
5 BEEF AND ETHANOL

5.1 Introduction

In accordance with the Terms of Reference (Annex 1), this Final Report includes a total of three sector level studies, of which this agricultural study is one. As previously discussed, agriculture is a sensitive issue in the EU-Mercosur discussions and there are key areas within the negotiations which are of particular concern for Mercosur and the EU, including beef and ethanol. To provide more comprehensive coverage of the social, economic and environmental concerns present across both regions for agriculture in general, and for these two sectors in particular, the following section provides an depth analysis of two key areas under negotiation: Beef and Ethanol. This is complemented by a parallel study of the cross-linkages between forestry, agriculture and biofuels carried out in the forestry SIA.

The case studies on Beef and Ethanol were proposed in the Inception Report due to the potential for significant environmental and social impacts possible from changes in the terms of trade proposed for these two sectors in the Association Agreement. For example, Mercosur countries, in particular Brazil and Argentina, are very large beef producers and environmental and social issues related to beef production are already sensitive, including deforestation, greenhouse gas emissions (methane), soil degradation and displacement of landless farmers. As tariff reductions for beef products may increase under the proposed Agreement, these environmental and social impacts might be significant for both regions.

Brazilian sugar production is highly competitive, and increased openness of the EU market to Brazilian sugar would cause a decrease in EU production. As a by-product of sugar, ethanol also requires attention. Obtained biologically by the fermentation of sugar, ethanol can be blended with gasoline in varying quantities to reduce the consumption of petroleum fuels, as well as to reduce air pollution. Production of ethanol in Brazil increased to 18 billion litres in 2005, and consumption to 15.9 billion litres, making Brazil the world’s main ethanol exporter. The substitution of gasoline by ethanol fuel is an effective way to reduce greenhouse gas emission (principally CO₂), provided that in the production process, the fossil fuel contribution is minimized. The extent to which Brazilian ethanol may be imported in Europe depends both on the degree of protection of the European market (hence is competitiveness), and the energy and environmental balance of each biofuel.

Each of these key areas will be discussed in detail below. An overall summary of the SIA for agriculture is provided in Section 6.

5.2 Beef: Overview of the sector

5.2.1 Mercosur

Brazil maintains the largest commercial beef herd in the world and accounts for over 60% of all beef production in South America (Argentina 25%).¹⁸ Beef livestock amounted to 173.8 Million heads in 2006, with 1.8 Million farms and 6.9 Million workers. Dairy livestock accounted for only 34 Million heads. Previously situated mainly in the South - South East, production is increasing more and more and growing in the Central West, the region of Sao

¹⁸ Brester et al, 2000
Paulo, North.\textsuperscript{19} Brazilian beef has the lowest production costs in the world at approximately 0.86$/kg. This is due primarily to the presence of low production costs from large farms (structures), favourable climatic conditions and cheap labour.

Brazilian beef production increased by 23\% between 2000 and 2006, while there was a nearly three-fold increase in exports during the same period. In 2004, there was a fall in consumption of beef meat due primarily to high prices and low incomes. Export earnings from the beef industry in Brazil amounted to nearly 1.5 billion Euros in 2005, or around 6\% of total agricultural exports.

Brazilian production is 80\% from the Zebu breed and crosses with European breeds (Bradford, Canchim, Limousin), and 20\% from other Brazilian breeds (Gir, Cangaiam, Brahman). Zebu meat is low quality (sourness, hardly any marbling, lack of carcass uniformity), but with high rusticity and high reproduction performances. Crosses give better results, with better quality of meat and leather.

Large scale (more than 1,000 ha, more than 800 bovines) and extensive production dominates in the country with the “fazendas” that have three quarters of the cattle. Such farms are specialised and farm owners often live in town and engage a manager. Medium scale farms (100 to 1,000 ha; 50 to 800 bovines) are family owned and are less specialised with fewer employees. Breeders with family small holdings are still present, and are more diversified with a lower productivity and technological level. Approximately 75 \% of beef is produced in specialised farms, half of them with more than 500 heads.

In Argentina, beef livestock accounted for 48 million heads in 2002.\textsuperscript{20} In the 1970s, it accounted 80 million heads and has since decreased. Beef production has high importance in Argentina. It accounts for 2.5\% of GDP and 58\% of the gross production value of breeding activities. In 2005, 850,000 jobs in Argentina were in primary beef production.\textsuperscript{21}

The beef sector in Argentina is a significant contributor to GDP, accounting for more than 2.5\% in 2005 and approximately 850,000 jobs. Consumption of beef in Argentina is the highest in the world, at approximately 6.8kg/capita in 2005. Exports accounted for 1.3 billion US$ in 2005.\textsuperscript{22} Alongside high internal consumption, exports are important too (record level in 2001: 0.6 millions tons) with a value of 1.39 billions US$ in 2005.\textsuperscript{23} The main Argentina importers are Russia and the EU (especially Germany).

Livestock is dispersed all over the country but a concentration can be noted in the Pampa, particularly in the provinces of Buenos Aires (37\% of the total production), Cordoba and Santa Fe (12\% each).\textsuperscript{24} In the past 10 years, this sector has not developed, while soybean production has increased, representing more than the half of the cultivated crop area of the country. This trend is particularly strong in the Pampa, where profitability for cattle breeding is half that for soybean cultivation. Even if the volume of production remains stable, production areas are changing.

\textsuperscript{19} GEB, 2004  
\textsuperscript{20} GEB, 2004  
\textsuperscript{21} Instituto Nacional de Tecnología Agropecuaria (INTA)  
\textsuperscript{22} ONCCA, INDEC, SENASA  
\textsuperscript{23} Servicio Nacional de Sanidad y Calidad Agroalimentaria  
\textsuperscript{24} Instituto Nacional de Tecnología Agropecuaria (INTA)
In the Pampa area, total production has decreased by 7% in 7 years, while cattle breeding is concentrated in areas with bad cultivation conditions (flooding of the Pampa grasslands). In the North East area where the climate is humid and tropical, almost 25% of bovine production is located. In this region, production is slightly decreasing and almost 50% of the pastures are damaged by overgrazing.

In the North West region, breeding is mainly practiced in the Chaco, in fragile ecosystems. The only region where production can still expand is the semi-arid central area, constituted by two ecoregions: calden forests (shrublands) and Monte. Nevertheless this potential development will be limited by water availability and lack of transport infrastructure. Unlike in Brazil, the expansion of beef production in Argentina has not been significant in the past 7 years, and has actually decreased in some areas due to overgrazing and bad cultivation conditions.

Beef production in Uruguay and Paraguay occupies a significantly smaller share of the agricultural sector, as does total meat production for these two countries. Increased production in the smaller beef producing Mercosur countries will likely arise from sectoral specification and the capturing of specialised markets for high unit value products, such as Hilton and grass-fed beef from Uruguay (See Box 5-1).

**Box 5-1 Beef Production in Uruguay**

Uruguay is a small, beef-exporting country with approximately 57,000 agricultural/livestock operations, of which 52 per cent (29,000) are pasture based beef and sheep ranches. Of these, about 19,000 specialize in breeding (cow-calf operations), 6,000 are calf-to-beef type operations, and 4,000 specialize in finishing. Over half the ranches are classified as family farms with less than 200 acres, while another quarter are considered transitional farms with less than 900 but more than 200 acres.

Uruguay has the world’s third highest annual per capita beef consumption at 43 kg, after Argentina (56 kg) and the United States (44.8 kg). Beef consumption remained fairly steady during the 1980s and 1990s, but declined during the past four years due primarily due to high prices.

Beef production expanded following the achievement of FMD-free status in 1995 which increased market access for exports of beef and live animals. With access to new markets, exports increased to an average of 232,000 metric tons from 1995 to 2000, accounting for about 60 percent of production in 2000. FMD caused a reduction in exports to 169,000 metric tons in 2001, recovering to a record 318,000 metric tons in 2003 as markets reopened. In 2004, exports reached a record 404,310 metric tons carcass weight (equivalent to 247,071 metric tons shipped weight) of which about 15 percent was chilled and 80 percent frozen.

In 2004, exports accounted for 74 percent of beef production. Uruguay still supplies less than 5 per cent of the approximately 6 million tons of beef traded internationally. In recent years the United States has become the largest export market for Uruguayan beef, accounting for 52 percent of total tonnage of beef exports in 2004. Other major beef export markets include Canada, EU countries (United Kingdom, Germany, Spain, Portugal), Israel, and MERCOSUR members (Argentina, Brazil and Chile). In 2004, exports to the European Union (EU) amounted to approximately 18,600 metric tons. Each year the EU allocates 55,000 metric tons of Hilton quota import permits, of which Uruguay has 6,300 metric tons, while Argentina has 28,000. Exports within the Hilton quota are subject to a 20 percent ad-valorem tariff, while quantities above the quota pay a 12.8 percent tariff in addition to a 3034 Euro per metric ton specific rate. Given the tariff structure, exports to the EU comprise mostly high value cuts such as tenderloin, strip loin, rumps, and rib eye. In 2004 for example, the average

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25 GEB, 2004 and FAO
FOB value of exports to the EU was $4.96 per kilogram compared to $2.29 per kilogram for exports to the United States. Exporting rump and loin cuts under the Hilton quota added an additional cost of approximately $3,500 per metric ton.

Source: Grassfed Certification: The case of the Uruguayan beef industry, Fox et al, 2005

5.2.2 European Union

In 2005, the EU-25 bovine livestock amounted to 86 millions heads. The three main producers, France, Germany and the United Kingdom, represent almost half of the total. A second group of countries is formed by Poland, Spain, Ireland and Italy, each with approximately 5 to 6 millions heads. A third group is formed by countries accounting for 1 to 5 millions heads (Belgium, Czech Republic, Denmark, The Netherlands, Austria, Portugal and Sweden). The last 8 of the 10 countries who joined the EU in 2004 have fewer than 1 million heads (Latvia, Lithuania, Malta, Hungary, Cyprus, Estonia, Slovakia, Slovenia), as do Finland, Greece and Luxemburg.

Within the EU-25, heads of cattle have decreased since 2001 by 16%, from 90 to 86 million heads in 2005. Even if the number of heads is declining, meat production has decreased less rapidly since 1996, and remains stable at around 7.3 millions tons in the EU-15. This decline in number of heads is more acute in the ten new Member-States; Slovakia, Czech Republic, Estonia, Poland, Lithuania, Latvia and Hungary have lost more than 20% of their cattle from 1996 to 2005. In the EU-15, the decline is stronger in countries specialised in dairy production (Denmark, Finland, the Netherlands, for instance), than in countries having both dairy and suckler cows (France, Ireland). In the same period, number of heads increased in three countries (Spain, Portugal and Greece).

In 2005 EU-15 beef production was 7.2 million tons carcass weight equivalent. This production is as large as in 2001, but it should be noted that 2001 was the worst year of the second BSE incident, when consumption dropped by 15%. The cattle number includes both dairy and beef cattle.

EU livestock is constituted by two kinds of animals: dairy livestock and suckling livestock. Dairy cows are reared for their milk, and suckling livestock for their meat. Beef meat comes from both categories. Young bulls coming from dairy livestock are grown for meat production purposes, and dairy cows, when unfit for dairy production, are slaughtered to supply meat. In this case, meat is a by-product of dairy farming, but some farms are specialised in growing and fattening young bulls from dairy cattle. Animals born from suckler cows are grown only for meat production. Suckling breeds are selected for their meat quality and productivity, while dairy breeds are selected for milk productivity. Meat quality differs from one category of cattle to another. Lowest quality comes usually from dairy cows, and the best from 3-year old suckling cattle. The method of production has an important impact on meat quality, linked to growth speed and breeds.

Dairy cows represent almost one quarter of the total bovine livestock in the EU (which includes calves, young bulls, bullocks, dairy cows and other cows). In many of the new member states the cattle herd is more strongly oriented towards dairy. Some countries are mainly specialised in suckling livestock, including Ireland, Greece, Spain, France, while others are specialised in dairy production (Estonia, Cyprus, Latvia, Lithuania, Poland, Hungary, Netherlands and Denmark).
Small scale farms are dominant in EU cattle production, with over half having fewer than 10 heads. In the EU 15, small scale farmers are less important than in the 10 Eastern and Central European Countries. Those kinds of farms are socially important, especially in the new Member States (Czech Republic, Estonia, Latvia, Lithuania, Poland, Slovenia and Slovakia) and also in Portugal, where they represent more than 70% of the cattle farms. Nevertheless, small scale farms represent only 4.6 million heads out of a total of 88 million in 2003.

In the EU 15, 83% of the farms have fewer than 100 heads; meanwhile, more than half of the production comes from farms with 100 heads or more. Production is very concentrated in Estonia, Hungary and Cyprus, where farms of more than 300 heads account for more than 50% of the national cattle. Nevertheless, in the main producing countries like France and Germany, large scale farms (>300 heads) represent only 9% and 19% of the total cattle, respectively.

In the EU-15 over the past ten years, livestock concentrated on small scale farms has decreased, while livestock on medium and large scale farms has increased.

EU-25 beef meat production is expected to fall from 8 million in 2002 to 7.5 million in 2011. In the same period, EU-25 consumption is expected to increase from 7.9 million in 2002 to 8.1 million in 2011.

5.3 Importance of beef in trade negotiations

The Mercosur region has a comparative advantage in beef production which, collectively, is expected to expose EU producers to increased competition if trade barriers are reduced.

Beef highlights the complexity of trade negotiations between the EU and Mercosur and is classified as a “sensitive” product. Under the proposed Agreement, the implication of a reduction in trade barriers between the EU and Mercosur on changes in beef production and trade is uncertain.

There are a number of instruments available to negotiators, including Tariff-Rate Quotas (TRQs) which have proved favoured tools to combine market access commitments and import control for bilateral and multilateral negotiations. The negotiations on tariff rates are important in determining which type of beef products will be supplied by Mercosur (i.e. Hilton beef) to the EU and thus it has significant implications on the political economy of negotiations; the EU and Mercosur have proposed different changes to current trade arrangements. In particular, Mercosur has opted for a “less than full reciprocity” approach; this would mean various products would be subject to different categories of tariff reduction, over different time scales.

The most sensitive agricultural products, Category “E”, were reclassified and, in addition to beef, include cereals, olive oils, pork meat, eggs, poultry meat, as well as sugar, fruits and vegetables. For Category “E” products, tariff elimination applies only to ad-valorem duties, while the EU has proposed TRQs for such products. Mercosur countries initially demanded larger concessions based on tariff cuts, however, negotiations are presently suspended on this issue.

27 Coyle et al, 1998
28 Bureau et al, 2005
For the purpose of the CETM model, cattle are aggregated with other animals and raw milk in the animal products group. The results of the model give an indication of the possible order of magnitude of production changes for the group as a whole that might arise from full trade liberalisation. The reduction of EU import tariffs is expected to lead to higher exports of beef meat from Mercosur to the EU, and hence to an increase in beef production and cattle rearing in Mercosur. Consequently, beef expansion is expected to occur primarily in Brazil and Paraguay, with a decrease in the EU. Although there may be significant variations between different products in the grouping, the figures are broadly indicative of the potential production changes for beef cattle if trade were fully liberalised. Cattle rearing is expected to contract more in EU15 than in EU10, due to the fact that the EU15 is more specialised in meat production than the EU10.

5.4 Impacts of trade liberalisation on the beef meat sector

5.4.1 Economic

The primary economic impacts expected from increased liberalisation is an increase in exports of beef meat from Mercosur (in the form of processed foods) to the EU, and with this, an increase in beef production and cattle rearing in Mercosur. The CETM results reported in the MTR indicate a magnitude of production changes for the group of animal products, of which bovine production is part. The figures, therefore, do not give information on beef production alone, and are instead broadly indicative of the potential production changes for beef meat if trade were fully liberalised. Total changes in output for processed foods are expected to be largest in Paraguay (37%) and Brazil (32%), followed by Uruguay (4.6) and Argentina (4.1).

The CETM results estimate the effects of full trade liberalisation. As previously discussed, due to the sensitive nature of the beef sector, a less than full liberalisation scenario is likely and it is expected there may be mixed instruments employed to arrive at a policy mix that is suitable for all parties involved in the negotiations.

The specific changes to current trade scenarios will ultimately be reflected in changes to production and exports. The largest economic gains would come from the elimination of specific tariffs, as this would lead to the largest gains in low quality exports, such as from Brazil. This would support the findings reported from the CETM results, i.e. that the largest gains would be seen in Brazil. Argentina and Uruguay, as smaller, more specialised beef producers, would support instead an increase in quotas. Based on the CETM results, Argentina is expected to have the smallest change in animal product production out of the four Mercosur countries. Ultimate changes will depend on the details in negotiating tariff rate reductions and/or changes in quotas. Lower tariffs would increase the quota rent of high-quality exports (such as Hilton beef) allowing Argentina to capture a larger share of the rent, rather than expand the volume of trade.

Therefore, specific tariff reductions would bring about the best scenario in terms of trade for the EU and Brazil, while Argentina and smaller producers would benefit more significantly from quota augmentation. Tariff reductions in general could lead to a more “equitable” situation between exporters as there would be no quota rent. Complicating negotiations further is the fact that, ultimately, different instruments affect each Mercosur country differently.
Expansion of beef cattle in Brazil and other Mercosur countries will be associated with effects on meat production and the meat processing value chain (slaughtering, processing). These are included along with other processed agricultural produce in the “processed foods” sector in the model. The processing sector as a whole is projected to expand in Mercosur and contract in the EU. Within this, the changes in production of beef meat are expected to be similar to those for cattle.

In 2002, among the new accession countries, Poland and Hungary exported the largest share of bovine to the rest of the EU, filling 86% and 25% of its quota (in 2002). This quota increased for Candidate Members from 2003 onwards. Bovine production in Hungary decreased in 2005, while it increased in Poland. At present, consumption of bovine meat is expected to increase by approximately 2% by 2009 in the new accession countries, while production is expected to fall by 20%. With bovine meat in particular, Brazil and Argentina continue to exceed the in-quota exports significantly, despite the much higher tariffs.

Production may also be limited on the supply side due to limited room for expansion of production due to natural capital constraints.

5.4.2 Social

Employment in the beef sector is likely to increase in Mercosur countries. The model results for full liberalisation give an indication of the possible magnitude of the effect in each of the countries, varying up to a maximum of the figures given in the above table according to the degree of liberalisation achieved in the agreement.

Beef cattle for export are mainly grown in large farms, where most of the new employment is expected to occur. Effects will probably be modest on small and medium scale farms, and inequalities within beef cattle growers may increase.

The efforts of the Brazilian government to combat the use of forced labour in cattle raising will be a key factor in mitigating potentially serious adverse social effects of trade liberalisation. Without this, the number of forced labourers can be expected to increase, without any improvement in wages or working conditions above those of the existing workforce. Disputes over land tenure can also be expected to increase, with further adverse social impacts for small scale farmers who lose their land.

In the EU, employment is expected to contract more in the EU-15 than in the EU10, due to the concentration of beef meat cattle in EU-15 Member States, such as France, Spain and Ireland. Impacts will be localised, but could be significant in some rural areas of these countries, with spillover negative effects on rural development.

Market demands and public investment have resulted in increasing human activity in the Brazilian Amazon. This has fuelled disputes over land tenure and forest degradation. Conflicts arise because enforcement of land tenure regulation is weak and land titling is a long process.29

29 Barreto, 2006
In its 2005 report on forced labour, the International Labour Organization (ILO) reports that “since early 2003, the Government of President Lula da Silva has adopted yet stronger measures to combat forced labour and impunity in Brazil.” In 2003, almost 5000 slave workers were freed by government interventions. The ILO defines slave labour as “degrading work conditions and the impossibility of leaving the employer owing to fraudulent debts and the presence of armed guards”.

According to the ILO, 25,000 workers are victims of slave labour, mostly in the Amazonian states of Pará and Mato Grosso; with more than 80% working in cattle raising. Many of these workers, mostly men, are trafficked by intermediaries who recruit workers in urban centres in north-eastern Brazil (Box 5-2). Brazilian action to solve this problem is held up as an example for the Latin-American continent. 30

Box 5.2. Forced Labour in Brazil

In Brazil, a system of forced labour based on debt and exploitation still traps workers in logging and charcoal-burning camps, and on cattle ranches. As deforestation rises, so does debt bondage. Forests are cleared to make way for cattle ranches. Bonded labourers fell the trees and tend the cattle. Although data are scarce, one survey put the number of bonded labourers in Brazil at 25,000.

In 2002, more than 2,400 workers were freed by government inspection teams, but many more cases go undetected. Debt bondage thrives in the most remote regions, where isolation, threats and violence make it impossible for workers to leave. Isolation also means workers have no choice but to buy essentials, including food, from their employers, often at vastly inflated prices. They are told that their spending outweighs their earnings. Without papers and very often unable to read or write, few can argue.

Typically, those who fall into debt bondage are recruited by a contractor called a "gato", or cat. Often the gatos target the poorest areas. Those who sign up are often taken hundreds of kilometres away to work in logging camps or in ranches, then told to repay a debt such as for transport. In other cases, workers are effectively "bought" from hostels, where they may have run up bills for accommodation and alcohol. When the gato pays off bill, the worker must pay him back in labour: the only asset they possess.

On these farms, workers may be fed once a day, endure primitive living conditions, and have no access to medical care for injuries or disease. Some debt bondage contracts are seasonal. In other cases, victims have been snared without pay for years at a stretch. While the logging camps and ranches usually target men, charcoal camps can trap whole families.

Source: ILO Declaration on Fundamental Rights at Work: Combating Forced Labour in Brazil, Background paper, www.ilo.org

5.4.3 Environmental

Expansion of cattle implies a need for new pastures in Brazil. Overall crop production is not expected to reduce, and the new pastures are likely to be taken directly from available lands, in particular in Amazon and in the Cerrado (See Box 5-3).

30 ILO, 2005
In the Amazon, land has traditionally been made available by deforestation. In some areas, public controls are not sufficient to regulate deforestation, and so it is probable that the development of bovine production will occur through an increase in land area. Breeding development in Brazil is strongly linked with pasture cultivation, which has permitted a significant increase in productivity per hectare. Nevertheless, pasture degradation is an ongoing problem and is primarily a consequence of overgrazing. Public control will be a key factor in mitigating potentially significant adverse environmental consequences.

A study looking specifically at the sustainability of current agricultural methods in the Pampas of Argentina, a key beef producing region, found it is difficult to classify current agriculture as sustainable or unsustainable; in particular, measuring the sustainability of agriculture, such as the contribution of ruminants to greenhouse gas emissions, is challenged by poor data availability and the inherent complexity of natural variation in weather, soil, and climate conditions, combined with changes in technology and land use over time. Particularly in Argentina, expanding soybean production replaced traditional extensive farming with intensive production systems leading to soil compaction and erosion—all factors which limit the expansion of production.

**Box 5-2 The Amazon and Cerrado**

In a report for the World Resources Institute and the Amazon Institute of People and Environment, Barreto (2002) estimated that in 2002, 47 per cent of the Brazilian Amazon is under some type of human pressure, either as areas under pressure from human settlement (19%) or areas subjected to incipient human pressure (28%). Cattle ranching is the predominant use of land in deforested areas throughout the region. Areas deforested for cattle ranching occupied accounted for 70 per cent of the total deforested area in 1995 and pasture area continues to grow. Deforestation has a variety of environmental consequences: loss of biodiversity, soil erosion, nutrient depletion, loss of watershed regulation functions and emission of greenhouse gases.

The Cerrado is the second largest eco-region in Brazil (206 millions ha), after the Amazon basin. Most of the Cerrado is located in the Brazilian Highland Plateau (UNESCO). The Brazilian Cerrado is home to over 10,000 different plant species, 4,400 being endemic, and 1,268 vertebrate species (117 endemic). Despite its biodiversity, much of the Cerrado has been converted to agriculture and cattle ranching. Between 1970 and 2000, seeded grassland surface has developed from approximately 10 to 50 million ha.

In the Cerrado, intensification is expected to lead to the cultivation of more natural pasture in seeded grasslands, adversely affecting biodiversity. The legally enforced conservation of natural areas will be a key mitigation measure

Source: See the MTR, 2006.

In Argentina, the results of the CETM modelling are consistent with the qualitative considerations discussed above, indicating that the production increase will be fairly small, and impacts on ecosystems less acute. Nevertheless, the only region with potential for development of beef production is the semi-arid central area, constituted by two eco-regions: Calden forests (shrublands) and Monte. In that region significant environmental impacts could occur. Water is scarce, and an increase in bovine production could cause problems.

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31 Balbino, 2002
32 Viglizzo et al, 2003
33 Ekboir and Parellada 2000
Furthermore, because this region lacks infrastructure, the building of roads and other infrastructure associated with export production could have negative consequences on the environment, depending on the effectiveness of regulatory controls.

In the EU, liberalization will reinforce specialization of the regions. Beef production will tend to concentrate in regions where the costs of production are the lowest, while agriculture in other regions will tend to move to different products. Both positive and negative environmental impacts could occur. Some land may go out of production, allowing a rise in semi-natural habitat. However, cattle breeding plays an important role in land fertilization in crop cultivation regions. Farmers in regions where beef production declines would expand their use of other fertilisers with greater environmental impacts. With relatively strong regulation, the effects could be largely mitigated.

With the significant growth in this sector in Brazil, pasture cultivation and forest clearing have resulted, leading to widespread degradation. Additionally much of the land on which beef production occurs is that of the Brazilian Amazon and this has forced around 25,000 workers, primarily from the Amazonian states, to work in cattle raising.

The effect of trade liberalisation between the EU and Mercosur is only one of many causes of land clearance and deforestation, and represents an incremental addition to larger effects. The typical volatility of farm prices is relatively high compared to the price effects of liberalisation, with annual changes that tend to be unpredictable\textsuperscript{34}. The overall impact of the trade liberalisation scenario will be to reinforce the need for mitigation of effects that are already occurring through other factors.

Taking into account increased production in Mercosur and decreased production in the EU, the overall impact on greenhouse gas emissions is expected to be relatively neutral, except for the adverse effect of increased international transport and a small increase in overall production. The CETM results for overall carbon emissions support this. The production movements between different agricultural sectors with different emissions will be similar but in opposite directions in EU and Mercosur.

5.5 Ethanol: Overview of the sector

Brazil and the United States lead the world ethanol market. With production over 15 billion litres each, they became the two major suppliers of this market. China and India are also important players with a production somewhat less than 4 billion litres. In Europe, France, Spain and Germany are the main producers of Ethanol. In 2005 the EU produced 2.5 billion litres of biofuel (FO Licht 2005), of which almost 1 billion litres was ethanol (IFP).

Ethanol is made from starchy products or from carbohydrates. It is used in gasoline engine blend or pure, depending on the engine technology. Ethanol production in Brazil is mainly driven by sugar manufacturers. For those firms, processing ethanol is adding value to sugarcane. In the European Union, ethanol is primarily from cereals and sugar beets.

Ethanol is first fermented from sugar and it contains water. This hydrous ethanol is corrosive for most gasoline engines. In Brazil, most of the new cars are flex fuel and their engine

\textsuperscript{34} Newbold et al (2005)
accepts hydrous ethanol. After dehydration, anhydrous ethanol is obtained. When blended it can be used easily in gasoline engines (See Box 5-4).

Ethanol made from sugar cane is more profitable than ethanol made from any other crop. Thus Brazilian ethanol is profitable against oil when the barrel price averages $30, while European sugar beet ethanol is profitable when the oil price reaches $90.35

**Box 5-3: Biofuels**

A biofuel is any type of liquid or gaseous fuel that can be produced from biomass substrates and that can be used as a (partial) substitute for fossil fuels. Common examples are ethanol, methanol, and biodiesel. Ethanol alcohol can be obtained by yeast- or bacteria-mediated fermentation of sugar crops, such as sugar cane, sugarbeet, and sweet sorghum, or of starchy crops, such as corn and cassava. Biodiesel fuels can be obtained from oil crops, such as soybean, rapeseed, sunflowers, and palms, by extracting the oil with suitable solvents or through mechanical pressing and then converting the oil into diesel fuel. Ethanol is a good substitute for gasoline in spark-ignition engines; methanol can also be used as a substitute for gasoline. Gasoline and biofuel mixtures in a proportion of 85% and 15%, respectively, can be used with only minor adjustments to the engine. Biofuel can substitute for fossil energy only if the large-scale production of biofuel is biophysically feasible, i.e. not constrained by the availability of land and fresh water sources for energy crop production; environmentally sound, i.e. does not cause significant soil degradation, air and water pollution, or biodiversity loss; and compatible with the socioeconomic structure of society, i.e. requires labour productivity that is consistent with the existing labour supply and per capita energy consumption in society.

*Source: Giampietro, Ulgiati and Pimentel, 1997 (585-587)*

**5.6 Importance of ethanol in trade negotiations**

**5.6.1 Mercosur**

Mercosur ethanol production is mainly based in Brazil (which represents 95% of Mercosur production). Across the Mercosur countries, sugar and ethanol are exclusively extracted from sugar cane.

Brazil is both the world’s largest producer and consumer of ethanol. In 2005, sugar and ethanol production in Brazil represented 0.03% of the EU GDP,36 while it accounts for 2.35% of Brazil GDP, and 1.41% of the Mercosur GDP. Since 1997, ethanol exports have increased significantly (Figure 5.1).

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35 Von Lampe, 2006
36 European Commission, 2006
Figure 5.1: Brazilian ethanol exports from 1997 to 2005

Source: Canaplan

The total surface area of Brazil is 845 million hectares, of which 66 million hectares were classified as arable in 2002. At present, 6 million hectares of sugarcane are planted, totalling approximately 10% of cultivated arable land.³⁷

Production is concentrated in two regions, with more than half of the total area is in the South East, mainly in Sao Paolo State. Almost 20% of the area is located in the North-East. Nevertheless, the area is quickly increasing in the North, where almost 80% of sugarcane is processed into ethanol.

Brazil has significant advantages in this market due to low production costs, tropical weather, fertile soil, high technology, and exploitation of the by-product for energy generation.

Box 5-4: Sugarcane production

Sugar cane is an extremely versatile raw material. Absolutely everything from the cane is used: bagasse, syrups, cake and waste from the harvest. From it, sugar and various types of alcohol can be made; beverages can be manufactured and electricity can be generated from the bagasse (material obtained by crushing the cane to extract the sweet juice). The bagasse will feed the boilers, where it is burned and the energy produced turns water into steam. The steam is used to produce both the heat and the electricity needed in the sugar and alcohol manufacturing process.

Sugar cane accounts for the most important share of the cost of production of sugar. It represents around 65% of the cost of sugar production, with the remaining 35% in processing (UNICA). For a farm situated in the Centre-South area, the planting cost accounts for 1,000€ per hectare every 5 to 8 years. Manual harvesting costs 3.3€ per ton and a person collects 9 tons per day. Mechanical harvesting is by harvest convoy, for a unit price of 500,000€. Each harvest convoy collects 700 tons per day (UNICA).

Source: See the MTR, 2007

Brazilian policy currently focuses on competitiveness (research) and demand (tax reduction on cars using ethanol). Currently the maximum percentage of anhydrous ethanol in blended gasoline (approximately 25%) is fixed by the Ministry of Agriculture.

³⁷ FAO 2002
Ethanol productivity has increased significantly over the last two decades, from 4,200 litres of ethanol per hectare sugar cane in the early 1980s, to 6,800 litres/ha in 2003.\(^{38}\)

Brazilian ethanol factories are of three main types. The first is exclusive to ethanol production and has no other purpose than to produce alcohol. The second has the ability to switch easily between the production of sugar and ethanol following changes in relative prices.\(^{39}\) A new generation of these flexible factories can switch between one product and another in a matter of minutes. They are now implemented at a large scale in the São Paulo State, providing Brazil a large competitive advantage as demand can rapidly inform suppliers of both sugar and ethanol.

Finally, the expansion of ethanol production depends largely on available area. In Brazil, to produce 10% of national consumption for domestic transport, the country would need only 3% of its agricultural area. On the contrary, the EU-15 would need 72% of its crop area to meet regional needs. Therefore, Brazilian competitiveness is linked to its ability to develop its production capacity rapidly and at a large scale.\(^{40}\)

5.6.2 European Union

Main EU ethanol producers are Spain, followed by France, Poland and Sweden (Von Lampe, 2006). In the EU, ethanol (from any source) can be imported duty free in unlimited quantities from a considerable number of countries (ACP and GSP). Over the last years, these imports have increased significantly. The European Union of Ethanol Producers (UEPA) has argued it is important to ensure a balanced global import policy to prevent very competitive products destroying the EU industry.\(^{41,42}\)

In the European Union, ethanol is produced from both cereals and sugar. Sugar is primarily extracted from sugar beets, while ethanol is from cereals (including wheat, barley, rye and corn) as well as sugar beets. Sugar beets are widely produced in the EU as this crop needs a more moderate climate. Sugar beets have a larger yield per hectare than wheat and produce more ethanol per hectare: on average, one hectare of sugar beets produces 30 hectoliters more ethanol than wheat.\(^{43}\)

In 2004, the EU25 produced 138 million tons of wheat and 131 millions tons of sugar beet. In the same year, 18.7 millions tons of sugar, and in 2005 2.5 billions litres of ethanol.\(^{44}\) Since 1997 Sugar beet production has decreased slightly, influenced in part by CAP reform (Figure 5.2). At present, Germany and France each account for 20% of the EU-25 sugar production, followed by Poland (10%), Italy and the United Kingdom.\(^{45}\)

\(^{38}\) UNICOPA, 2004; Peres de Lima, 2006  
\(^{39}\) Tokgoz et al., 2006  
\(^{40}\) Von Lampe, 2006  
\(^{41}\) UEPA, 2006  
\(^{42}\) In Sweden (the only country where direct blends are produced and where the consumption is higher than the national production), imports from Brazil are developing tremendously, representing now 70% of the Swedish consumption of fuel ethanol (UEPA)  
\(^{44}\) (FO-Licht).  
\(^{45}\) Eurostat
Since 2001, the European Union has strongly promoted the use and production of biofuels. The European Commission has highlighted the unique role biofuels have to play in European energy policy as they are a direct substitute for oil in transport available on a large scale. Additionally, the EU has recognised biofuels can lead to greenhouse gas (GHG) savings, and are one of a few measures offering practical large-scale savings in the transport sector in the medium term.46

The Commission have adopted two legislative proposals in the form of a biofuels directive, and Article 16 of the energy taxation directive.47 The EU’s energy dependency has necessitated an alternative strategy for fuel use and especially in the transport sector where high oil prices have been steadily rising. Also central to the EU’s initiative to promote the use and production of biofuels is their commitment to reducing GHG emissions, while also developing jobs in rural areas within the EU.48 Focus on biofuels, therefore, has given the EU an opportunity to “put the Lisbon Agenda into practice (stimulating growth, employment and competitiveness) and is key legislation to implement the commitments taken under the Kyoto Protocol (reducing GHG emissions)”.

The 2003 Directive on the promotion and use of biofuels in the European Union, reflects these policy aims and it was determined that by 2005 and 2010, 2% and 5.75%, respectively, of all fuels on the market would be from renewable sources, primarily bioethanol and biodiesel from agriculture-derived feedstocks. To achieve these goals, European States have implemented tax exemption and excise tax exemption on biofuels. The Biofuels Progress Report of January 200749 showed that the EU had fallen well short of its 2005 target of 2%, and concluded that the 2010 target would not be met. Even if the shortfall for 2010 were only half as much as that for 2005, the Union would only achieve a biofuels share of 4.2% in 2010

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46 COM, 2007
47 COM 2007
48 UEPA
49 UEPA
50 Commission of the European Communities (2007)
instead of the 5.75% target. The Commission considered this to be a reasonable estimate of the likely outcome of existing policies and measures, and argued that these should be strengthened. The European Council responded with a decision of March 2007 which endorsed a binding target for 2020 of 10% for biofuels in petrol and diesel transport fuels, subject to “production being sustainable, second-generation biofuels becoming commercially available and the Fuel Quality Directive being amended accordingly to allow for adequate levels of blending”\textsuperscript{51}.

The production of biofuels in the EU is limited by a combination of administrative burden, the non-binding or partially binding nature of the biofuel targets and land availability. The last of these has been eased by EU expansion and is expected to ease further with the accession of Romania and Bulgaria, due to the larger relative biofuel crop potential of these countries. Nonetheless, due to the EU’s limitations in producing biofuels, while wanting to achieve an increasing mix of renewable based fuels to satisfy energy needs, imports of biodiesel and bioethanol may be necessary. Ethanol, therefore, remains a key area under negotiation between the EU and Mercosur. The European Commission has made a limited offer for bioethanol on the access to the EU market, while sugar is still under consideration in the list of sensitive products.

At present, Brazil is the world’s largest bioethanol producer and exporter, while EU production of bioethanol is only in its infancy. Until now, there has been a lack of competitiveness in this sector in the EU. Consumption and production is developing in a very erratic manner within the EU as Member States have implemented the promotion directive in different ways, which has led to uneven and slow growth in this sector.\textsuperscript{52}

While the EU targets for biofuels present an opportunity for EU producers, it is widely anticipated that the majority of these targets will be met, at least initially, by imports from overseas. EU ethanol imports have increased by more than four since 2001, coming mainly from Brazil since 2000; Pakistan was previously the main EU supplier of ethanol (Table 5.1).\textsuperscript{53} In 2005, Brazil exported to the EU 416,000 tons of Ethanol, thus 527 millions litres. According to FAPRI, Brazil is expected to become the major world exporting country in the next decade. The Brazilian trade balance is expected to increase over the years mostly because of the large reserve of land where sugar cane production is possible.

\textbf{Table 5.1: EU imports of Undenatured ethyl alcohol, of actual alcoholic strength of $\geq 80\%$ (HS 2207 10), in tons}

<table>
<thead>
<tr>
<th>Years</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total imports extra-EU25</td>
<td>95,890</td>
<td>142,257</td>
<td>217,229</td>
<td>266,349</td>
<td>416,992</td>
</tr>
<tr>
<td>Brazil</td>
<td>895</td>
<td>24,264</td>
<td>29,965</td>
<td>69,708</td>
<td>134,916</td>
</tr>
</tbody>
</table>

\textit{Source: COMEXT}

\textsuperscript{51} Council of the European Union (2007)
\textsuperscript{52} ETL, 2006
\textsuperscript{53} Comext
5.7 Economic impacts of ethanol trade liberalisation

5.7.1. Economic impacts in Mercosur

Currently a duty (102 €/m³) is applied on denatured ethanol imports at the EU border. As ethanol density is 0.789, this additional tax represents 129 €/ton. In 2005, the FOB price of ethanol (HS 2207 20) imports to the EU was 320 €/ton, thus the buying price was 449 €/ton (0.562 €/L). While these prices are subject to fluctuation and do not differentiate between ethanol uses they indicate that the buying price was similar to the EU cost of production.

The price for ethanol in the EU is mainly determined by the world market price, plus the EU import tariff, plus transport costs. The world market price itself is determined by factors which include fossil fuel prices and world supply and demand, including Brazil’s supply and demand. Although future world prices will depend on changes in both supply and demand, ethanol liberalisation by the EU would increase Brazil’s export profitability by the amount of the tax that is removed. On the hypothesis of 1 million tons this would represent a total of 102 million Euros of extra-profitability for ethanol exporters. Thus, the investment potential of this sector will increase. According to stakeholders, this amount would permit investment in a factory of a capacity of 2 million tons of sugarcane per annum.

5.7.2. Economic impacts in EU

The Biofuels Progress Report (adopted by the Commission on 10th January 2007) gives no estimate of the extent to which the 10% target for 2020 might be achieved by domestic production, and instead proposes a balanced approach between import and domestic production in which both exporting countries and domestic producers can invest with confidence in the opportunities created by the growing European market.

The EC’s DG Agriculture has published an analysis of the impact of the 10% biofuel target for 2020 on EU-27 agricultural markets and land use. The main scenario examined assumes that second generation feedstocks will contribute 30% of domestic needs by 2020, of which 25% are imported. Some 55% of transport fuel is estimated to be diesel and the remainder ethanol, with all biodiesel production assumed to remain in the EU. The estimated land area required is 17.5 m ha, comprising about 15% of the total arable land in the EU-27. This is between 5 m ha and 7 m ha more than required under the old biofuel directive, depending on the share of second generation fuels. Of the total area of 17.5 m ha, about 3.9 m comes from the current set aside area in the EU-27, with an extra 1 m ha of set aside land from 2011 onwards from the Member States which entered in 2004, and a further 0.5 m ha in 2015 from Romania and Bulgaria. If all the second generation feedstock were produced in the EU, a further 2 m ha of land would be needed. If the assumed contribution of second generation technologies is reduced from 30% to 20%, import needs rise to 30% (occurring in the oilseed and vegetable oil markets if the diesel/ethanol mix remains unchanged). If second generation biofuel technologies are excluded, the estimated import share rises to 50%.

Von Lampe (2006) has calculated that if all of the 10% biofuel share of transport fuel requirements were met from domestic production this would require 31.5 million hectares of

54 Export Helpdesk, European Commission
55 Commission of the European Communities (2007)
56 European Commission (2007)
land. This corresponds to about 18.1 million hectares for the 5.75% target for 2010, which is marginally higher than the estimate given in the European Commission’s impact assessment of the Biofuels Strategy. The EC estimates that 4.35 million hectares would be needed to achieve 25% of the target, corresponding to 17.4 million hectares for the full 5.75% target, or 14% of EU-25 total arable land.

Ericsson and Nilsson (2006) have shown that under certain restrictions on land availability, the potential total supply of biomass energy in the EU amounts to up to 11.7 EJ in the EU15 and 5.5 EJ in the ECC10, compared with 5.6 EJ required to meet the EU15 target for 2010. Consequently, no important resource limitations are foreseen in meeting the 2010 target, and energy crops are presented as an interesting alternative to food crops. This is particularly important in relation to EU enlargement, since the accession countries accentuate the problem of overproduction. However, the authors argue that large-scale bioenergy production beyond the 2010 target is to some degree in conflict with environmental goals, other than those for reducing greenhouse gas emissions.

Other authors have drawn similar conclusions regarding the production capacity of the new Member States. Large agricultural areas are likely to become available in these countries with high potential for improvements in agricultural production methods. Bulgaria and Romania have a particularly high biofuel crop potential compared to the EU-15 and the EU-10 countries. Conflicts may however arise between the extension of ecological agriculture and large-scale biomass production. Lower yields are produced with ecological production methods, resulting in lower availability of land for energy crops, higher land use and consequently higher biomass production costs.

Kavalov (2004) argues that meeting the 5.75% target for 2010 will probably require significant changes in agricultural production patterns in the EU, which could be quite challenging in the context of wider techno-economic concerns and policy objectives such as security of food supply. The production difficulties would be eased considerably if biodiesel were replaced by bioethanol, which has a larger biofuel yield per hectare. However, bioethanol has other other techno-economic and policy-related drawbacks, including fuel safety and engine performance concerns, and issues related to crop cultivation and agricultural regulations. Frondel and Peters (2007) have investigated the environmental and economic implications of support of rapeseed-based biodiesel, and find that the energy and greenhouse gas balances are clearly positive. However, it is unclear whether the overall environmental balance is also positive, notably because of nitrous oxide emissions contributing to ozone depletion. Equally importantly, biodiesel is argued not to be a cost-efficient emission abatement strategy, with a greenhouse gas abatement cost of about 200 Euro/t that will not be economically viable without subsidies. It is therefore argued that the choice of approach to greenhouse gas abatement should be determined by the market through the European emission trading system.

From a global perspective, a recent report from OECD argues that the potential of both ethanol and biodiesel to deliver a major contribution to the energy demands of transport without compromising both food prices and the environment is very limited. What it describes as the subsidised “rush to energy crops” threatens to cause food shortages and

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57 CEC 2006
58 Kavalov (2004)
59 van Dam, Faaij, Lewandowski and Fischer (2007)
60 Doornbosch and Steenblik (2007)
damage to biodiversity, with limited benefits, and with effects on farm commodity prices that are already visible. The Agricultural Outlook published by OECD and FAO\textsuperscript{61} expects rapid growth of the biofuels industry to keep these prices high and rising throughout at least the next decade.

Further concerns arise regarding the assumptions on future development of second generation biofuels. It is widely agreed that these hold promise, but depend on technological breakthroughs and are not expected to make a significant contribution before 2015\textsuperscript{62}. The Biofuels Research Advisory Council expects the availability of the technology in 2010-2015, with increasing profitability during the period\textsuperscript{63}. Although new biofuels offer a better greenhouse gas balance they may be more expensive than first generation ones, even with a decline in price by 2020\textsuperscript{64}.

The OECD study suggests that since second-generation technologies are still in the demonstration phase, it remains to be seen whether they will become economically viable over the next decade, if ever\textsuperscript{65}. Assessments of the readiness of these technologies for the market vary considerably, as do opinions on how this can be achieved. In the USA feedstock sources such as cellulosic biomass are considered to be promising, but with technological barriers that make their future uncertain\textsuperscript{66}. The European Commission and the US government have both set aside large large funds for basic research and demonstration projects, while observers outside the companies involved believe that there is still basic work to be done before it is known whether the process will be economically viable\textsuperscript{67}.

In the light of these uncertainties it is concluded that the balanced approach advocated in the EC’s Biofuels Progress Report is highly appropriate. Total reliance on biofuel production within the EU would entail significant risks of threats to food security and of adverse environmental effects, particularly if current hopes for second generation feedstocks prove to be unjustified. Conversely, full exposure of EU production to international competition at world market prices would entail threats to the EU’s energy security and fail to take full advantage of the available opportunities for the development of EU agriculture, particularly in the new Member States.

In their report for the OECD Doornbosch and Steenblik (2007) suggest that although liberalising trade in biofuels is difficult, it is essential for global objectives. It may be argued that this conclusion does not take full account of energy security issues in all countries and the corresponding potential for international conflict over energy supplies, or of food security and biodiversity issues in exporting countries. A degree of support for EU biofuel production may therefore be justified. As argued by Frondel and Peters (2007), any such support risks picking losers rather than winners unless it operates through market mechanisms such as the European emissions trading scheme, in combination with full allowance for all environmental effects. In this context protection of EU production through import barriers may be preferable to subsidies. It should however be noted that the maintenance of import barriers to ethanol

\textsuperscript{61} OECD/FAO (2007)
\textsuperscript{62} EC, 2007
\textsuperscript{63} Biofuels Research Advisory Council, march 2006
\textsuperscript{64} EC, 2007
\textsuperscript{65} Doornbosch and Steenblik (2007)
\textsuperscript{66} Yacobucci and Schnepf (2007)
\textsuperscript{67} Sanderson (2006)
restricts the competitiveness of all EU industries that use ethanol as a feedstock, including chemicals, pharmaceuticals, cosmetics and the food and drink industry.

As noted above, ethanol has both economic and environmental advantages over biodiesel for fuel production, and ethanol made from sugar cane is considerably more profitable than ethanol made from any other crop. Hence, if EU-Mercosur trade in ethanol were fully liberalised without a corresponding increase in EU subsidies, Brazilian ethanol could have a sufficiently large impact on European biofuel production to put at risk the goal of a balanced strategy which takes account of all the uncertainties.

5.8 Social impacts of ethanol trade liberalisation

5.8.1. Social impacts in Mercosur

Brazilian sugarcane is mainly grown by large scale farmers, with particularly poor working conditions for farm labourers. The initial impact of an increase in ethanol production would be a rise in employment, with some improvement in wages or working conditions in order to attract workers. An increase in labour costs may increase incentives for mechanisation, resulting in higher skill levels in the longer term, and lower employment. In view of the much higher productivity levels available from mechanisation, the long term effect may be a fall in employment, despite higher production, with higher wages and better conditions.

Much of the increase in land area required for increased feedstock production is likely to come from small farms producing other crops, with a loss of livelihoods for small scale farmers. The Brazilian government policy of giving tax exemptions to small farmers supplying biofuel feedstocks could be an important mitigation measure. The introduction of a certification system which includes criteria for social issues may add further impetus to such measures. Without effective mitigating measures of this nature, the long term impacts of increased sugarcane production in large scale commercial farms could include greater rural poverty and an increase in migration to the cities.

Brazil’s sugar and ethanol agribusiness employs approximately one million workers and covers over 60,000 growers who supply sugar cane. The entire sugar/ethanol chain employs around 3.5 million people. This activity has a strong presence in the economies of over 960 municipalities, which represent around 17 percent of Brazil’s municipalities as a whole. Due to the need to process sugar cane soon after the harvest, sugar manufacturers are established in rural areas, with a positive impact on rural employment. Mechanisation of harvesting could decrease the number of jobs in plantations, as one combine harvester can replace as many as 80 workers. On average, farms account for around 300 ha, but most of the industries have their own plantations, and individual suppliers represent the minority of the industry’s needs.

Working conditions in sugar cane fields are reported to be one of the most difficult in the country. There is evidence that mills withhold basic food supplies for workers who cut an average of less than 10 tons of sugar a day; workers must execute, on the average, 9,700 machete strokes to attain the 10-ton daily quota. As with the production of beef, significant concerns arise over the use of forced labour. Non-governmental pressure groups in Mercosur have reported widespread use of slave labour on sugar cane plantations and in ethanol

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68 UNICA
69 Human rights in Brazil 2005, Social Network for Justice and Human Rights
production in Brazil, as well as on oil palm plantations that are increasingly geared to biodiesel production in other Latin American countries. Other social concerns expressed by these groups include the expansion of production into forest areas and territories occupied by indigenous and other traditional communities.

Brazilian sugarcane is currently grown mainly by large scale farmers. A study carried out by UNCTAD identifies the possibility that economies of scale in the cultivation and processing of many energy crops may disadvantage small and local producers. Large-scale export production might generate income but provide fewer livelihoods. It is suggested that organisational support may be needed in order to facilitate the involvement of small farmers, including the promotion of contract farming arrangements or cooperatives. Ideally, small producers would be involved at the local level, while large companies take care of the international trading of feedstocks.

The Brazilian government’s biofuels policy could help to address these issues. Factories sourcing their feedstocks from small farmers will get tax exemptions. Thus small scale production could develop, and generate beneficial social impacts rather than the adverse ones that may otherwise occur.

5.8.2. Social impacts in EU

Social impacts in Europe are directly related to the economic impacts discussed above. With full liberalisation of EU-Mercosur trade, ethanol production may fall significantly as a result of price competition, despite the increasing demand for biofuels. Some farmers growing raw materials (both cereals and sugar) would therefore have to develop new products. Adverse social impacts are not expected to be large, but could be significant during the transitional period.

The increased competitiveness of EU industries that use ethanol as a raw material can be expected to generate increased employment, with positive social impacts. The impact is expected to be smaller than the potentially adverse effects in the agriculture sector.

Both cereal and sugar production would be affected. In the case of sugar, the effects of liberalisation for ethanol would be additional to those occurring through restructuring of the sector under the sugar reforms. In the EU-15, the increased productivity in sugar beet production and processing has led to job reductions in the sugar sector in recent years. From 1995 to 2005, the number of people working in the processing industry during the processing period have fallen from 52,000 to 32,000, while sugar processing industry permanent employment decreased from 32,000 in 1995, to 16,000 in 2005. The number of growers also decreased from 264,000 in 2000, to 16,000 in 2005.

Sugar beet production is also a major source of employment in new member states. In EU-10, almost 10,000 people work permanently in the sugar beet processing industry, of which 90% are in Poland. There are over 83,000 growers in sugar beet production of which 94% are in

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70 Network of Latin American activists (2007)
71 UNCTAD (2006)
72 Brazilian Ministry of Agriculture, 2006
73 Eurostat
Poland; sugar beet growers represent almost 10% of the Polish agricultural labour force. Full liberalisation could be expected to have significantly adverse impacts in these countries.

5.9 Environmental impacts of ethanol trade liberalisation

5.9.1. Environmental impacts globally and in Mercosur

Stakeholder positions

The views of stakeholders on the environmental impacts of expanding biofuel production in the Mercosur countries cover a wide range. In an open letter to the European Commission, Parliament and citizens, a Latin American NGO network has expressed the fear that Europeans will maintain their ‘lifestyle based on automobile culture’ at the expense of natural ecosystems, while ‘the population of Southern countries will have less and less land for food crops and will lose its food sovereignty’. It is argued that the production of energy crops would exacerbate the loss of rainforests in Argentina, Paraguay and the Brazilian Amazon, while creating other major adverse effects on both the environment and local communities. Similar concerns have been expressed by European NGOs. Such fears have been dismissed by industry associations in the region. Brazil is argued to be ‘big enough to expand its sugar-cane fields massively without either displacing necessary food crops or getting anywhere near the rainforest that the rest of the world seems to have decided is international property’, while the ‘fantastic increase in productivity has made all these Malthusian arguments completely nonsense’.

In the context of climate change Brazil’s President Lula da Silva has warned of growing risks of unprecedented environmental and human catastrophe unless there is a more equitable distribution of wealth within and between countries. He has promoted expansion of the biofuel industry as a solution, and not part of the problem, arguing that the experience of biofuel production in Brazil has demonstrated that it poses no threat to either food security or the Amazon rainforest.

The Global Bioenergy Partnership (GBEP) of the UN Food and Agriculture Organisation (FAO) has adopted an intermediate position. The GBEP is a partnership formed by the G8+5 countries (Canada, France, Germany, Italy, Japan, Russia, UK and USA, plus Brazil, China, India, Mexico and South Africa). An analysis by the GBEP Secretariat argues that in global terms ‘sustainability performance standards backed by the power of law will be necessary to prevent negative impacts’. However, beneficial impacts of biofuel production are identified for Brazil. The Secretariat’s report identifies positive social and environmental impacts from recovery of deforested areas, provision of crop rotation and aeration, and expanding employment. It supports the case that the expansion of sugar-cane production in Brazil has come primarily from productivity gains, and argues that the industry has a better performance than other agricultural sectors in terms of pesticides, soil erosion, waste generation and the quality of water resources.

74 Eurostat
75 Network of Latin American activists (2007)
76 EEB/BirdLife/T&E (2006)
77 Marris E (2006)
78 Lekic S (2007)
79 FAO (2007)
The opposite view has been expressed by the Special Rapporteur on the Right to Food of the United Nations. A report to the UN General Assembly warns of serious risks of a rapid increase in the price of food crops arising from biofuel production, that would intensify competition over land and other natural resources, including forest reserves. In the light of these concerns the Special Rapporteur has called for a five-year moratorium on biofuel production using current methods. This would allow time for the development of technologies and regulatory structures to protect against negative environmental, social and human rights impacts.

Impact on GHG emissions and energy balance

The economic analysis of the SIA indicates that a reduction of EU import tariffs would result in a significant increase in imports of ethanol from Mercosur. Much of the increase would be to satisfy increased EU demand, but the lower import price may also lead to a significant fall in EU biofuel production. European and Brazilian biofuels have different energy balances and produce different greenhouse gas (GHG) emissions. Europe produces mainly biofuels based on vegetable oils (biodiesel and in natura vegetable oil). The Mid Term Report of the SIA presented a detailed analysis of GHG emissions and energy balance of biofuels from Mercosur and the EU. The principal findings are summarised here, together with further analysis of potential impacts.

Biofuel production itself generates greenhouse gases, including methane as well as carbon dioxide. Methane is not very important in European biofuel production, but it is for Brazilian production as 80% of the harvest is manual, and slash and burn of the leaves is practised, thus producing methane.

The analysis presented in the Mid Term Report considered four biofuels: wheat ethanol, rapeseed in natura vegetable oil and rapeseed biodiesel as produced in Europe; and sugarcane ethanol as produced in Brazil. Sugar beet ethanol was not included in the analysis as it has a worse energy balance and GHG emissions than wheat ethanol. The evaluation showed that sugarcane ethanol has the best energy balance of the four biofuels. Even when transported from Brazil to Rotterdam, the invested energy is multiplied by almost six, while it is multiplied by less than four for in natura vegetable oils, the best of the EU biofuels. Brazilian ethanol produces less GHG than European ethanol by almost a factor of two.

Similar findings come from studies of biofuel production in the USA by comparison with Brazil. Discussions have taken place on a US-Brazil energy partnership, including a review of the 54 cents per gallon tariff on most imported ethanol which protects US biofuel production. It has been estimated that, even if the country’s entire corn and soybean production were devoted to biofuels, US domestic biofuel production would meet only 12% of the country’s gasoline demand and 6% of its diesel demand.

Brazil has been producing ethanol for 35 years. As EU production is more recent its environmental performance may improve in the future. The production process is the most energy-consuming step. Straw could replace natural gas as the source of energy, which would improve the energy balance and GHG emissions. Almost 50% of the straw that is normally buried for fertilisation purposes would be used to fulfil the energy needs of ethanol.

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81 Eye on Earth (2007)
82 Hill et al (2006)
production, therefore, soil fertilisation could be adversely affected. Moreover, using straw as the energy source would increase the ethanol price by € 64 per hectolitre. As fossil energy will become more expensive, using straw as the energy source will become more competitive in the future. Nevertheless, ethanol from sugar cane is expected to remain significantly more competitive.

An additional factor that needs to be taken into account in the analysis of GHG emissions is the effect of land use changes for the production of biofuel feedstock, such as the razing of tropical forests or replacement of grasslands. These changes can result in large releases of carbon from soil and existing biomass, negating any benefits of biofuels for decades. To avoid such effects it is essential to prioritise the protection of virgin ecosystems and adopt policies that require the biofuel industry to maintain or improve current management practices of land, water, and other resources.

With the proviso that effective policies of this nature are adopted, it is concluded that the reduction of EU import barriers to Mercosur ethanol would have a significant beneficial impact on both the energy balance of the fuel and the GHG emissions from non-energy aspects of production.

Biodiversity impacts

The UNEP Global Environmental Outlook for 2007 reports that the cultivated area for ethanol production in Brazil is increasing rapidly in order to meet government production targets. According to CONAB, the sugar cane land area increased in Brazil between 2005 and 2006, mainly in the North (by 21.4%) and Centre West (10.6%). The most sensitive eco-regions, Amazon and Cerrado (Box 5-3) are situated in those areas. Traditional sugar cane producing areas expanded their areas more slowly (by 3 to 6%) but as their sugar cane area is already large, a small increase will have a larger impact. The expansion of oil palm plantations, whose uses include biodiesel production, have also been associated with the adverse changes taking place in the Cerrado.

Using current technologies sugarcane requires considerably less land area than other biofuel feedstocks. It has been estimated that if a 5 percent biofuel contribution to worldwide gasoline and diesel supplies were achieved, shared proportionally among all carbohydrates and oilseeds, the world as a whole would need an increase in crop area of more than 15 percent. The most efficient scheme in terms of land requirements would be to derive the incremental ethanol supply from sugarcane in the center-south region of Brazil, and biodiesel from palm oil sourced more widely.

The climate of the Amazonian forest is too rainy for growing sugar cane. However, the expansion of sugar cane production elsewhere in the region may displace the production of other agricultural production, some of which can be grown in Amazon, such as cotton, soybeans or livestock. An expansion of sugar cane production may therefore have a spillover effect on deforestation in the Amazon. The introduction of an effective certification system addressing biodiversity issues may therefore be an important mitigating action.

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83 INRA (2006)
84 WWI (2006)
85 UNEP (2007) Nairobi
86 Rajagopal and Zilberman (2007)
A comprehensive review of the current state of knowledge has been undertaken for the Inter-American Development Bank. The study takes as a basis the Brazilian government’s plans to triple biofuel production by 2020. Its analysis gives considerable support to the view that, to date, the expansion of sugarcane production has been almost entirely driven by efficiency gains. These have come from intensive research into the sugarcane genome, the development of high sugar content varieties resistant to disease and pests, and the optimization of agricultural and processing techniques. Current sugarcane production is concentrated in Sao Paulo state and parts of the north, but high land prices are now pushing greenfield projects further afield. Much of the land that has been identified as ideal for sugarcane is located in the Cerrado, whose importance for biodiversity is well recognised. New Brazilian legislation is under consideration which would restrict agriculture in this region. This will be a key variable in the development of the ethanol industry and its environmental impacts.

The IADB report provides a similarly comprehensive analysis of the options for expanding Brazilian biodiesel production. Experience is more limited than for ethanol, so that the optimal choice of feedstocks is less clear, with soy, palm oil and castor oil among the options. Each has its advantages and disadvantages in economic, social and environmental terms. Soy production is well established, with social and environmental concerns that would be exacerbated by expansion into biofuels. Social and environmental issues may be less important for castor, but its use may be limited by economic and technical factors. Palm has many advantages, but may entail high long-term investment, and could stimulate further invasion of the Amazon. Similar considerations apply to the expansion of biodiesel production in the other Mercosur countries, notably Argentina, whose biodiesel industry is highly competitive with Brazil’s.

In all these areas considerable research is being undertaken in the region to address the issues, particularly in Brazil, and also in Argentina. For sugarcane, major research areas include continued productivity improvements through genetic and other improvements and exploiting the potential of cellulose processing through second generation technologies. The need to develop second generation technologies is also seen as key for biodiesel production and is the main focus of research in this sector.

A reduction of EU import barriers to biofuels would make a significant contribution to achieving the Mercosur countries’ own goals for expansion of the industry. The avoidance of significant adverse impacts on biodiversity will depend on two key factors: the success of research programmes (within Mercosur and internationally) devoted to continuing improvements in productivity, sufficient to counter commercial pressures for land take and land conversion; and the success of Mercosur governments in introducing and enforcing effective legislation to protect areas such as the Cerrado, where commercial pressures would otherwise be likely to lead to increasing biodiversity loss.

Other environmental impacts

A wide range of other potential environmental impacts associated with the production of biofuels have been catalogued in the literature. These include increased needs for irrigation

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88 Rothkopf (2007)
89 Kojima et al (2006)
and water consumption, fertiliser and pesticide runoff, soil degradation, and pollutants such as liquid waste and smoke from burning fields. An adverse impact may occur in those areas in Mercosur where production rises, which may be locally significant in the absence of effective regulation.

Adverse pollution impacts from increased biofuel processing may be countered to some extent by new investment in more modern plants using newer and cleaner technology. A certification scheme such as discussed above, along with EU support for strengthening regulation and the development of new technologies, would help to mitigate the potentially adverse effects.

For a certification scheme to deal adequately with all the environmental effects of biofuel production (carbon offset, other greenhouse gases such as nitrous oxide, energy balance, biodiversity, land degradation, water consumption, land, water and air pollution) it has been proposed that a combined Green Biofuels Index be developed. The certification scheme would also need to deal with the social issues as discussed above.

In the longer term, much of the research indicates that the large scale use of biofuels will almost certainly require the effective development of cellulosic technologies if significant adverse environmental effects are to be avoided.

5.9.2. Environmental impacts in EU

Assuming no change to the EU targets for increased consumption of biofuels, the impact of greater imports of biofuels from Mercosur would be to counter those arising from increased production in the EU. To the extent that some EU biofuel production would remain commercially viable the effects would be significantly reduced rather than eliminated.

The analyses discussed above indicate that to meet the biofuel targets from EU production, all set aside land would need to be devoted to biofuels, plus a considerably larger area from other sources. Although the new Member States can provide some of the additional production with no significant adverse effects, this is insufficient to meet the full target for 2020, particularly if second generation technologies are less effective than hoped.

As well as putting pressure on food production, these demands can be expected to reduce the ecological value of set aside land and increase pressures for conversion of semi-natural habitats. The combined demands of biofuel production and food production on a limited land area would also increase incentives for higher intensity of production and less use of ecological techniques, with potentially higher usage of water and agro-chemicals. Several of the studies discussed above indicate potentially significant impacts of this nature. To counter such impacts, WWF (2007) have argued that the biofuels target should be conditionally coupled with energy efficiency measures and an EU-wide sustainability certification scheme, including the retention of set aside land for conservation and wildlife.

If EU ethanol production falls as a result of price competition, the pollution impact in the EU arising from ethanol production would be reduced. The industry is, however, relatively well regulated, so the impact of the trade agreement is not expected to be significant.

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91 Turner et al (2007)
Full liberalisation of EU-Mercosur trade in biofuels can therefore be expected to have beneficial environmental impacts in the EU by comparison with continued protection and support for EU biofuel production, for biodiversity, water consumption, pollution and amenity effects. The overall impact is assessed to be significant for the 2020 target, and would become increasingly so if higher biofuel targets were introduced subsequently in response to climate change. More limited protection and support for EU production would enable approximately neutral effects to be achieved by comparison with the current situation.
6 SIA RESULTS FOR AGRICULTURE

6.1 Interactions with the forestry sector

Strong interactions occur between liberalisation in the agricultural sector and in the forest sector, for which a detailed SIA has been carried out in parallel with this study. Increased incentives for agricultural exports will lead to greater production, and in some cases to forest clearance. In Brazil for example, an increase in soybean production is expected from agricultural liberalisation, much of which may occur through an expansion in the tilled area on the margins of the Amazon. This may put increased pressure on areas with high biodiversity. Expansion of beef exports can also be expected to accelerate deforestation.

A small interlinkage between agriculture and forestry also occurs in the opposite direction. Liberalisation in forest products may itself accelerate conversion of land to agriculture, with potential impacts associated with fertilisers, pesticides and herbicides. In general, however, the greatest pressures on forests are expected to arise from liberalisation of agriculture itself, largely because initial protection is higher in this sector.

The findings of the forest sector SIA have been incorporated into the following assessment of the impacts of agricultural liberalisation.

6.2 Impacts in Mercosur

6.2.1 Economic

Real income

The CETM model indicates a static welfare gain from full liberalisation of agriculture and manufacturing combined of about 0.3% GDP in Argentina, 0.9% in Brazil, 1.2% in Uruguay and 6% in Paraguay. The estimated effect in Paraguay is particularly significant, with a large contribution from agricultural liberalisation. The static welfare gains in the other Mercosur countries are small in comparison to normal growth rates. The principal long term welfare impact is likely to come from the dynamic effects of the trade agreement.

Output is expected to rise significantly for the agricultural sector as a whole, with little adverse impact from reduced barriers to EU imports. Mercosur production is particularly competitive for meat, cereals, sugar, ethanol and fruits, for which exports to the EU are expected to increase. Production in Mercosur is expected to expand in these sectors, allowing the development of agriculture and of the food industry. Exports of soya products to the EU may fall in response to a fall in EU beef and chicken production.

It is important to consider the impacts that increased exports could have on domestic supply of basic food commodities in Mercosur. Recent experience in Argentina indicates that an increase in beef exports led to severe restrictions in domestic supply and rising prices, followed by political agreement to restrict exports. More generally, rising Mercosur exports have been accompanied by rising production.

The model projections for full liberalisation indicate a rise in output for grains of the order of 10% for all the Mercosur countries. For animal products, which include cattle rearing, the projected increase is significant in Argentina and Uruguay at around 4%, and considerably
higher in Brazil and Paraguay at over 30%. Similar but larger increases in production are projected for meat and other processed foods, of nearly 50% in Brazil and over 70% in Paraguay. These modelling estimates are for full liberalisation rather than the more limited agreement likely to be reached, and are strongly dependent on the assumptions made in the model. Agricultural output in Mercosur has been growing rapidly in recent years, with increasing exports to the EU and other countries. Therefore, the sector is already highly competitive and is in the process of responding to market opportunities that already exist. Due to the nature of the CGE model, there is an assumption in such estimations that the Mercosur economies are already in equilibrium. It is possible that production would not be able to respond to a further increase in incentives any more rapidly than it is responding to existing ones. Nonetheless, the model results give an indication of the possible magnitude of the effects that could occur over the ten year period in which an EU-Mercosur trade agreement would come into effect.

Employment

Employment in agriculture is expected to rise approximately in proportion to the output changes, as indicated by the modelling results. The model assumes fixed total employment, with the increase in agriculture coming from a decline in other sectors. In practice most of the increase is expected to come from the rural informal sector and the rural unemployed. This will apply mostly to satisfy demands for additional employment in agricultural production and the processing industry (sugar or ethanol for instance), with a smaller increase in urban areas for other processing and transport (including harbour services for the increased exports).

In Brazil and Paraguay, where the percentage increase in output is greatest, the recorded level of rural unemployment is below the national average; this reflects the existing trend of rising production and its demand for extra labour. The additional output due to EU-Mercosur liberalisation will encourage a further decrease in unemployment. In Argentina and Uruguay, for example, rural unemployment is considerably higher than the national average. The additional demand for agricultural labour in these countries may help to address this problem.

As noted in the case study for ethanol, these effects may change in the longer term through increased incentives for mechanisation, resulting in higher skill levels and lower agricultural employment. In the shorter term, increased employment in large scale production may be countered by loss of livelihoods for small scale farmers. The effect of the EU-Mercosur agreement would be an incremental addition to existing pressures in this direction.

Fixed capital formation

The expected increase in agricultural output will stimulate additional investment in the sector. This is expected to include new infrastructure and machinery as well as the acquisition of land. Total fixed capital for the agricultural sector should increase.

6.2.2 Social

Poverty

To the extent that the increased employment in the sector comes from the pool of unemployed, it will have a beneficial impact on rural poverty, which is particularly high in Paraguay and Brazil. There may however be an adverse effect associated with the need for
additional land. Land tenure is weak in many areas, particularly in Paraguay, where the overwhelming majority of peasants have no formal land titles. Informal farmers are likely to be displaced by the expansion of commercial farming. Depending on the labour productivity of new commercial activities, the number of employment opportunities may not be sufficient for the number of people displaced, and the standard of living provided by formal employment may be lower than in informal farming. In Brazil in particular, additional land for agricultural production is expected come from forest clearance, resulting in the loss of livelihoods for indigenous people.

The case study for beef has identified a potentially serious concern. A small part of the employment in cattle raising is forced labour. The Brazilian government is endeavouring to combat the problem, but the trade agreement could exacerbate it. Without effective mitigation the number of forced labourers would increase, without any improvement in wages or working conditions above those of the existing workforce, and a significant decrease for the people affected. The case study also identifies a potential increase in disputes over land tenure, with further adverse impacts on poverty for small scale farmers who lose their land.

It is concluded that liberalisation offers potential for a reduction in rural poverty throughout the region, but that there could also be significant adverse effects in some areas in the absence of strengthened regulation.

Health and education

Improved export performance should, in principle, help to strengthen Mercosur economies overall, which would help enable increased public finance and higher health expenditure. This is particularly the case in Paraguay, where the modelling results indicate a significant increase in overall welfare. In the other Mercosur countries, the static welfare gains are too small to be significant in this respect. Dynamic effects offer greater potential in all the countries, but this depends strongly on other aspects of government policy that interact with trade liberalisation.

Similar considerations apply to education, with potential for both positive and negative effects.

Equity

Expansion of production will lead to an increase of total farm income, but not necessarily to a reduction of income inequalities in the farm sector. Increased incentives for mechanisation may in the long term lead to higher skill levels in the sector and hence to reduced inequalities for those in employment. This would however be associated with a decline in agricultural employment. The overall impact would depend on increasing the quantity and quality of employment in other sectors. In the absence of structural changes leading to higher skill levels overall, a decrease in inequality typically requires redistributive public policies.

The effects on poverty discussed above may, in the absence of effective mitigation, have significant adverse impacts on equity. Competition between farmers for new arable lands is expected to increase land prices, and also land conflicts in areas where land tenure is weak. Small scale farmers could be the losers of that process, including women. Adverse gender impacts may arise through the loss of traditional livelihoods and limited opportunities for women in the formal sector. Working conditions have to be watched with scrutiny. Forced
labour in Brazil is already a problem in the bovine sector. Although the government is working to combat it, liberalisation could amplify this problem.

The problems for sugar cane production are smaller, but could be significant. Sugarcane production for ethanol is expected to develop in new regions where land is available, but where workers are not organised in trade-unions and may have difficulty in obtaining good working conditions. A certification scheme for EU ethanol imports, with appropriate social as well as environmental criteria, could help to address this.

More generally, agricultural export development on its own is not expected to reduce structural income inequalities in Mercosur.

6.2.3 Environmental

Natural resource stocks

Agricultural production is expected to rise significantly in all the Mercosur countries, placing pressure on both land and water. The modelling results indicate a significant rise in grain production in all the countries, with a large increase in meat production in Brazil and Paraguay. The animal products sector also rises significantly in Argentina and Uruguay. As discussed in relation to both ethanol and beef, there are potentially significant adverse effects from both intensification and expansion.

In Argentina, the projected increase in beef production is relatively small. Production is likely to be intensified, with less available land than in Brazil. Significant adverse impacts on water resources are expected to be restricted mainly to the semi-arid central area where water is scarce.

As identified in the forest SIA, the expansion of beef production and soybean production in Brazil is expected to have a direct impact on deforestation. The expansion of sugarcane would have an indirect spillover effect by taking land from products which would move into forested areas. For sugarcane, certification of EU ethanol imports could help to address the problem. For beef, soya and other products the expansion would add to existing long term pressures on forests which need to be addressed by a stronger regulatory regime.

Other potential impacts which may occur from increased production unless adequately regulated, include flooding, especially on the plains such as the Pampas (arising from disruption of soil hydrology), and soil erosion from cultivation of steep slopes.

Environmental quality

In many of the areas where agricultural production would increase, such as the Cerrado, conversion of these lands to arable cropping or intensive grassland management would require application of agrochemicals, artificial fertiliser and irrigation, both of which would have impacts on soil and water quality. Some adverse pollution impacts may occur in this and other areas where production increases, which may be locally significant in the absence of effective regulation. The use of agrochemicals potentially affects both water and soil pollution. An increase in poultry meat production could also have an impact on water contamination, depending on production methods. Effective regulation will be required in order to avoid locally significant impacts of this nature. If certificates aimed at ensuring the
sustainability of production are in place, there is a significantly reduced risk of adverse impacts from increased production; such certificates should be monitored and possibly revised to ensure the best positive impact on the environment⁹⁴. Further concerns arise over animal welfare associated with increased intensification of production. This too will require stronger regulation.

As discussed in the ethanol case study, the increased production of sugarcane for ethanol exports to the EU would have an overall beneficial impact on GHG emissions, provided that the expansion is achieved in a sustainable manner.

Biodiversity

Large areas of the Mercosur region are of global environmental significance, particularly the Amazon and Cerrado. Global attention is, understandably, focussed on the threats to the Amazon rainforest resulting from increased trade. The most sensitive regions lie within the Mercosur region and although timber logging has been the major driver for deforestation in the Amazon, subsequent conversion of land to soya bean production has ongoing impacts on biodiversity and enforces more permanent changes to soils and hydrology.

The Brazilian Cerrado is South America’s largest, and one of the world’s most biologically rich, areas of savannah. Conversion to monoculture crop production (particularly soya beans) and intensification of beef production is reducing the area of natural and semi-natural habitat. At present, there remain large areas of relatively undisturbed Cerrado where conversion to soya bean production or cattle ranching would significantly reduce biodiversity.

The region includes extensive areas of wetland at the Deltas of the Orinoco, Parana and Tigre rivers. Conversion to plantation forestry is the main threat to biodiversity in these areas.

In other areas such as the Pampas of Argentina, Uruguay and southern Brazil, and the Brazilian sertão, centuries of extensive agriculture, particularly cattle ranching, have already replaced the climax natural vegetation with more open grassland. Conversion of grassland to soya bean and cereal production, particularly on the fertile soils of the Pampas, has a negative impact, particularly on areas of Pampas, that are otherwise rich in diverse vegetation.

The last ten years have seen the conversion of the majority of soya bean production to Genetically Modified (GM) varieties. Fears have been expressed about the impact that the transfer of novel genes from GM crops could have to natural organisms and systems. Perhaps because the soya bean is not closely related to any South American plant, these fears have not yet been realised.

Any conversion of pristine habitats and natural resources to agricultural production, whether it be cattle ranching, sugar cane plantations or arable cropping, would have significant negative impacts. The increased intensification of the most agriculturally areas, such as the Parana plain and the Pampas, is likely to have fewer negative impacts but, in common with any such intensification of land use, issues of pollution, both diffuse and point source, and reductions in soil quality, would need to be addressed.

⁹⁴ ETL 2006.
In relation to natural resource stocks, the projected expansion of beef production and sugarcane are both expected to have adverse impacts on deforestation in the Brazilian Amazon, unless countered by effective mitigation. This will also have adverse impacts on biodiversity. In the case of sugarcane, a certification system for EU ethanol imports could be an important mitigating measure.

The beef case study also identifies potential adverse impacts on biodiversity through production development in the Cerrado, where intensification is expected to lead to the cultivation of more natural pasture in seeded grasslands. Stronger measures of public control will be necessary in both regions to avoid potentially significant adverse impacts. There is still room to expand production onto seeded grasslands, and thus avoid additional degradation of natural ecosystems.

The results of the SIA for Mercosur agriculture are summarised in Table 6.1.

6.3 Impacts in the European Union

6.3.1 Economic

Real income

The CETM model indicates a total static welfare gain of 0.1% GDP in both the EU15 and the EU10 for full liberalisation, of which about a third would come from goods liberalisation (agriculture and manufacturing combined). The impact is positive, as expected from conventional trade theory, but not significant in terms of normal growth rates. The principal long term welfare impact would come from the dynamic effects of switching resources to more competitive sectors of the economy, with a long-term decline in the agriculture sector.

Despite an overall decline in the agricultural sector for the EU, the main impacts of the proposed Agreement include a small overall welfare gain which would be the result of goods liberalisation, including both agriculture and manufacturing. Prices in the EU would fall as Mercosur imports competed with domestic products, with impacts felt most acutely at the lower end of the commodities market. Potentially adverse impacts will be felt most acutely in the agricultural sector within the EU.

Increased imports from the Mercosur region will compete with domestic products, reducing prices to EU producers and processors. This impact is likely to be greatest at the lower end of the commodity market. In many parts of the EU there are important cultural associations between food and drink and geographical identity. Consumers place a premium on products from particular production systems and locations, often favouring traditional products from their own territories. While the strength of these associations has been declining at the undifferentiated commodity end of the market, it is growing at the top of the market, suggesting that increased imports from the Mercosur region would reduce EU prices for commodity products. Increases, however, would be offset in part by increasing consumption of value added products, differentiated by their EU provenance and production systems.

An additional outcome of full tariff removal could be both regions improve their balance of trade, leading to welfare gains as the EU will improve both its non-agricultural trade with Mercosur, as well as total agriculture and food trade. Increased imports from Mercosur to the EU would increase pressure on EU producers, primarily in the area of chicken and sugar.
production; leading most likely to higher differentiation of these markets within the EU. Further impacts include increased imports of processed foods and ethanol from Mercosur sugarcane. Lower tariff rates could also lead to a reduction in deadweight losses, which would prove particularly beneficial for economies engaging in their own reforms—such as the new accession countries.

Competition is likely to increase for sugarcane and chicken, with EU producers having greater potential for securing differentiated markets for domestically produced beef and fruit. While EU chicken producers would benefit from lower wheat prices arising from greater imports, this is unlikely to offset the competitive advantage (particularly lower labour costs) of chicken producers in the Mercosur region. A decline in EU chicken production would therefore reduce demand for grain production, particularly wheat, resulting in lower domestic prices.

The market for apples and pears is already segmented by the different seasons of production (southern and northern hemisphere) but improving storage techniques is prolonging the seasons, increasing competition.

The modelling results are broadly in line with these expectations. They indicate that Mercosur agricultural products will tend to replace EU products, particularly for processed foods including meats, and ethanol from Mercosur sugarcane. EU grain output is also projected to decline. The estimated decline is not large (up to 5% for full liberalisation and less for a more realistic agreement), but could be significant in local areas where production of the affected goods is high and competitiveness is low (this is addressed in greater detail in the sectoral study).

One product for which competitive differentiation of EU agricultural products is not likely to occur is for increased ethanol and biodiesel imports, derived from sugar cane and oilseeds grown in the Mercosur region. The EU Biofuels Strategy seeks to increase consumption of transport fuels produced from renewable feed stocks, reducing consumption of fossil fuels. While the EU targets for biofuels present an opportunity for EU producers, particularly in the new Member States of Central and Eastern Europe, there are many uncertainties in future technological and economic developments. The EU is pursuing a balanced strategy between domestic production and imports which helps to allow for these uncertainties. Full liberalisation of ethanol trade with Mercosur could have significant adverse impacts on the domestic industry and threaten this balance.

Although the overall effect for EU agricultural production is adverse, liberalisation of the Mercosur market would be beneficial for some EU products such as wine, olive oil and spirits. Reduced trade barriers will allow some firms to expand their markets, leading consumers in Mercosur to gain better access to improved foreign varieties of goods such as wine, olive oil and spirits. All these products are likely to enter at the top of the consumer market. If this is associated with stronger protection of geographical indications, European wine producers are expected to gain further market share in Mercosur.

Employment

The agricultural sector in the EU remains a key source of employment in rural areas, and particularly in Poland, Italy, Spain, France and Hungary, which combined account for nearly two-thirds of the total EU agricultural labour force.
Accompanying the decline in agriculture within the EU is a reduction in agricultural employment, particularly for the new member states. One expected response would be increased geographical differentiation of production, thus creating more jobs in food processing sectors producing higher value products. It is also expected that the reduced competitiveness of EU agriculture will reduce land prices and an overall decrease in capital stock. The Agreement is therefore expected to cause transfer of investment out of the EU agricultural sector into more competitive sectors, creating an overall positive effect for the EU economy.

EU employment in the farm and agricultural processing sectors will follow the output changes, and again may be significant in local areas. For full liberalisation employment in primary commodity production in sugar, wheat, chicken, beef and fruit sectors is likely to fall, particularly in the areas of economically marginal production such as the uplands and mountainous regions where production is least competitive. These agriculturally marginal areas are those most likely to receive rural development support from the CAP for economic adaptation and the maintenance of high nature value areas which will tend to reduce the impact of trade competition. Sugar beet presents something of a special case since its production is highly concentrated in regions that are relatively agriculturally productive, usually in regions with strong economies. While these areas are less likely to receive favoured status in support of rural development, it is likely that declining agricultural employment will be absorbed by other economic sectors.

It is likely that opportunities for re-employment would be lower in the EU-10 compared to the EU-15. The CETM model results suggest that the EU-15 will be somewhat more affected than the EU-10, but qualitative considerations suggest that some of the new member states are more vulnerable for some of the affected products. In Europe as a whole, domestic markets are likely to react to provide increased opportunities for employment in the food processing sectors, producing higher value products sold with strong geographical indications. This will present opportunities for increased employment in food and drink processing and distribution.

The overall effect on agricultural employment in the EU-15 is expected to be a small addition to the long term trend towards lower agricultural employment. For the new member states, employment opportunities associated with accession will be somewhat reduced by greater competition from Mercosur.

Fixed capital formation

The reduced competitiveness of EU agriculture is expected to reduce land prices, and hence a fall in its capital value. Some processing facilities for products such as beef and sugar may suffer from closures and a decrease in capital stock. Investments that have been made by the EU sugar industry in Mercosur are unlikely to be affected by the agreement. A reduction of the agricultural capital stock in the EU itself would be partially compensated by investment in products benefiting from greater exports (wine, olive oil and spirits), but the overall effect of the trade agreement is expected to be a transfer of investment out of European agriculture into more competitive economic sectors. The overall effect for the EU economy as a whole is expected to be beneficial.

6.3.2 Social

Poverty
The overall impacts on social welfare of full liberalisation would be most adverse for countries specialising in meat, cereal and sugar production, including France, Spain and Ireland. Likewise, the accession countries are expected to feel short term impacts on poverty and unemployment while social policies have been dismantled and new systems are not yet fully in place. However, more competitive effects from reduced tariffs could lead to increasing returns and expanded product varieties, such as for whisky and olive oil.

The economic impacts on employment will have corresponding social effects, with a possibility of short term adverse effects on poverty in localised areas. Areas depending strongly on meat, cereal and sugar are the most likely to be affected, particularly in the agriculturally marginal areas and in the EU-10. For beef production, France, Spain and Ireland are expected to be among the most affected. In the new member states, and to some extent in the EU-15, existing problems of unemployment and poverty could increase in the short term, depending on social policies at the national level. The additional difficulties could be significant in accession countries where social policies have been dismantled and new systems are not yet fully in place.

Health and education

Imports from Mercosur will continue to comply with EU sanitary and phytosanitary standards (SPS), and no adverse health impact is expected from increased imports. Concerns that have been raised regarding plant diseases and animal welfare are discussed below in relation to environmental quality.

No significant impacts on education are expected in the EU.

Equity

The adverse employment effects are likely to be felt by the least competitive farmers and processing facilities. Some rural areas will be negatively affected, and small farms may be more affected than large ones. As already noted, producers involved in undifferentiated commodity production and in agriculturally marginal areas will be most affected, increasing geographic disequilibrium. More competitive and entrepreneurial farmers will be in a stronger position to decrease their production costs, while less competitive ones will experience greater difficulties. Income inequalities among EU farmers could therefore increase in the short term. Rural development support to maintain traditional agricultural systems, cultural landscapes and natural value, and to encourage diversification into new non-agricultural activities, would reduce negative impacts. The longer term impact on income distribution is not expected to be significant.

No significant gender impacts are anticipated.

6.3.3 Environmental

Natural resource stocks

Impacts on the stocks of water and soil will depend on the changes to agricultural production systems. Reductions in the intensity of production or complete agricultural abandonment, which is likely to occur in the agriculturally marginal areas (for instance uplands and
mountainous regions) and in value adding production systems (such as organic), will decrease pressure on natural resources. In these areas water supplies and quality could be ameliorated and soil erosion decline. On the other hand, the increased competition from Mercosur imports may stimulate higher intensity of production, which could place greater demand on ground and river water and on soils. The EU Water Framework Directive and the EU Action Plan for Soils will both result in policy measures to address threats to water and soils.

The overall impact of the trade agreement is expected to be a less agricultural production in the EU, and decreased pressure on water supply, with a beneficial effect in those areas where the resource is scarce. Loss of competitiveness may encourage greater intensity of production in order to increase yield, but the overall effect on soil and water resources is expected to be small and beneficial.

Environmental quality

The factors outlined above on natural resource stock also apply to environmental quality. Policy interventions through Pillar II of the CAP (particularly the agri-environment programmes) will seek to address any threats to environmental quality. The quality of water may improve in some areas through reduced use of agrochemicals, although in others there may be adverse pollution impacts associated with a decline in livestock farming and an increase in use of chemical fertilisers. The overall effect is not expected to be significant.

Concerns have been expressed that increased imports of Mercosur produce may increase the likelihood of plant diseases being introduced, particularly for citrus fruits. EU phytosanitary standards have been designed to prevent impacts of this nature. The EC maintains regular surveillance of exporting countries’ compliance with these standards, and so it is not anticipated that the EU-Mercosur trade agreement would entail a significant increase in risk.

Concerns have also been expressed in respect of animal welfare, in that standards which relate to methods of production rather than to the characteristics of a product are not permissible under normal WTO requirements. Imports from Mercosur countries would be produced under their own standards rather than EU standards. It has been suggested that EU producers could become uncompetitive, through the higher costs of producing to high standards, or that there would be an economic incentive for the EU to relax its animal welfare standards. During the WTO negotiations the EU has proposed that compensation should be permissible for the additional costs of meeting legal standards. Any such arrangement in the EU-Mercosur agreement would be a matter for negotiation, and would need to be WTO-compliant.

For the potential impact on climate change, the case study for ethanol concludes that increased imports of sugarcane ethanol from Mercosur will have a significantly beneficial impact on greenhouse gas emissions, provided that measures are taken to avoid release of sequestered greenhouse gases from conversion of inappropriate land. For beef production, the case study indicates that the combined impact in EU and Mercosur on greenhouse gas emissions will be neutral, except for the adverse effect of increased international transport and

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95 EUCOFEL (2007)
96 van Horne and Bondt (2003)
98 CEC (2003)
a small increase in overall production. For other agricultural products the impact of higher production in Mercosur and lower production in the EU is also expected to be neutral.

The modelling results support this. For full liberalisation of all goods and services they indicate that the production changes would reduce CO\textsubscript{2} emissions in the EU and Mercosur combined (including Venezuela) by less than 0.1%. This does not include emissions of methane, ammonia and nitrogen oxides, which are significant for cattle raising and other agricultural activities. Here too it is expected that an increase in Mercosur will be approximately cancelled by a corresponding decrease in the EU. However, a greater impact on climate change is expected to come from the increase in carbon emissions arising from increased international transport (as discussed in the overall SIA).

\textbf{Biodiversity}

Increased competitive pressure on EU agriculture, particularly on beef, chicken and cereal production, will tend to increase the specialisation of production systems, reducing diversity of habitats. Agriculture specialization is expected to increase, with a concentration of production in some sectors, and a possible small decline in agricultural biodiversity.

Agricultural abandonment could also reduce biodiversity of ‘semi-natural’ habitats such as hay meadows, but will provide opportunities for recolonisation of ‘climax’ vegetation. On the other hand a move to less intensive production systems (such as organic) could increase biodiversity. Once again, policy interventions such as the CAP agri-environment schemes will be available to reduce negative impacts.

The overall fall in EU agricultural output is expected to result in an overall impact on biodiversity in the EU that is small but beneficial. The results of the SIA for EU agriculture are summarised in Table 6.2

\textbf{6.3.4. Process indicators}

The proposed trade agreement is judged to be highly consistent with principle 12 of the Rio Declaration, in promoting a supportive and open international economic system. There are however potential conflicts with the Rio principles of reducing and eliminating unsustainable patterns of consumption (principle 8) and enhancing technology transfer (principle 9). Except in these areas, the scenario is judged to be relatively neutral in respect of sustainable development principles.

In relation to consumption and production patterns, the scenario aims to accelerate economic growth in both the EU and Mercosur. To the extent to which it achieves this goal, it will add to the underlying processes which drive increasing consumption and associated wastes. Stronger environmental regulation will therefore be needed, to achieve a sustainable balance between economic growth and environmental degradation. The EU-Mercosur trade liberalisation scenario adds incrementally to this general need.

In relation to technology transfer, the scenario encourages a movement of capital into low added value agricultural production and out of higher added value industrial production. While some aspects of agricultural production have a high technology content, the overall effect may be to inhibit technology transfer rather than enhance it.
EU-Mercosur agricultural liberalisation is judged to be neutral in its influence on institutional capacity for strategic sustainable development planning.

### 6.4 Summary of sustainability impacts

The impacts discussed above are summarised in the following tables.

#### Table 6.1: Sustainable development impacts of agricultural liberalisation in the Mercosur

<table>
<thead>
<tr>
<th>Impact</th>
<th>Countries / sectors affected</th>
<th>Causal factors</th>
<th>Factors affecting significance</th>
<th>Potential significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>short term</td>
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<tr>
<td>Economic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real income</td>
<td>Paraguay, less significant in others</td>
<td>Export development, lower consumer prices</td>
<td>Long term gain depends on growth of other sectors</td>
<td>▲ ▲</td>
</tr>
<tr>
<td>Employment</td>
<td>Greatest in Brazil and Paraguay. Meat, grains, ethanol production.</td>
<td>Export development</td>
<td>Long term effect depends on overall structure of economy</td>
<td>▲ -</td>
</tr>
<tr>
<td>Fixed capital formation</td>
<td>Land acquisition, machinery, infrastructure</td>
<td>Export development</td>
<td>Long term gain depends on overall growth of economy</td>
<td>▲ ▲ ?</td>
</tr>
<tr>
<td>Social</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Poverty</td>
<td>Greatest in Brazil and Paraguay.</td>
<td>Demand for agricultural labour</td>
<td>Land tenure, forced labour</td>
<td>▲ ▲ -</td>
</tr>
<tr>
<td>Health and education</td>
<td>Paraguay beneficial, others mixed.</td>
<td>Poverty, government expenditure</td>
<td>Long term effect depends on overall growth of economy</td>
<td>▲ ▲ -</td>
</tr>
<tr>
<td>Equity</td>
<td>Mixed effects, potentially adverse for women</td>
<td>Land conflicts, mechanisation</td>
<td>Employment in other sectors, redistributive policies</td>
<td>▲ ▲ -</td>
</tr>
<tr>
<td>Environmental</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Natural resources</td>
<td>Greatest in Brazil and Paraguay for land. Argentina for water</td>
<td>Increased agricultural production</td>
<td>Regulatory regimes, ethanol certification</td>
<td>▼ ▼</td>
</tr>
<tr>
<td>Environmental quality</td>
<td>All</td>
<td>Increased production, agrochemicals; Intensification, animal welfare; Deforestation and monocultures for increased production</td>
<td>Production methods, regulatory framework</td>
<td>▲ ▲</td>
</tr>
<tr>
<td>Biodiversity</td>
<td>Greatest in Brazil, Amazon and Cerrado</td>
<td>Deforestation and monocultures for increased production</td>
<td>Regulatory regimes, ethanol certification</td>
<td>▼ ▼</td>
</tr>
<tr>
<td>Process</td>
<td></td>
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<tr>
<td>SD principles</td>
<td>Positive for international cooperation, adverse for consumption and production and for technology transfer, otherwise neutral.</td>
<td>Acceleration of underlying processes. Capital movement out of higher technology industries</td>
<td>Environmental regulation. Development planning</td>
<td>- ▲</td>
</tr>
<tr>
<td>SD strategies</td>
<td>Neutral impact</td>
<td></td>
<td></td>
<td>- -</td>
</tr>
</tbody>
</table>
Legend: ↑ beneficial greater significant impact, ↓ adverse greater significant impact, ⬆ beneficial lesser significant impact, ⬇ adverse lesser significant impact, ⬆⬇ beneficial and adverse impacts likely to be experienced according to context (may be lesser or greater as above), - non-significant impact compared with the base situation.

Table 6.2: Sustainable development impacts of agricultural liberalisation in the EU

<table>
<thead>
<tr>
<th>Impact</th>
<th>Countries / sectors affected</th>
<th>Causal factors</th>
<th>Factors affecting significance</th>
<th>Potential significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic</td>
<td></td>
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</tr>
<tr>
<td>Real income</td>
<td>All</td>
<td>Lower consumer prices</td>
<td>Long term gain depends on growth of other sectors</td>
<td>⬆</td>
</tr>
<tr>
<td>Employment</td>
<td>Areas of economically marginal production. Sugar, wheat, chicken, beef, fruit.</td>
<td>Competition from Mercosur imports</td>
<td>Rural development support</td>
<td>⬆ ⬆</td>
</tr>
<tr>
<td>Fixed capital formation</td>
<td>All</td>
<td>Fall in land value and closure of facilities</td>
<td>Long term gain depends on growth of other sectors</td>
<td>⬆</td>
</tr>
<tr>
<td>Social</td>
<td></td>
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<tr>
<td>Poverty</td>
<td>Areas of economically marginal production. Accession countries most vulnerable.</td>
<td>Fall in employment</td>
<td>Social policies</td>
<td>⬆ -</td>
</tr>
<tr>
<td>Health and education</td>
<td></td>
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<tr>
<td>Equity</td>
<td>Less competitive small farms</td>
<td>Fall in employment</td>
<td>Rural development support</td>
<td>⬆ -</td>
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<tr>
<td>Environmental</td>
<td></td>
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<tr>
<td>Natural resources</td>
<td>Water and soils</td>
<td>Reduced production</td>
<td>Water Framework Directive and Action Plan for Soils</td>
<td>⬆ ⬆</td>
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<tr>
<td>Environmental quality</td>
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<tr>
<td>Water and air pollution</td>
<td>Mixed effects</td>
<td>Reduced production, higher intensity</td>
<td>Regulatory framework</td>
<td>- -</td>
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<tr>
<td>Plant diseases</td>
<td></td>
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<td>Biodiversity</td>
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<td>SD principles</td>
<td>Positive for international cooperation, otherwise neutral except for increased consumption</td>
<td>Acceleration of underlying processes</td>
<td>Global environmental regulation and support for Mercosur regulation</td>
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<td>SD strategies</td>
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Legend: ↑ beneficial greater significant impact, ↓ adverse greater significant impact, ⬆ beneficial lesser significant impact, ⬇ adverse lesser significant impact, ↔ beneficial and adverse impacts likely to be experienced according to context (may be lesser or greater as above), - non-significant impact compared with the base situation.

Greater and lesser significance are defined by the SIA methodology as:

- **lesser significant impact** – marginally significant to the negotiation decision, and if negative, a potential candidate for mitigation
- **greater significant impact** – significant to the negotiation decision, and if negative, merits serious consideration for mitigation.
7 OPPORTUNITIES FOR MITIGATION AND ENHANCEMENT

7.1 Introduction

The analysis of Mitigation and Enhancement (M&E) measures is part of the SIA methodology and, on the basis of identified impacts, an SIA should propose mitigation and enhancement measures in different areas of public policy, including trade policy. Mitigation and enhancement of potential impacts may be taken through trade-related measures within the negotiation framework, such as adjustment to the timing or phasing of trade reforms, through domestic measures within the EU, domestic measures in the Mercosur countries, as well as by means of development assistance provided by the EU. These types of measures are identified in the following section along with a discussion on the overall needs for mitigation or enhancement.

The principal aim of this section is to identify appropriate mitigation measures, which may be taken within the trade agreement itself or in parallel to EU-Mercosur action or domestic policy measures, in order to enhance beneficial impacts and avoid potentially adverse ones, or reduce them to an acceptable level.

The MTR indicated that an overall economic gain can be expected in both the EU and Mercosur from increased trade liberalisation in the agricultural sector. In principle, it should be possible to mitigate adverse social and environmental impacts identified, while still achieving a net economic gain in both regions. In the following section, we will limit the attention to addressing some of the most important challenges to social and environmental well-being that were identified in Section 6, and how these could be addressed.

The European Union’s Sustainable Development Strategy (SDS) identifies clear aims of achieving a competitive economy, while giving environmental issues the same political priority as economic and social issues.\(^99\) The role of trade liberalisation in achieving sustainable development is, therefore, a key consideration within the EU. In particular, “…trade remains the single most important factor for accelerated poverty reduction” according to Europe’s Forum on International Cooperation.\(^100\) To this end, the Commission recognises that SD cannot exist without proper protection of animal and human life and thus the support systems upon which both depend. In Article 26 of the Commission’s Communication on SDS entitled ‘Towards a global partnership for sustainable development’, the Environment DG recognised that: “Sustainable development in Europe and in the rest of the world are highly interdependent” and that the EU therefore has a role in ensuring increased trade does not lead to increased inequality internally or externally to the EU.

The most immediate adverse impacts that could result from increased trade between the EU and Mercosur with respect to agriculture are expected to take place in the Mercosur countries, in particular, the impacts that would result from an increase in production of beef meat and sugarcane for ethanol. An increase in these two key sectors could lead to the expansion of monoculture production onto lands of high biodiversity, such as the Amazon and Cerrado, as well as an increase in the use of agrochemicals in Mercosur. Mitigating the potential environmental and social implications of likely changes in levels of production will be discussed in Section 7.2 and 7.3.

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\(^99\) See [http://ec.europa.eu/sustainable/sds2006/index_en.htm](http://ec.europa.eu/sustainable/sds2006/index_en.htm) for more information
\(^100\) EUforoic, 2003
7.2 Environmental impacts

If not properly addressed, adverse environmental impacts have the greatest potential for reducing likely social and economic benefits of increased trade between the EU and Mercosur. At the same time, with appropriate flanking measures adopted, reduced barriers to trade in some key products, such as ethanol, have the potential to enhance existing goals towards sustainability and development. Increased trade in ethanol for biofuels, for example, could be key in the EU reaching its 2010 targets of biofuel use and thus reducing GHG emissions, while providing economic gains in the Mercosur countries (See the Automotive Study).

One argument against freer trade with respect to agriculture is its impact on the environment.\textsuperscript{101} There is, however, a scarcity of literature on the impact of trade liberalisation on the environment in the context of agriculture and conclusions concerning the impact of trade policies on the rural natural resource base, as well as welfare effects of freer trade, remain ambiguous.\textsuperscript{102} Due to data limitations, it is difficult to accurately model the agriculture-environment relationship in econometric exercises. To date, it has, therefore, been common to express agri-environmental externalities as a simple function of agricultural output; in particular:

“The net welfare effects for a large exporting country liberalising trade and facing a negative externality would be ambiguous. This is because higher domestic prices after liberalisation would lead to gains in producer surplus, but also to an increase in external environmental costs and a loss of consumer surplus which, on balance, could be positive or negative”\textsuperscript{103}

The most appropriate measures to address potentially negative impacts of increased productivity resulting from freer trade can, therefore, be equally ambiguous. The promotion of appropriate agricultural technologies and management techniques associated with resource use, as well as improved agro-chemical usage, will be essential, and can be achieved through increased environmental regulation.\textsuperscript{104}

7.2.1 Land use regulation, ownership and conservation

Policies to increase the environmental efficiency of agriculture are essential to mitigate the potential adverse impacts of expansion in agricultural production. This is particularly important for the Mercosur countries, for which technical assistance from the EU can make a valuable contribution. International concern over the future of the Amazon forest and the rate of degradation in recent years has led to increased international and domestic initiatives to help promote conservation planning and sustainable development—particularly in Brazil.\textsuperscript{105}

Investment in the expansion of roads and transportation infrastructure by the Brazilian government to support increasing exports of agricultural goods out of Brazil has received significant attention due to the large-scale impact on biodiversity in the Amazon and Cerrado.

\textsuperscript{101} Glebe, 2003; Overall Final SIA Report, Annex 3  
\textsuperscript{102} Scrieciu, 2005  
\textsuperscript{103} Glebe, 2003  
\textsuperscript{104} George, Kirkpatrick, 2004  
A World Bank led consortium called the “Pilot Program to Conserve the Brazilian Rainforest”, was established to “maximize the environmental benefits of rain forests through the implementation of pioneering projects that contribute to the ongoing reduction of the deforestation rate in Brazil;” the WB is the trustee of the Rain Forest Trust Fund (RFT), with over $428 million donated to the Pilot Program since 1992.106

With successful land-use regulation, demarcation of protected areas, local land-use planning, and improved land titling, there is real potential for conservation amidst expanding economic development and investment in infrastructure (Box 8-1). Cited as key to successfully promoting biodiversity protection in Brazil, and particularly with respect to the Amazon, has been the “Environmental Crimes Bill.” This bill was passed by the Brazilian congress in 1998, giving the Brazilian environmental protection agency (IBAMA) the power to levy fines, impose jail sentences for illegal deforestation, burning, and logging activities; “armed with this legislation, IBAMA recently suspended 800 timber management plans approved in the state of Pará, nudging the region's burgeoning logging industry toward reduced impact forest management practices and reducing fire risk.”107

Box 8-1: Brazilian efforts to protect biodiversity in the Amazon

Brazil's ambitious Amazon forest policy requires forest maintenance along streams and slopes and that at least 80% of rural properties be protected as forest reserves. It also requires licensing of deforestation, logging, and burning. These regulations have been difficult to enforce in the vast, remote frontiers of Amazonia, where government institutional capacity is limited. However, Mato Grosso state has made effective use of remote sensing and geographic information systems (GIS) technology to enforce forest policy. Landholders wishing to clear forest must provide the coordinates of their property, superimposed on recent Landsat imagery, to the state environmental agency. Properties totalling more than 10 million hectares--11% of the state--have been registered in this system. Deforestation permits have been denied to landholders who have exceeded the 20% deforestation limit on their property. The western Amazon state of Acre's "government of the forest" has established a 15% cap on deforestation and is effectively promoting economic activities that depend on forests as it suppresses pasture expansion.

Significant progress is also being made in prevention and control of accidental fires. The Brazilian fire control program for Amazonia (PROARCO) prohibits burning during the peak of the dry season. The program's implementation in 2000 was associated with a two- to fourfold reduction in the number of fires registered by satellite images from 1999 to 2000 throughout most of the heavily settled eastern and southern portion of Amazonia. This fire reduction cannot be explained on the basis of rainfall patterns.


There are also bilateral programs between the Brazilian and other governments, domestic governmental initiatives, and activities of private organizations. Collectively, these programs involve hundreds of millions of dollars and the energies of many dedicated individuals. More recent reports found that “trends in Brazil's land-use regulation and management capacity could potentially conserve 70% to 80% of the forest while fostering economic development.”

106 For further details:
Therefore, if proper institutional mechanisms are in place, “unprecedented large-scale tropical forest conservation” is possible.  

**Proposal:** Strengthening of environmental regulation to ensure immediate and local conservation.

Careful management of land and soil under increased intensity of use is a key way to provide concrete incentives for farmers to avoid the need for additional land conversion. The increased efficiency in land used for beef can improve productivity of individual animals and land. Furthermore, productivity gains can be achieved through more intense use of land for beef production in a sustainable method; while short term costs in the transition phase may be significant, in the long run there is potential for higher returns at the farm level. Government support and/or subsidies would be required to encourage such change in activity and land use.

**Proposal:** Increased use of dual purpose and beef herds (milk and meat production) and careful and controlled fertilisation of grass-legume pastures, alongside greater stocking densities for cattle systems, in order to improve economic returns under existing conditions.

Further mitigation measures which will allow increased production while limiting expansion onto new forested areas or lands high in biodiversity include the adoption of production techniques that can increase productivity per unit, i.e., improved varieties of seeds; as well as increased organic production—particularly for beef.

**Proposal:** Increased use of high yielding crop varieties and genetically modified varieties which require fewer inputs, as well as increasing the share of organically produced crops to mitigate potential impacts of increased agricultural production.

The provision of property rights does not necessarily imply privatisation, making this a flexible tool depending on country-specific political circumstances. Other institutional solutions are common-property management schemes. Policy reform and institutional adjustments in this case can severely reduce degradation or reverse existing trends, including the cessation of policies and practices of awarding land titles to deforested lands—a policy which has encouraged workers (especially in Brazil) to deforest land. There is empirical as well as qualitative evidence in Brazil that title and investment contribute to land value and, in turn, promote farm-specific protection and investment.

**Proposal:** Strengthening property rights to enhance the reduction of environmental degradation, since ownership encourages responsible maintenance of resources, promoting profitability and land protection.

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108 Schneider, 2000  
109 Nepstad, et al, 2002  
110 See Blake and Nicholson, 2004, for further detailed discussion  
111 Alston, et al, 1996
7.2.2  Agrochemical use

Increased production from freer trade between the EU and Mercosur may lead to an increase in the use of agrochemicals, including pesticides and fertilizers:\textsuperscript{112}

“…agrochemicals in the region threaten to increase incidence of pesticide poisoning, which has already been termed a serious public health problem throughout Latin America by the World Health Organization (WHO). Because of the social, economic and cultural conditions under which they are used, pesticides acutely poison hundreds of thousands each year, including many children. In Central America, it is estimated that 400,000 people suffer acute pesticide poisoning each year; in Brazil alone 300,000 cases are reported annually. In the majority of Latin American countries poisoning registries are so inadequate that most acute poisoning cases never get recorded. Meanwhile health effects of chronic or long-term pesticide exposures such as cancer or birth defects are not available—omissions that serve to hide the epidemic proportion of pesticide-related illness in the region.”\textsuperscript{113}

More efficient use of agrochemicals is a key policy concern for the EU. The Commission is engaged in a number of working groups aimed at assessing the impact of increased agricultural productivity on GHG emissions, particularly from N\textsubscript{2}O (nitrous oxide) and CH\textsubscript{4} (methane).\textsuperscript{114} In particular, a number of EU directives have been adopted to ensure more efficient fertiliser applications to reduce overall use, and, therefore, reduce contamination from excess fertilisation, alongside increased livestock manure management. In the United States, this has been found to have the highest methane emission reduction potential among agricultural mitigation strategies.\textsuperscript{115}

Due to the high risk to human and environmental health associated with pesticide use, through direct or indirect exposure, the EU has sought a number of regulatory directives to minimise the detrimental impacts of pesticide use, while trying to increase public awareness of the harmful environmental and health impacts associated with their use. To this end, there are a number of EU regulations covering pesticides, the monitoring of agrochemicals in groundwater and all surface waters.\textsuperscript{116}

The EU has likewise promoted the transfer of knowledge between EU experts and those in the Mercosur region to extend technology and knowledge in this area and has co-funded a consortium under the Sixth Framework Programme called EUMercoPol which will generate scientific information in support of trade policy between the EU and Mercosur countries.\textsuperscript{117} The project is currently underway and expected to conclude in April of 2008. The initiative has been designed to address competitiveness of key Mercosur agri-food sectors relative to EU commodity systems; agri-food policies in the context of production, consumption and trade environments and the\textit{ex-ante} impact of liberalised trade between the EU and Mercosur on markets, budgets, and key indicators of their agricultural sectors.

\textsuperscript{112} Rosenthal, 2005
\textsuperscript{113} PAN-Latin America, 2003.
\textsuperscript{114} DG Agro, 2003
\textsuperscript{115} Schneider 2000
\textsuperscript{117} See \url{http://www.eumercopol.org/interna_project.html} for more information.
**Proposal:** Increased cooperation and transfer of knowledge and technology between the EU and Mercosur to ensure proper and sufficient regulation of agrochemical use to avoid excess exposure and applications resulting from increased productivity; (ii) improved pest management to reduce pesticide; (iii) increased management of manure to reduce global GHG emissions following from expected increases in beef production.

### 7.2.3 Market-based mechanisms

Research has shown that a command and control approach to environmental regulation can be expensive, cumbersome and result in policies that are “fragmented and inflexible”\(^{118}\). As a result, market-based environmental mechanisms, such as taxes and tradable permits, have become much more common. A primary justification for using transferable permits for pollution control is that they achieve an “optimum” level of emissions at the lowest cost.

At present, there is a need for considerable increase in the role of Mercosur governments in protecting biodiversity and the destruction and deforestation of the Cerrado and Amazon Basin. In recent years, destruction of these two richly bio-diverse habitats has increased with effects on atmospheric carbon levels and on global biodiversity.

Available mitigation measures which simultaneously protect forested areas, while promoting a reduction in GHG emissions, include carbon sequestration initiatives (such as the clean development mechanism CDM)\(^{119}\). Such programmes promote the protection of forested areas or lands rich in biodiversity (such as the Cerrado) with significant ecological benefits, while simultaneously being able to promote socioeconomic development for indigenous populations.

There are, however, social costs associated with forest sequestration programmes, which has led to controversy about the adverse impacts of trade in forest carbon. There is evidence that a community-based approach to forest management for carbon sequestration may, therefore, offer the greatest benefit to local livelihoods\(^{120}\).

Environmental labelling of products is becoming increasingly common in the form of ‘eco-label’ seals of approval or government mandated labels, such as those indicating efficiency ratings\(^{121}\). Such an approach to ethanol production in biofuel manufacturing has been proposed for Mercosur. The production of biofuels uses energy which itself generates greenhouse gas emissions, and the production process may also have other adverse environmental and social impacts. In order to ensure that the replacement of fossil fuels by biofuels makes a positive contribution to reducing climate change and does not have other impacts that are unacceptable, several countries have been developing standards for biofuels or have taken initiatives to develop certification systems\(^{122}\).

Other tools that can encourage environmentally sustainable production are governed by international markets, such as certification. Such an approach would be particularly useful with the expected expansion of sugar cane production for biofuels and help to mitigate spill

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\(^{118}\) Khanna, 2001  
\(^{119}\) Hardner, et al, 2000  
\(^{120}\) Smith, et al, 2003  
\(^{121}\) Khanna, 2003  
\(^{122}\) van Dam et al (2006)
over effects on further deforestation in the Amazon and expansion onto genetically diverse Cerrado lands.

The European Commission has played an important role through the development of a Biomass Action Plan and an EU Strategy for Biofuels. It is planned to introduce a form of European certification to ensure that biofuels will count towards renewable energy targets only if their cultivation complies with minimum sustainability standards.

The EU Biofuel Strategy states that assistance will be given to suitable developing countries through EU development policy, to help them capture the economic benefits offered by biofuels, and to support the development of effective regulatory frameworks which would mitigate environmental risks and address sustainability concerns.

The United Nations Conference on Trade and Development (UNCTAD) launched a BioFuels Initiative in 2005, to facilitate biofuel initiatives among UN and non-UN bodies. The initiative aims to share experience and provide support to developing countries, and provide UNCTAD membership with access to sound economic and trade policy analysis, capacity building activities and consensus building tools. An UNCTAD study has identified the value of labelling and certification schemes in addressing environmental concerns, while contributing to environmental objectives. Such an approach minimises unnecessary barriers to international trade, especially to exports from developing countries.

The bioenergy task programme of the International Energy Agency (IEA) has summarised proposed sustainability criteria that may be used in certification schemes, as developed in a range of national and other initiatives. The IEA notes several difficulties which need to be overcome in the development of an effective certification system:

- Lack of adequate criteria and indicators
- Requirement of effective control and monitoring system
- Open market limits effectiveness of certification system
- Small stakeholders’ limitations to implement requirements
- Stakeholder involvement required for a legitimate and reliable system
- Limitations related to (inter-)national legislation and international trade
- Cost levels of biomass certification
- Issues related to inequalities in development and trade

Similar difficulties are identified in the OECD biofuels report. The report argues that certification is useful for promoting good practices, but cannot be trusted as a safeguard, and that only a global and coherent approach stands a chance of making a positive difference.

It will also be necessary to ensure that any standards and certification schemes for biofuels address the issue of possible leakage effects, arising for example through renaming or mislabelling. It has been argued that additional research is needed to determine whether an independent international certification body that counters these effects for sustainable biomass

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123 EC (2005)
124 EC (2006)
125 UNCTAD (2006)
126 van Dam et al (2006)
127 Doornbosch and Steenblik (2007)
is feasible\textsuperscript{128}. Such research should be done in collaboration with a consortium of all stakeholders in the production chain. Experience in the seafood sector suggests that it may be necessary to introduce standards for the use of common and trade names, specification of production methods and rules for country of origin, with penalties for infractions\textsuperscript{129}.

Any certification scheme would need to address all of these difficulties and be sufficiently rigorous to be effective in addressing sustainability issues, while at the same time complying with WTO rules and not unduly constraining infant biofuel industries or acting as a surreptitious trade barrier. The experience of forest certification attained by organisations such as the Forest Stewardship Council is expected to be of particular value in addressing these concerns\textsuperscript{130}.

**Proposal:** Engage with all relevant international bodies in the development and implementation of an effective globally agreed certification process which rewards products that are produced sustainably.

### 7.3 Social Impacts

There is evidence in the SIA analysis that an increase in trade between Mercosur and the EU could have adverse impacts on social welfare, particularly on the welfare of rural populations. An implication of increased productivity (in the long-run) is a decline in agricultural employment as mechanisation replaces rural workers. This decline in agricultural employment would necessitate an increase in education and training policies to assist the take-up of new employment opportunities. In addition, without appropriate controls, there is a risk that increased production resulting from freer trade could lead to an increased demand for forced labour, especially in the bovine sector in Brazil.

#### 7.3.1 Wages and working conditions

Regulatory measures to improve wages in line with rising income from increased exports, as well as ensuring improved work conditions for those on the existing work force, need to be considered in light of negotiations between Mercosur and the EU. For example, there is evidence that a minimum wage (especially in Brazil), can be an effective policy tool in the fight against poverty and inequality, without reducing employment opportunities.\textsuperscript{131}

The Director General of the ILO recently highlighted the role trade liberalisation can play in both job destruction and job creation; depending on the short term conditions and country-specific factors. Net employment effects can be positive or negative and, in particular, “where trade liberalization has a prejudicial effect on parts of the labour force, it is necessary for labour and social policies to redistribute some of the gains.”\textsuperscript{132}

There exist serious concerns over the use of forced labour in Brazil, including child labour. If appropriate flanking measures are not adopted, the Agreement could exacerbate this problem further. While forced labour is a world wide problem, this issue is of considerable concern in Latin America, and particularly in Brazil; although the practice is illegal, it is widely practiced

\textsuperscript{128} WWI (2006)  
\textsuperscript{129} Jacquet and Pauly (2007)  
\textsuperscript{130} WWI (2006)  
\textsuperscript{131} Lemos, S., Minimum Wage Effects in Brazil, Development Studies 43(3) 2007, p. 700-720  
\textsuperscript{132} DGs introduction to the 2007 IL conference in Geneva, May 30-June 15, 2007
Bringing this issue into the public spotlight, especially at a time of trade negotiations, is an important step in combating the issue.\textsuperscript{135} The ILO has highlighted useful measures to eliminate the practice, including collaboration between municipal governments and NGOs; further education and vocational training; micro-credit and other poverty reduction programmes.\textsuperscript{134}

In the Social and Labour Declaration (Declaración Sociolaboral) adopted by the Heads of State of MERCOSUR in Rio de Janeiro on 10 December 1998, each member State undertook to eliminate the use of all forms of forced or compulsory labour, incorporating principles and provisions elaborated in ILO Conventions Nos. 29 and 105.

In Brazil in particular:

“...the Government’s commitment to eradicating degrading labour practices and debt bondage has been reflected in the adoption of numerous measures, including the establishment of the Special Mobile Inspection Group; the adoption of the National Plan for the Elimination of Slave Labour; the adoption of a cooperation project between the ILO and the Government of Brazil entitled “combating forced labour in Brazil” (2002–07); and the annual publication of a list of individuals and entities found guilty of using slave labour and barred from entering into financial arrangements with certain public financial institutions and from obtaining government subsidies and tax exemptions, etc.”\textsuperscript{135}

The EU will also play a key role in encouraging appropriate employment standards with its trading partners. The Trade Commissioner has highlighted the importance of the EU in enforcing ILO standards, in particular, he pointed to the fact that the EU withdrew GSP (Generalized System of Preferences) from Myanmar (Burma) for forced labour practices and, following ILO advice, the EU is now considering GSP withdrawal from Belarus for alleged abuse of freedom of association and failure to meet ILO standards.\textsuperscript{136} Under the new GSP+ scheme adopted in June 2005 by Council, the EU now extends an even stronger incentive for good practice by offering further tariff preferences for countries that have signed and effectively implemented the core ILO conventions on basic labour rights. Strict and rigid labour laws are therefore necessary and that there is no empirical evidence such regulations themselves have kept unemployment high and wages low in Mercosur (especially in Brazil).\textsuperscript{137}

In addition, DG Trade has funded an ILO pilot project to develop decent work indicators in developing countries that can be used to predict and monitor the impact of trade liberalisation on decent work. Case studies have been completed in Uganda and Philippines. The results will be published in the next month or so. The aim is to extend the ILO pilot to other developing countries as part of the ILOs policy on trade and labour market adjustment.\textsuperscript{138}

\textsuperscript{133} http://www.ilo.org
\textsuperscript{134} For more information go to: http://www.ilo.org/dyn/declaris/DECLARATIONWEB.PROJECTDETAILS?var_Language=EN&var_ID=191
\textsuperscript{135} ILO Report 96\textsuperscript{th} Session (2007) on the Forced Labour Convention; Report III, part 1B
\textsuperscript{136} Party of European Socialist’s conference, Brussels, 10 May 2006
\textsuperscript{137} Hoek 2004
\textsuperscript{138} A summary of points made by Commissioner Mandelson at a Party of European Socialist’s conference, Brussels, 10 May 2006
Proposal: Improved compliance with international labour standards, including those related to forced labour.

A further contribution to addressing these issues may be made through an international certification scheme as discussed for environmental issues, covering the social as well as environmental aspects of biofuel production. It has been argued that although the experience of certification schemes in the agriculture and forestry sectors constitutes a valuable starting point, more analysis is required on how these schemes can be beneficial to small producers.\(^\text{139}\)

Proposal: Promote the inclusion of labour standards and measures to benefit small producers in the development of a globally agreed certification process for biofuels.

### 7.3.2 Investment in education, training and social capital

Increased trade between Mercosur and the EU will likely lead to increased economic welfare in the two regions. With increased growth and development, there is a possibility to reduce any negative social impacts resulting from increased trade between these two regions, including reducing unemployment and increasing rural income levels. Methods of achieving increased rates of employment as well as higher income levels vary dramatically between country and context.

There is significant focus on the role of education and training in reducing poverty and increasing access to varied types of employment, particularly non-farm employment. On the whole, education levels in the Mercosur countries remain very low, with significant variation between urban and rural populations. Low levels of education lead to reduced opportunities (particularly non-farm employment) and, in turn, lower wages.\(^\text{140}\)

Because agricultural activities require limited skills, the impact of additional schooling is less in terms of higher output in agriculture. While education may not have a significant impact on on-farm wages, it can lead to a relatively significant change in non-farm employment opportunities. There is empirical evidence that, while relatively small, education can play a role in determining off-farm income. The evidence suggests, therefore, that non-agricultural employment requires skills that are correlated with higher levels of education. Therefore, the impact of education on total rural household income can be significant, due in particular to the impact on rural non-farm income.\(^\text{141}\)

The range of mechanisms available to combat poor working conditions, while simultaneously increasing the welfare of the rural or agricultural-dependent workers is wide indeed. In a seminal article on the role of development in combating poverty in South America, Bebbington (1999) argues that the appropriate mechanisms depend very much on the location and context. In particular:

> “Some options would emphasize investment in human capital more than produced or natural capital, for instance: training so that people are able to secure better and healthier jobs in the urban labour market; improved health care to increase migrants’ resilience to environmental stresses; investment in education and nursery schools to

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\(^\text{139}\) Dufey (2007)  
\(^\text{140}\) Lemos, 2007  
\(^\text{141}\) Lopez et al, 2000
increase children’s long term capabilities; etc. Other options might emphasize investments in social capital as more appropriate. Social capital might, for instance, facilitate increased income for migrants, more rapid and safer transfers of remittances to rural areas, or more productive use of remittances once transferred to rural areas.”

The EU-Mercosur agreement could result in a short-term increase in demand for agricultural labour, thus reducing rural unemployment. There is likewise a risk, particularly in the long-term, that an increase in mechanisation could result in lower agricultural employment and a demand in higher skill levels. For the larger economies of Brazil and Argentina:

“…rural workers…are less dependent on the farm economy than those almost everywhere else in the developing world. This suggests that for the larger Latin American economies, fast growth in the non-rural economy can go a long way in reducing rural poverty, even if the rural economy does not grow very fast.”

The development of non-farm activities could, therefore, contribute to the alleviation of poverty among rural inhabitants. For example, an increase in tourism (the service sector) could promote growth in manufactures (e.g., local winemaking) and in agriculture itself. In Brazil in particular, investment in the non-farm economy occurred in the fruit and coffee sector, leading to agro-industrial economies that increased income growth and led to a proliferation of service sector jobs such as repair shops and domestic services.

There is likewise a need to assess the “dynamics” of changes in livelihoods resulting from economic development. For example, understanding the cause and effect of migration away from areas due to lost access to land, water and/or forests resulting from acquisition of those assets by other actors. With respect to land tenure and production in Mercosur, land rights and use issues are an example of where appropriate mitigation efforts may be necessary to reduce the negative impacts of certain policies, e.g. increased production. For example, measures which would focus less on investment in migrant skills as a means of improving rural livelihoods may be more appropriate. Instead, policies which focus on ways in which the benefits of assets of the poorer or marginalised groups could be protected, may be most appropriate and/or investing in the capability of those people to control and defend assets, i.e. investing in social as opposed to human capital.

Proposal: Investment in both human and social capital through education and training in order to promote job creation and inter-sectoral mobility.

Proposal: Increased protection of farmers and agricultural labourers in the form of alternative forms of rural non-farm employment (i.e. in manufacturing and services), alongside investment in social capital.

142 Lopez, et al, 2000
143 Reardon et al, 2001
144 Bebbington, 1999
145 Bebbington, 1999
8 CONSULTATION AND DISSEMINATION ACTIVITIES

8.1 Consultation Process

Consultation processes are an integral part of the SIA methodology. Consultations with stakeholders have been carried out since the inception of the EU Mercosur SIA programme in May 2006. This process of engagement with stakeholders and interested parties has been conducted by the development of an experts network, website usage, public meetings in Brussels to discuss the Inception and Mid Term Reports, networking with other groups and parties involved in EU and Mercosur trade policy, and dissemination of the project outputs to the research and policy communities through publications and conference presentations.

A Civil Society meeting was held on the Inception Report on 18 July 2006 in Brussels, and a report on the consultations is available on the project website. In response to this meeting, a Final Revised version of the Inception Report was submitted on 1 September 2006. The Mid Term report was discussed with interested parties at a public meeting in Brussels on 19th December 2006. The Report was subsequently revised in response to the comments received at the public meeting and also the comments received by email. The comments received and the consultants’ response were posted on the project website (www.sia-trade.org). The revised mid term report was distributed on 5th April 2007. The Executive Summary was provided in English, Portuguese and Spanish.

Dialogue with stakeholders should cover all the areas of the trade negotiations. The principal mechanism for achieving this is through the experts network database which has been accumulated through the SIA programme. This includes stakeholder organisations and individuals in the European Community member states and Mercosur, including experts with knowledge in a wide range of environmental, social and economic areas. Electronic communication with stakeholder representatives is being supported by the posting of reports and other information on the project website, and through the website’s feedback facility and email correspondence with participants. Direct dialogue with stakeholders will continue to be pursued through attendance at international events involving civil society and governmental representatives.

The contractors have continued to run the open access website at www.sia-trade.org. The existing database of nearly 1300 stakeholder organisations and individuals was used to distribute electronically an announcement of the commencement of the current phase of the work programme. Details of the dates for completion of the inception, midterm and final reports, and the timetable for consultation on the reports, have been provided. All interested parties, whether individuals or organisations have been invited to participate in the current phase of the SIA programme, using the dedicated email address for comments – sia-trade@manchester.ac.uk

The contractor will continue to respond to the comments received, using the feedback-comment function that is incorporated in the website to facilitate dialogue with stakeholders and other interested parties.

The project website has had over 17,200 visits between November 2006 and May 2007 (see Tables 8.1-8.3).
Table 8.1: Numbers of visits to the Mercosur website (November 06 – May 07)

<table>
<thead>
<tr>
<th>Per Month</th>
<th>November</th>
<th>December</th>
<th>January</th>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>Total Nov-May</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visits</td>
<td>2047</td>
<td>2937</td>
<td>2898</td>
<td>2057</td>
<td>2445</td>
<td>2595</td>
<td>2309</td>
<td>14979</td>
</tr>
<tr>
<td>Hits</td>
<td>24481</td>
<td>24205</td>
<td>26927</td>
<td>20356</td>
<td>25428</td>
<td>27256</td>
<td>23220</td>
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<td>98</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>134</td>
<td>36</td>
<td>368</td>
</tr>
</tbody>
</table>

Table 8.2: Number of times that online reports have been accessed from Nov 06 – May 07

<table>
<thead>
<tr>
<th>Report</th>
<th>November</th>
<th>December</th>
<th>January</th>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>Total Downloads Nov-May</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inception Report (6 July 2006)</td>
<td>123</td>
<td>79</td>
<td>179</td>
<td>80</td>
<td>124</td>
<td>103</td>
<td>110</td>
<td>798</td>
</tr>
<tr>
<td>Midterm Report (MTR) (November, 2006)</td>
<td>0</td>
<td>185</td>
<td>0</td>
<td>78</td>
<td>115</td>
<td>83</td>
<td>-</td>
<td>461</td>
</tr>
</tbody>
</table>

Table 8.3: Access to Revised Overall Mid-Term Report and MTR Sectoral Studies (April 5-May 31, 2007)

<table>
<thead>
<tr>
<th>Report</th>
<th>English</th>
<th>Spanish</th>
<th>Portuguese</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Revised MTR (5 April, 2007)</td>
<td>96</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Agriculture</td>
<td>235</td>
<td>346</td>
<td>267</td>
</tr>
<tr>
<td>Forestry</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Automobile</td>
<td>0</td>
<td>98</td>
<td>0</td>
</tr>
</tbody>
</table>

8.2 Dissemination and Contribution to the Policy Debate

The contractor has continued to engage in the wider policy debate on issues relating to trade policy analysis, impact assessment and sustainability impact assessment.

Networking activities:

- Presentation at the Easy-Eco Conference in Saarbrucken Germany, 11-14 October, 2006 on “Improving the quality of Sustainable Development’
The contractors have continued to disseminate the results of the SIA programme through academic publications.

**Publications:**


9 CONCLUSIONS

This report presents the results of a project undertaken for the European Commission to provide a sustainability impact assessment (SIA) of the agricultural sector, as part of the Association Agreement under negotiation between the European Union and the Mercosur countries. The agricultural sector SIA has been carried out in parallel with two other detailed SIAs, for the automotive and forestry sectors. The results of these sectoral SIAs are also incorporated into an Overall SIA of the EU - Mercosur Association Agreement.

This report provides the results of the sustainability impact assessment, and an analysis of potential flanking measures. It incorporates the comments received on the earlier Inception and Mid Term Reports which were circulated widely to stakeholders and discussed at consultation meetings in Brussels with civil society.

This Final Report on the potential impacts resulting from the EU Mercosur Association Agreement was undertaken using CGE modelling, case study material and secondary literature. The impacts are assessed in terms of economic, social, environmental, and process impacts for the EU and Mercosur countries. This report also includes an extended analysis of the impacts of freer trade on two key sectors: Beef and Ethanol. To provide more comprehensive coverage of the economic, social and environmental concerns present across both regions for agriculture in general, and for beef and ethanol in particular, this report provides an depth analysis of these key areas under negotiation. In addition, this final report emphasises potential mitigation and enhancement (M&E) measures in relation to impacts on sustainable development, particularly for the Mercosur region.

In the EU, the main economic impacts of the proposed Agreement should be positive, with an overall welfare gain expected as prices in the EU fall with rising imports from Mercosur. Despite an overall decline in the agricultural sector for the EU, consumption of value added products is expected to rise with increased geographical differentiation of production, creating more jobs and thus producing higher value products.

The overall economic impact of full trade liberalisation between the EU and Mercosur is expected to be positive for the Mercosur countries. Production in Mercosur is highly competitive for meat, cereals, sugar, ethanol and fruits; with reduced trade barriers, Mercosur is expected to expand in these sectors, leading to increased development of agriculture and the food industry in Mercosur.

Employment in agriculture is expected to rise in Mercosur following increased output across the sector. The additional output expected from relaxed trade barriers will encourage a further decrease in unemployment. Long term effects may result in increased incentives for mechanisation, resulting in a demand for higher skill levels and a reduction in agricultural employment. It is expected that the effect of the EU-Mercosur agreement would be an incremental addition to existing pressures in this direction.

The overall impacts of full liberalisation on social welfare in the EU are expected to be negative in the short term for countries specialising in meat, cereal and sugar production. The accession countries, in particular, are expected to feel short term impacts on poverty and unemployment. The long term impacts, however, are expected to be neutral.
Within Mercosur, both positive and negative social impacts are anticipated. In particular, there may be adverse impacts on land tenure. The expansion of commercial farming could displace informal farmers, leading to higher levels of unemployment and increased poverty, and may also have adverse effects on efforts to counter the use of forced labour. Additional demand for land may also result in the loss of land for indigenous people, especially in Brazil. If these effects are satisfactorily mitigated liberalisation also offers potential for a reduction in rural poverty as employment could rise to satisfy increased agricultural demand. Improved export performance is expected to lead to an increase in public finance and higher health expenditure. This could result in increased overall welfare in the Mercosur countries, particularly in the areas of health and education.

The overall impacts on the environment are expected to be positive within the EU. Loss of competitiveness in the agricultural sector may encourage greater intensity of production in order to increase yields, but the overall effect on soil and water resources is expected to be small and beneficial. The overall decline in EU agricultural output is expected to result in an overall impact on biodiversity in the EU that is small, but beneficial.

Agricultural production is expected to rise across the Mercosur countries, leading to increased pressure on natural resources. Increased production is expected to have potentially significant adverse impacts in the short and long run, due to both intensification and expansion of production, particularly of beef and sugar for ethanol production. Adverse pollution may likewise be a problem in areas of increased production, with locally significant impacts in the absence of effective regulatory measures. The increased production of sugarcane for ethanol exports could have an overall beneficial impact on GHG emissions if expansion is achieved in a sustainable manner. In the absence of appropriate mitigation efforts, the projected expansion of production is expected to have adverse impacts on deforestation in the Brazilian Amazon and Cerrado areas.

There is potential for environmental benefits from increased production of biofuels, provided the systems of production and processing are achieved in a sustainable and efficient manner. Likewise, expansion of production could be achieved without additional degradation of natural ecosystems, if appropriate measures are in place and regulation is sufficient and effective.

**Flanking Measure Proposals**

The analysis of Mitigation and Enhancement (M&E) measures is part of the SIA methodology and, on the basis of identified impacts, an SIA should propose mitigation and enhancement measures in different areas of public policy, including trade policy. Mitigation and enhancement of potential impacts may be taken through trade-related measures within the negotiation framework, such as adjustment to the timing or phasing of trade reforms, through domestic measures within the EU, domestic measures in the Mercosur countries, as well as by means of development assistance provided by the EU.

This study identified the most immediate and adverse impacts likely resulting from increased trade between the EU and Mercosur with respect to agriculture and proposed a number of potential measures that could reduce these impacts to an acceptable level, while potentially enhancing beneficial impacts expected from increased trade.
This report identified mitigation and enhancement measures for the key social and environmental impacts expected from increased trade between the EU and Mercosur. Increased environmental regulation offers a series of mechanisms to ensure immediate and local conservation that could offset adverse impacts of expansion in agricultural production. In particular, this report explored improved land use, ownership and conservation as mechanisms to ensure careful management of land and soil. Such an approach provides incentives for farmers to avoid the need for additional land conversion, while still being able to meet increased production demands.

The increased use of dual purpose and beef herds, as well as greater control of fertilisation of lands could operate as a key mechanism to improving economic returns under existing conditions. An increase in high yielding crop varieties and genetically modified varieties which demand fewer inputs, could increase output without requiring additional land. Higher shares of organically produced crops can also lead to reduced consumption of harmful agrochemical usage, as well as reduced consumption of water and land. An increase in property rights to reduce environmental degradation; ownership has been found to improve natural resource use and can lead to higher land productivity and profitability.

With increased trade between the EU and Mercosur, there will be pressure for increased productivity and thus the potential for increased use of agrochemicals. To ensure increased production does not lead to further contamination of lands, sufficient regulation of agrochemical use is necessary to avoid excess exposure and applications of agrochemicals, including pesticides and fertilizers. Improved pest management will also lead to a reduction in the need of pesticides, as would improved water conservation and management. Improved management of manure at the farm level could be a key way to address GHG emissions resulting from increased productivity, particularly in areas where beef production is expected to increase.

A series of market based mechanisms to address potential increases in carbon emissions will also be essential in the promotion of cost-effective reductions in carbon emissions, such as the role of carbon sequestration. Carbon sequestration can reduce harmful emissions, while leading to conservation and restoration of areas high in biodiversity. Similarly, the use of certification processes which reward products that are produced sustainably can create a market for environmental quality.

In general, risk aversion favours mitigation over business-as-usual, however, information, as well as incentives must be available if a society is to fully understand and respond rationally to risks. Particularly with respect to environmental degradation and the long term costs of lost biodiversity and climate change, such information is not always made available or known. Therefore, averting damages in the Mercosur countries with respect to the environment will require international incentives, alongside local and national schemes, so that short term gains in welfare from destructive practices, such as forest clearing, are less favourable to small farmers than long term solutions such as land ownership, thus allowing farmers decision making power to promote sustainable use of resources and ultimately increase welfare.

The SIA offered evident that increased trade between Mercosur and the EU could lead to adverse impacts on social welfare, particularly on rural populations. To address the potentially negative impacts, a number of key flanking measures that could be adopted to mitigate the most adverse impacts were discussed, as well as enhancement measures to promote positive impacts resulting from increased trade between these two regions.
Due to the widespread use of forced labour in the region, as well as high levels of poverty among farmers and rural populations, both the EU and Mercosur will need to work together to keep international pressure and awareness of forced labour high, thus combating the existence and potential expansion of this practice. Improved enforcement of international labour standards will be essential, particularly by involving the ILO and WTO during the negotiation process.

With overall economic welfare expected to rise in the Mercosur and EU with increased trade liberalisation, it is necessary to ensure potential negative impacts on employment and income levels are addressed. To this end, increased education and training should be key, thus allowing mobility to other sectors. Likewise, increased protection of farmers and agricultural labours in the form of non-farm employment, as well as improved investment in social capital will help mitigate adverse impacts expected from freer trade between the two regions.
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ANNEX 1: TERMS OF REFERENCE

Task specifications to Specific Contract No 1
(implementing framework contract No Trade 05-G3-01)

This annex specifies the tasks, activities and reporting which will be carried out during this specific agreement.

Requirements and timetables defined by the Commission must be strictly respected by the contractor.

For information related to the objectives and content of the Trade SIA methodological framework, see the terms of reference of the call for tender of the framework contract.

A) Main tasks and services of this specific agreement

This specific agreement should assess how the trade aspects of the Association Agreement could affect sustainable development in the EU and beyond, in particular in the MERCOSUR countries.

The aims of this specific agreement are the following:

1) to up date the Overall Preliminary Trade SIA EU-MERCOSUR
2) to conduct three Trade SIAs including Automotives-Motor Vehicles and Agriculture

1) Up dated overall preliminary Trade SIA EU-Mercosur

The study will provide an overall assessment of the potential impact on sustainability of the trade aspects for an Association Agreement between the European Communities and Mercosur. The overall preliminary Trade SIA will allow for the cross-sectoral and cumulative impacts likely to result from the implementation of the trade aspects of the Association Agreement between the European Communities and Mercosur as a whole. The assessment will build on the preliminary overview Trade SIA done in 2003. The up dated overall preliminary Trade SIA will be based on an assessment of two scenarios:

i.) a baseline scenario, without agreement
ii.) a scenario with trade agreement

The overall preliminary Trade SIA will:

- Draw together the results of the earlier study and complement this with further analysis in order to up date the preliminary overall Trade SIA results in light of the progress made so far in trade negotiations.
- On this basis, identify, as far as possible in quantitative terms, the likely impacts on the three key areas of sustainability – economic, social and environmental development – of the different aspects of the proposed EU-Mercosur trade agreement.
- On the basis of identified impacts, propose mitigation and enhancement measures in different areas of public policy, including trade policy.
• Identify the generic issues (potential sustainability impacts and policy options for optimising outcomes) which can inform negotiators and policy-makers.
• Evaluate the Trade SIA methodology and identify areas for further development and refinement in future Trade SIAs.
• Provide proposals for the ongoing monitoring of key sustainability indicators affected by trade liberalisation and for ex-post evaluation of the overall preliminary Trade SIA EU-Mercosur.
• Contribute to enhancing the dialogue concerning the overall preliminary Trade SIA EU-Mercosur with interested stakeholders, inside and outside of the EU.
• Produce an SIA-Trade Newsletter and distribute in electronic and paper format.
• Contribute to the development of a credible international network of Trade SIA experts in other countries and within other international organisations, particularly in relation to Mercosur.

2) Three Sectoral Trade SIAs including Automotive-Motor Vehicles and Agriculture

Each of the sectoral Trade SIAs should aim to achieve:

• An update of the Trade SIA methodology for these sectors and assessment tools to be used.
• A clear overview of the current trade situation in the three sectors, together with a definition of the options/scenarios to be considered and a clear analysis of causal chain analysis and the mechanisms through which the different options will affect social, economic and environmental areas.
• An analysis of the expected significance of these impacts for the sector, using appropriate measures and indicators for assessment of impacts and making use of appropriate qualitative and quantitative techniques.
• Identification cross-cutting links between these sectors and other sectors.
• Propose preventive as well as flanking measures or other adjustments that would prove effective in tackling any adverse impacts of liberalisation, and/or in promoting its positive impacts, in these three sectors.
• Contribute to enhancing the dialogue concerning the above Trade SIA with all interested stakeholders: inside and outside of the EU, particularly in Mercosur countries.
• Contribute to the development of a credible international network of Trade SIA experts through participation in policy debate on Sustainability Impact Assessments with experts in other countries and within other international organisations.

B) Preliminary sustainability assessment of the overall preliminary Trade SIA and of the three sectoral Trade SIAs

The aim of preliminary assessment of the trade aspects of the Association Agreement EU-MERCOSUR is to present an overview of all the three dimensions of sustainable development (economic, social and environmental) at stake in the trade aspects of the Association Agreement between EU and Mercosur for each of the Trade SIAs to be developed in the scope of this specific agreement 1.
Attention should be paid to building a coherent and rigorous assessment framework. This should include quantitative analysis and modelling as set out in the consultant offer for the framework contract No Trade 05-03-01.

These preliminary assessments should rely on:

1) **scenarios and findings** delivered by the previous economic and trade analysis;
2) an analysis of the **underlying sustainability context** (economic, social and environmental context);
3) a clear **analysis of the mechanisms** through which the different scenarios of the agreement will affect social, economic and environmental areas.

The specific preliminary assessments should provide an analysis in the EU at a regional/national and if appropriate sub national (regional, NUTS 2) level with:

- a preliminary assessment of possible economic impacts of the trade aspect of the Association Agreement between EU and MERCOSUR;
- the preliminary social, and environmental impacts of the trade aspects of Association Agreement between EU-MERCOSUR with an analysis of the **causal chains** which identify the significant cause-effect link between a proposed change in trade policy and its social (including gender and poverty), environmental (including all media) and economic impacts. This analysis should as far as possible combine qualitative and quantitative approaches and a wide range of indicators.

This analysis should cover all trade-related aspects of each sector, highlighting the potential positive and negative effects on sustainability as well as preliminary reflections on possible complementary measures which such effects require.

**The main output will comprise:**

1) a **first identification of key sustainability** issues and most potentially-affected **social groups** and **geographical areas**;
2) as a next step, proposal of a set of sector studies for study in the next phase of the contract, to be agreed in consultation with the Commission and Civil Society.

**C) Detailed study of sub-sectors and case studies**

Sub-sectors will be analysed in detail notably with the help of **at least one case study** for each sector.

This work will include:

- **Quantitative analysis** informed by modelling results according to the consultant offer for the framework contract No Trade 05-03-01 as well as qualitative assessments of the impact of potential outcomes in the sub-sector concerned. This work should be undertaken on the basis of case studies and economic, social and environmental analysis (including environmental impact assessment(s), using appropriate methodology, measures and indicators, and making use of both qualitative and quantitative techniques as appropriate. Impacts shall be as much as possible differentiated amongst **EU regions (in particular for the weakest regions of the enlarged EU)** - NUTS 2 level.

- **Analysis of cross sectoral effects.**
Suggest possible amendments or adaptations (including phasing in) of the assessed trade measures or new rules whose potential sustainability impacts are expected to be important, taking into account the existing regulatory frameworks and domestic policies.

- Based on the existing regulatory frameworks and domestic policies of the countries/regions under review, suggestions on what complementary measures might be introduced to best address the negative impacts and maximise the positive impact of further liberalisation / changes in rule-making. This should include an assessment of the various options for mitigating and enhancing measures, including those which could be introduced on a domestic or regional level, in international fora, or in other areas of the ongoing negotiation processes. Identify inherent trade-offs where they exist and specify on which basis and principles the choices on measures have to be made (e.g. precaution, prevention, cost-effectiveness, internalisation of external environmental costs, Treaty obligation of a high level of environmental protection).

The consultants shall select an adequate team of local experts to assist them for the geographical case studies. The list of local experts should reflect the three dimensions of sustainable development in a balanced manner. Particular attention should be paid in finding suitably qualified environmental local experts (in Mercosur countries).

D) Process and consultation

Particular attention should be paid to the involvement of stakeholders, not only from the EU but also from developing countries, in particular Mercosur countries.

Recent experience of the Trade SIA shows a deficit of information and consultation both inside and outside the EU and in particular difficulty in involving third country representatives and stakeholders.

This need for better local consultation was also confirmed at the Trade SIA seminar organized by DG Trade in Brussels on 6-7 February 2003 (see more information on http://trade-info.cec.eu.int/civil_soc/docconsult.php?action=list).

Consultation in the EU and abroad is a major challenge which must be met in order for the EU’s Trade SIA process to ensure its credibility and legitimacy.

The objectives of the consultation process are:

- to ensure a better understanding of the Trade SIA process by society inside and outside Europe;
- to disseminate the Trade SIA methodology, process and results inside and outside the EU. Trade SIA results should also be validated and complemented with opinions from experts in order to improve the analytical work and next steps;
- to contribute to the identification of priority areas and key issues (see previous section);
- to extend the network of Trade SIA expertise.

This specific agreement should look at maintaining and strengthening the existing Trade SIA consultation process by which the Commission can ensure transparency of the Trade SIA process and enable civil society and other stakeholders to provide inputs during the study. This will include:
- Presentations of the inception, mid-term and final reports at public meetings in Brussels.
- Electronic dissemination of the inception, mid-term and final report, using Experts Network and project website.
- Produce a SIA-Trade Newsletter and distribute in electronic and paper format.
- Participate in international meetings and consultations on impact assessment, and make oral or written presentations on the Trade SIA Trade methodology and work programme.

E) Composition and competence of the working team of the overall preliminary Trade SIA and of the three sectoral Trade SIAs

Before starting the work on this specific agreement the consultant should provide an indicative list which sets up a minimum qualification team for the overall preliminary Trade SIA and for the three sectoral Trade SIAs.

F) Working meetings in Brussels

The Contractor will be required to attend meetings in Brussels with Commission officials. These will include: working meetings at the launch of both studies, presentations and explanations by the Contractor of work completed, further information from the Commission on negotiating developments and discussion of future work.

This will usually entail, as a minimum, one meeting at the start of the specific contract and thereafter one meeting for each phase of the Trade SIAs work (inception, mid-term and final reports), with other meetings arranged on an ad hoc basis as necessary. A set of six working meetings of one day should be foreseen within this specific agreement.

The consultant will be asked to draft a complete report for each of these meetings.

G) Public meetings

The Contractor will be required to participate in public meetings organised by the Commission involving representatives of Member States, the European Parliament and Civil Society. It must present and explain work completed and provide the opportunity for interested stakeholders to provide direct input.

This will usually entail a minimum of three meetings (held back-to-back with the meetings with the Commission).

The consultant will be asked to draft a complete report for each of these meetings.

H) Electronic documentation

The Contractor must create and maintain a web-site dedicated to the above SIA project with a link to the DG Trade web-site. All reports, meeting reports, outputs presented to the Commission including the news letter, the list of consultant networks and consultation documents will be published by the Contractor on this web-site.
The web-site should incorporate a feedback function allowing all interested parties to provide input and setting up of a forum of discussion to further stimulate the involvement of civil society.

I) Deliverables

i) Content of the reports for each of the four Trade SIAs:

The two first reports (interim and midterm) should aim to describe 1) the state of play of the study and 2) the way ahead and to propose some further developments to be discussed with the Commission. The Commission draw the attention of the consultant to a necessity of transparency in reports which must include all the references, analytical paths needed to understand fully the outcomes and results of the study.

Interim report:

This interim report will provide the Commission with:

- An overview of the consultant’s proposed approach to the study, including a presentation of the conceptual framework of the sustainability assessment analysis.
- A description of preliminary methodological developments or changes from past studies.
- A review of literature, list of tools and references to be uses, list of contact in Mercosur countries.
- A preliminary screening exercise for the key sustainability issues/impacts associated with the trade agreement, based as far as possible on quantitative indicators.
- A preliminary discussion on the selection of sector specific indicators relevant for this study.
- Outlines of the contents for both the mid-term and final reports.

Midterm report:

The midterm report summarise the work that has been undertaken on the project and its principal outcomes in September.

In particular, it will describe:

- Implementation of the methodology: a summary of the process by which the methodology has been implemented in the case of EU-Mercosur negotiations
- Information on communication activities:
  - Creation of the web site and links to other web sites. Number of hits.
  - Consultations and dialogue with external experts ad civil society: summary of comments and suggestions received (via e-mail, web site comment function, ordinary mail, meetings etc.) and the uses made of these.
  - Development of network of Trade SIA experts: contacts undertaken, information supplied and comments received.
- State of play of study underway, outcomes regarding the screening phase, design of sector studies
• The way ahead to complete the study

**Final report:**

The final report will entail the following elements

• The methodology used for the Trade SIA
• The outcomes and results of the assessment
• Proposals of flanking measures
• Communication actions, networking
• Conclusions
• References and key sources

ii) Timing:

Deliverables for this preliminary, will be produced in accordance with the following timetable:

<table>
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<tr>
<th></th>
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<th>Mid-Term Report</th>
<th>Final Report</th>
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