

WTO NEW ROUND
Sustainability Impact Assessment Study

Phase One Report

Colin Kirkpatrick, Norman Lee and Oliver Morrissey

Institute for Development Policy and Management, and
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Revised, 1st October 1999

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PREFACE

As part of the European Commission's preparation for the proposed New Round of multilateral trade negotiations, a study has been commissioned on the impact that these negotiations might have on sustainable development. The contractors are the University of Manchester's Institute for Development Policy and Management, in collaboration with the EIA Centre, University of Manchester and the Centre for Research on Economic Development and Trade (CREDIT), University of Nottingham.

The work is to be completed in two phases: mid-July to mid-September (Phase One) and mid-September to mid-November (Phase Two). Phase One has involved literature and case study reviews of the relevant documents and the development of an SIA methodology for use in Phase Two. The second phase will mainly involve a preliminary examination of the potential impact on sustainability of each area (measure) within the negotiations.

This report contains the main conclusions arising from the Phase One work programme.

A **website** dedicated to the study can be found at the following address:

<http://fs2.idpm.man.ac.uk/sia/>. The contractors can be contacted directly at the following e-mail address: chk@man.ac.uk.

EXECUTIVE SUMMARY

Introduction

The main objective of this study is to develop a methodology for carrying out a sustainability impact assessment (SIA) and then to use it to make a broad qualitative assessment of the impact upon sustainability of the New Round. In addition, the study findings are to be used to provide ideas on how best to maximise the positive impacts of the expected liberalisation or rule-making.

The work is to be completed in two phases: mid July – mid September (Phase One) and mid September – mid November (Phase Two). Phase One has involved literature and case study reviews of the relevant documents and the development of an SIA methodology for use in Phase Two. The second phase will mainly involve an examination of the potential impact on sustainability of each area (measure) within the negotiations. The findings should be summarised, distinguishing those areas where negotiations are likely to have a relatively limited impact and those where the impact may be greater. Proposals are also invited by the Commission for cost-effective and workable flanking measures for those areas of negotiation where the expected impact is greater.

This summary contains the main conclusions arising from the Phase One work programme and describes the proposed Phase Two work programme and the types of follow-up work that may be needed after Seattle.

Phase One Findings

Sustainability impact assessment is a relatively new concept for which there is no established methodology and little practical experience, particularly relating to international trade policy (EDRC, 1999; WWF, 1998).

What is very familiar, is the methodology and application of separate forms of economic, social and environmental appraisal at the project level. Cost benefit analysis, environmental impact assessment and social impact assessment are long-standing and, in the first two cases at least, their methodologies are well established (Kirkpatrick and Lee 1997a, ch.1).

However, the application of specialised economic, social and environmental appraisals at the policy, plan and programme level (strategic-level appraisal) is much less developed. It is most developed in the economic sector, much less developed (though growing) in the environmental sector, and least developed in the social sector. A similar pattern exists so far as trade-related impact studies are concerned. It is relatively most advanced in the trade-economic sector, where modelling studies are often used. It is considerably less advanced in the trade-environment sector where a small number of modelling studies and a greater number of case studies have been completed. It is least developed in the trade-social sector, where case studies predominate. Further details are contained in chapters 3 and 4, and Appendices 3 and 4.

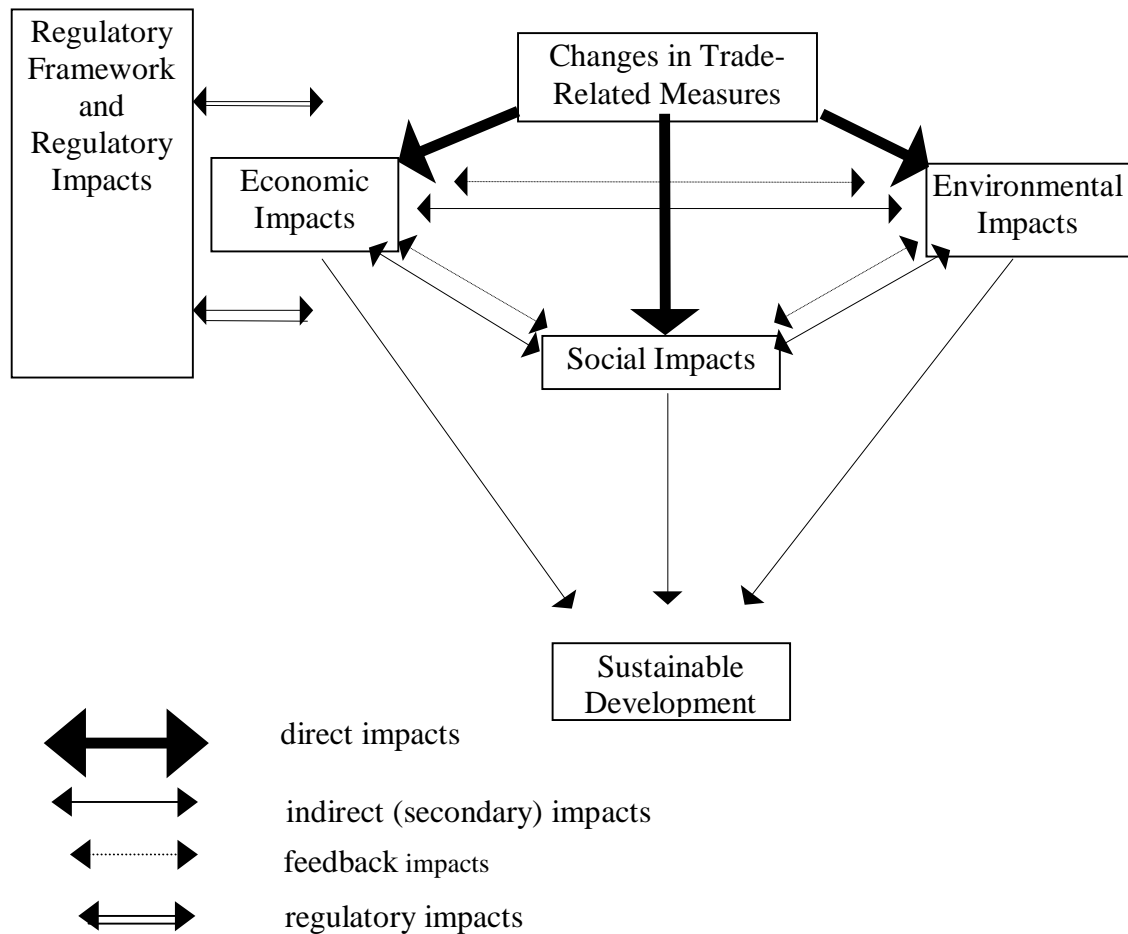
The development of an SIA methodology, for application to trade-related international agreements, faces a number of challenges. The first is the geographic breadth and ill-defined scope and content of the proposed New Round agreement. Second, there is the under developed nature of the constituent appraisal methodologies – economic, social and environmental – for use at the strategic level, and the limited practical experience in their application. Third, there is no established method for integrating these specialised strategic appraisal methodologies, which are based on different discipline-based paradigms and research methods, within a common SIA framework (Lee and Kirkpatrick 1999, forthcoming, ch.1).

Our response to these challenges is in two forms. One, reported in Chapter 2, is to construct an ‘appraisal approach’ to help in planning the SIA study. This considers four issues:

- *What is the task for which the SIA appraisal is needed?* Answering this question not only clarifies the types of trade-related measures to be appraised but also the stage in the policy formulation process at which the SIA appraisal is to be used in Phase Two. Since this is an early and imminent preparatory stage it is clear that a *preliminary* rather than *full* SIA is required in the pre-Seattle situation.
- *What is the analytical framework within which the SIA should be structured?* This, in its simplest form, is illustrated in Figure 1 below. It highlights the importance of certain sub-systems (trade, economic, social, environmental and regulatory) as building blocks within

the overall framework, and draws attention to the main interdependencies which exist between them (section 2.2).

Figure 1 Types of Impacts of a Trade Agreement on Sustainable Development



- *What are the main sustainability impacts to be assessed and how is their importance to be determined?* Attention is focused on a core set of sustainability indicators which relate to economic, social and environmental impacts of importance to sustainable development in all societies (see Box 1). The significance of specific changes in these indicators is to be assessed, using the criteria which are also summarised in Box 1 (section 2.3).

Box 1 Core Sustainability Indicators and Significant Criteria

Indicators

- ◆ average real income; net fixed capital formation; employment
- ◆ equity and poverty; health and education; gender inequalities
- ◆ environmental quality (air, water, land); biological diversity; other natural resource stocks

Significance Criteria

- ◆ extent of existing economic, social and environmental stress in affected areas
- ◆ direction of changes in base-line conditions
- ◆ nature, order of magnitude, geographic extent and duration of changes
- ◆ regulatory and institutional capacity to implement mitigatory measures

- *How are the inevitable uncertainties (arising from incomplete information, limitations in analytical tools, unpredictability of future events, etc.) to be handled within the SIA? A number of methods and procedures are identified by which some of these uncertainties may be reduced, and others may be managed, within the SIA process itself and through proposed flanking measures (section 2.4).*

The literature reviews have been of two kinds: methods-based and trade-agreement-based. The findings are reported in Chapter 3 and Appendix 3, and Chapter 4 and Appendix 4, respectively. Their common purpose is to clarify the current state of knowledge, of relevance to the appraisal of trade-related agreements, and to assist in the development of the proposed SIA methodology. The first review covers more specialised forms of appraisal (i.e. economic, social, environmental and regulatory impact appraisals) and integrated appraisals (including sustainability appraisals). The second review covers appraisals of trade-related agreements and other initiatives of relevance to the appraisal of measures that may be included in the New Round negotiations. These relate, among others, to the North American Free Trade Agreement (NAFTA), the Uruguay Round negotiations and outcomes, the European Union

Single Market Study and other studies such as the OECD study concerned with trade liberalisation and transport sector reforms.

The methods used are very diverse, partly reflecting the differences in the paradigms of the different disciplines involved – economic, social, environmental, and legal. They range between computable general equilibrium models and sophisticated forms of statistical analysis at one end of the spectrum to interview-based case studies, participatory appraisal studies and international case law studies at the other.

Much valuable work has been completed in a number of these areas during recent years. However, the development of an integrated SIA methodology, appropriate for trade-related agreement proposals, is still at a relatively early stage. A good deal is known about a number of the sub-systems in Figure 1, but many of the links between them (with the partial exception of trade policy – trade effect – economic impact links) are insufficiently identified and described for appraisal purposes. More precise definitions and consistent information, and some strengthening of analytical methods, are needed to remedy this.

The additional understanding gained from the literature and case study reviews has assisted in developing the SIA methodology, which it is proposed to use in Phase Two. Its principal components are summarised in Box 2 and are detailed in Chapter 5. Its main features are:

1. The objectives and content of the appraisal are closely related to its intended use in the pre-negotiation period.
2. The nature and extent of the relevant information which is available, the types of analysis which may be feasible and the limited time remaining in the pre-negotiation period are fully taken into account.
3. Guidance is provided on: the identification of trade measures, the appraisal scenarios to be used, country groupings, core sustainability indicators (economic, social and environmental), and on appraisal methods, information sources and consultation procedures.
4. A structured and staged approach to appraisal (involving screening, scoping, preliminary assessment, identification of flanking measures) is used, based partly on the environmental assessment process which is already familiar, within the European Union and internationally. This supports the development of a systematic and transparent

assessment process, which will encourage more balanced, good quality and influential appraisals.

Box 2 Principal Components of the SIA Methodology

Part A: Listings for use in the Preliminary SIA

- List of possible measures for negotiations in the New Round.
- List of possible scenarios to be analysed for each measure.
- List of country groups for which appraisals are to be undertaken.
- List of sustainability impact indicators and significance criteria to be used in appraisals.
- List of methods, consultation procedures and information sources for use in appraisals.

Part B: Stages, methods and procedures in the Preliminary SIA process

- *Screening*: to determine which measures on the proposed New Round agenda may be excluded from appraisal because they are unlikely to give rise to significant impacts.
- *Scoping*: to determine the terms of reference (TOR) for the appraisal of each measure likely to give rise to significant impacts (Which components of the measure should be assessed? Which appraisal methods and consultation procedures should be used?).
- *Preliminary Assessment*: to determine the impacts associated with each measure and with the Agreement as a whole that are likely to be of greater significance, lesser significance, and of no significance.
- *Flanking measures*: to determine types of flanking measures which may reduce significant negative impacts and enhance beneficial effects associated with particular measures in the proposed New Round.

Phase Two Work Programme

The work undertaken in Phase Two will mainly consist of the following:

1. Determination of the measures to be submitted to a preliminary SIA

It is proposed that the study team should screen the list of measures contained in Appendix 1 and make recommendations on which of these should be submitted to a preliminary SIA. The list of measures to be appraised should be discussed during the meeting with the Commission on October 1 when the proposed methodology, described in Chapter 5, will also be discussed.

The Commission has undertaken to provide the study team with further information on its negotiating objectives and expectations to assist in undertaking these appraisals.

2. Carrying out preliminary SIAs for each of the selected measures

This will be undertaken, using the proposed SIA methodology, according to the following stages:

- *Scoping*: to establish the appropriate coverage of each SIA.
- *Preliminary sustainability assessment*: to identify those impacts for each measure, which are likely to have a significant effect, positive or negative, on sustainable development.
- *Mitigation and enhancement analysis*: to suggest cost-effective and workable measures in those areas identified as having a potentially greater impact on sustainable development.

3. Undertaking consultations

The following consultations should take place during Phase Two.

- Meeting with the Commission, on October 1, to discuss the proposed SIA methodology, the proposed list of measures to be subject to SIA and the specific features of the measures to facilitate their appraisal. Informal consultations will also be held with Commission personnel at various times during Phase Two to assist in the appraisal of individual measures.
- Contacts with other experts and key organisations, as required, to facilitate the completion of the Phase Two Work Programme.
- Placing the findings of the Phase One report and the list of measures to be subject to SIA, on the University of Manchester Web Site and inviting comments and suggestions relating to this.
- Participating in the meeting in Brussels on October 20, organised by the Commission, to discuss the WTO study programme with representatives of NGOs and the Member States.
- Debriefing meeting with the Commission, immediately following the submission of the Phase Two report in the middle of November.

4. SIA follow-up, post Seattle

The present work programme has been primarily concerned with the development and application of a preliminary form of SIA in the pre Seattle period. During Phase Two, preparations should be made for the development of a more detailed form of SIA for use in subsequent stages of the New Round negotiations, after the Seattle meeting. Suggestions relating to this will be presented in the final report.

The arrangement of a follow-up meeting with representatives of civil society, after the completion of the current study, should be considered by the Commission. Its purpose would be to discuss the conclusions of the final report in the light of outcomes of the Seattle meeting, and the desirability of further development of the SIA methodology for more detailed application in subsequent phases of the New Round negotiations.

1. INTRODUCTION

The European Commission's Communication to the Council and European Parliament – 'The EU's Approach to the Millennium Round' (published 8 July 1999) sets out why the Commission believes that there should be a further round of WTO multilateral trade negotiations. As part of the Commission's preparation for the proposed New Round a study has been commissioned on the impact that these negotiations might have on sustainable development. The two main objectives of the study are to develop a methodology for carrying out a sustainable impact assessment, and to use the methodology to make a broad qualitative assessment of the impact upon sustainability of the New Round.

In accordance with the terms of the contract, this Phase One report contains:

- An examination of current literature on impact assessments, covering both environmental and social development assessment.
- An examination of relevant cases where these existing methodologies have been applied and of their effectiveness.
- A proposal for a fully defined sustainable impact assessment (SIA) methodology for subsequent use, during Phase Two, in a broad qualitative assessment of the sustainability impacts of the WTO New Round.

- A concise summary of these findings, which can be easily understood by trade and non-trade specialists.

The Executive Summary is presented at the beginning of this report. Chapter 2 summarises the rationale and methodological approach to the study. Chapters 3 and 4 contain the literature and case study reviews. Chapter 5 contains the proposed SIA methodology to be used in Phase Two. Chapter 6 presents the main conclusions and recommendations arising from the study. Appendices 1-4 contain more detailed, supporting information. The report concludes with a list of references.

The Work Programme to be undertaken during Phase One was described in the Inception Report, dated 12 July 1999. It has been completed in a short period, extending over approximately two months. The consortium which has undertaken the work is led by the Institute for Development Policy and Management (IDPM) of the University of Manchester, in conjunction with the Environmental Impact Assessment Centre, University of Manchester and the Centre for Research in Economic Development and International Trade (CREDIT) of the University of Nottingham.

The core members of the team with overall responsibility for the study are Professor Colin Kirkpatrick (IDPM), Dr. Norman Lee (IDPM and EIAC) and Dr. Oliver Morrissey (CREDIT). They have been assisted, during Phase One, by the other members of the team, particularly Johanna Curran, Kirsty Drew, Clive George, Andrew McKay and Chris Milner. The study has received additional assistance from a number of Directorates within the European Commission and from a number of international and national organisations and individual experts with interests and experience in the appraisal of trade agreements. To facilitate a process of public consultation during the study period, a web page dedicated to the work was established in mid-July at the following address: <http://fs2.idpm.man.ac.uk/sia/>. During the Phase One period, the website was 'visited' on 215 occasions by a range of institutional and individual representations of civil society. In addition, the contractors established a dedicated e-mail address (chk@man.ac.uk) to enable direct contact with interested parties.

This process of consultation and communication with international and national organisations and individuals will continue during Phase Two of the study.

2. RATIONALE AND APPROACH TO SUSTAINABILITY APPRAISAL

2.1 Rationale of Sustainability Appraisal

In well-functioning markets, there are efficiency gains to be made from trade liberalisation. However, since the Rio Conference and the adoption of sustainable development as an overarching policy goal by many international organisations (including the WTO), national governments and the European Union, economic efficiency is no longer the sole criterion in the appraisal of trade-related agreements. Other considerations include a range of social issues (relating, for example, to equity and the distribution of benefits and costs) and of environmental issues (relating to resource conservation and environmental protection).

The social and environmental consequences of trade policies have received increasing attention in studies published during the 1990s, particularly in relation to their effects on the developing world. These are additional to the much greater number of studies on the economic consequences of trade agreements, which have largely been undertaken separately from these. However, as the literature and case study reviews in Chapters 3 and 4 show, the appraisal methods used in many of these different studies are insufficiently developed, explicit or compatible with each other to be successfully integrated within a sustainability appraisal which combines economic, social and environmental effects.

A major purpose of this Phase One study is to address this shortcoming through the construction of a new SIA methodology. However, it only attempts to do this within the requirements of its intended use. This is to assist the EU in negotiating the New Round Agenda at the forthcoming Seattle meeting in November-December 1999. This requires a *preliminary appraisal* of a range of separate trade-related measures, which is to be completed in the next two months. This is distinguished from the more detailed methodology, which may be appropriate for the *fuller* SIA appraisals to be used in the post Seattle negotiation process, after the New Round agenda has been agreed. Recommendations relating to this are made in Chapter 6.

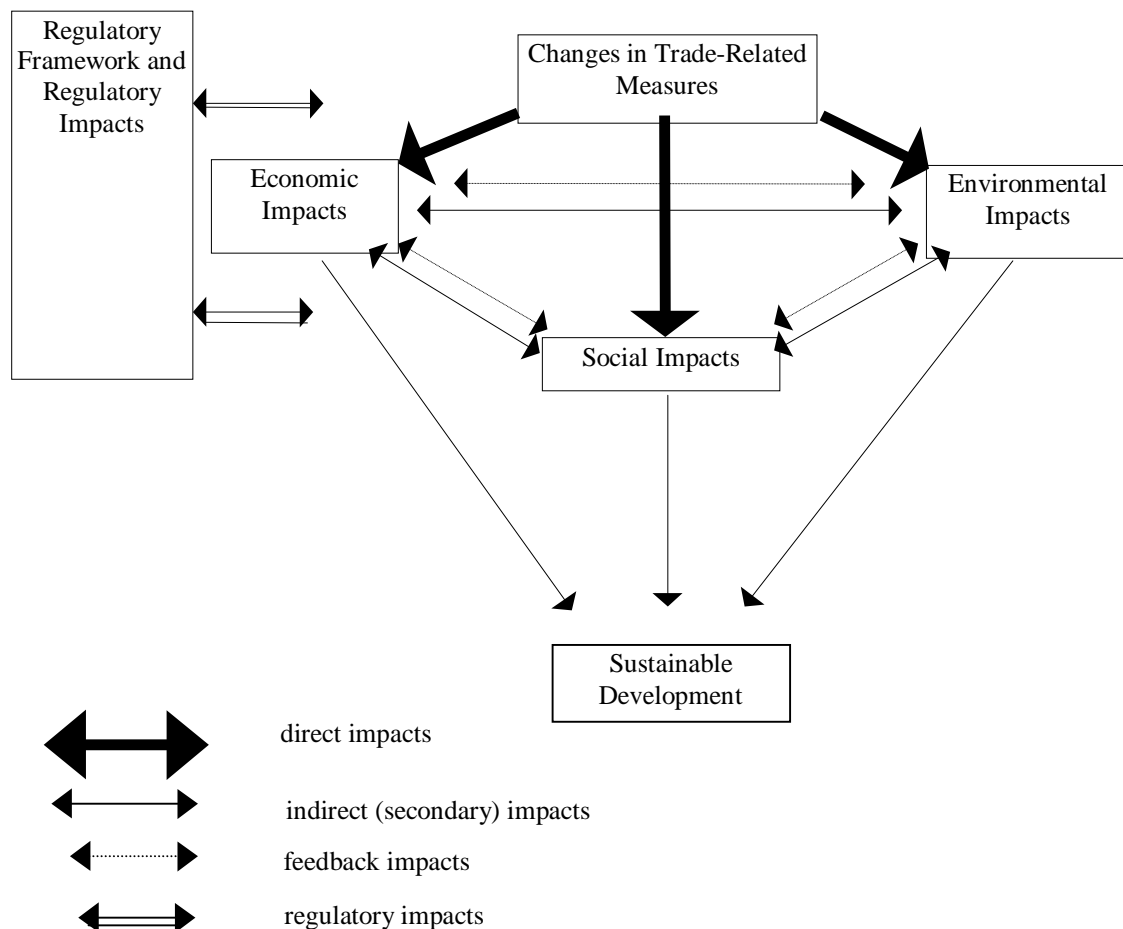
In summary, the sustainability appraisals to be undertaken in Phase Two are preliminary and strategic in nature and relate to specific, trade-related measures (see Appendix 1). They are sharply distinguished both from full SIAs and from the much more specific and specialised

economic, environmental and social impact assessments, which are often carried out at the project level. They are ex ante appraisals (undertaken *before* trade negotiations commence) and, therefore, are also distinguished from ex post evaluations of previously approved agreements such as the NAFTA and Uruguay agreements. There are, of course, lessons to be learned from many of these other studies and experiences and for this purpose, they are also covered in the Chapter 3 and Chapter 4 reviews.

2.2 Sustainability Appraisal Framework

The simplified form of a Sustainability Appraisal Framework (SAF), which has been developed for use in this study, is illustrated in Figure 2.1. It is subsequently used in defining the scope and structure of the literature and case study reviews in chapters 3 and 4 and in elaborating the SIA methodology in chapter 5.

Figure 2.1 Types of Impact of a Trade Agreement on Sustainable Development



Proposals for new trade agreements usually contain many measures (see, for example, the list relating to potential New Round measures in Appendix 1). Some of these measures may have *direct* (positive or negative) economic, social and environmental impacts but often they also have *indirect* economic, social and environmental consequences.

Some measures (e.g. changes in tariffs, subsidies or quotas) influence trade flows, which then have a number of direct economic consequences (e.g. on production, employment and income). In turn, these may have further social and environmental repercussions. Other measures (e.g. regulatory measures to remove trade-related distortions in competition) may impact on the regulatory provisions for environmental and worker protection, which then have environmental, social and economic consequences. Further, the direct and indirect impacts from individual measures may have cumulative impacts, which need to be considered in the appraisal of the trade agreement as a whole. An added complication is that, parallel with trade reform, there may be other regulatory reforms taking place (e.g. involving deregulation, privatisation, structural adjustment measures etc.). These two sets of regulatory change may interact and have synergistic economic, social and environmental consequences.

The 'routes' through which these cause-effect relationships operate may be numerous and complex. However, for present purposes, interest is confined to those which are significant, i.e. result in impacts of sufficient importance to be relevant to the Seattle agenda. Screening and scoping procedures are used to help in identifying these (see Chapter 5).

The above Framework can to be applied (subject to availability of data) at different scales of space, time etc. according to the context and purpose of its intended use. It can be applied at a global or EU level or to particular types of country (e.g. developing countries or least developed countries). Alternatively, it can be applied to individual countries, sub-regions or particular socio-economic groups. It can also distinguish between short and long-term impacts. From a political perspective, the former is highly relevant, but from a sustainability perspective, the latter assumes greater importance.

2.3 Sustainability Indicators

A set of sustainability indicators is ideally required for use in SIA studies relating to trade-related measures. However, the selection of appropriate indicators is difficult for a number of

reasons, conceptual and practical. The sustainability concept is multi-dimensional (see Box 2.1 below, for one illustration), many of its components are not well defined or readily measurable, and predictions of future changes in indicator levels and their likely significance are subject to considerable uncertainty.

Box 2.1 UN Definition of Sustainable Development

‘Development is a multidimensional undertaking to achieve a higher quality of life for all people. Economic development, social development and environmental protection are interdependent and mutually reinforcing components of sustainable development.

Sustained economic growth is essential to the economic and social development of all countries. Through such growth, which should be broadly based so as to benefit all people, countries will be able to improve the standards of living of their people through eradication of poverty, hunger, disease and illiteracy, the provision of adequate shelter and secure employment for all, and the preservation of the integrity of the environment.

Democracy, respect for all human rights and fundamental freedoms, including the right to development, transparent and accountable governance and administration in all sectors of society, and effective participation by civil society are also an essential part of the necessary foundations for the realisation of social and people centred sustainable development.

The empowerment of women and their full participation on a basis of equality in all spheres of society is fundamental for development.’

Source: UN (1997) UN Agenda for Development p.1

Great efforts continue to be made, internationally, to develop a satisfactory system of sustainable development (SD) indicators which may be used for appraisal and other purposes. Appendix 2 contains a brief comparative review of sets of SD indicators prepared by different international organisations. There have also been a number of studies attempting to structure separate indicators into an integrated framework (see, for example, Hardi et al, 1997 on sustainable livelihoods). Also, a distinction is emerging between outcome indicators (used to track progress towards SD targets) and process indicators (used to check the consistency of policies with SD goals and of capacities to implement these policies). (Moldan and Billharz, 1997)

For the purposes of this study, it has been decided, despite the difficulties and shortcomings in doing so, to construct a small core of sustainability indicators and a short list of

significance criteria to assist in their interpretation. These consist of approximately equal numbers of economic, social and environmental indicators which record predicted changes to baseline conditions within each of the following impact categories:

- Average real income; employment; net fixed capital formation.
- Equity and poverty; health and education; gender inequalities.
- Environmental quality (air, water, land); biological diversity; other natural resource stocks (including minerals).

These are discussed further in Chapter 5 and Appendix 2. The complementary use of process indicators is also considered within the same chapter. The use of the above set of indicators is intended to focus attention, in a balanced way, on key components of concern to decision-makers and civil society, which relate to the New Round negotiations. It is also intended to promote internal consistency within the appraisal as a whole and to limit the volume of information gathering, analysis and consultation, to that which is manageable within the time available. At the same time, these core measures should be used in a flexible manner (using different formulations of an indicator if more appropriate in the circumstances) and, where other relevant information is readily available, it will be used to supplement these findings.

2.4 Reducing and Managing Uncertainty

Uncertainty, of different kinds, is pervasive to sustainability appraisals of trade-related policies as it is at the preliminary stage of most other kinds of policy appraisal. However, this is a surmountable problem, provided the presence of uncertainty is recognised and satisfactorily managed. Therefore, its presence should be made explicit and the methods by which it is to be taken into consideration should be clearly identified. The reduction and management of uncertainty can be achieved by a combination of the following:

- Scenario analysis (in two forms)
 - defining and analysing clearly specified alternative forms of the proposed measure, where the actual form of the measure is not yet known;
 - analysing the outcome of each proposed measure under clearly specified alternative situations where the context of its application is also not yet known.
- Use of sensitivity analysis to appraise the extent to which outcomes significantly vary, according to the scenario being appraised.

- Transparency of the appraisal process and increased opportunities for stakeholder participation (subject to reasonable confidentiality and time limitations) to test the resilience of the findings to exposure from a greater range of values, future perspectives and additional information.
- Acceptance of an adaptive approach to appraisal during the negotiation process and the policy implementation stage which follows (Holling, 1978; Goodland and Mercier, 1999). Additional information and better understanding is fed into the appraisal and negotiation process on a continuing basis. This encourages the prior appraisal of a sequence of corrective actions, over time, to guide economic, social and environmental systems along a more integrated and sustainable development path.
- Identification of flanking measures to reduce the likelihood of significant negative impacts having regard to the requirements of the precautionary principle.

The approaches and different considerations outlined in this chapter have been used in shaping the scope and focus of the literature and case reviews in the next two chapters and in developing the SIA methodology which is described in Chapter 5.

3. LITERATURE REVIEW: IMPACT ASSESSMENT METHODS AND PRACTICE

3.1 Introduction

Very few, if any, studies of the sustainability appraisal of trade agreements have been identified which have the comprehensive coverage specified in Figure 2.1. Most studies are confined to particular subsystems and their linkages within only part of the overall sustainability appraisal framework.

This literature review is mainly organised on a similar basis. The following four sections relate to economic, environmental, social and regulatory impacts respectively. They cover both *ex ante* appraisals and *ex post* evaluations. They include appraisal and evaluation studies, which directly concern trade measures as well as other methodological appraisal studies (relating to environmental and social assessments) which are potentially applicable to trade related agreements.

Additionally, a section reviews the limited number of more comprehensive SIA-type studies which concern trade agreements and a small but growing number of other integrated appraisal studies which are also of potential relevance. The chapter concludes with a summary of the overall findings of the literature review, which are of particular importance to the development of the SIA methodology presented in Chapter 5.

Both the following summary reviews and the more detailed reviews in Appendix 3 have a similar purpose and structure. This is to facilitate comparisons between them, to assist in synthesising their findings and to help in determining how the constituent elements may be better integrated within the overall appraisal framework. Each section commences with a brief overview of the scope, type and quality of the literature. It is followed by a description of the appraisal methods used and their principal applications, an evaluation of their main strengths and weaknesses and any key findings of relevance to the future strengthening of the SIA methodologies.

Since this is a rapidly evolving area of study, and a number of additional appraisal studies are likely to become available in the near future, it is likely that some updating to this literature review will take place during Phase Two of the Work Programme.

3.2 Assessing Economic Impacts of Trade-Related Agreements

There is an extensive literature, theoretical and empirical, on the economic impacts of trade policy measures, much of which is concerned with the impacts of trade liberalisation. This is a subset of a broader literature assessing the impact of economic policy reforms. The existing literature covers both *border reforms* (changes in trade taxes and subsidies, quantitative restrictions, etc.) and *non-border reforms* (domestic policy reforms that have trade effects, especially those relating to the exchange rate and agricultural policy) but focuses more on the former than the latter. Studies cover both *unilateral* trade liberalisation (and tend to be *ex post* studies) and *multilateral or regional* trade reforms (relatively more often being *ex ante* studies). Few of these studies also analyse the environmental and social consequences of trade reforms nor do many present their economic impact findings in a form most suitable for analysing their indirect environmental and social consequences.

A range of appraisal models and methods has been used in these studies. From the perspective of designing a framework for a sustainability impact assessment, the most important distinction is that between *ex ante* and *ex post* studies. The former are aimed at predicting or projecting the potential effects (or impacts) of specific trade reforms. They are almost always modelling exercises, usually partial or general equilibrium. The standard approach is to define the base scenario (the initial equilibrium), introduce the trade reform (perturbation of the model) and solve for the new equilibrium. The differences between the new and initial equilibria identifies the impact of the reforms. The most important *ex ante* assessments of the Uruguay Round employed applied general equilibrium (AGE) models. The structure of such models and the principal results (from what is a large literature) are briefly reviewed in Appendix 3. The models project gains in global welfare but these are unevenly distributed (see 3.4 below).

The approach adopted in *ex post* models is very different. Here the aim is to evaluate the impact on a country (or group of countries, or particular sector) that has implemented a set of reforms. Empirical studies of the impact of policy reform are commonly based on one or a

combination of three methods: before-after comparisons; with-without comparisons between countries; counterfactual comparisons within countries (McGillivray and Morrissey, 1999). *Ex post* impact studies tend to be one of two types - econometric (regression based) or country case study. The econometric approach uses some indicator of trade reform and assesses whether or not this has a significant impact on the variable of concern (such as growth of exports or income). Most such studies are based on a cross-section of many countries and provide no more than a general aggregate indication of the correlation between trade liberalisation and exports (which appears to be positive) and economic growth (which appears to be mixed). The case study approach is generally more informative, as the study can address the apparent impact of trade reforms on a range of indicators.

It is difficult to draw simple conclusions from the empirical results of these studies. Differences in the methods used and in the coverage of the studies, have meant that the results tend to be quite mixed across countries and between sectors within countries (Appendices 3 and 4). However, two main findings which are relevant to this SIA study can be drawn from the literature. First, trade reforms are generally associated with economic growth and efficiency gains; and second, these gains are often unevenly distributed between countries and within countries.

In considering the strengths and weaknesses (methodological and empirical) of these studies, and the main lessons that are of relevance to the SIA study, it is important to distinguish between unilateral and multilateral trade liberalisation.

When a small country liberalises on its own, there are no effects on world prices so the basic effect is to reduce domestic distortions and promote increased internal economic efficiency. In a country case study one can examine the reforms implemented, how specific sectors responded and evaluate the aggregate effects. However, in the case of multilateral liberalisation, where it affects tariffs, subsidies or quantitative restrictions, the important immediate impact is on world prices. Individual countries will be affected differently, depending on the importance (in trade and production) of the commodities whose prices are affected, and the ability of the economy to respond. The implication is that to evaluate the impact of multilateral liberalisation one requires *ex ante* studies to estimate the effects on world prices (available from modelling studies). This information can then be related to base

scenario data on specific regions or countries to evaluate the potential effects on impact indicators.

The principal weakness of *ex ante* modelling studies is that they estimate the effects of stylised reforms and rarely, if ever, are these projections later evaluated against the effects of reforms actually implemented. The modeller's defence would usually be that the reforms implemented were not actually the same as those proposed and used to perturb the model, or other exogenous effects will have been present. This is certainly true of AGE evaluations of agricultural trade liberalisation in the Uruguay Round. The main benefit of *ex ante* evaluations is that they can suggest the types of effects to look for in respect of specific products, sectors and countries.

The problem with *ex post* case study evaluations of the impact on specific countries is that they are often quite descriptive, only identify broad effects and often fail to control for other influences. Consequently, it is difficult to be confident in attributing specific outcomes to specific reforms. An additional problem is that one cannot generalise from country studies. The advantage of cross-country econometric studies is that one can generalise. The disadvantages, however, outweigh this: they only reveal aggregate tendencies and typically use very broad proxies for trade reform.

Rule changes relating to trade liberalisation do not lend themselves easily to economic analysis since their effects are indirect. In such cases, it will often be necessary to rely on inference and intuition, rather than formal empirical estimation.

3.3 Assessing Environmental Impacts of Trade-Related Agreements

The great majority of countries, development banks and aid agencies now have regulations or other formal requirements for environmental assessments and have developed appraisal methods and procedures for their application. These relate mainly to projects, but the application of environmental assessment procedures to policies, plans and programmes (strategic environmental assessment) is growing, and has been recognised as an important tool to encourage policy makers to take environmental impacts into account in decision making (Therivel and Partidario, 1996, IAIA, 1995).

The methodology of strategic environmental assessment (sometimes called environmental reviews in the trade context) has been examined in a limited number of trade-related studies and has also been applied in similar cases on both an *ex ante* and *ex post* basis. These kinds of methodologies are also being used as a basis for the development of sustainability appraisals (see Section 3.6).

The growing interest in trade-development-environmental linkages, particularly in developing countries, has also led to an increasing number of case study investigations (World Bank, 1993). The methodologies they use are based mainly on *ex post* case study methods, such as surveys, interviewing and other more situation specific methods of investigation.

The application of strategic environmental assessment methods to trade policy issues emerged in the early 1990s within the context of the EU Internal Market and the negotiation of the NAFTA Agreement. The OECD *Methodologies for Environmental and Trade Reviews* (1994) describes a framework for conducting environmental reviews of trade-related measures, which has heavily influenced subsequent work. The proposed methodology starts with the identification of base-line conditions and the subsequent use of forecasting models, scenario assessment and case studies to identify the trade and environment linkages and estimate changes within this methodology. The environmental effects of trade policy changes can be classified into four categories: product effects, scale effects, structural effects and regulatory effects. Subsequent developments of this OECD methodology have incorporated institutional or process analysis which focuses on the procedural steps and institutional arrangements of environmental reviews, such as scope, timing participation and consultation, monitoring and follow up (WWF, 1998, 1999); and have refined the use of matrix methods to define the linkages between the trade measures and environmental effects (EDRC, 1999).

The first aim of the work by the OECD was to provide an analytical framework for considering the possible environmental effects of trade and trade liberalisation. They then applied case studies which cover agriculture, transport, wildlife and endangered species, fisheries and forestry to illustrate the issues further. These case studies show how difficult it is to appraise the relative contribution of trade, trade policies and trade liberalisation to environmental degradation. The direct effects of trade, trade policies and trade liberalisation

are shown to be both positive and negative. The indirect environmental effects are suggested to be more significant, but more difficult to identify and isolate from other contributing factors (OECD, 1994).

Studies which have attempted to model environmental-trade relationships are principally general or applied equilibrium models (Bergman, 1990). The OECD has developed several such models: General Equilibrium Environment Model (GREEN); Trade and Environment Equilibrium Analysis (TEQUILA), (CEC, 1996). The GREEN model analyses international trade linkages associated with climatic change abatement strategies and costs and is intended to highlight the effects of carbon dioxide emission abatement policies. The TEQUILA study is used to assess how trade liberalisation and induced changes in production processes affect the emission levels of a set of pollutants.

The limitations of applied general equilibrium models have already been discussed in the preceding section. These problems become more acute when the models are extended to incorporate environmental effects. The stylised structure of the AGE models, their level of aggregation and the narrow range of outcome indicators which the models provide, limit the usefulness of the modelling approach in the *ex ante* appraisal of the sustainability impact of policy measures (WWF, 1999, CEC, 1999).

Ex post studies of the trade-environmental linkages have used both cross-country regression analysis (e.g. Dean, 1998) and case study methods (e.g. Low, 1992; Munasinghe and Cruz, 1995). Much of this work has focused on developing countries. The strengths and weaknesses of both methods were discussed in the previous section, and are centred around the trade-off between specificity and generality. The case study approach often increases our understanding of the effects that context has on the impact-outcomes of trade policy, whereas the cross-section analysis may help to identify the broader, more fundamental relationships and linkages which occur across many countries.

The review of the literature which focuses on the impact of trade measures on the environment provides several main lessons, which are relevant to this SIA study. The first is the recognition that there is no single, correct methodological approach, and that the various methodologies that are available need to be tailored to the particular type of trade measure in question, distinguishing in particular between price/quality and rule changes, and the

purposes and requirements of the impact assessment study (OECD, 1994). The second is to highlight the interdependence between the economic assessment and the environmental (and social) appraisal. Most of the methodologies for assessing environmental impacts depend upon information available from the economic assessments of the trade measure or agreement, and many of the environmental effects will stem from the economic changes. This has important implications for the development of an integrated sustainability impact assessment methodology for 'matching' data to enable the linkages to function.

3.4 Assessing Social Impacts of Trade-Related Agreements

The literature on social assessment is more limited than for economic and environmental appraisals. As in the case of the environmental assessment literature, only a small proportion relates directly to trade policies and agreements. However, some of the other social assessment literature has potential relevance to trade-related appraisals. Additionally, some economic impact assessment studies analyse impacts on labour markets (on employment, income distribution, poverty levels etc.) and some environmental assessment and health studies analyse the socio-economic impacts of development proposals (although, more usually, at the project level). As in the case of environmental assessments, the growing interest in trade-development-environment issues in developing countries has led to an increasing number of studies, mainly using case study investigation methods, of the social as well as environmental and economic consequences of different development and trade programmes and policies. The appraisal methods used in social impact studies traditionally place a strong emphasis on the process by which the appraisals are carried out, stressing the importance of consultative and participative approaches, stakeholder analysis, social survey and interviewing methods, rather than on the use of modelling and more technically sophisticated methods of analysis and evaluation.

The social assessment literature consists of two related types: social impact assessment and social development assessment. The former is *ex ante* in nature and has traditionally focused on developed countries. Social development assessment has evolved from the development studies literature, is focused on assessing poverty impacts in developing countries, and is generally *ex post*. At the project level, social impact assessment and social development assessment both rely mainly on qualitative methods, many of which are common to those used in environmental impact assessment (checklists, surveys, matrices, scoring),

(Interorganisational Committee, 1994, DFID 1998). There is an emphasis on participatory approaches, using stakeholder analysis and local surveys to elicit peoples' assessment of the impact of interventions on individuals' and communities' well-being.

At the macro level, a large volume of social assessment literature has focused on the relationship between economic growth and poverty or equality (ODI, 1997), or on the social impact of economic policy reform, particularly in the form of structural adjustment programmes, on key poverty indicators such as literacy, health, terms and conditions of employment, and gender (UNDP, 1997).

The trade-related social assessment literature comprises both some quantitative modelling and cross-country regression studies as well as case studies, which are often more qualitative in nature. Modelling work has built on the CGE/AGE economic models by including, for example, a social accounting matrix, which allows changes in the distribution of income to be linked to individual households (Bourgingon and Morrison, 1992). Cross-country regression analysis has been used to estimate the poverty impact of income growth and the 'soundness' of economic policy and to identify the impact of trade liberalisation of key social indicators, such as employment and labour standards ((ILO, 1996, OECD, 1995; McKay et. al. 1999). Case studies have tended to focus on more in-depth investigation to assess the impact on a specific community or group (Oxfam 1998, Nurick, R. 1998, *Metroeconomica* 1996, LeQuesne 1996).

The empirical findings from these studies highlight the complexity of assessing social impacts resulting from a trade-related policy intervention. Differences in underlying assumptions and methods, and in the data used prevent the identification of a clear and consistent set of findings or conclusions. However, it is possible to draw several broad conclusions which are of relevance to the SIA study. The first relates to the importance of inequality as a measure of social impact in both developed and developing countries. Inequality, which can be addressed in many dimensions - income, gender, access and entitlement - is a key indicator of social impact (Nurick, 1999; ODI, 1998). The second is the close linkage between economic and social impact, where a trade-related change in production will have a direct impact on employment, households' income and relative poverty levels (UNDP, 1996).

3.5 Assessing the Regulatory Impacts of Trade-Related Agreements

Regulatory impact assessment aims at systematically assessing the *ex ante* impacts of proposed changes in existing regulations, where the term ‘regulation’ is generally used to include the full range of legal instruments by which governing institutions impose obligations or constraints on public and public agents’ behaviour. Regulatory impact assessment (also known as regulatory impact analysis) may, in principle, be applied *ex ante* in the appraisal of any regulatory proposal, or *ex post*, in a subsequent evaluation of its resulting effect.

Although there is considerable experience in some of the narrower forms of RIA (e.g. assessing its fiscal consequences or its cost implications for business enterprises) it is not yet widely used for assessing the broader economic, environmental and social costs and benefits of regulatory changes (Lee, 1997, OECD, 1997a,b). Few studies have been published of this kind, particularly relating to trade measures, although there is growing pressure to do so. In the meantime, any conflicts arising tend to be treated as problems to be resolved, if possible, through clarifications in legal interpretation or, failing this, in further regulatory reform.

There are possibly two major types of trade-related regulatory changes likely to be of concern in a sustainability impact assessment. The first is where an agreement proposes to eliminate trade-related sources of discrimination in ways which may conflict with provisions, existing or proposed, in multilateral environmental agreements or national social legislation and practices. This potential conflict can arise with the TRIMs, TRIPs and MEA agreements. The second is where changes to a trade regulation regime, possibly forming part of a general economic reform programme (e.g. including provisions relating to deregulation, privatisation, institutional and fiscal reform) have consequential effects on the environmental and social regulatory regime and the effectiveness of its operations (Kirkpatrick and Lee, 1997b).

To the extent that regulatory impact assessments have been applied to trade-related agreements, and broader economic reform policies, the appraisal methods have followed a broadly similar approach to the OECD methodology for environmental and trade reviews (OECD, 1994). The first stage is to identify the effects of a trade measure on negotiations, standards and other measures. The effects can be either negative (where the capacity of governments to enact and implement appropriate regulations is undermined by the provision of the trade measure) or positive (where trade measures support governments’ implementation of effective environmental and social policies). This methodology for

regulatory impact assessment is usually qualitative and issue-specific, based on detailed investigation of the issue in question. Use is made of checklists to identify areas in which there are likely to be regulatory impacts and the likely environmental and social impact of these outcomes (OECD, 1994; WWF, 1999).

A limited number of trade-related studies have assessed the regulatory impact, although the focus has been almost entirely on environmental aspects. The Canadian Environmental Review of NAFTA (1992) sought to identify areas where there could be potentially negative effects, which would have undermined the capacity of governments to implement appropriate environmental policies on an *ex ante* basis and then to identify the appropriate mitigating policies and build them into NAFTA provisions. The study on the environmental dimensions of the '1992 market' (Task Force, 1990) identified the potential negative environmental effects at the European level resulting from removal or modification of regulations, such as cross-border controls or fiscal harmonisation. Sectors that were trade-sensitive were identified, and qualitative assessment was then made of the potential negative effects of trade liberalisation on the environment. No consideration was given to the social effects. It is difficult to generalise from the results of the small number of regulatory impact assessment studies of trade measures that have been undertaken so far. The findings confirm that trade-related policy changes can have a significant impact on existing international and national, environmental and social regulatory regimes. Despite the limitations of the impact assessment methodology, this form of impact assessment is likely to be an important part of any sustainability impact assessment, and provides a framework for addressing issues of subsidiarity and policy coherence associated with multilateral trade proposals.

3.6 Integrated Appraisals of Trade-Related Agreements

There is limited literature available on this subject as the issue of integrated appraisal is relatively recent. Much of the literature deals with the relative advantages and disadvantages of integrated appraisal and the principal studies discuss the issues involved with integrating different forms of appraisal (Lee and Kirkpatrick, 1999). A number of studies have attempted to describe the methodologies which may be adapted to the application of integrated assessment. However, on the whole, procedures and methods of integrated assessment are not well developed. There is a notable lack of methodologies relating specifically to integrated appraisal of trade measures. The most relevant work is that which

has been undertaken by the Commission for Environmental Co-operation (CEC, 1999). The work is described in Appendix 4.

The integration of economic, environmental and social (and, where appropriate, regulatory impact assessments), is fundamental to the concept of sustainable development. There are two main approaches to integrated appraisal in the literature. The first approach seeks to bring together the different methodologies used in economic, social and environmental assessment, thereby providing the decision-maker with a combined set of impact estimates (Kirkpatrick and Lee, 1997a ch.7; Nardini, 1997). This presents various analytical difficulties, including the possibility of double counting, the use of different measures in estimating the magnitude of impacts, inconsistency in ranking procedures to indicate the relative importance of different types of impact, and lack of transparency as to the means of achieving integration. An integrated appraisal 'cycle' has been proposed to facilitate the coordinating of the separate appraisals and to minimise the risks of missing cross-linkages or duplicating impacts (Post et. al., 1998).

A second approach has adopted formal modelling methods, and is associated with the research undertaken by the European Forum on Integrated Environmental Assessment (Environmental Modelling and Assessment, vol.3, 1998). This approach to integrated assessment seeks to combine the analytical methods of the natural sciences and the participatory methods of the social sciences (Rotmans, 1998). Two main types of integrated assessment methods have been identified in the literature: analytical methods and participatory methods. There are a number of strengths and weaknesses of these methods which have been discussed in the literature and these are summarised in Appendix 3 (see Table A3.4).

The methodology for a fully integrated appraisal is not yet sufficiently developed to support its practical application, beyond the area of climatic change. However, the literature does provide a number of important lessons, to be incorporated into SIA methodology. Appraisals should be coordinated so that they can be used simultaneously in the appraisal. An assessment of the cross-linkages and 'system-level' impacts needs to be carried out. Furthermore, the specific regulatory and procedural context in which different appraisals take place should be taken into account, to enable any regulatory impacts to be identified.

3.7 Key Findings

This chapter has reviewed the literature relating to the appraisal of trade agreements. The purpose was to identify the methods of appraisal used in the literature, to synthesise their findings, and to identify how these could contribute to the overall sustainability impact assessment methodology. Five separate sets of literature were reviewed, covering economic, social, environmental, regulatory and integrated impact assessment.

The review has revealed a wide range of methodologies for assessing the impacts of trade measures. Economic assessment has used both *ex ante* and *ex post* modelling methods; most of the former studies have used applied general equilibrium models, whereas for *ex post* analysis, regression analysis has been mainly used. Both approaches can assist in identifying broad, underlying relationships between trade policy and economic performance, but do not easily capture the variation in individual country conditions and experience. For this, a case study approach is more useful. Environmental assessment has used a variety of methods, including forecasting models, scenario analysis and case studies to identify the environmental effects of trade changes. Social assessment at the micro level has relied mainly on qualitative methods, with a concentration on participatory approaches to elicit peoples' assessment of the impact of trade measures on individual and community welfare. At the macro level, some quantitative modelling has been undertaken to identify the impact of policy change on economic growth and poverty. There have been very few studies on the regulatory impact of trade measures, and the methodology has, so far been mainly qualitative and issue specific, based on detailed investigation of the issue in question. Two general approaches to integrated appraisal have been found in the literature. The first is to ensure that the information from the separate economic, social and environmental assessments is given equal attention in appraisal and decision making. The second approach relies on a more ambitious integration of modelling, analysis and participatory approaches.

The following lessons can be drawn from the literature review. First, it is necessary to maintain a sufficiently comprehensive coverage, which will allow a range of impact-types to be covered in the SIA analysis. Second, the most appropriate methodology will vary with the measure being considered, the impact being assessed, and the purpose of the assessment exercise. It is unlikely, therefore, that any highly specific methodology will be suitable for assessing the sustainability of all trade measures.

4. CASE STUDIES REVIEW

4.1 Introduction

The purpose of this case study review is to examine the appraisal and evaluation methodologies that have been applied to a selection of trade agreements and trade-related measures, to summarise their principal empirical findings and to highlight the main lessons to be drawn for the SIA methodology presented in Chapter 5. This review of case studies complements the literature review in the previous chapter by presenting and evaluating additional, case specific, experience.

As in the literature reviewed in Chapter 3, most of the case studies concentrate on the assessment of a single or sub-set of impacts, either economic, environmental or social. The studies typically, therefore, have a narrower coverage than is required in a more comprehensive SIA. The case studies also reflect the range of methodological approaches used in impact analysis, the differing use that is made of quantitative and qualitative information and the use of both *ex ante* and *ex post* methods.

The cases, which have been examined are mainly grouped according to the type of trade agreement involved or to the authorities involved in the appraisals, cover:

- Uruguay Round studies (4.2);
- NAFTA studies (4.3);
- European Union studies (4.4);
- Other studies (4.5).

A summary of the principal findings drawn from all of the case studies is presented in Section 4.6.

4.2 Uruguay Round Studies

There is an extensive literature on the impact of the Uruguay Round (UR) and much of it focused on economic impacts. Most studies of the impact of the UR trade reform measures

have used applied general equilibrium (AGE) modelling (a brief review of this methodology is provided in Appendix 3).

Such studies are very helpful in estimating the relative magnitudes and distribution (according to reform measures, sectors and countries/regions) of the welfare effects associated with multilateral trade reforms. However, they are very demanding in modelling time (and expertise) and are not well suited to the type of preliminary SIA we wish to undertake. In particular, they are not suited to impact assessments of reforms to regulatory measures, such as TRIMs and TRIPs. Nevertheless, the results of AGE studies can be accommodated within a more practical impact assessment method, which evaluates impact against a set of economic indicators, including the composition of production, trade and employment and other relevant economic impact indicators. The results of AGE studies can suggest how such indicators (for specific sectors or types of countries) will be affected by particular reforms.

In this section we consider four areas that feature prominently in the UR and that are likely to be important in any New Round (for details of the studies covered in this summary review, see Appendix 4). Two of these areas refer to trade liberalisation measures that have direct price and quantity effects (reform of trade in agriculture and textiles/clothing). The other two areas are examples of regulatory reforms, TRIMS and TRIPS.

Agriculture

The estimates of world price changes for specific commodities in AGE studies are indicative of the relative magnitudes of potential changes: all prices are expected to rise, but temperate food crop prices are likely to increase by more than tropical crop prices. Global welfare gains are estimated to be quite large (some 0.25 per cent of world GDP). The impact will vary from country to country, depending on the importance of specific products to production and trade (and the supply responsiveness of producers). In general, cereal exporters not currently benefiting from subsidies will be major gainers (Cairns Group), and food-importing countries will lose (unless the increased prices stimulate domestic production). Developed countries such as the EU, Japan and USA will gain, but the impact is sensitive to the ways in which domestic agricultural policies are reformed. Exporters of tropical crops should make mild gains.

It is worth noting that although significant liberalisation of agriculture was proposed in the UR, relatively little has been achieved. Developed countries availed of many exceptions, set tariffs at levels higher than intended, and retained domestic support measures. There is considerable further scope for liberalisation of agricultural trade in the New Round. To avoid adverse impacts on the poorest countries (especially Africa), measures to ensure free market access to developed country markets could be important.

Textiles

The global welfare gains from phasing out the MFA are expected to be considerable but will be very unevenly distributed. The likely losers will be producers benefiting from existing quotas, and relatively high cost producers. The likely gainers are low cost, high volume producers that are quota-constrained. Developed countries consumers are expected to benefit considerably from cheaper imports. The impact of phasing out the MFA on employment is difficult to predict, but areas where high-cost production is concentrated will face adjustment costs and labour shifts to more competitive sectors.

TRIPs and TRIMs

No examples of impact assessment studies in these two areas have been identified, and there is an absence of empirical evidence, *ex ante* and *ex post*, on the effects of policy change in these areas.

Trade Related Investment Measures (TRIMs) refer to restrictions attached by host states to the activities of transnational corporations (TNCs) that have invested in the host. They are termed investment measures because they relate to TNCs that have engaged in foreign direct investment (FDI), i.e. that are undertaking production activities in the host (the discussion could be extended to investment to services). They are trade related because the activities of the TNC impact on trade flows, in one or more of three essential ways. The TNC may be potentially able to export, and the TRIM may relate to export requirements (e.g. stipulating a share or value of output to be exported). Alternatively, the TNC may be producing import-competing goods, and the TRIM may restrict such competition (e.g. limiting the share or value of output that can compete with imports). Finally, the TNC may import inputs that are available locally, and the TRIM may require some minimum amount of inputs be sourced from local producers (such as local content requirements). A TRIM, therefore, affects trade

flows, the level of imports and/or exports. It follows that the removal of a TRIM can affect trade flows, and such removal is the intention of the TRIMs Agreement.

The underlying motive behind bringing TRIPs under the Uruguay Round, was to protect R&D activities of leading technology industries. This is an extension of the principle of patent protection (conventionally conferred at a national level), to the international level. Rather than each country deciding on its own patent (or IPR) law, an international standard of protection is established (the reduction in discriminatory treatment does imply global efficiency gains). As copying in specific countries reduced the exports of innovators to those countries, and may have reduced exports to third countries (supplied more cheaply by imitators), contravention of IPRs had trade effects, hence TRIPs.

The major beneficiaries of IPR protection are producers in developed countries (mostly in high technology, luxury goods and entertainment industries) who are able to charge higher prices. Consumers who have to pay these prices lose. In large markets, especially high-income markets, a period of protection may be warranted. In small markets, however, where local imitators could supply the goods more cheaply, the benefits to consumers are likely to outweigh the costs to the producer of lost earnings in that market.

The most important area, in terms of the impact of protecting IPRs, is probably technology products, but few developing countries are likely to be affected. The one exception may be in the case of medicines and drugs. The issue here is complicated; as much a dispute over the prices charged by TNCs as about the issue of IPRs *per se*. In general, TRIPs are likely to generate a few very high profile disputes, but may not have many direct economic impacts.

Lessons for Development of the SIA Methodology

It should be clear from the foregoing review that the impact of reforms of any trade measures will vary according to the characteristics of the economy in question, and there is no ready classification of countries into types that would be applicable to all measures. For example, the impact of TRIPs depends on whether the economy is a major base for production and sale of counterfeit goods, or an exporter of technology goods. Similarly, the impact of the removal of TRIMs depends on whether the behaviour of TNCs located in the country has been affected by existing TRIMs. In the case of agriculture, the important consideration is the country's net (and potential) trade balance in cash and food crops, whereas for textiles it is

whether the country has had MFA quotas or is a low-cost competitive producer that has been quota constrained. The case studies show, therefore, that the impact analysis should be specific to the measure in question.

4.3 NAFTA Studies

Following the endorsement of the NAFTA Agreement in 1992 several of the NAFTA countries (Canada, Mexico and the U.S.) prepared ex-ante reviews of the environmental implications of NAFTA. Also, following the implementation of NAFTA, the North American Agreement on Environmental Co-operation (NAAEC) was established. Article 10(6)(d) of the NAAEC, directs the Commission for Environmental Co-operation (CEC), to consider on an ongoing basis, the environmental effects of the North American Free Trade Agreement (NAFTA). A four year study by the NAFTA Effects Project Team into the development and application of a methodological approach for analysing major environmental changes under NAFTA, has been published by the CEC this year.

The U.S. Environmental Review

The report commences by covering NAFTA's environmental provisions. In this section the establishment of supplemental agreements are also detailed. The report then goes on to discuss Mexico's pollution control regime and the recent developments in the U.S.- Mexico environmental relationship. Note is also made to the comparison of U.S and Mexican environmental laws regulations and standards carried out by the U.S EPA in 1993.

The consideration of the potential environmental effects of NAFTA commences with a discussion of the macroeconomic effects. It is recognised that the economic changes that will come with NAFTA have the potential to place additional stresses on the environment, particularly for the development of transport and other trade-related facilities at border crossings. However, it is emphasised that public and private resources for environmental protection will be increased and industry will be dispersed away from the already stressed border region. The implementation of the NAFTA is expected to promote additional development of both the U.S. and Mexican economies.

The "sectoral effects" are then covered. These include: energy, agriculture, transportation. There is then a discussion of "specific effects" which include: product standards; pesticides and food safety; air quality; water quality and supply; control of toxic chemicals; hazardous

waste; non-hazardous waste; chemical emergencies; wildlife and endangered species; fisheries; forest, parks and rangelands and health implications. The discussion of sectoral effects and specific effects considers both the potential impacts of NAFTA and trends in the absence of NAFTA.

The Canadian Environmental Review

The Canadian Environmental Review is an analysis of the potential environmental effects of Canada's participation in the NAFTA Agreement. The review focussed on the environmental implications for Canada alone, the other countries were only considered in relation to transboundary effects. The review was conducted by the NAFTA Environmental Review Committee, comprising representatives from several government departments. In carrying out the review, the Committee assembled and reviewed reports and data from Canadian and foreign governmental and non-governmental sources; met regularly with members of Canada's negotiating team; exchanged information with U.S. and Mexican officials; consulted with members of the trade advisory committees; organised a workshop and two special briefing sessions on NAFTA and the Environment; and provided input for Memoranda to Cabinet.

The review examined four areas in relation to NAFTA. The following general conclusions were drawn:

1. Environmental provisions: NAFTA establishes a new benchmark for environmentally sensitive international trade and economic relations. The environmental provisions of NAFTA go well beyond those of any previous free trade agreement.
2. Environmental Screening: The NAFTA Agreement is not expected to have a measurable impact on Canada's environment, given the anticipated volume of trade between Canada and Mexico. The NAFTA Agreement is unlikely to significantly increase environmental pressures on Canada's air, land, water or natural resources or add to its generation of toxic substances and wastes.
3. Industry Migration: Canadian business generally does not anticipate that new environmental regulations will adversely affect its overall competitive position in the future. There is likely to be at most, a minimal relocation of Canadian industry due to the projected differences in pollution abatement costs and Mexico has given notice that it is upgrading its enforcement of its environmental protection laws which are already in existence.

4. Follow-up Mechanisms: The review concludes that the concerns of Canadians will continue to be addressed through the NAFTA as well as through bilateral, trilateral and international initiatives.

Analytical Framework (Phase II) and Issue Studies (NAFTA) (CEC, 1999)

The aim of the Final Analytic Framework (Draft) is “to develop an understanding of the connections between trade and the environment, to assist in anticipating important environmental impacts in the context of trade liberalisation, and to develop policy tools to better mitigate negative impacts and maximise positive ones”. The Final Analytic Framework (Draft) was developed in three distinct phases. In Phase I (1995–1996), an interdisciplinary group of experts undertook research to explore the trade and investment regime that NAFTA put in place, and the ways that NAFTA-associated economic change might relate to the environment. Before beginning Phase I, the CEC undertook a number of background studies in order to set the work in context and to identify appropriate stakeholders.

Phase II (1996–1997) of the project built on the basic approach developed in Phase I and refined it on the basis of review and consultation. Phase II also took into account the work done by international organisations, such as the Organisation for Economic Co-operation and Development (OECD), and by research and other communities in the NAFTA region and beyond, on trade-environment linkages. During Phase II, the Framework methodology was tested and refined using the analysis of four case-studies:

- an examination of the operation of NAFTA’s environmentally-related institutions,
- an issue study on maize in Mexico,
- an issue study on cattle feedlots in the United States and Canada, and
- an issue study on electricity in Canada, the United States and Mexico.

Phase III of the project (1998–1999) consisted of an extensive peer review of the work undertaken in Phase II, and the subsequent incorporation into the methodology of comments provided. The Final Analytic Framework will be released early in 2000.

The methodological framework is constructed in a linear fashion:

- i) conceptualisation of the issue in terms of the environmental context, the economic context, the social context and the geographic context - this provides the baseline from which the NAFTA-associated change can be identified;
- ii) description of NAFTA rules and institutions and their trade and investment effects;
- iii) linkages to the environment in terms of: production, management and technology; physical infrastructure; social organisation and government policy;
- iv) environmental impacts and indicators covering the effects on the four major components of the ambient environment: air, water, land and living things (biota).

The analytical methodology of the framework may be applied both generally and specifically to issues or sectors. In addition to six overall hypotheses developed to focus the analysis, the framework specifies the content of key variables relating to rules, institutions, trade, investment, production management and technology, physical infrastructure, social organisation, government policy, air, water, land and living things. Criteria have been developed to serve as a guide for the selection of sectors, to identify specific issues within or across sectors and help expand the field of analysis.

Various methodologies are used for the more detailed assessment, either alone or in combination. These include qualitative and quantitative methods, including partial and general equilibrium, economic and ecological modelling. The quantitative methods include the use of specialised interviewing techniques, particularly useful for examining legal, institutional, technological and social factors, as well as components relating to management, production, and policy. Partial or general equilibrium models of the economy, based only on quantitative methods, are considered to be of limited use for assessing NAFTA's environmental effects. It is recommended that the development of quantitative models should focus on generating required data from all NAFTA countries, linking trade with environmental indicators, and identifying how the different processes unleashed by NAFTA-associated trade liberalisation affect the environment in distinct ways.

Lessons for the development of the SIA methodology

The U.S. and the Canadian environmental reviews both emphasise the importance of follow-up agreements and of undertaking a comparison of the environmental laws, regulations and standards within the countries involved in the agreement. Also, they both conclude that there will be overall benefits as a result of the NAFTA agreement. The U.S. environmental review

emphasises the benefits of NAFTA to the environment in all sectors and there is little mention made of any adverse environmental effects. The Canadian environmental review considers the positive and negative effects of NAFTA from a purely Canadian environmental perspective. Both reviews are relevant, but the Canadian study is more logically argued and more clearly presented.

The Analytical Framework (Phase II) and Issue Studies is intended to contribute to an increased understanding of the possible environmental effects of trade and related economic and institutional developments in North America. It is also qualitative and relies on scenario-appraisal. The report "does not provide a conclusive assessment of all of NAFTA's actual environmental effects. The lack of comprehensive baseline data on the relevant linkages and the short time NAFTA has been in effect means that such a definitive assessment is not yet possible" (CEC 1999 p.8). It is intended that the framework will be applied, using the NAFTA model, to further develop the methodology, the state of knowledge, and the analytical understanding in North America, about the relationships between the environment, the economy and trade.

The study has pointed to a number of recommendations for the development of a trade review methodology. These include: the importance of establishing a baseline which incorporates the environmental, the economic, the social and the geographic context from which the trade measure's associated change can be identified; the use of hypotheses to focus the analysis; the use of case studies to test and refine the methodology; the use of criteria to serve as a guide for the selection of sectors, to identify specific issues within or across sectors and to guide any expansions of the field of analysis; the use of both qualitative and quantitative methodologies either alone or in combination; the identification of a set of key indicators that affect the four major components of the ambient environment: air, water, land and living things (biota) and the use of aggregate indicators; the importance of an open and transparent process; and incorporating the findings of consultation and participation throughout the application of the methodology.

4.4 European Union Studies

“1992” The Environmental Dimension (Task Force Report on the Environment and the Internal Market), 1990

This case study undertook what was principally an environmental appraisal of the impact of the creation of the Internal Market. It drew on a range of documentation including: the *Ceccini* report, which predicted the economic impacts of the creation of the Internal Market; a macro-economic study which was commissioned in order to provide information on the spatial distribution of economic impacts; sectoral information sets against which to predict trade sensitivity and likely environmental impacts; and a range of documentation relating to the ‘state’ and ecological capacity of the environment across the EU.

The case study combined a qualitative approach with quantitative analysis. It drew on various models in order to measure the impact of growth on two key pollutants, sulphur dioxide and nitrogen dioxide emissions. Judgements on other impacts were made on the basis of existing information sets. A key element of the method of approach was its adoption of a spatial analysis in order to disaggregate economic and environmental impacts.

The case study’s key conclusions emphasised that environmental impacts resulting from the completion of the Internal Market would be most felt in relation to three areas:

air pollution (from energy and transport);

land-use impacts;

threats to habitats.

Transport was identified as the sector likely to give rise to the greatest environmental impacts following liberalisation.

Maastricht Treaty and the Winnipeg Principles on Trade and Sustainable Development, 1999

This study was undertaken by the International Institute for Sustainable Development (IISD), a Canadian private non-profit organisation. The appraisal method assesses the provisions of the Maastricht Treaty against seven sustainability principles (efficiency and cost

internalisation equity, environmental integrity, subsidiarity, international co-operation, science and precaution, openness). The study is wholly qualitative in approach and compares the Treaty's provisions with each of the seven criteria. Hence, the study emphasises principles rather than indicators, and does not use any methodological framework for assessing the magnitude or significance of impact.

4.5 Other Studies

Trade Liberalisation in Developing Countries

Numerous studies have been carried out to estimate the effect of unilateral trade liberalisation on economic performance in developing countries (World Bank, 1999). The method used has been mainly cross-sectional regression analysis, to obtain ex-post impact findings. The results of a representative sample of these studies are summarised in Appendix 3. Several general conclusions emerge from these studies. First, the impact of trade liberalisation on the key economic performance indicators (exports, imports, employment, investment) is heavily influenced by other factors, including a country's stock of human and natural capital. Second, a country's policy environment, particularly as it affects the efficient management of natural and human resources, has an important influence on the impact of a given measure of trade liberalisation. Third, a country's export response to trade liberalisation depends heavily on external market access and demand.

Lessons for the Development of SIA Methodology

The inconclusive nature of the ex post cross-country regression analyses of unilateral trade liberalisation in developing countries confirms that the economic impact of a given trade measure is often country and sector specific. Impact analysis needs, therefore, to examine the context and conditions of each case, rather than imposing a fixed 'dose-response' relationship on the economic impact of trade liberalisation.

Freight and the Environment: Effects of Trade Liberalisation and Transport Sector Reforms, OECD, 1997

In September 1995, the OECD Joint Session of Trade and Environmental Experts initiated a study examining the environmental effects of international transport of goods attributable to trade liberalisation and liberalisation/structural reforms in the transport sector itself. The

studies looked at to what extent trade liberalisation is contributing to increased pressure on the environment from the growth in transport, and at two questions in particular:

- are changed movements in international freight associated with trade liberalisation a significant factor?
- have the reforms undertaken to date towards freer access and increased competition contributed to greater pressure on the environment through negative scale effects or have the economic efficiencies they have engendered also been associated with positive environmental efficiencies?

Appraisal methodology

The review addressed shipping, air cargo, trucking, rail, pipelines and intermodal terminals. Stress on the environment arising from freight transport was assessed by measuring the volume (weight) of traded goods and the distances that such goods are carried. Attention was then paid to the particular environmental stresses imposed by different modes of freight used to transport the total volume of goods from their origin to their destination. Following on from this, an international trade model was developed to simulate the effects of Uruguay round commitments to reduce trade barriers and trade distorting measures. Two case-studies have been investigated: the experience of North America with respect to the liberalisation of the transport sector since 1980 as well as the implications of NAFTA for freight movements; and the European experience with liberalisation of various freight transport modes.

Principal empirical findings

Data collected on both air pollution and noise pollution showed trucks as clearly more polluting than rail or ships. In addition, comparison of the social costs of other external environmental impacts were also higher for road than for rail. The results from the model simulation indicated that overall, intercontinental sea transport will increase slightly, but the magnitude and direction of these changes will vary widely by export or import flow, commodity sector and region. Sectoral projections show a greater increase in international transport for all manufactured goods than for agriculture and mineral commodities.

The case-studies analysis indicates a change in transportation, trading and infrastructure patterns from an east-west orientation to more of a north-south one as a result of the NAFTA.

Cross border rail and intermodal movements are expected to increase as rapidly as the Mexican infrastructure can be improved. Competition between US and Canadian ports for international cargo has increased. Important economic gains have been made, which in many cases have permitted environmental improvements through the adoption of new technologies and infrastructure investments. In particular the energy consumption for the sector has gone down and inter-city freight movements by rail have increased relative to those on road. As a result of liberalisation in the EU, road haulage has dramatically increased whereas the more environmentally friendly forms of transport have lost market shares. However, the study does not conclude that these forms of transport would have stabilised or increased their market position had the liberalisation not taken place.

Lessons for the SIA methodology

In analysing the relationship between trade liberalisation, international transport and the environment, the effect of trade liberalisation on both quantities and distances transported needs to be considered. The enforcement of social regulations (driving and rest times) also seems to be a key factor for intermodal competition. There is concern over the negative environmental impacts of a rise in freight activity. This is due to the continuing rates of such rises and also the fact that road haulage and heavy goods vehicles are carrying most of the increment. Energy use and various air pollutants are markedly heavier for trucking than for other modes of freight transport. However, it is noted that the use of different methodologies to assess the different type of impact, may be more significant than any possible generalisation about the differences between marine and rail transport based on these data.

Liberalisation of the transport sector needs to be undertaken at the same time. It also needs to be accompanied by a framework of social, environmental and safety restrictions to harmonise intermodal competition. In the absence of such harmonisation, there is strong evidence to suggest that there will be a shift away from the more environmentally friendly forms of transport such as rail, inland waterways, coastal shipping and pipelines.

Sustainability Reviews: Lessons and Potential for the Millennium Round: The Chilean Experience (Volpi, 1999)

The paper advocates the use of a Sustainability Review (SR) in helping to integrate and mainstream sustainability concerns in trade negotiations which is defined as an "analytical

and policy-orientated process for predicting, analysing and interpreting the significant impacts of free trade policy and agreements on Sustainable Development". The Sustainability Review is applied to assessing the environmental effects of trade liberalisation on the mining sector in Chile.

In relation to the scope of a Sustainability Review, the study is not restricted to the economic, environmental and social dimensions of sustainable development, but also includes transparency and accountability of the system. In this regard a distinction is made between the 'Trade and Environment' approach as embodied by the WTO's CTE and a more integrated approach where all trade reforms support the goal of sustainable development.

The methodology involves 3 inter-related phases:

- economic assessment
- environmental assessment
- social assessment

The study also incorporates a spatial analysis.

The impacts of different trade liberalisation measures in relation to natural resources, air water and bio-diversity are ranked as *positive*, *negative* or *uncertain*. The main findings of the study were presented as a matrix which correlated trade-related economic effects (sectoral growth, diversification of exports, technology transfer) with environmental media. In addition, the study attempted to determine the net impact. Overall it found that the impact of sectoral growth and diversification of exports was largely negative. Technology transfer was assessed to produce mixed results. The net impact was judged to be largely negative although some positive impacts were identified for air pollution.

Lessons for Development of SIA Methodology

The study confirms the need to include sectoral analysis; illustrates the value of involving stakeholders; and demonstrates the feasibility of applying an impact-matrix methodology to analyse economic social and environmental impacts resulting from trade liberalisation.

4.6 Principal Findings

This chapter has reviewed a number of case studies which have appraised and evaluated a selection of trade agreements and trade-related measures. The objective was similar to that of the previous chapter, namely to inform the development of the SIA methodology in Chapter 5. We have not reviewed multilateral environmental agreements (MEAs) since these do not deal directly with trade. However, this body of literature may become relevant in the next phase of the SIA study, when it may be necessary to undertake a regulatory impact assessment of these New Round issues.

Various methodologies have been used, either alone or in combination. These include qualitative methods, and have been both *ex ante* and *ex post*. Taken as a whole, the studies confirm that the environmental and social impacts of trade measures can be significant, and need to be assessed alongside the economic effects. While each method has its own strengths and weaknesses, there would appear to be potentially significant benefits in terms of transparency and consistency in decision-making to have a single, overall methodological approach, which can be used to assess economic, social and environmental effects within the same integrated framework.

5. SUSTAINABILITY IMPACT ASSESSMENT METHODOLOGY

5.1 Introduction

The purpose of this chapter is to describe the main stages, methods and procedures for the *preliminary SIA* of the measures proposed for inclusion during the New Round negotiations agenda to be discussed at Seattle. The content of this methodology takes account of the reviews and findings presented in Chapters 2-4 and the corresponding appendices to which they refer.

The main components of the methodology are summarised in Table 5.1. These are elaborated in section 5.2, which is structured in the form of a Checklist with supporting explanations to assist in understanding and applying the methodology. Part A of the Checklist contains information and guidance relating to measures for negotiation, scenarios for analysis, country groupings for appraisal purposes, core sustainability impact indicators and appraisal methods, consultation procedures and information sources. Part B contains information and guidance on each of the main stages involved in undertaking a preliminary sustainability impact assessment: screening, scoping, preliminary assessment, and provisional identification of mitigatory and enhancing modifications to the proposed measures. Additional information and guidance are contained in the appendices to which cross-references are made. Since this is a new methodology, it is likely that some further refinements will be made to it during its application in Phase Two.

Table 5.1 Main Components of the Preliminary SIA Methodology

| |
|--|
| <p>A. Information checklists to assist in applying the methodology</p> <ul style="list-style-type: none">• possible measures for negotiation in the New Round• possible scenarios to be analysed for each measure• country groups for which appraisals are to be undertaken• sustainability impact indicators and significance criteria to be used in the appraisals• methods, consultation procedures and information sources |
| <p>B. Main stages in the assessment process</p> <ul style="list-style-type: none">• screening: to determine which measures require SIA• scoping: to establish the appropriate coverage of each SIA• preliminary sustainability assessment: to identify potentially significant effects, positive and negative, on sustainable development• mitigation and enhancement analysis: to suggest types of improvements which may enhance the overall impact of the New Round negotiations on sustainable development |

This chapter does not consider the methodology for *full SIAs*, which may be undertaken post Seattle. This is discussed, more briefly, in Chapter 6.

5.2 Preliminary SIA Checklist

Part A: Lists for use in the Preliminary SIA

1. List of possible measures for negotiation in the New Round

The list of possible measures for negotiation is contained in Appendix 1 and is based on the European Commission's Communication to the Council and European Parliament (July 1999). The EU's broad approach to each of these measures is elaborated in a series of fiches submitted to the WTO at approximately the same time. More information is being sought from the Commission to enable each of these measures to be defined more precisely, to facilitate their appraisal.

2. List of possible scenarios to be analysed for each measure

Because of uncertainty over the negotiation positions that may be adopted by the parties, it is recommended that three different scenarios are appraised for most measures, reflecting the range of possibilities that may be encountered. Other scenarios within the range may need to be appraised in the post-Seattle period. The specifics of the scenarios for measures may vary but the underlying criteria should be broadly the same, as indicated below.

Scenario A: '*Base*' scenario. This implies that no new agreement is reached on the measure concerned and that existing provisions, as currently practised, continue.

Scenario B: '*Intermediate*' scenario. This is to be defined, taking into consideration information provided by the Commission in 1. above. The scenario is constructed for appraisal purposes only. It has no official status and implies no EU/EC policy commitment to it.

Scenario C: '*Trade liberalisation*' scenario. This assumes general acceptance of greater and faster trade liberalisation and of supporting measures to remove discriminating market practices in domestic markets. No changes are assumed to mitigate resulting adverse environmental and social impacts.

3. List of country groups for which appraisals are to be undertaken

Given the limited duration of Phase Two, it is recommended that impacts are appraised in this study for three groups of countries – the European Union; developing and/or least developed countries; the rest of the world or all countries – in descending order of priority. Other parallel studies e.g. European Commission DGII (1999), which are intended to serve somewhat different purposes, use different country groupings.

4. List of sustainability impact indicators and significance criteria to be used in appraisals

It is recommended that a core set of economic, social and environmental indicators are used relating to:

- Average real incomes; employment; net fixed capital formation.
- Equity and poverty; health and education; gender inequalities.

- Environmental quality (air, water, land); biological diversity; other natural resource stocks.

The detailed specification and form of measurement (quantitative or qualitative) may vary to reflect type of measure, country group characteristics and data availability.

It is proposed that the significance criteria used in the interpretation of sustainability indicator data should cover:

- a) the base-line conditions in the affected areas (i.e. the extent to which these areas are already experiencing economic, social and/or environmental stress);
- b) the expected direction of change to these conditions (favourable or unfavourable);
- c) the likely nature, order of magnitude, geographic extent and duration of the changes (expressed qualitatively or quantitatively) and
- d) the likely capacity of the regulatory system and relevant institutions in the affected areas to respond, using their own resources, with appropriate mitigatory measures.

5. Methods for use in appraisals

Examples of methods are summarised in Table 5.2 and in Section B below, according to the stage in the appraisal process at which they may be used.

Table 5.2 Examples of Appraisal Methods of Potential Use in SIAs

| | |
|---------------------------------|---|
| Economic Appraisal Methods | <p>Computable general equilibrium (CGE) and applied general equilibrium models (AGE)</p> <ul style="list-style-type: none"> • Regression analysis • Cost-benefit analysis • Case Studies |
| Environmental Appraisal Methods | <p>Checklists; matrices; cause - effect diagrams/models; networks; policy evaluation techniques such as extended Cost Benefit Analysis (CBA) and Multi-Criteria Analysis (MCA); scenario analysis; consultative and participative approaches.</p> <p>Models:</p> <ul style="list-style-type: none"> • Economic assessment models: computable general equilibrium (CGE) and applied general equilibrium models (AGE) extended to include a consideration of environmental effects; for example: GeneRal Equilibrium ENvironmental model (GREEN) (a global dynamic AGE model developed by the OECD); Trade and Environment eQUILibrium Analysis (TEQUILA) (a dynamic, multisectoral CGE developed by the OECD focussing on the environmental effects of trade liberalisation and induced changes in production processes); Global Trade Analysis Project (GTAP) • Environment assessment models (these models identify correlations between economic variables and environmental effects) • Simultaneous-equation models |
| Social Appraisal Methods | <ul style="list-style-type: none"> • Checklists; surveys; matrices; scoring • consultative and participative approaches; stakeholder analysis; social survey and interviewing methods • cross-country regression analysis • case studies • extending building on CGE/AGE economic models by including, for example, a social accounting matrix |
| Regulatory Appraisal Methods | <p>Socio-economic impact analysis; distributional analysis; cost-benefit analysis of regulatory competition effects; fiscal analysis; budget-cost analysis; rule-specific analysis; check-lists; static-dynamic framework</p> <p>Refer to: BOX A3.2 OECD Check-List Identifying Regulatory Effects BOX A3.3 WWF Regulatory Assessment Products</p> |
| Integrated Appraisal Methods | <p>Analytical Methods: Models; Scenario analysis; Risk analysis</p> <p>Participatory methods: Dialogue methods; Policy exercises; Mutual learning methods; expert panels; Delphi methods; gaming; focus groups.</p> <p>Various forms of extended Cost Benefit Analysis (CBA) and Multi-Criteria Analysis (MCA)</p> |
| Other methods | <p>A wide range of consultation and participative methods may be used, in addition to various technical methods, in most of the above categories of appraisal. Additionally, geographic information systems (GIS) have a number of potential applications.</p> |

See Chapters 3 and 4, and Appendices 3 and 4 for further details.

Part B: Stages, methods and procedures in the Preliminary SIA process

1. Screening

The purpose of screening is to decide which, if any, of the measures listed in Appendix 1 are to be excluded from the Preliminary SIA because they are unlikely to give rise to significant impacts. Screening is to be undertaken by the study team, in consultation with the Commission, at the beginning of Phase Two. In view of the short time available, it is expected that the study team will complete their part of this work in sufficient time to discuss the screening findings at the meeting with the Commission on October 1. These conclusions will be posted on the University of Manchester's WTO study web site. Responses from civil society and Member State representatives will be invited via the Internet and will be discussed at the meeting on October 20 in Brussels.

It is proposed that screening is undertaken using the following criteria:

- a) Whether the types of areas likely to be affected by the measure are already under economic, social or environmental stress.
- b) Whether the characteristics of the measure are likely to cause it to have significant economic, social or environmental consequences.
- c) Whether the measure is likely to make a significant contribution to the cumulative impacts of the New Agreement as a whole.
- d) Whether the existing regulatory, institutional and financial capacities in the affected areas are sufficient to implement appropriate mitigatory measures, using their own resources.

Simple checklists and cause-effect diagrams will be used to assist in screening and the results of the screening exercise will be summarised as illustrated in Table 5.3 below. The sources of information used in the completion of the screening exercise will include study team knowledge and documentation, searches and specialist advice, as appropriate, consultations with the Commission and feedback from civil society.

Table 5.3 Summary of Screening findings for a proposed Trade-Related Agreement

| Individual Measures within the Agreement | Recommendation | Justification for Recommendation |
|--|----------------|--|
| 1 | ✓ | (Summary of the reasons for the recommendation relating to each measure, based on the available information and the stated screening criteria) |
| 2 | ✓ | |
| 3 | ✓ | |
| 4 | x | |
| 5 | x | |
| 6 | ✓ | |

✓ = measure requires SIA; x = measure does not require SIA.

2. Scoping

Scoping is to be undertaken for all measures which, after screening, remain to be appraised.

Its purpose is to systematise the determination of the terms of reference (TOR) for the appraisal of each New Round measure to be assessed. It will be used to identify:

- the specific scenarios to be investigated;
- the specific features or components of each measure that should be examined in the preliminary assessment (see 3. Preliminary Assessment below), either individually or cumulatively, because of their potentially significant impacts;
- the cause-effect routes through which these significant impacts are transmitted;
- the country groups to be investigated;
- the time horizons over which the assessment should be constructed;
- the methods, data and indicators to be used, and consultations to be undertaken, in the assessment.

Scoping will build upon the work already completed at the screening stage. It will identify the specific *components* of each trade *measure* and the main cause-effect routes through which significant impacts are likely to occur. Its purpose is to focus the preliminary assessment on those elements which really matter for decision-making purposes. The use of headline (core) sustainability indicators and significance criteria reinforces this.

Similar methods to those already used in screening (e.g. checklists and cause-effect diagrams and previous study findings, etc.) are used for scoping. This helps to maintain continuity and internal consistency within the appraisal process as a whole. Similar information sources are also used but, within the time available, some additional information will be analysed (see

below). It is recommended that the scoping findings are summarised in a separate matrix for each measure (illustrated in Table 5.4) and that a combined scoping matrix is prepared for the Agreement as a whole.

Table 5.4 Scoping Matrix for a Measure included within the SIA of a proposed Trade-Related Agreement

| Components of the Measure | Types of Impact | | | | | | | | | Principal Cause – Effect Routes for significant impacts |
|---------------------------|-----------------|---|---|--------|---|---|---------------|---|---|---|
| | Economic | | | Social | | | Environmental | | | |
| | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | |
| 1 | ✓ | x | ✓ | x | ✓ | x | x | ✓ | x | |
| 2 | ✓ | ✓ | x | ✓ | ? | x | ✓ | ✓ | ✓ | |
| 3 | x | ✓ | ✓ | x | x | ✓ | x | ? | x | |

The types of impacts examined correspond to those included in the recommended core set of sustainability indicators. ✓ = likely significant impact; x = unlikely significant impact; ? = significance of impact very uncertain.

The scoping study should also report on the prediction and evaluation methods to be used in the preliminary assessment. The detailed choice of methods will be influenced by a number of factors – the nature of the trade-related measure, the cause-effect routes through which impacts are transmitted, the characteristics of the affected areas, the types and extent of information (including models and other tools of analysis) available and the needs of those who will use the preliminary appraisal findings. For this reason, there will be some differences in detail between appraisal methods for different measures and contexts. However, the following should broadly apply:

- There are likely to be some differences between the appraisal of measures which change levels of tariffs, quotas and subsidies (whose main trade and economic consequences are, *in principle*, quantifiable) and a range of trade-related rule changes (where quantification is much less likely). Because of the limited quantitative data available at the preliminary assessment stage, this difference may not be so great in practice.

- In all cases, it is important to identify the significant cause-effect routes *before* finalising the choice of methods for the preliminary appraisal.
- Models are potentially useful for analysis and prediction within complex systems, such as those depicted in Figure 2.1. However, they are likely to be of limited empirical (as distinct from analytical) use in preliminary SIAs in the near future. As shown in Appendices 3 and 4, the main modelling activities have been confined to the trade-economy sub-systems in the SIA framework; extensions to cover the environmental and social sub-systems as well, are few. Additionally, there are examples of economic-environmental sub-systems modelling, which, however, are not explicitly trade-related. Modelling of social system links to economic and environmental systems are least developed of all. A more important limitation lies in the types of models that are currently available, which are often not ideally suited for SIA use. For example, the underlying assumptions and structural form of the general equilibrium models, that have been mainly used to predict trade and economic changes, have limitations when also used to predict social and environmental consequences. At a more practical level, few modelling studies provide directly useable estimates for the preliminary appraisals to be undertaken during the next two months..... and there is insufficient time to modify models, assemble fresh data and derive new estimates. In summary, modelling studies have a limited, but potentially useful, contributory, rôle in this preliminary SIA study. Where relevant findings from computable modelling studies of trade-economic systems are available, they can be used but will probably require cautious interpretation. The potentially greater use of computable models in full SIAs in the post Seattle period, which have been specifically adapted and extended for this purpose, is recognised in Chapter 6.
- Similarly, both ex post statistical studies and more specific case studies of the consequences of trade-related measures have a potentially valuable contribution to make in preliminary (and full) SIAs. The total numbers of existing ex post studies are greater than their ex ante counterparts. However, their limitations have also to be taken into account. Ex post statistical studies often experience difficulties in distinguishing the influence of the trade measure from that of changes in other variables. Case studies, though often empirically richer, can suffer from similar

difficulties and run the risk, where the case study method is not sufficiently explicit, of seeming to be anecdotal and too subjective. In both cases, there is some concern how far conclusions drawn from ex post studies, in one situation, can be safely transposed for ex ante use, in a different situation. In summary, both of these types of ex post studies have a useful but limited rôle in SIA preliminary appraisals. There is a potentially greater rôle for them where their methodological rigour and relevance to full SIA studies is strengthened.

- Given the limitations which have been described, and the short time available in which to conduct the preliminary appraisals, a more pragmatic, packaged approach to the selection of appraisal methods is recommended. This will draw upon a variety of different existing sources of information and interpretation: ex ante modelling studies, ex post statistical studies, case studies, other relevant information sources (qualitative as well as quantitative), consultations and expert judgement. In all cases, however, their use should be tailored to the more modest, specific requirements of the preliminary appraisal. The significant cause-effect routes should be identified, as should the strengths and limitations of each of the information sources *in the particular context* in which they are to be used. A short summary of the main recommended methods should be attached to the scoping matrix for each measure. This may need to be modified, during the Phase Two appraisal, and any modifications should be recorded at that stage (see 3. Preliminary Assessment below).

Consultations, based upon the draft scoping findings, can be a useful check on whether any potentially significant impacts have been omitted from the TORs and whether any potentially useful assessment methods and sources of information have been overlooked. However, in this study, there will not be a well-defined division between the completion of the scoping stage and the commencement of the preliminary assessment. This is partly due to the limited duration of Phase Two. It is also because the preliminary assessment is an extension to scoping rather than a separate full assessment. As a result, the scoping of some measures will end earlier and their preliminary assessment will commence sooner than of other measures.

A meeting with the Commission will be held, towards the end of Phase Two, to discuss both the draft preliminary SIA and the scoping findings from which it was developed (informal consultations with the Commission will continue through Phase Two). A separate meeting,

arranged for October 20, will provide an opportunity to discuss progress in both scoping and the preparation of the preliminary SIA with representatives of civil society and the Member States.

3. Preliminary Assessment

This stage in the process involves the preliminary appraisal of each potentially significant impact identified at the scoping stage, using the methods and procedures recommended at that earlier stage. Fewer cause-effect routes remain for further investigation because those identified, as likely to be non-significant, will already have been scoped out. This provides the opportunity to investigate a small number of impacts in additional detail. However, this is only justified to the extent that it is needed in helping to define the Seattle agenda. With this in mind, the preliminary assessment should serve two main purposes:

1. Resolving any remaining uncertainties concerning which impacts are to be recorded as potentially significant or non-significant. (This involves converting any question mark (?) into a tick (✓) or a cross (x) – see Table 5.4).
2. Differentiating between impacts of lesser significance (to be shown as ‘1’ and greater significance (shown as ‘2’), in the matrices for individual measures and in the combined matrix for the Agreement as a whole. This involves converting each tick (✓) into ‘±1’ or ‘±2’.

The Preliminary Assessment introduces a further, but limited, degree of differentiation in the level of significance of the impacts. Its purpose is to assist negotiators and other interested parties in identifying the potentially most important types of consequences which may flow from the New Round agreement as well as those of lesser (but still significant) concern. These should then be summarised, as illustrated in Table 5.5. This will enable the reader to identify:

- Which measures may give rise to significant/very significant impacts (positive and negative) and under which scenarios they are likely to occur.
- Which significant/very significant impacts (positive and negative) are associated with each scenario.

- The main types (economic, social, environmental) of significant/very significant impacts and the circumstances in which they are most likely to occur.
- The extent to which these significant/very significant (positive and negative) impacts are likely to be experienced by different country groups – for example, the European Union; developing countries; least developed countries.

Table 5.5 Summary of Preliminary Assessment Findings

| Measures within the proposed agreement | Significant Impacts | | | | | | | | |
|--|---------------------|----|---|------------|----|----|------------|----|----|
| | Scenario 1 | | | Scenario 2 | | | Scenario 3 | | |
| | A | B | C | A | B | C | A | B | C |
| 1 | +1 | 0 | 0 | +1 | 0 | 0 | +1 | 0 | 0 |
| 2 | 0 | -1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | -1 | 0 | 0 | -1 | -1 | +1 | -1 | -1 |
| 4 | 0 | 0 | 0 | 0 | 0 | +2 | 0 | 0 | -2 |
| ↓ | | | | | | | | | |
| n | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

A = economic impacts, B = social impacts, C = environmental impacts
 + = positive impact; - = negative impact
 0 = non-significant impact; 1 = lesser significant impact;
 2 = greater significant impact.

4. Mitigatory and enhancing measures (flanking measures)

The findings of the preliminary SIA, as summarised in Table 5.5, will reveal where the potential need for mitigatory measures to reduce or eliminate significant negative impacts is most likely to arise. Comparisons between the results obtained from the appraisal of the three scenarios will also provide an initial indication of ways in which some of the beneficial impacts may be enhanced. The previously conducted literature and case study reviews, consultations etc. will also provide ideas on possible types of improvement that might be sought, and of the types of mitigatory and enhancing measures that may be used to achieve these. This is illustrated in Table 5.6 Flanking Measures Matrix. However, each flanking measure may not only have its targeted effect but also some indirect impacts (economic, social and environmental) both favourable and unfavourable. Additionally, combinations of

these measures may have cumulative impacts, which are difficult to predict without further analysis.

A useful way of progressing this analysis is by including different packages of flanking measures in new scenarios which are then submitted to a preliminary SIA. However, this can only be undertaken after the Phase Two study has been completed and the information required to complete Table 5.6 becomes available. It may be best undertaken after Seattle, once the New Round Agenda has been clarified. However, the range of *possible* mitigatory and enhancing measures should be identified by Seattle.

Therefore, the Phase Two study should construct a preliminary Flanking Measures matrix to indicate the range of flanking measures which could make a positive impact on sustainable development through the New Round agreement. However, the actual appraisal of alternative flanking measure strategies, developed on the basis of a completed Table 5.6, should be undertaken post Seattle.

Table 5.6 Preliminary identification and subsequent appraisal of measures that may mitigate significant negative impacts and enhance beneficial impacts

| Mitigating and enhancing measures | Impacts | | |
|-----------------------------------|--------------|------------|-------------------|
| | Economic (A) | Social (B) | Environmental (C) |
| 1 | ✓ | ✓ | ✓ |
| 2 | x | ✓ | x |
| 3 | x | x | x |
| 4 | x | ✓ | ✓ |
| 5 | ✓ | x | x |
| 6 | ✓ | ✓ | x |

✓ could make a positive contribution to sustainable development

x unlikely to make a positive economic, social or environmental contribution to sustainable development

6. CONCLUSIONS AND PHASE TWO WORK PROGRAMME

6.1 Conclusions

The experiences of the 1990s have demonstrated that the issues to be addressed in international trade agreements and the negotiating context in which these are to be resolved have become much broader than at the beginning of the decade. The narrow trade liberalisation agenda has spilled over into a much wider range of issues relating to multi-national investment, intellectual property rights, labour standards, and the possible trade distorting effects of other international agreements and country-level domestic policies. During the same period, particularly since the 1992 Rio Conference, a range of international organisations, including the WTO itself, the European Union and many national governments have adopted an over-arching goal of sustainable development. This has brought to the fore a set of economic, social and environmental issues which can no longer be satisfactorily addressed by trade liberalisation measures working to a narrower, economic efficiency agenda. Further, growing political concern over the distribution of benefits and costs from previous international trade agreements, particularly so far as they affect developing countries in general and least developed countries in particular, has reinforced calls to place wider development issues, linked to the international trade agreement issue, on the New Round agenda.

Recent experience with the OECD initiative for a multi-national investment agreement contains a number of lessons of relevance to agenda setting and the negotiation process for the New Round. This study is mainly concerned with two of these. The first is the value of prior appraisals of proposed measures when setting the New Round Agenda. The second is the desirability of taking explicit account within these appraisals of a) social and environmental, as well as economic, consequences within a sustainable development framework and b) analysing the distribution of these New Round consequences on different key country groupings – in this study, the European Union and developing countries/least developed countries and different social groups already under economic, social or environmental stress.

The main contribution of the first phase of this study has been in the development of an SIA methodology for trade-related measures which may be applied in the second phase of the

study to those measures which are potential candidates for inclusion on the Seattle agenda. Two principal characteristics of that methodology are that it explicitly assesses the likely economic, social and environmental consequences relevant to the promotion of sustainable development and that it can be applied to separate target groups of countries and social groups as identified in the previous paragraph.

Surveys of the existing literature and experience relating to sustainability impact appraisal and its application to trade-related agreements have been carried out and the findings are reported in Chapters 3 and 4, supplemented by Appendices 3 and 4. An extensive list of references is included at the end of the report. The findings indicate that much valuable methodological work has already been done. However, to date, it mainly relates to certain, separate components within the sustainability impact appraisal (SIA) framework rather than the integration of all relevant components within the integrated appraisal framework described in Figures 1 and 2.1.

It is this framework which has been used in determining the structure of the proposed SIA methodology to be used in Phase Two. It is described in some detail in Chapter 5 and its main features are summarised below in Table 6.1. It is intended for use in the pre-negotiation phase which culminates in the Seattle meeting. Its aim is to be balanced in its coverage of economic, social and environmental impacts (both positive and negative) as well as being practical and transparent in its approach. Within the restricted time available, it will use a package of appraisal methods, mainly adapted from more specialised areas of assessment which, where necessary, will use qualitative information and different forms of consultation.

Table 6.1 Principal Components of the SIA Methodology

Part A: Listings for use in the Preliminary SIA

- List of possible measures for negotiations in the New Round.
- List of possible scenarios to be analysed for each measure.
- List of country groups for which appraisals are to be undertaken.
- List of sustainability impact indicators and significance criteria to be used in appraisals.
- List of methods, consultation procedures and information sources for use in appraisals.

Part B: Stages, methods and procedures in the Preliminary SIA process

- *Screening*: to determine which measures on the proposed New Round agenda may be excluded from appraisal because they are unlikely to give rise to significant impacts.
- *Scoping*: to determine the term of reference (TOR) for the appraisal of each measure likely to give rise to significant impacts (Which components of the measure should be assessed? Which appraisal methods and consultation procedures should be used?).
- *Preliminary Assessment*: to determine the impacts associated with each measure and with the Agreement as a whole that are likely to be of greater significance, lesser significance, and of no significance.
- *Flanking measures*: to determine types of flanking measures which may reduce significant negative impacts and enhance beneficial effects associated with particular measures in the proposed New Round.

6.2 Phase Two Work Programme

The work undertaken in Phase Two will mainly consist of the following:

4. Determination of the measures to be submitted to a preliminary SIA

The study team will screen the list of measures contained in Appendix 1 and make recommendations on which of these should be submitted to a preliminary SIA. The list of measures to be appraised will be discussed during the meeting with the Commission on October 1 when the proposed methodology, described in Chapter 5, will also be discussed. The Commission has undertaken to provide the study team with further information on its negotiating objectives and expectations to assist in undertaking these appraisals.

5. Carrying out preliminary SIAs for each of the selected measures

This will be undertaken, using the proposed SIA methodology, according to the following stages:

- *Scoping*: to establish the appropriate coverage of each SIA.
- *Preliminary sustainability assessment*: to identify those impacts for each measure, which are likely to have a significant effect, positive or negative, on sustainable development.
- *Mitigation and enhancement analysis*: to suggest cost-effective and workable measures in those areas identified as having a potentially greater impact on sustainable development.

6. Undertaking consultations

The following consultations should take place during Phase Two.

- Meeting with the Commission, on October 1, to discuss the proposed SIA methodology, the proposed list of measures to be subject to SIA and the specific features of the measures to facilitate their appraisal. Informal consultations will also be held with Commission personnel at various times during Phase Two to assist in the appraisal of individual measures.
- Contacts with other experts and key organisations, as required, to facilitate the completion of the Phase Two Work Programme.
- Placing the findings of the Phase One report and the list of measures to be subject to SIA, on the University of Manchester Web Site and inviting comments and suggestions relating to this.
- Participating in the meeting in Brussels on October 20, organised by the Commission, to discuss the WTO study programme with representatives of NGOs and the Member States.
- Debriefing meeting with the Commission, immediately following the submission of the Phase Two report in the middle of November.

7. SIA follow-up, post Seattle

The present work programme has been primarily concerned with the development and application of a preliminary form of SIA in the pre Seattle period. During Phase Two,

preparations should be made for the development of a more detailed form of SIA for use in subsequent stages of the New Round negotiations, after the Seattle meeting. Suggestions relating to this will be presented in the final report.

The arrangement of a follow-up meeting with representatives of civil society, after the completion of the current study, should be considered by the Commission. Its purpose would be to discuss the conclusions of the final report in the light of outcomes of the Seattle meeting, and the desirability of further development of the SIA methodology for more detailed application in subsequent phases of the New Round negotiations.

APPENDIX 1

INITIAL LIST OF MEASURES FOR APPRAISAL¹

Trade Measures

Issues

Agreement on Agriculture

- Implementation of the existing Agreement
- Maintaining *existing* provisions (i.e. defence of the 'blue' box, renewal of the peace clause after the year 2003 and renewal of the special safeguard provisions)
- Improving access to certain markets
- Ensuring compatibility of rural and environmental policies within the multifunctional role of agriculture (animal rights, food safety, preservation of human and plant health etc.)

Trade in Services
(e.g., transport, telecommunications,
financial services) –GATS

- Increased market openings coupled with regulatory disciplines
- Increased participation of LDCs given the importance of GATS for all countries as a catalyst for improving investment etc.

Multilateral Framework of Rules Governing
International Investment including TRIMS

- The role of the WTO as a (non-discriminatory) negotiating forum (balance between 'home' and 'host')
- Establishing conditions for international investment to be conducive to sustainable development
- Securing access to investment opportunities
- Protecting investment and the right to regulate
- Creating a stable and transparent business climate

Competition
(the development dimension should be a
central consideration in developing this
multi-lateral framework)

- Support for a binding framework of multinational rules

Trade Facilitation

- Simplification and reduction in import-export procedures

Tariffs on Non-agricultural Products
(e.g. textiles, ceramics)

- Reducing tariffs on non-agricultural products whilst recognising the need for flexibility in relation to Member countries at different development levels, and the possible need to increase certain preferences.
- Removing all tariff peaks
- Harmonising the tariff structure (tariff band approach with weighted tariffs according to the level of development)
- Impact of tariff bands on GSP (e.g. under Lomé) with a view to avoiding unacceptable reduction of margins of preference in sectors that are key to development in LDCs

Trade and the Environment
(support for trade and environment policies
playing a mutually supportive role in favour
of sustainable development)

- Clarification of relationship between WTO rules and trade measures taken pursuant to Multi-Lateral Environmental Agreements (MEAs)
- Clarification of the relationship between WTO rules and environmental principles such as the precautionary principle

Trade Measures

Issues

| | |
|---|--|
| | <ul style="list-style-type: none">• Clarification of relationship between WTO rules and non-product related process and production methods requirements, in particular eco-labelling schemes. |
| TRIPS Agreement | <ul style="list-style-type: none">• Support for updating and reinforcing the Agreement to strengthen global protection of intellectual property rights through establishing minimum rights for right holders and enforcement mechanisms |
| Government Procurement | <ul style="list-style-type: none">• Integrate into WTO framework• Improve market access |
| Technical Barriers to Trade | <ul style="list-style-type: none">• Reducing barriers associated with technical regulations, standards and conformity assessment procedures• Support to developing countries to participate in standards• Also acknowledges the treatment of health, consumer safety and environmental issues need to be strengthened within the Agreement• Promote the introduction of international standards |
| Consumer Health | <ul style="list-style-type: none">• Allowing each Member country to choose and implement own level of consumer health and to apply corresponding sanitary measures• Strengthening WTO provisions with regard to the precautionary principle |
| Trade Defence Instruments | <ul style="list-style-type: none">• Further consideration of anti-dumping, subsidies and agreement on safeguards |
| The New Round and Development | <ul style="list-style-type: none">• Acknowledges that economic development, social development and environmental protection are interdependent and mutually reinforcing components of sustainable development• Assistance in overcoming implementation difficulties so as to ensure benefits to the developing countries.• Commitment by industrialised countries to tariff free treatment on essentially all products from least developed countries by 2003• WTO rules on investment and competition should support development |
| Trade and Core Labour Standards (five point strategy) | <ul style="list-style-type: none">• Support for fuller integration and capacity strengthening• Enhanced co-operation with the ILO• Support ILO requests for observer status• Convene a WTO/ILO high-level meeting on trade, globalisation and labour issues• Maintenance of incentive schemes such as already operated by the EC |
| Other Issues | <ul style="list-style-type: none">• Tariff-free treatment for products of least developed countries• Transparency including: dialogue with civil society and de-restriction of documents; transparency in procurement• Improve coherence between WTO and other major institutions such as the World Bank and the International Monetary Fund |

Trade Measures

Issues

- Review of the Dispute Settlement Understanding (DSU) especially the issue of implementation
- Electronic Commerce

1. list of measures based on the Communication from the Commission to the Council and to the European Parliament, July 1999.

APPENDIX 2

SUSTAINABLE DEVELOPMENT INDICATORS FOR USE IN SUSTAINABILITY IMPACT APPRAISALS OF TRADE RELATED AGREEMENTS

Introduction

A sustainability assessment aims to identify the extent to which sustainable development objectives have been or are being achieved in a country, locality or region, or are likely to be achieved as a result of changes in policy. Those objectives are defined through a set of indicators of sustainable development, or sustainability indicators, chosen according to the nature of the study. The indicators normally cover the three main components of sustainable development: environmental, social and economic.

Many indicator sets have been derived primarily for the purpose of assessing past performance, using indicators which have been chosen to reflect key sustainability issues in the country or locality being studied. In the present project, the assessment is of proposed changes in international policy, affecting many countries. The indicator set must therefore be relevant internationally, and appropriate to the types of impact most likely to arise from the policy measures envisaged. The large number of factors which contribute to sustainable development must be reduced to a manageable number of indicators, without compromising the study's ability to identify important effects.

Methodology

The selection of indicators, presented in this Appendix, is derived from the indicator sets and frameworks developed by the United Nations Commission on Sustainable Development (UNCSD 1996), OECD (OECD 1993), the European Commission (Guinomet et. al. 1997), UNDP (UNDP 1998), and the World Bank (World Bank 1997). Reference has also been made to the United Kingdom's more specific indicator set (DETR 1997), the indicators used by the European Environment Agency in its performance reviews (EEA 1999), and to other indicators reviewed by the World Bank (World Bank 1996) and under the ICSC/SCOPE project (Moldan and Billharz 1997).

Where the UNCSD and OECD frameworks are followed, use is made of both pressure indicators and state indicators. State indicators are generally quantifiable. In many cases

published data are readily available for many countries (particularly for UNDP and World Bank indicators). In other cases however, particularly for environmental effects, the indicators presented represent a degree of aggregation (e.g. pollutant concentrations). In such cases, quantification of the current state may present difficulties in both data collection (availability) and presentation (aggregation method). Where a quantified aggregation is impracticable, the indicator may nonetheless be used to give a quantitative or qualitative measure of the predicted impact. This applies also to pressure indicators, some of which are less readily quantifiable than state indicators.

- For each of the three components of sustainable development (environmental, social and economic), a number of broad impact areas are defined, using categories adopted in the above indicator sets.
- From a brief review of selected literature (Potier M 1996, Coote B 1992, HIID 1999, Gadgil and Devasia 1995), a number of reported impacts of past trade policies and agreements have been identified. These are assigned to the impact areas.
- From the chosen indicator sets, at least one indicator relevant to the study has been identified in each impact area.

Details are given in Tables A2.1, A2.2 and A2.3.

Environmental indicators (Table A2.1)

The impact areas illustrated are the ten policy fields of the European Union's Fifth Environmental Action Programme, Towards Sustainability (with field 8 separated into its two components). These categories are being used in the EC's own indicator development programme. This part of the EC's programme aims to reduce an original set of over 1000 indicators to a more manageable number. In parallel, the EC is also developing indicators under the UNCSD framework. The OECD set of indicators is also illustrated. In support of the UNCSD and OECD indicators, some of the more detailed indicators used in the UK set have been included in the table, where these may be relevant to the study.

Social indicators (Table A2.2)

The impact areas illustrated are those used in the UNCSD framework, based on the chapters of Agenda 21. For chapters 23-32 of Agenda 21, the framework gives only response indicators, in a separate institutional category. However, chapters 24, 25 and 26 cover social

effects which are considered to be relevant to the study, and so they have been included as social impact areas.

The UNDP indicators are those used in the annual Human Development Report. UNDP aggregates these indicators into four development indices, a Human Development Index (HDI), two Human Poverty Indices (HPI-1 and HPI-2), used respectively for developing countries and industrial countries, a gender-related development index (GDI), and a gender empowerment measure (GEM). All of the HDR's indicators are included in the table, which also identifies the indices in which they are expressed. The use of HPI indicators need not be restricted to the types of country they were developed for, since some (e.g. unemployment) may be relevant to both developing and industrial countries.

The World Bank indicators are a selection from those used in the annual World Development Report.

Economic indicators (Table A2.3)

The impact areas are those identified in the UNCSD framework for economic indicators, plus Agenda 21's Chapter 32 (an institutional category in the framework). As with the social indicators, the indicator sets illustrated are those of UNCSD, OECD and the World Bank.

Use of the indicators

In using the indicators, the following factors should be taken into account:

- effects arising in importing and exporting countries will normally need to be considered separately;
- for global impacts (e.g. climate change) the total effect from all affected countries should be evaluated;
- regional or transboundary impacts may need to be considered for some effects (e.g. air pollution, water pollution, water resources, fish stocks), as well as local and national ones; such impacts should be evaluated cumulatively;
- short and medium term effects (e.g. on unemployment) may need to be considered separately from long term ones.

Table A2.1 Environmental indicators

| Area of 5 th Action Programme | | Examples of reported trade-related effects | Most relevant “established” indicators | | |
|--|-----------------------|--|---|--|--|
| | | | CSD (and EC) | OECD | UK (additional) |
| 1 | climate change | yes | <ul style="list-style-type: none"> emissions of greenhouse gases | <ul style="list-style-type: none"> index of greenhouse gas emissions | |
| 2 | ozone layer depletion | yes | <ul style="list-style-type: none"> consumption of ozone depleting substances | <ul style="list-style-type: none"> index of apparent consumption of ozone depleting substances | |
| 3 | loss of biodiversity | natural forest, endangered species, monocultures | <ul style="list-style-type: none"> forest area change threatened species as % native species | <ul style="list-style-type: none"> habitat alteration and land conversion from natural state threatened or extinct species as a share of total species known | <ul style="list-style-type: none"> habitat fragmentation damage to designated and protected areas |
| 4 | resource depletion | non-renewables, soil degradation, erosion, salination, fish stocks | <ul style="list-style-type: none"> land use change change in land condition land affected by desertification area affected by salinization and waterlogging | <ul style="list-style-type: none"> size of spawning stocks erosion risks: potential and actual land use for agriculture degree of topsoil losses | <ul style="list-style-type: none"> depletion of fossil fuels fish stocks aggregates output |
| 5 | waste | creation, disposal | <ul style="list-style-type: none"> generation of industrial and municipal solid waste | <ul style="list-style-type: none"> waste generation (municipal, industrial, nuclear, hazardous) | |
| 6 | air pollution | industrial emissions, general and occupational, accidents | <ul style="list-style-type: none"> emissions of sulphur oxides emissions of nitrogen oxides | <ul style="list-style-type: none"> emissions of NOx and SOx | <ul style="list-style-type: none"> particulate matter concentrations CO emissions lead emissions pollution incidents |

Table A2.1 (cont.)

| Area of 5th Action Programme | | Examples of reported trade-related effects | Most relevant “established” indicators | | |
|--|----------------------|---|---|---|---|
| | | | CSD (and EC) | OECD | UK (additional) |
| 7 | dispersion of toxins | hazardous wastes, mineral wastes, nuclear waste | <ul style="list-style-type: none"> • generation of hazardous wastes • imports and exports of hazardous wastes • generation of radioactive waste • area of land contaminated by hazardous wastes | <ul style="list-style-type: none"> • emissions of heavy metals • emissions of organic compounds • changes of toxic content in products, production and processes | <ul style="list-style-type: none"> • radiation exposure |
| 8a | water pollution | industrial effluent, pesticides, fertilisers | <ul style="list-style-type: none"> • faecal coliform in freshwater • BOD in water bodies • use of agricultural pesticides • use of fertilisers | <ul style="list-style-type: none"> • BOD/DO, concentration of N and P in inland waters • consumption of pesticides | |
| 8b | water resources | yes | <ul style="list-style-type: none"> • annual withdrawals • domestic consumption (per capita) • groundwater reserves | <ul style="list-style-type: none"> • intensity of use of water resources | |
| 9 | marine environment | pollution, mangroves, corals | <ul style="list-style-type: none"> • discharge of oil • releases of nitrogen and phosphorus | <ul style="list-style-type: none"> • BOD/DO, concentration of N and P in marine waters | <ul style="list-style-type: none"> • estuarial water quality • concentrations of key pollutants • oil spills |
| 10 | urban environment | road traffic emissions, noise | <ul style="list-style-type: none"> • ambient concentrations of pollutants in urban areas | <ul style="list-style-type: none"> • urban air emissions: SO_x, NO_x, VOC • traffic density, urban, national | |

Table A2.2. Social indicators

| Chapter of Agenda 21 | | Examples of reported trade-related effects | Most relevant “established” indicators | | |
|----------------------|----------------------|---|--|---|--|
| | | | CSD (and EC) | UNDP | World Bank |
| 3 | combating poverty | unemployment, wealth distribution, food prices and availability | <ul style="list-style-type: none"> • unemployment rate • poverty gap index • Gini index | <ul style="list-style-type: none"> • long term unemployment rate (HPI-2) • percent people with income less than 50% of median (HPI-2) | <ul style="list-style-type: none"> • Gini index • percent shares of income/consumption by income band • percent below poverty line |
| 5 | demographic dynamics | migration | <ul style="list-style-type: none"> • population growth rate • population density • net migration rate | | <ul style="list-style-type: none"> • population growth rate |
| 6 | human health | environmental effects, poor diet (cash crops) | <ul style="list-style-type: none"> • life expectancy at birth • infant mortality rate • maternal mortality rate • access to safe drinking water • percent of population with adequate excreta disposal facilities | <ul style="list-style-type: none"> • life expectancy at birth (HDI) • under-40 mortality (HPI-1) • under-60 mortality (HPI-2) • access to safe water (HPI-1) • access to health services (HPI-1) • percentage of underweight children under 5 (HPI-1) | <ul style="list-style-type: none"> • life expectancy at birth • under-5 mortality rate • access to sanitation • child malnutrition |
| 7 | human settlements | urban migration | <ul style="list-style-type: none"> • area and population of urban formal and informal housing • floor area per person | | <ul style="list-style-type: none"> • urban population percent |

Table A2.2 (cont.)

| Chapter of Agenda 21 | | Examples of reported trade-related effects | Most relevant “established” indicators | | |
|----------------------|--|--|---|---|--|
| | | | CSD (and EC) | UNDP | World Bank |
| 24 | gender equality | female labour | <ul style="list-style-type: none"> ratio of average female wage to male wage difference between male and female school enrolment ratios | <ul style="list-style-type: none"> female and male earned income share (GDI and GEM) female and male combined enrolment ratio (GDI) female and male adult literacy rate (GDI) female and male life expectancy at birth (GDI) percent women in senior positions (GEM) | <ul style="list-style-type: none"> female percent of labour force |
| 25 | children and youth | child labour | | | <ul style="list-style-type: none"> percent children aged 10-14 at work |
| 26 | indigenous peoples | loss of traditional lands | <ul style="list-style-type: none"> | <ul style="list-style-type: none"> | <ul style="list-style-type: none"> |
| 36 | education, public awareness and training | indirect effects | <ul style="list-style-type: none"> adult literacy rate primary school enrolment ratio secondary school enrolment ratio | <ul style="list-style-type: none"> adult literacy rate (HDI, HPI-1, HPI-2)) combined enrolment ratio – primary, secondary and tertiary (HDI) | <ul style="list-style-type: none"> adult literacy rate school enrolment ratios |

Table A2.3 Economic indicators

| Chapter of Agenda 21 | | Examples of reported trade-related effects | Most relevant “established” indicators | | |
|----------------------|---|--|---|--|---|
| | | | CSD (and EC) | UNDP | World Bank |
| 2 | international cooperation to accelerate sustainable development | GDP | <ul style="list-style-type: none"> • GDP per capita • net investment share in GDP • sum of exports and imports as percent of GDP | <ul style="list-style-type: none"> • real GDP per capita at PPP (HDI) | <ul style="list-style-type: none"> • GNP per capita • GDP growth rate • average annual inflation |
| 4 | consumption patterns | decline of import substituting industries | <ul style="list-style-type: none"> • annual energy consumption • share of manufacturing value-added in GDP | | <ul style="list-style-type: none"> • energy use per capita • value added by sector • government and private consumption |
| 32 | role of farmers | loss of land rights, drug trade | | | <ul style="list-style-type: none"> • percent cropland and pasture |
| 33 | financial resources | | <ul style="list-style-type: none"> • net resources transfer/GDP • debt/GNP • debt service/export | | <ul style="list-style-type: none"> • genuine savings % GNP • overall budget deficit/surplus • debt/GNP • debt service/exports |
| 34 | technology transfer | | <ul style="list-style-type: none"> • capital goods imports • foreign direct investment | | <ul style="list-style-type: none"> • net private capital flows |

APPENDIX 3

REVIEW OF STUDIES OF IMPACT ASSESSMENT METHODS AND FINDINGS

3.1 INTRODUCTION

This appendix provides a detailed examination of the current literature on impact assessment methodologies, as applied to trade-related measures. The appendix is organised on a similar basis to Chapter 3, with separate sections relating to economic, environmental, social, regulatory and integrated impact assessment.

The content also follows the pattern used in Chapter 3. Each section commences with a brief overview of the scope, type and quality of the literature, followed by a description of the appraisal methods used, and an evaluation of their main strengths and weaknesses. Detailed referencing is provided for each section.

3.2 ECONOMIC IMPACT ASSESSMENT OF TRADE RELATED MEASURES

Introduction

Trade related measures can take many forms and their economic impacts can operate through many different channels. Consequently, there is an extensive literature, both theoretical and empirical, on the economic impact of trade policy measures (Greenaway et. al., 1998). This literature is a sub-set of the broader literature on the evaluation of the impact of economic policy change (McGillivray and Morrissey, 1999).

Trade policy changes can take place at different levels. Unilateral liberalisation refers to reforms implemented by an individual country alone, and evaluations are based on studies of the country in question. Multilateral liberalisation refers to cases where the reforms are at a global level, such as the Uruguay Round, and evaluations must incorporate the interactive impacts of all countries simultaneously (such assessments are usually model-based, as reviewed in Appendix 4). Measures that relate to groups of countries (such as NAFTA or the EU single market) are referred to as regional or minilateral liberalisation.

Trade and trade-related policy reforms can be broadly classified into *border* and *non-border* reforms. A useful working definition of the former is reforms that directly affect transactions at the border, and includes trade taxes and quantitative restrictions. The latter concept is

broader, to encompass any domestic policy reforms that have trade effects. Obvious examples would be trade related investment measures (TRIMs) or exchange rate reforms that alter the relative prices of importables and exportables. Agriculture policy reforms, such as liberalisation of marketing, could affect relative incentives (prices) to exporters and therefore have trade effects. This review focuses on both, although the existing literature focuses much more on the impacts of border reforms. A related distinction is between *price* and *non-price* reforms, the latter specifically including regulatory measures.

Economic Impacts of Trade and Trade-Related Measures

In studies of economic impacts, the concept of welfare most commonly used is that of consumption, where (in principle, and often in practice) this can be defined for different groups (of countries, of people within a country etc.), for different concepts of consumption, and taking account of sustainability. The impacts of trade reform on consumption though are indirect, and there are at least seven main channels of influence that suggest indicators that can be used to evaluate the impact of trade reforms:

- (i) *Commodity prices.* Trade reform will affect prices of commodities both directly and indirectly. The price effects will have implications both for producers and consumers of these commodities and distributional implications within the country. Many trade reform measures do not affect prices directly (e.g. those affecting investment), but may indirectly affect commodity prices.
- (ii) *Market access.* Any measures that reduce restrictions (price or non-price) on imports will have multiple effects. Consumers of imports (which may be firms using intermediate inputs) benefit from lower prices and/or greater availability. Domestic import-competing firms face increased competition and may lose (they may also gain if they can respond to competition by increasing efficiency). Foreign producers (exporters to the market) have an opportunity to gain.
- (iii) *Income.* Even in a static perspective, greater openness to international trade enables countries to specialise more in accord with comparative advantage, and the increased efficiency this implies acts like an increase in income for the country. This effect is potentially further reinforced in a dynamic perspective if, for example, trade leads to significant learning by doing effects (see (v) below).

- (iv) *Investment.* Relaxation of rules on capital inflows may attract increased foreign direct investment in countries, and this in turn may lead to increased domestic production and investment.
- (v) *Technology, growth and productivity.* Greater openness is likely to imply increased competition for producers of import substitutes, and this can mean the need to adopt new production methods and/or new technology so that firms can compete. Moreover, factors that lead to increased receipts by a country of foreign direct investment may lead to the adoption of new, presumably superior, production technologies.
- (vi) *Employment and wages.* Effects of trade reform here are likely to differ between different types of sectors. Greater openness provides opportunities for exporting (or potentially exporting) sectors to expand (although it may also imply increased competition); on balance this should benefit many developing countries, and lead to increased employment where these sectors are labour intensive. Offsetting this though, the fact that technical progress may be skill-biased may mean that it is employment and wages of skilled labour which benefit relative to unskilled labour, with obvious distributional implications. Increased competition for import substituting sectors is likely to have an adverse impact on production and employment in such sectors, especially in sectors not able to respond to increased competition from imports. However, even where such sectors are able to innovate in response to increased competition, employment may still contract and the point above about skill-biased technical progress can also apply here.
- (vii) *Government revenue.* Movements towards greater international openness, especially in trade, are likely to have impacts on government revenue received from taxes on such transactions. Reduced levels of import tariffs on particular commodities may have an adverse effect on government tariff revenue, restricting government freedom for spending in other areas and/or necessitating increases in other taxes, some of which, e.g. excise taxes, may also have trade consequences.

It is through these and other channels that trade reform will impact on consumption, production and trade flows; clearly these effects are complex, and each of them is likely to have social and environmental consequences.

Methods for Assessing the Economic Impacts of Trade Related Measures

Many different methods exist for assessing the economic impacts of trade reforms, and the discussion and application of these methods has generated an extensive literature. Changes in relative prices following trade liberalisation have implications on resource allocation, output, returns on factors of production and composition of production. These effects occur in stages (Kate, 1992). First, imports tend to rise faster following trade liberalisation, which give rise to a new set of prices. Second, this change in relative prices induces adjustment in production levels and the composition of investment. Also, the effects of trade liberalisation on given sectors are likely to be recognised only some time after the implementation of the reforms.

Empirical studies of the impact of policy reform are commonly based on one of three methods for *identifying* if reforms had effects (McGillivray and Morrissey, 1999):

- Before-after comparisons: comparing the situation prior to trade reform with that during and after it; this suffers from the difficulty of separating out the effects of trade reform from other factors.
- With-without comparisons between countries: in this context comparing outcomes in countries which did undertake trade reform with those which did not; this also suffers from various limitations, including the fact that other factors may explain differences between countries.
- Counterfactual comparisons within countries: comparing the outcomes with trade reform in place with what would have happened had it not been undertaken (or undertaken in a different way); the difficulty here is in knowing what would have happened in the absence of the trade reform policies, which calls for modelling.

The analyst also has a choice of methods for *assessing* or *evaluating* the economic impacts. Here, the distinction is between studies that appraise the potential impacts of proposed

reforms (*ex ante*) and studies that evaluate the outcomes of actual reforms (*ex post*). Most studies of multilateral liberalisation tend to be *ex ante*, using a model to predict the likely effects of reforms. Studies of the impact of unilateral trade liberalisation tend to be *ex post*, examining and evaluating the outcomes of measures that were implemented (although the quality of measures of implementation is highly variable, see Milner and Morrissey, 1999). A further choice of methods relates to:

- (i) Aggregate versus disaggregated methods. The impact of trade reform can be considered for the economy in aggregate, e.g. its effect on GDP or export growth or aggregate employment). It is also important to consider disaggregated impacts (e.g. effects on different sectors or on different household groups).
- (ii) Partial equilibrium versus general equilibrium methods. Partial equilibrium methods focus on impacts on different sectors individually, without considering interactions between sectors. In the context of trade policy, examples of this approach include effective protection or domestic resource cost analysis (Greenaway and Milner, 1993; Sadoulet and de Janvry, 1995). General equilibrium methods emphasise interactions between sectors (or economies), though often at the expense of detail and with the need for simplifying assumptions to construct the model. Examples of the application of this method include analysis of true protection (Greenaway and Milner, 1993) or applied general equilibrium models.
- (iii) Quantitative versus qualitative methods. Many economic evaluation techniques (including those discussed above) are quantitative in nature, even if the interest is more in the qualitative (order of magnitude) effects. Many economic variables are relatively easily measured so effects can be quantified. But this is not true in all instances; it is much truer of border reforms and price effects, for example, than for non-border reforms and non-price effects.
- (iv) *Ex ante* versus *ex post* methods. The difference here is essentially that between *prediction* and *evaluation* respectively. *Ex ante* assessment involves a focus on what the effects of a given trade policy reform are expected to be, and may use information from past experience in reaching this judgement. *Ex post* methods look at what actually did happen during a given trade reform episode. Much of the literature on

evaluating economic reform is of this type. By its nature such evaluation is only possible some time after reforms have occurred.

Modelling Economic Impacts

Ex ante studies of multilateral trade measures have often used an applied general equilibrium (AGE) modelling approach. The essential feature of an AGE model is that it is concerned with general equilibrium. This is beneficial as it allows one to take account of interactions between sectors of an economy (and between economies). However, there are costs in the assumption that the economy (or economies) in question can be represented as in equilibrium, and data and modelling requirements are great. Such models can only give us estimates of changes in the relative prices of goods and factors, although they incorporate estimates of effects on outputs, factor utilisation, etc. An important benefit of looking at the general system is that potential distributional effects can be identified.

Constructing and solving an AGE model requires specification of the model and an appropriate data set. Such models have been applied to the study of trade liberalisation in two ways. First, using the GTAP database (a global GCE model) one can estimate the impact of liberalisation on regions of the world economy. Alternatively, a country-specific AGE model could be constructed, data permitting, to evaluate the impact on that country. Blake et. al. (1999) apply both approaches to the case of Uganda. They conclude that while the global model is useful to provide estimates of changes in world commodity prices, to feed into the country model, the country model is a far more reliable indicator of the impact of multilateral trade liberalisation. This is unsurprising as the country model is fine-tuned. However, Blake et. al. (1999) also argue that an informed case study approach, such as the composition of trade approach, whilst obviously less detailed, can be sufficient to identify the most important likely impacts of trade liberalisation. This conclusion is particularly relevant in the case of low income countries that usually have relatively simple (formal) economic structures in terms of the composition of production and trade. Powerful models such as AGE are often difficult to construct for such countries (due to data constraints), but equally are often not really required - economies with relatively simple structures can be meaningfully studied using relatively simple techniques.

It is worth noting that any two models that use the same database and model trade policy reform in exactly the same way will have different results if they aggregate the database

differently. The GTAP database allows (and because of the size of the full database, requires) the modeller to aggregate the database into regional and commodity groupings. Other databases, such as the Rural-Urban North-South (RUNS) database, are not as large, so that the whole database is normally used. In these cases the issue of data aggregation should be considered in terms of the database being a particular aggregate of the commodities and regions that exist in the world economy.

A Review of Economic Impact Indicators

Table A3.1 summarises the indicators used in a variety of studies of the *ex post* impact of trade reforms. Our purpose is to emphasise two points. First, it is quite common for studies to focus on either manufacturing or agriculture (frequently distinguishing export and food crops), often in addition to considering the impact on indicators for the economy overall. Second, prices, production, exports, imports and employment are the most commonly used indicators (incomes, perhaps given data constraints, is less frequently used).

Principal Lessons from the Methodology Literature Review

Many economic valuation techniques, including those discussed above, are quantitative in nature, even if the interest is in the qualitative (order of magnitude) effects. Many economic variables are relatively easily measured so effects can be quantified. But this is not true in all instances; it is much truer of border reforms and price effects, for example, than for non-border reforms and non-price effects. It is also the case that *ex ante* economic appraisals of multilateral trade measures have made extensive use of formal general equilibrium modelling

Table A3.1: Indicators used in Impact Studies of Trade-related Reforms

| Indicator | Food crops | Export crops | Manufactures | Economy wide |
|------------|----------------|------------------------|----------------|------------------|
| Exports | 5,15 | 2, 3, 5, 9, 10, 15, 18 | 1, 2, 13, 17 | 4, 8, 13, 16, 17 |
| Imports | 9, 18 | | 2, 12 | 4, 8 |
| Production | 3, 10, 13, 18, | | 2, 3, 4, 6, 14 | 4, 10, 18 |
| Employment | 6, 7 | | 7, 14 | 4, 16 |
| Incomes | | | 2 | 13 |
| Prices | 3, 5, 10, 18, | 5, 9, 10 | 2, 8, 17 | 1, 16 |

Notes: The numbers in the table correspond to the following studies. We here provide author, year of study and coverage in terms of countries and period of reforms. Reference details are provided in the Bibliography.

1. Flores (1997); Brazil, (1990-96),
2. Moreira and Core (1998); Brazil (1986-96),
3. Kate (1992); Mexico, (1985-89),
4. Dijkstra (1996); Nicaragua, (1988-94),

5. Cuthbertson (1997); Sri Lanka,
6. Fane (1996); Indonesia,
7. Kambhampati and Howell (1998); India, (1991-96),
8. Bandara and McGillivray (1998); cross-country analysis; South Asia (1971-97)
9. Colman and Okorie (1998); Nigeria; (1970-92),
10. Belshaw, Lawrence and Hubbard (1999); Uganda, (1986-97),
11. Collier (1997); Uganda, (1987-95),
12. Rudaheranwa (1999); Uganda, (1987-97),
13. Mosley and Weeks (1993); cross-country (Sub-Saharan African countries) (1980-90),
14. Bennell (1998); cross-country analysis (mainly Sub-Saharan African countries), (1981-91),
15. Guillaumont (1994); cross-country analysis (African countries), (1970-88),
16. Greenaway (1993); Cross-country analysis, (reform periods vary)
17. Greenaway (1998); cross-country analysis, (reform periods vary)
18. Duncan and Jones (1993); cross-country analysis (1980-91).

methods. But, as Blake et. al. (1999) argue, an informed case study approach can be sufficient to identify the most important likely effects of trade liberalisation. Since SIA is a tool for appraising trade policy reform proposals, both quantitative and qualitative techniques are likely, therefore, to be appropriate in evaluating economic impacts.

3.3 ENVIRONMENTAL ASSESSMENT OF TRADE RELATED MEASURES

Introduction

Practical experience with environmental assessments of the potential effects of trade liberalisation on the environment first emerged in the early 1990s within the context of the completion of the Internal Market of the EU and the negotiation of the North American Free Trade Agreement (NAFTA). A growing number of countries, including Canada, the United States, Switzerland and other OECD countries, have since undertaken environmental assessments of multilateral or regional trade agreements.

Environmental assessments of trade liberalisation are one form of strategic environmental assessment (SEA). SEA is the general term used to describe the environmental assessment process for different kinds of policies, plans and programmes – sometimes other terms are used (e.g. environmental evaluation, environmental review) but these are assumed to have essentially the same meaning. SEA refers to the application of EIA procedures to review policy, programme and planning proposals and can also be applied to operations of transnational corporations, national budgets, global conventions and treaties. The technique of SEA has been recognised by many as an important tool to encourage trade policy makers to take sustainability principles into account (Abaza, 1996).

With reference to the application of SEA to trade policies and agreements Abaza, H. (1996) states:

“Trade policies, and multilateral and bilateral agreements need also to be subject to EA’s. It should, however, be emphasised that EA of trade policies and agreements need not result in reduced competitiveness or accessibility of countries to international markets. The intention is to ensure that full considerations to the pros and cons and the actual costs and benefits resulting from such policies and agreements are catered for and are entered into the analysis. Such an assessment should result in capturing the real cost and value of traded commodities.”

SEA may be introduced by applying existing EIA procedures to higher level decisions (e.g. for scoping and impact identification, describing base-line conditions, predicting impacts from multiple sources, etc.). An alternative approach is to use EIA principles in the formulation of policies and plans through the identification of needs and development options which are assessed with the objective of achieving sustainable development (e.g. scenario and simulation analysis, policy and programme evaluation techniques). (Therivel and Partidario, 1995; Wood and Djeddour, 1992).

Since SEA and EIA are based upon common principles, their components are also likely to be broadly similar. Despite the similarities between SEA and EIA processes, there are some procedural and methodological differences between them, largely stemming from SEA being applied at an earlier stage in the planning process than EIA. The scale (e.g. in terms of the range of activities and geographic area to be covered) of an SEA tends to be considerably greater than for an EIA. Also the time interval between the planning of an action and the implementation of the specific activities which give rise to environmental impacts is much longer in the case of SEA. Therefore, the potential complexity of SEA is increased relative to EIA. However, the degree of detail and the level of accuracy of information needed for an SEA is generally much less and the time available for gathering and analysing information for an SEA is, with the important exception of some policy decisions, greater than for EIA (EIAC, 1995).

Methods Used in Assessing the Environmental Impacts of Trade Related Measures

There is a considerable amount of literature available which deals with the relationship between trade and the environment. However, the majority of environmental reviews are limited to providing a general and descriptive appraisal of the impacts of trade on the environment. Most of them fail to develop a methodological and analytical assessment

framework to examine the effects of trade liberalisation. The majority of environmental reviews have been undertaken by governments at a regional or national level (e.g. NAFTA). However, these reviews have a role to play in contributing to the development of a methodology for environmental reviews at the international level.

The principal studies which deal with methodologies relating to trade and the environment are:

(i) OECD (1994a) Methodologies for Environmental and Trade Reviews

This is a classic study which has had a strong influence on subsequent environmental reviews of trade policies and agreements. A general methodology for conducting environmental reviews of trade policies and agreements is described with a menu of options presented from which countries can select when conducting environmental review of different trade policies and agreements. The reviews are intended to focus on domestic trade policies, including the policy approach to international trade agreements with the general aim of informing policy-makers in advance of the environmental consequences of different trade policy measures

(ii) CEC (1996a) North American Free Trade Agreement (NAFTA)

A framework methodology is being developed by the Commission for Environmental Co-operation (CEC) to analyse major environmental changes under NAFTA taking place within North America. It identifies and traces four major processes through which activity generated by NAFTA's rules and institutions and associated trade and investment can affect the natural environment. It also highlights areas where further analytical development, monitoring of key indicators, and policy, technical and institutional changes may be appropriate.

(iii) World Wide Fund for Nature (WWF)
Developing a Methodology for Environmental Assessment of Trade Liberalisation
Agreements (1998)
Initiating an Environmental Assessment of Trade Liberalisation in the WTO (1999)

Two useful studies which propose a methodology for the environmental assessment of trade liberalisation agreements. The first paper is basically sound and logical. It is strongly based on the OECD methodology and is therefore not particularly innovative

or fully worked through in terms of the methodology proposed. The second paper largely reflects the principal features of the first.

Most studies have adopted the methodology of linking environmental impacts to the economic impacts of trade measures. Trade measures affect a wide range of economic activities including production and consumption decisions, with possible consequent effects on natural resource use; transport patterns; goods/services substitutions; and work/leisure substitutions. Any of these may have environmental effects. New trade agreements also may contribute to new patterns of economic growth and investment both nationally and internationally, which can result in positive and/or negative environmental effects. For example, under the NAFTA agreement the US focused special attention on the possibility of new economic activity and related environmental effects in the US-Mexico border area. Therefore, the assessment should not be confined to impact on a single country because trade policies and agreements (TPAs) affect the economies (and consequently the environments) of more than one country and secondly because the economic changes in each country may give rise to transboundary environmental impacts on other countries.

The methodology proposed by the Environment and Development Resource Centre (1999) recommends the use of a matrix with the aim of defining the inter-linkages between the environmental, social and economic elements of the sustainable development framework, as well as the way they might relate to a trade liberalisation process. Within this study it is also suggested that, with the exception of very immediate environmental impacts resulting from the transportation of products (spills, pollution and toxicity), the environmental effects of trade liberalisation stem from the economic changes it will bring.

The studies undertaken by the WWF (1998 and 1999) recommend that the environmental review process starts with an economic analysis of the major proposed trade measures in the trade agreement concentrating on the main sectors where the effects will be felt. The review should then move on to assess the more indirect environmental and social effects and a consideration of the regulatory implications.

The paper by Potier, M. (1997) emphasises the links to economic appraisal. The paper discusses the environmental assessment of trade liberalisation from an OECD perspective

whereby the environmental effects of trade and trade liberalisation have been analysed as product, scale, structural and regulatory effects. (see Box A3.1).

Uncertainty inherent in economic forecasts will be augmented by uncertainty in environmental predictions. Therefore, within the environmental appraisal there needs to be a determination of the acceptable limits of uncertainty for strategic level decision-making. The presence of uncertainty also needs to be reflected in the evaluation methods which are used. In addition, mitigation of environmental impacts must have regard to trade and other socio-economic considerations (Lee, 1994).

Methodological Framework

A framework for a general methodology for the environmental reviews of trade policies and agreements was put forward by the OECD in 1994. It starts with the identification of base-line conditions and, subsequently, the use of models and forecasting techniques is recommended to predict changes. In cases where there are deficiencies in data, scenario analyses is recommended to test predictions and hypotheses. The use of case studies of

Box A3.1: Environmental Effects of Trade and Trade Liberalisation

Product effects:

Positive product effects may occur, as trade will provide the mechanism for faster diffusion of goods and services which contribute to environmental protection. Also, markets for goods produced by more environmentally sound production measures may be expanded. For example, The North Atlantic Free Trade Association (NAFTA) will result in relaxed constraints on imports of heavy trucks and buses into Mexico from Canada and the USA; such vehicles are less polluting than many Mexican ones. Negative product effects may occur, as trade may increase international movement and exchange which can cause damage to the environment or harm ecosystems such as hazardous wastes, dangerous chemicals or introduction of non-endemic species.

Scale effects:

Positive scale effects may occur as trade may increase the efficiency of international markets through a freer flow of goods and services which permits a better allocation of resources. Therefore, there will be a contribution to a rise in environmental awareness through increases

in per capita income and more funds will be made available to be spent on environmental protection. However, the expansion of economic activity implies more use of natural resources and more pollution and, in addition, this may impose social costs.

Structural effects:

Trade may alter the international location and intensity of production and consumption activities via national and international market prices. In the absence of proper evaluation of environmental assets trade may have negative structural effects in encouraging production and consumption in regions which are unsuited to the nature and intensity of the activity.

Examples given from the agriculture, transport and forestry sectors (Ch3, p50).

Regulatory effects:

Trade liberalisation effects may affect environmental policies in promoting harmonisation of national policies in particular environmental standards to facilitate trade. These standards may be altered upwards or downwards. National law and procedures may also be effected.

Adapted from Potier, M. (1997)

particular types of impacts or of particular economic sectors or geographical regions and the use of policy evaluation techniques (e.g. CBA) is also suggested.

The methodological framework put forward by the WWF is divided into two parts: Firstly, there is an institutional analysis, which focuses on the procedural steps and institutional arrangements of environmental reviews, such as scope, timing, participants, monitoring and follow-up. Secondly, sectoral/substantive analysis would be carried out. This aims to identify and quantify the trade, development and environment linkages using different methodologies such as EIA forecasting models, scenario evaluation, case-studies and policy evaluation techniques. Within this framework the effects on the environment are considered according to three key issues: scale effects (e.g. increased output); structural effects (the pattern of output) and product/technological effects (changes to production techniques).

The nature and magnitude of the potential impacts at this stage needs to be considered. The use of screening criteria will be beneficial for identifying which TPAs might have potentially significant environmental impacts. These need to be developed to reflect the particular trade and environmental policy concerns. The report by WWF puts forward the following criteria for prioritising environmental impacts:

- type and nature of the effects (pollution effects, health effects, safety effects, effects on natural resources)
- geographical and spatial scope
- significance/magnitude
- outcome (positive/negative)
- likelihood
- the analysis should be extended to consider transboundary, global, positive and negative environmental effects of trade
- the need to cover scale, structural, product and regulatory effects
- evaluating and quantifying the overall impact in the environment - cumulative effects and irreversibility
- integration and linkages between environmental, social and economic effects

The purpose of the methodological framework described in Environment and Development Resource Centre (1999) is:

- to foresee potential conflicts between trade and environmental objectives before a TLA is established, in order to construct a TLA which will integrate both objectives;
- to provide forward looking policy recommendations which will help strengthen sustainable development objectives. In fact, environmental reviews will help mainstream the environment into TLAs and WTO Agreements.

The methodological framework consists of the following steps:

Setting the context: Defining the main characteristics of the Sustainable Development Framework through its environmental, social and economic context.

Linking trade and environment: Identify those economic sectors which are likely to change because of the TLA and set priorities for environmental reviews.

Defining Policy Packages: Identify where trade and environmental policy objectives can be made mutually supportive and propose alternatives to overcome potential conflicts between the two policy areas.

Summary of public consultations, responses to public and NGO concerns: A transparent environmental review process will be facilitated by making policy-makers accountable to civil society concerns.

The report by the OECD (1994) suggests that it is most likely that different mixes of methodologies will be needed for different types of trade measures and agreements with various types of effects. It proposes that the environmental review should depend largely on the information available from the economic assessments of the trade measure or agreement. Therefore it is recommended that economic assessments are conducted prior to, or in the early stages of, the environmental review.

Indicators Used

The use of environmental indicators within the four following categories are put forward by the Environment and Development Resource Centre (1999):

- *Air quality:* issues range from rural and urban air quality (concentration of common and toxic pollutants); through acid rain caused by SO₂ and NO_x emissions; to global climate change and ozone depletion resulting from greenhouse gas emissions and other substances.
- *Water quality and quantity:* include both surface and ground water quality parameters such as the level of nitrates, ammonium, faecal coliform, total suspended solids (TSS), biological oxygen demand (BOD), heavy metals, etc. Water quantity refers to the levels of withdrawal and replenishment of surface and ground water, as well as the efficiency of water use (i.e. for irrigation in the agricultural sector and other uses).
- *Land:* parameters should capture the overall patterns of land use, including urban, agriculture, forests and natural reserves. Issues of soil quality are also included, such as organic matter, soil structure, erosion, salinisation, desertification and contamination.
- *Biota:* refers to species and genetic diversity (i.e. biodiversity) and its depletion, the status and health of the habitats, the rates of conversion of forests and other natural or semi-natural habitats to other uses etc.

Several similar indicators have also been put forward in the Draft Analytical Framework for the NAFTA agreement prepared by the Commission for Environmental Co-operation (CEC, 1999):

- *atmospheric environment*, including local and regional air quality, pollution levels, and broader processes such as stratospheric ozone depletion and climate change.
- *water*, including quality and quantity in different uses, the condition of inland, coastal and groundwater areas, and how much of it is subjected to effluent discharges.
- *land*, including soil quality and patterns of land use, including agriculture, forest cover, and natural and protected areas.
- *biodiversity*, ie. all forms of living organisms, including animals, plants and micro-organisms.

Detailed Assessment - Quantitative Analysis/Models

In order to improve the prediction of magnitude and the determination of significance various models, techniques or methods can be employed which will be able to improve:

- the prediction of changes in emissions from multiple sources;
- the prediction of the diffusion of pollutants from multiple sources and their resulting ambient levels;
- the determination of the likely significance of the resulting changes in environmental quality assessed by reference to explicit criteria such as their compliance with environmental quality standards, valuation of the environmental quality changes, etc.

(Lee, 1994)

There are a number of different types of models available which are commonly grouped into several categories:

- economic assessment models
- environment assessment models
- combinations of the two, including specific trade-environment models.

As with all models, these studies must be viewed with some measure of caution. In particular, there is considerable methodological uncertainty surrounding efforts to isolate the impact of trade on the environment from other variables.

The economic assessment models available are principally the computable general equilibrium (CGE) and applied general equilibrium models which were described in the preceding section. For global environmental effects such as climate change, these models can be adapted directly to produce information on environmental impacts. They will include interaction between countries affecting production processes and consider long term impacts. However these models do make a lot of simplifying assumptions and it is difficult to incorporate local environmental effects. They are not designed as a forecasting tool, so are at best a first step.

One GE model with widespread use in this area is the Global Trade Analysis Project (GTAP). This is aimed at modelling the impacts of trade on production patterns at country and sectoral level, and can also be used to model environmental impacts. Problems with GE models and GTAP in particular, may become more acute when looking at non-economic factors. It needs to be decided whether the results from the GTAP model combined with environmental (or social) assessments, would be realistic enough to be useful in this context (Hurst and Neiland, 1999).

Studies have been undertaken using single equation models, which demonstrate no relationship between environment and trade flows, or a positive relationship between trade liberalisation and the environment. In a study by Dean, J. (1998) a simultaneous-equations model is developed to estimate this relationship, incorporating the effects of openness on growth of income, and of income growth on environmental damage. Estimation of this model reveals that trade liberalisation directly aggravates environmental damage via its influence on the terms of trade, but indirectly mitigates it via its effects on income growth.

Environment assessment models, which identify correlations between economic variables and environmental effects, are now available. While most do not specifically incorporate trade liberalisation, they often reflect broader environmental data sets that are lacking in the CGE and AGE models. In recent years, considerable progress has been made in obtaining accurate environmental data on which to base these models but there are still data gaps. Nevertheless,

some of the most extensive environmental modelling work has been done in the context of climate change and other specific environmental issues linked to economic growth.

A number of analytic efforts are underway to try to link models addressing trade liberalisation with both economic considerations and environmental quality. The OECD has developed a global dynamic AGE model entitled the General Equilibrium Environmental model (GREEN). The model analyses international trade linkages associated with climate change abatement strategies and costs, and is intended to highlight the effects of carbon dioxide emission abatement policies on the allocation of resources among sectors, as well as the effects of energy policies on international trade. This model focuses on the trade effects of environmental policies, not on the environmental effects of trade liberalisation.

The GREEN model consists of twelve sub-regional sub-models, eleven producer sectors (e.g. agriculture; coal mining; crude oil; natural gas; refined oil; electricity, gas, and water distribution; energy-intensive industries; and other industries and services), four consumer sectors (food, beverages, and tobacco; fuel and power; transport and communication; and other goods and services), and up to fifteen primary factors (e.g., labour, capital). The model allows for the testing of various environment policies, but it lacks a way to model abatement effects and is recognised to overemphasise the costs of pollution controls. (CEC, 1996).

The OECD Development Centre is also conducting a separate modelling effort that focuses more narrowly on assessing the environmental effects of trade liberalisation. Originally focused on Mexico, it was expanded to include five other “case studies” (Costa Rica, Chile, China, Indonesia and Vietnam). The TEQUILA study — Trade and Environment Equilibrium Analysis — involves a dynamic, multisectoral CGE built to assess how trade liberalisation and induced changes in production processes affect the emission of a set of 13 pollutants. This model also allows for analysis of possible mitigation policies that might accompany trade liberalisation. (CEC, 1996).

Principal Lessons from the Methodology Literature Review

The review of methodological approaches to assessing the environmental impact of trade-related measures suggests that an effective assessment exercise will need to encompass the following issues:

- The need to approach environmental review as a dynamic, ongoing process.
- There needs to be the provision of adequate resources and provisions made to ensure the technical quality and objectivity of the work carried out by the organisations responsible for the environmental review.
- Need to have high-level policy makers who are seriously committed to making the environmental review process work.
- Provisions made for international or inter-state co-operation in carrying out the environmental review and for commenting on its findings.
- Importance of an open and transparent process.
- The timing of the commencement of the environmental review in relation to the socio-economic appraisal and the preparation of the TPA.
- Provisions made for screening and scoping, preparation of the SEA documentation, its publication, independent review.
- Importance of transparency, consultation and public participation.
- Recognition of difficulty of establishing clear cause and effect relationships.
- Integration of the findings from the SEA, consultation and review into the preparation of the TPA enabling informed decision-making.
- Provisions made for follow-up, for example, *ex post* environmental reviews can be undertaken when they address especially resource intensive sectors such as fisheries, mining or agriculture.

A number of additional considerations have arisen from the literature review. These include:

- What will be the range of the impact and will its geographical distribution be significant?
- How will the concept of existence values will be treated?
- How will the public perception of the value of the environment be treated?
- Will any positive or negative impacts be cumulative, long term, or irreversible?

The Environmental and Development Resource Centre (1999) recommends that a geographical assessment is carried out to identify the areas likely to be subject to high environmental stresses where industrial or agricultural activities may overburden the capacity of ecosystems/human beings to deal with environmental stress and pollution. This assessment would complement the other assessments and add a spatial dimension to them.

More detail is required on the actual data to be measured for the sustainable development impact indicators. For example: gaseous and particulate pollutant concentrations – which gases and particulate pollutants will this cover? (e.g. SO₂ and NO_x) and what is this an indicator of? (e.g. acid rain); change in land condition – will this cover issues of soil quality such as organic matter, soil structure, erosion, salinisation, desertification and contamination?

In addition there is a lack of coverage of water quality parameters, for example: the efficiency of water use (i.e. for irrigation) which is particularly important in developing countries; surface and ground water abstraction and replenishment; and measures of water quality such as the level of nitrates, ammonium, suspended solids, biological oxygen demand (BOD), heavy metals, etc.

The framework for a general methodology for environmental reviews of trade policies and agreements, put forward by the OECD in 1994 provides a clear and logical starting point for the development of the SIA methodology. The OECD framework starts with the identification of base-line conditions and subsequently the use of models and forecasting techniques is recommended to predict changes. In cases where there are deficiencies in data, scenario analyses is recommended to test predictions and hypotheses. The use of case studies of particular types of impacts or of particular economic sectors or geographical regions and the use of policy evaluation techniques (e.g. CBA) is also suggested.

The environmental assessment process should be dynamic and ongoing to identify environmental effects of trade liberalisation as they occur and the importance of follow-up has been identified throughout the literature. Potential co-operative measures which can be pursued outside the framework of the trade agreement can be identified to address the environmental effects. This has been the case of NAFTA, where a parallel North American Agreement on Environmental Co-operation (the NAAEC) was established. More recently, a TLA between Chile and Canada has involved an environmental side agreement to address potential environmental effects through increased co-operation and information-sharing. In the case of some TLAs special bilateral or multilateral agencies have been created with a mandate to monitor the environmental effects of the agreements (e.g. the NAFTA, and Chile-Canada, Commission for Environmental Co-operation). In other cases, co-operation between governments has increased (e.g. the Mediterranean Commission for Sustainable Development created a special working group on trade and environment).

3.4 SOCIAL IMPACT ASSESSMENT OF TRADE RELATED MEASURES

Introduction

The basic purpose of social impact analysis is to assess the distributional consequences of specific policy changes for the welfare of individuals and their communities. There is ongoing uncertainty over the extent to which social impact assessment is to be regarded as a separate process functioning in its own right, or as part of the environmental impact assessment and/or economic impact assessment processes. Thus, while the status of social impact analysis as a separate approach has increased significantly in recent years, some economic impact studies continue to analyse social effects (for example, impact on labour markets) and some environmental impact studies also include social effects (for example, health effects).

The methods of social impact assessment are most fully developed at, and appropriate to, the project level. These techniques are mainly participatory methods, including rapid appraisal, participatory appraisal, interviewing, sampling etc., and rely heavily on a process approach. This creates a problem in ‘scaling-up’ social impact methods to the policy level where it becomes increasingly difficult to relate a policy-related impact to specific groups or communities. In recognising the problem, Vanclay (1995) suggests that the focus of social impact assessment at the macro or policy level will be to “sensitise people to general social change”.

There is a wide-ranging literature relating to the social effects of trade, or more generally, the effects of trade liberalisation on poverty and distribution. Much of this literature is focused on the impact of trade policy measures on developing countries, particularly, the least developed countries, and there are only a small number of studies of the social impact of trade liberalisation in developed countries. The trade-specific social impact assessment literature has not developed a methodology for *ex ante* appraisal, but rather has examined the *ex post* impact on particular sectors or groups of people, using a case study approach. These studies have tended to adopt a review rather than analytical approach, and their value is mainly in highlighting the issues and lessons that need to be captured in the sustainability impact assessment methodology.

Methods Used in Assessing the Social Impact of Trade Related Measures: Recent Literature

In this section we review the limited number of studies that has addressed the social impact of trade policy reform. The first two studies (WWF, 1998, 1999) are concerned with developing a methodological framework for undertaking an *ex ante* assessment of trade policy measures. The remaining studies reported on here, rely on a case study approach to undertaking an *ex post* assessment of the social impact of specific trade measures.

WWF (1998) Developing a Methodology for Environmental Assessment of Trade Liberalisation Agreements

WWF (1990) Initiating an Environmental Assessment of Trade Liberalisation in the WTO

The proposed approach comprises two parts: substantive and institutional analysis. The substantive methodology adopts the OECD's (1994) classification of impacts into scale, structural, product and regulatory. It proposes that the social (and economic, environmental and regulatory) impacts are assessed using a three-stage process: determine the type, scope and magnitude of effect; identify the linkages; evaluate the overall impact (including cumulative impacts). In relation to the institutional aspects, the studies emphasise the need to include process issues in the assessment. In particular, it highlights the need for increased transparency and consultation to ensure the integration of sustainability issues into trade policy assessments.

The social impact analysis is given relatively little consideration, other than proposing a number of areas in which social impacts should be examined:

- employment patterns
- income level and distribution
- mobility and quality of labour
- migratory flows
- rate of urbanisation
- cultural issues
- gender issues

In relation to the participatory process aspects of assessment, a number of issues are identified:

- involvement of all relevant government institutions
- involvement of civil society
- intergovernmental collaboration
- improved transparency and participation at international level

While identifying the areas in which social impact might be assessed, the studies do not propose a set of indicators for measuring change in these areas. The studies review the main economic and environmental models that have been proposed for estimating economic and environmental impacts, but warns against the weaknesses of these modelling approaches (assumptions, data constraints). Recognising that “there is not yet a consolidated methodology at the international level” and that “methodologies must be tailored to the particular type of TLA in question, which makes it difficult to foresee in advance the final methodological framework deployed” (p.24), the preferred approach to impact assessment is to pose a series of questions (e.g. What is the employment impact following the introduction of new labour-saving technologies following liberalisation?) as a means of tracing impacts. The proposed methodology relies, therefore, on a set of qualitative judgements, rather than quantitative indicators, to assessment social impacts.

CEC (1999a) Assessing the Environmental Effects of the NAFTA

This major study develops and applies a methodological approach for analysing major environmental changes under NAFTA. It identifies four main processes through which activity generated by NAFTA's rules and institutions and associated trade and can affect the natural environment. The processes are:

- production, management and technology;
- physical infrastructure
- social organisation
- government policy

The environmental pressures and supports flowing from each of these four processes combine with existing environmental conditions to impact on sustainability in particular locations and in specific dimensions of the natural environment. The impact on the state of the four major media of the ambient environment: air, water land and biota - is measured using selected indicators.

The methodological framework is constructed in a linear fashion: i) conceptualisation of the issue - this provides the baseline from which the NAFTA-associated change can be identified; ii) description of NAFTA rules and institutions and their trade and investment effects; iii) linkages to the environment; iv) environmental impacts and indicators.

The framework is designed to be applied to specific sectors or issues that may have strong relationships to NAFTA and that are important to the environmental concerns of its members.

The approach is ex ante and qualitative and relies on scenario-appraisal. The report "does not provide a conclusive assessment of all of NAFTA's actual environmental effects. The lack of comprehensive baseline data on the relevant linkages and the short time NAFTA has been in effect means that such a definitive assessment is not yet possible" (p.8).

The objective is to develop an understanding of the connections between trade and the environment, to assist in anticipating important environmental impacts in the context of trade liberalisation and to develop policy tools to better mitigate negative impact and minimise positive ones.

Social Assessment

In considering the social impacts of NAFTA trade liberalisation the study draws on the concept of social capital as networks of associational life and sets of social norm and values. Social capital can affect and be affected by the impacts of the NAFTA-associated changes in economic activity.

The environmental impacts of NAFTA are seen to depend on the way stakeholders operate collectively in networks of social organisations with ecological concerns. These networks will cover a wide range of stakeholder groups - business, labour consumer, community, environmental and the environmental outcomes will be affected by the balance between the groups and the extent to which their 'voice' influences public decision-making.

Social organisation of property rights will also influence environmental impacts by including the choice of production methods and the resource usage. Cultural and traditional values also contribute to the social capital and can affect productions and technology choices and have environmental effects.

The stock of social capital can be affected by a change in economic conditions. Social organisation directed towards strengthening environmental standards may be enhanced by a change in the market incentives. Conversely social capital may be weakened where for example an inflow of migrant workers overwhelms the community support networks or where outward migration leaves communities unable to carry out their traditional roles in supporting the environment.

The sustainable livelihoods of households can also be affected by changes in other components of the households assets and capabilities. A change in public infrastructure (transport, utilities) will affect access to physical capital; a change in the price of goods purchased by households has a direct effect on sustainability.

The CEC Study undertakes three detailed case studies: maize in Mexico, feedlot production of cattle in the United States and Canada; and electricity in North America. Each of the studies gives explicit consideration to the social impacts of NAFTA-associated changes in production.

Maize is a staple in Mexico's diet and production represents 66% of total agricultural output, by value. Some 18 million persons depend on the production of corn for their livelihoods. Impacts from the US have increased significantly under NAFTA and domestic prices have dropped to international levels. Despite this, total production of corn in Mexico has remained the same and in some cases has increased.

The study indicates that changing production processes, technologies, social organisation and environmental impacts are closely related and interdependent. With respect to social impacts, the study focuses on three issues: social institutions and the closely related property rights regime; subsistence production and the availability of labour force; migration.

Shifts in production away from corn and into labour-intensive commodities such as fruit and vegetables could reduce the corn-producing population and erode the traditional social and community institutions responsible for resource management. A typical rural household supplies part of its corn production to the market to meet income needs and to purchase inputs. An additional source of income is the sale of labour in local labour markets. Consumer prices for corn have not dropped. The reduction in producer prices of corn will adversely affect rural employment and income. Migration will increase as corn-producing households seek to sustain their household incomes. This can result in labour shortages at the household level, can erode the ability to monitor and maintain agricultural practices which ensure sustainable traditional agricultural. Lack of local employment opportunity and off-farm income and the associated outward migration weaken local institutions and relationships.

The direct social impacts of the changes in corn production and trade will also have environmental consequences. Migration reduces households and communities' capacity to maintain social conservation infrastructure, reduces the capacity to manage water resources while the disruption of social organisation can affect capacity to maintain adequate management of genetic resources.

The fed-beef sector in Canada and the US links various parts of agriculture: cattle are fed on grains and oil seeds, which account for a large store of North American crop acreage. After leaving the feedlot they are processed into beef products. Much of this activity occurs in, on or close to soil, water, and biota and therefore has important environmental impacts. The feedlot production of beef has displayed considerable structural change, much of which is linked to economies of scale, fewer farms, larger feedlots and a small number of large processing firms.

The increasing concentration of production has several social consequences that ultimately affect the environment. First small family owned firm and farms and rural communities, become less sustainable. Second, there are human health arguments against beef, revolving around cardiovascular health and fat. Thirdly, there are changes in the pattern of employment with a reduced demand for the skilled labour and increasing demand for lower skilled workers, often met by migrants, in the meat processing industry.

The case study of electricity in North America considers the potential effects of NAFTA on the aggregate environmental impacts attributable to the electricity sectors in Canada, Mexico and the USA. The electricity sector is undergoing a process of structural change and re-structuring that began prior to the NAFTA agreement. The social impacts of the increased competition in the electricity sector particularly in the USA and Canada are limited to the effect of lower prices on consumers as the employment impact of re-structuring particularly where electricity enterprises are state-owned.

Oxfam (1998) Trade Liberalisation as a Threat to Livelihoods - the Corn Sector in the Philippines

This study also adopts a scenario-based approach to the impact of NAFTA on US corn exports and the implications for rural poverty in the Philippines. Its methods are once again largely qualitative. It first describes the highly vulnerable rural population in the Philippines before going on to detail both the national and corn producing '*context*' using a range of (state) indicators including:

- percentage below the poverty line
- the percentage living in subsistence poverty
- infant mortality rates
- nutritional levels
- access to social infrastructure
- inequality; income distribution and access to productive assets

The importance of *inequality* as expressed through unequal control over land and other access to productive assets is particularly highlighted. This *context* is given as evidence of the vulnerability of this society to even small changes.

The paper then undertakes a detailed analysis of the relative role of yellow and white corn in sustaining rural livelihoods and their respective market structures, before examining the likely impact of replacing import quotas by a sliding scale of tariffs and a phase increase in the minimum volume of imports (MAV). It uses OECD projections of volume of US corn exports to explore the effects of both a *price rise* and a *price decrease* on corn producers in the Philippines.

Overall, therefore, the method combines a detailed understanding of ‘context’ with contrasting scenarios of the effects on prices, using OECD projections, to sketch out potential impacts not easily ‘captured’ in terms of indicators.

Oxfam is currently undertaking a further study which seeks to juxtapose poor people’s *ex post* perceptions of what has changed their lives during a period of liberalisation with the *ex ante* expectations derived from economic theory and practitioners experience. The aim of the study is to help with the assessment of future trade negotiations.

The method of approach used is to capitalise on an *understanding of ‘what has happened in the past’ (ex post perceptions)* to inform an assessment of *what can be expected to happen in the future*. The study uses a case study approach focused on Zimbabwe and Zambia. The study emphasises the importance of distinguishing between absolute gains and absolute losses (i.e. food producers and food consumers) and absolute gains and relative losses (where only some of the potential beneficiaries are able to take advantage of the change).

This study underlines the importance of a case-by-case approach based on a detailed understanding of the specific context by which to examine impacts. In particular, it identifies a number of cases where the *ex post* impacts were different from those predicted on an *ex ante* basis. In the case of a rise in the price of cotton the benefits were offset by the removal of government subsidies and the impact was a shift out of cotton production. In this particular case, the deterioration in market conditions (volatility of prices for both cotton and imports) and infrastructure (transport to market) were key factors.

Metroeconomica (1996) “The Environmental and Socio-economic Impact of Sugar Cane and Banana Production in Colombia”

This study examined the environmental and socio-economic impact of trade liberalisation on sugar cane and banana production in Columbia. Its framework of analysis was to examine impacts on six groups of economic agents (growers, consumers, government, traders). The method was to examine the net private benefit to each group arising from four different international price scenarios, one of which was the base trend or ‘business as usual’ scenario.

However, the application of the methodology was constrained by lack of data on which to assess impact on a group by group basis.

Overall, the literature provides guidance as to the areas in which social impacts of trade measures may occur, and which may need to be included in an *ex ante* SIA appraisal, rather than providing a well-defined analytical framework or methodology for social impact assessment.

Social Indicators Proposed in Literature

The current international interest in sustainable development has led to a growing number of sustainable development indicators being proposed by various international bodies. The aim of these efforts has been to assemble a set of quantifiable indicators which can be applied internationally, using published data. This work has been based on the chapters of Agenda 21, and has sought to develop a set of social, economic and environmental indicators covering each of Agenda 21's sustainable development goals. The set of social indicators proposed by the United Nations Commission on Sustainable Development (UN, 1997), is given in Table A3.2. The indicators are presented in a 'driving force-state-response' framework. 'Driving force' indicators indicate human activities, processes and patterns that impact of sustainable development. 'State' indicators indicate the state of sustainable development. 'Response' indicators indicate policy options and other responses to change in the state of sustainable development.

The Sustainable Development Indicators approach is subject to a number of limitations. A major shortcoming is that many of the indicators are 'state' measures, for which it is often difficult to derive quantifiable 'response' (or impact) indicators. Furthermore, the indicators often represent a high degree of aggregation. Third, the Agenda 21, indicators do not offer any conceptual or analytical guidance on the linkages and cumulative effects between different indicators, or between driving force, state, and response measures.

For these reasons, the social component of international sustainable development indicators provide a guide to the main areas of social concern, but need to be translated into more disaggregated and focused indicators for use in SIA.

Table A3.2: Social Indicators of Sustainable Development

| Chapters of Agenda 21 | Driving Force Indicators | State Indicators | Response Indicators |
|---|--|---|---|
| Chapter 3: Combating poverty | <ul style="list-style-type: none"> – Unemployment rate | <ul style="list-style-type: none"> – Head count index of poverty – Poverty gap index – Squared poverty gap index – Gini index of income inequality – Ratio of average female wage to male wage | |
| Chapter 5: Demographic dynamics and sustainability | <ul style="list-style-type: none"> – Population growth rate – Net migration rate – Total fertility rate | <ul style="list-style-type: none"> – Population density | |
| Chapter 36: Promoting education, public awareness and training | <ul style="list-style-type: none"> – Rate of change of school age population – Primary school enrolment ratio (gross and net) – Adult literacy rate | <ul style="list-style-type: none"> – Children reaching grade 5 of primary education – School life expectancy – Difference between male and female school enrolment ratios – Women per hundred men in the labour force | <ul style="list-style-type: none"> – GDP spent on education |
| Chapter 6: Protecting and promoting human health | | <ul style="list-style-type: none"> – Basic sanitation; Percent of population with adequate excreta disposal facilities – Access to safe drinking water – Life expectancy at birth – Adequate birth weight – Infant mortality rate – Maternal mortality rate – Nutritional status of children | <ul style="list-style-type: none"> – Immunisation against infectious childhood diseases – Contraceptive prevalence – Proportion of potentially hazardous chemicals monitored in food – National Health expenditure devoted to local health care – Total national health expenditure related to GNP |
| Chapter 7: Promoting sustainable human settlement development | <ul style="list-style-type: none"> – Rate of growth of urban population – Per capita consumption of fossil fuel by motor vehicle transport – Human and economic loss due to natural disasters | <ul style="list-style-type: none"> – Percent of population in urban areas – Area and population of urban formal and informal settlements – Floor area per person – House price to income ratio | <ul style="list-style-type: none"> – Infrastructure expenditure per capita |

Source: UN (1997)

Social Impact Indicators and Sustainable Livelihoods

We have already seen how the basic purpose of social impact analysis is to assess the consequences of policy changes for the 'quality of life' of individuals and their communities.

The concept of 'sustainable livelihoods' is intended to reflect the multidimensional nature of quality of life (DFID, 1999). Livelihoods have both material and non-material dimensions. A change in income that accrues to individuals directly affects their livelihood level. In addition, people value non-material goods, and their sense of well-being is affected by numerous factors, including their self-esteem, sense of social inclusion, cultural heritage and community networks.

Livelihood levels are determined by the assets which people possess and by the processes by which these assets are used to produce income (broadly defined) which will maintain their livelihoods-level at an acceptable ('sustainable') level.

Livelihoods become unsustainable when they fall below the poverty level. Poverty can be understood in absolute or relative terms. Absolute poverty would require the 'minimum standard of living' to be measured in terms of some minimum level of nutrition or other basic necessities. Relative poverty may be understood in terms of the prevailing social standards in a particular country or community. It is generally agreed that the elimination of absolute poverty does not lessen the importance of relative poverty as a policy objective. Relative deprivation in terms of income, vulnerability and social exclusion occurs in developed and developing countries alike, with disparities in the level of human poverty being recognised as a legitimate concern of public policy in all countries.

One additional dimension of sustainable livelihoods for consideration is gender equality. The gender impact of policy change is often highly uneven, and the disadvantaging of women needs to be allowed for in social impact analysis.

This provides us with three core indicators of social impact:

- income distribution
- poverty
- gender

This set of core social impact indicators can be supplemented, where necessary, by more focused indicators. These can be selected by relating them to the causes of income, poverty and gender inequalities, namely the households' access to capital endowments (physical, national, human, social) and to the processes by which these asset-endowments produce income to the household. Table A3.3 details some of the indicators that could be used for this purpose in assessing social impacts as part of a sustainability impact assessment study.

Principal Lessons from the Methodology Literature Review

The literature has underlined that in terms of methods, the studies are highly qualitative, using case studies and descriptive approaches. The importance of scenario-building, however, and the need to take account of the counterfactual and 'business as usual' scenarios are clearly spelt out. The key for the development of a SIA methodology are as follows:

Table A3.3: Sustainable Livelihoods and Social Impact Indicators

| Household Endowments | Social Impact Indicator |
|--------------------------------------|--|
| Physical Capital | Investment (public and private) |
| National Capital | National resource use; property rights |
| Human Capital | Education/literacy status; Health status |
| Social Capital | Community networks, social customs and norms |
| Entitlements | |
| Household production and consumption | Commodity prices, market regulations |
| Sale and purchase of labour services | Wages, employment conditions and labour market |
| Gender | |

- The importance of *qualitative assessment*: particularly in relation to including what cannot be modelled and what cannot necessarily be captured by indicators - the 'question and check-list approach' highlighted in the WWF papers seems appropriate.
- The value of a *case study approach*.
- *Significance of an effect*: In assessing the significance of a policy effect, the literature suggests that it is the *vulnerability* of the group being affected as much as the size of the

trade effect which needs to be addressed. A small effect with repercussions for a highly dependent or highly vulnerable group may be significant. In particular the *direction of policy* needs to be considered.

- *The need to develop a typology of countries*: the case-by-case approach of much of the impact assessment work combined with the message in the more general literature for the need to distinguish between different types of country (i.e. their likely performance or current vulnerability) before assessing the impacts of trade liberalisation. WWF (1999), UNCTAD (1997) and numerous others have underlined the need to identify typologies of initial conditions and then to assess the likely impacts on different typologies. In terms of the SIA ‘methodology’ this would enable the method to apply impact indicators to different groups of countries which could be ranked ‘high to low’ along some sort of ‘capability’ or ‘vulnerability’ index.
- The need to consider *sequencing and phasing* is a common theme running throughout the trade literature given the high social costs associated with the ‘liberalise first, regulate later’ approach. This has clear implications for flanking policies.

3.5 REGULATORY IMPACT ASSESSMENT OF TRADE RELATED MEASURES

Introduction

Regulatory Impact Assessment (or Analysis) (RIA) is a decision- taking tool which aims to systematically assess the impacts of proposed and existing regulations" (OECD 1997).

In relation to trade related measures, and specifically in the context of environmental impacts, the OECD defines regulatory effects as those effects “*associated with the legal and policy effects of a trade measure or agreement on environmental regulations, standards and other measures*” (OECD 1994a: p14). Regulatory effects are seen to be primarily applicable to *trade liberalisation agreements* rather than commodity agreements, or preferential trade agreements. Regulatory effects can either be *positive*, where they seek to maintain the ability of governments to pursue appropriate environmental policies, or *negative* where the abilities

of governments to enact and implement appropriate environmental regulations is undermined by the provisions of the trade measure or agreement.

Methodologies Used in the Literature

In terms of the methods of RIA, there are no clear models to draw upon.

In the domestic context, countries use a range of tools including *socio-economic impact assessment; cost benefit analysis, general impact analysis, distributional and fiscal analysis; compliance cost assessment*. The OECD notes the importance of written guidance and public consultation.

In relation to trade, there are two groups of literature which focus on methodologies. The first comprises papers that have sought to define a methodology for undertaking a regulatory assessment in the context of a wider sustainability assessment. The second includes studies that have identified and analysed regulatory effects as part of a study assessing the impacts of trade.

In relation to the first group, the OECD (1994) has recommended a 'check-list' based method of approach in order to identify areas in which there are likely to be regulatory impacts. The WorldWide Fund for Nature (WWF, 1998), influenced by the OECD, advocates a similar approach (see Boxes A3.2 and A3.3). In addition, a recent report on the sustainability of the European Commission's trading policies (Environment and Development Resource Centre, 1999) provides a similar check-list in relation to the impact of trade liberalisation on national capacity to enact and implement policies in relation to:

- financial instruments such as taxes, user fees, credit subsidies, access to loans and other instruments used to internalise environmental externalities
- traditional 'command and control' measures – i.e. health standards, regulations
- direct conservation;
- voluntary programmes

BOX A3.2
OECD CHECK-LIST
IDENTIFYING REGULATORY EFFECTS

General

Goals: Does the trade agreement specify any general goals or objectives such as sustainable development

Environmental Principles: Does the trade agreement take into account environmental principles such as the Polluter Pays Principle?

Trade Measures

Import Restrictions: Does the trade agreement include provisions specifying when import restrictions may be used to ensure compliance with domestic product standards and domestic process standards;

Export Restrictions: Does the trade agreement include provisions specifying when export restrictions may be used? What are these rules, e.g. can export restriction be used for the conservation of natural resources or in short supply situations.

Environmental Agreements: Does the trade agreement have provisions relating to environmental agreements. How is an environmental agreement defined?

Exceptions: Does the trade agreement include specific exceptions to its general rules for trade measures taken to protect the environment? What are the criteria for judging the legality of an exception?

Environmental Policy Instruments

Product Standards: Does the trade agreement have provisions regarding the harmonisation of environmental product standards? How is greater harmonisation to be achieved? Are international standards recommended as a ceiling or floor to national standards? How is the legitimacy of national standards to be judged in terms of scientific evidence and risk management.

Environmental Subsidies: Does the trade agreement have provisions specifying when government assistance may be given to the private sector to achieve environmental objectives? What are these provisions, e.g., when are these subsidies actionable or subject to countervailing measures.

Economic Instruments: Does the trade agreement have provisions specifying when border tax adjustments may be used to correspond to domestic environmental taxes and charges. What are the provisions regarding adjustments to domestic taxes on products, processes and inputs to processes.

Voluntary Programmes: how are voluntary programmes to be treated?

Other Policies (Foreign Investment, TRIMS, Services):

Procedures:

Notification

Sub-National Entities

Dispute Settlement

Enforcement

Policy Responses

Source: OECD 1994a (pp17-18)

BOX A3.3

WWF REGULATORY ASSESSMENT PRODUCTS

Import/Export:

- how will increased trade in specific products affect provisions regarding the harmonisation of environmental product standards?
- will trade liberalisation lead to greater harmonisation in product standards and what will the individual or combined effects be on the effectiveness of these standards

Production/consumption

- how will trade liberalisation in a specific product affect existing environmental legislation and its future development
- how will trade liberalisation affect domestic processes and product standards
- how will trade liberalisation, including any revision of the TBT Agreement, affect the ability of national and international eco-labelling initiatives to facilitate a shift of production and consumption patterns underpinning international trade

SECTORAL

Import/Export:

- will trade liberalisation lead to upward or downward harmonisation of environmental legislation among trading partners in that sector;
- does the trade agreement include provisions to protect the environment (e.g. use of trade measures to protect the environment, exceptions to the general rules of the agreement, provisions relating to MEAs)

Production/consumption:

- how will trade liberalisation in a specific sector product affect existing environmental legislation and its future development
- how will trade liberalisation affect provisions relating to the enforcement of environmental regulations in that sector.

Source: EDRC 1999

In the legal literature, there are similar attempts to define a methodology in relation to assessing the effects of regulatory competition. The methods used include sophisticated *rule-specific* analysis and, more practicably, matrices, which are used to catalogue a list of costs and benefits (Trachtman, J. 1993). It is noted, however, that these are case specific and vary between and within societies. Overall, this subject area is recognised as being characterised by a high degree of '*particularity and relativism*' (Trachtman, J. 1993). The effects of deregulation arising from trade agreement and conflicts with appropriate domestic social or environmental policies have been dealt with as a regulatory subsidy. The legal literature also highlights the importance of the application of the principle of subsidiarity - i.e. the principle that social issues should be addressed at the level of society where they can be addressed most effectively.

One key area of concern in relation to regulatory effects is the conflict with a range of Multilateral Environmental Agreements (MEAs). There is a large volume of literature on the inter-relationship between MEAs and the multilateral trading system. However, the literature review has not identified areas of impact assessments. Indeed a recent paper (Assuncao, L., 1999) which explored the conflict between the MTS and the Kyoto Protocol specifically underlined the need for close scrutiny of rules as well as for more analytical work on the interface between MEAs and the MTS.

In relation to MEAs, to date, there have been four dispute cases (Bananas, Shrimp Turtle, Beef Hormones and Gas Refiners) held by the WTO. These have spelt out issues in relation to the mechanics of the Dispute Settlement Panel and the Appellate body but have not involved the application of regulatory impact assessment.

More widely in relation to trade and the environment, Sampson (1999) proposes a framework for action, based on categorising 'conflicts' by the degree of government involvement:

- Measures for which there is sufficient support to act *without* formal decision-making
- Initiatives that would require the collective approval of Members, but not necessarily changes in formal rules or obligations
- Objectives that could only be achieved through formal changes in rules

Sampson identifies the following critical issues: transparency and public access; product and process-related environmental standards; MEAs; and dispute settlement.

Overall, therefore, the MEA/environment - trade literature focuses more on the resolution of conflicts rather than impact methodologies.

In relation to the second group, a number of studies of trade agreements have specifically examined the regulatory impacts of de-regulation on sustainability. On the whole these have been focused on the environmental rather than the social impacts.

The *Canadian Environmental Review of NAFTA (1992)* identified a number of regulatory aspects that were included in the provisions of NAFTA so as to ensure positive environmental impacts. The provisions of priority interest include:

- The *preamble* to NAFTA which identifies environmental protection and conservation as a primary objective of the Agreement
- *Chapter 1* which includes a broad exception for specific trade obligations set out in international and bilateral environmental and conservation agreements;
- Chapter 3 (National Treatment and Market Access for Goods) which requires the elimination of all environmental goods and equipment within 10 years;
- *Chapter 7* relating to the Sanitary and Phytosanitary Measures which would permit NAFTA countries to establish the level of protection that they consider appropriate to protect human, animal, or plant life or health within their respective territories;
- *Chapter 9* (Standards-Related Measures) which would protect the right of the Canadian government to determine the level of environmental protection that they consider appropriate;
- *Chapter 11* (Investment) contains an important precedent-setting provision that would formally discourage governments from lowering their own environmental standards for the purpose of encouraging investment;
- *Chapter 16* (Temporary Entry for Business Persons) which requires that business persons, tourism personnel or scientists associated with environmental initiatives be granted temporary entry privileges to the other NAFTA countries
- *Chapter 18* (Publication, Notification and Administration of Laws) which permits participation and contribution by civil society;

- *Chapter 20* (Institutional Arrangements and Dispute Settlement Procedures which provide for expert to be able to submit their view to the dispute settlement panel and for these to be taken into account in the decision-making process;
- *Chapter 21* (Exceptions) incorporates GATT Article XX (b) and XX and (g) for the protection of human health, animal or plant life.

The study **1992 - The Environmental Dimension (*Task Force Report on the Environment and the Internal Market, 1990*)** also sought to identify and assess the impact of regulatory effects. This study focused wholly on the environmental impacts. Specifically its method of approach was to identify the potential negative environmental effects resulting from the removal or modification of controls such as the *removal of border controls* or the *harmonisation of fiscal provisions*. This falls within the study's analysis of the 'static' rather than the 'dynamic' effects. The method of approach drew on an existing analysis, which ranked industrial sectors according to the importance of technical (non-tariff) barriers. In other words it started by identifying sectors those sectors that were trade sensitive (see OECD, WWF recommendations); i.e. by defining the role of particular controls/policies and then (using existing, sometimes quantitative, information sets) making qualitative judgements as to the effects of trade liberalisation in terms of undermining environmental performance. The analysis did not address institutional aspects.

Oxfam's recent study (Nurick, R., 1999) on the impact of MAI on poverty in the UK specifically focused on the impact of the MAI on national and local initiatives undertaken to tackle poverty and social exclusion in the UK. Its approach was to identify key initiatives and policies that had been set up in order to tackle social exclusion and to show how these would be undermined by the provisions of the MAI. Whilst qualitatively highlighting the initiatives that would be threatened it did not attempt to quantify the opportunity costs in terms of benefits lost.

Principal Lessons from the Methodology Literature Review

Overall, a common method of approach in the studies has been to identify trade-sensitive policies and to explore the impact on a rule-by-rule basis. However, there are evident limitations with this approach and there is a need for a more structured and systematic approach. The 'checklist' method provides a useful basis on which to develop a regulatory impact assessment methodology than can be used in a SIA study.

3.6 INTEGRATED IMPACT ASSESSMENT OF TRADE RELATED MEASURES

Introduction

This section provides a review of integrated appraisal methodologies which have a potential useful application to the sustainability appraisal of trade measures. In the review of the methodologies presented in the literature, a distinction is made between methods concerned with the integration of different forms of appraisal (e.g. economic, environmental and social) into an overall appraisal, and the integration of the economic, environmental and social appraisals into decision-making. Preliminary recommendations are made regarding the appropriate form and degree of integration for the sustainability assessment of trade related measures.

The importance of integrating economic, environmental and social assessments in order to achieve sustainable development has been recognised throughout the literature but until recently the development and application of different tools and appraisal methodologies for environmental assessments, and social and economic analysis, has contributed to the segregation of these disciplines. However, there is now a growing recognition of the need for a more integrated approach to appraisal that can reflect the holistic nature of the sustainable development goal (Lee and Kirkpatrick, 1999).

Methodology Issues in Integrated Impact Assessment

There is a limited amount of literature available on this subject as the issue of integrated appraisal is relatively new. Much of the literature deals with the relative advantages and disadvantages of integration and discusses the issues involved with integrating different forms of appraisal. A number of studies have attempted to describe the methodologies which may be adapted to the application of integrated assessment, but, on the whole, procedures and methods of integrated assessment are not well developed. There is no methodology which relates specifically to integrated appraisal and trade measures.

The prime concern of integrated impact assessment is the linkages between the environmental, the economic and the social impacts. Kirkpatrick and Lee (1997) identify two polar cases of integration: the 'weak' integration model is where separate forms of assessment (environmental, social and economic) are undertaken and then it is up to the decision-maker to decide how the outcomes of these appraisals are to be integrated into the

decision-making process. The 'strong' case is described as the integration of environmental, economic and social assessments throughout the whole appraisal process, which involves working towards sustainability objectives, use of sustainability indicators and the consideration of the overall appraisal by the decision-making authority in reaching its decision.

When considering the question of integration there are several aspects which need to be considered. Firstly, the timing of integration. A distinction needs to be made between horizontal integration (i.e. appraisals and decisions at the same stage in policy development) and vertical integration (i.e. appraisals and decisions at different stages in policy development - sometimes called tiering). Secondly, the difference between institutional/procedural means of integration and methodological/technical means of integration should be noted.

Thirdly, the type of integration needs to be considered. A distinction needs to be made between integration of different forms of appraisal (e.g. economic, environmental and social) into an overall appraisal and the integration of the appraisal(s) into decision-making at different stages of the planning and project cycle.

An integrated methodology needs to take into account the different methodologies used in the individual appraisal systems. For example, Nardini suggests an approach to integrating the tools of environmental impact assessment (EIA), extended cost-benefit analysis (FCBA) and multi-criteria analysis (MCA) within the decision-making process (Nardini, 1997) which follows the basic format of an environmental impact assessment. However, Lee and Kirkpatrick note that although at the theoretical level EIA and CBA should be able to be used within certain appraisal and decision-making contexts, in practice, problems of relevancy and consistency occur (Lee and Kirkpatrick, 1997).

A methodology for an integrated impact assessment will need to consider the possibility of double counting of certain impacts or of overlooking impacts which exist as a result of the interdependencies of the different components of the integrated appraisal.

Newton, J. (1995) describes a number of factors which determine why integrated appraisal methods differ from each other:

- What categories and descriptions are used for estimating and reporting the impacts?
- How are the magnitudes of the impacts estimated?
- How are the ratings, which indicate the relative importance of each impact measured?
- Transparency of method
- Attention to presentation

In a study by Herwijnen, M., Janssen, R. and Nijkamp, P. (1993), multi-criteria analysis (MCA) and geographic information systems (GIS) are used as a decision support system to present an evaluation of various scenarios for sustainable development. It is noted that “at best, the GIS-based decision support system tools may increase awareness of current frictions and future incompatibilities in economic development, environmental sustainability and land-use shifts”. An effects table is presented with environmental and socio-economic indicators on one axis and the various development alternatives on the other axis. The indicators are given different priorities and then these priorities are reversed in a second scenario. The alternatives are ranked and compared using a MAC and a sensitivity analysis is carried out. The GIS/MCA may also be used to assess different development options in a different way if their geographic patterns differ significantly.

Support for the coordination of the separate appraisals in time is presented by Post, R. et. al. (1998). The risks of missing cross-linkages or of duplicating impacts if separate appraisals are carried out are emphasised and a nine step appraisal framework is presented:

1. General description of the problem
2. Delimitation of the physical, socio-cultural and economic environments
3. Description of the local and international context, description of local trends and identification of the interests of local stakeholders
4. Detailed problem definition
5. Formulation of alternatives
6. Impacts of the alternatives identified
7. Stakeholder groups attach values (weights) to the impacts of the various alternatives
8. Application of MCA
9. Assumptions and uncertainties listed and their importance for decision-making is assessed

The development of a tool which offers a method to integrate environmental, social, political and economic impacts before a decision is made and to support final decision-making is presented in a paper by Stahl, C. et. al. (1999). In this study “the establishment of sound and meaningful indicators, against which decisions can be measured and progress can be tracked in a specific area of interest” is described as “crucial to the construction of the decision consequence model (DCM)”. The indicators are organised into five hierarchical levels which represent various stages in the life cycle of the pollutants being assessed.

Integrated Assessment Methods

There are two main methods proposed in the literature for undertaking integrated impact assessment. The first is to integrate the separate appraisal methods (economic, social, environmental) by some process of combination or aggregation. The problem with the approach is that the different types of appraisal utilise different approaches to information gathering, its interpretation and use. As a result, their assessment may be different and inconsistent with each other, for example:

- differences in the scope and from double counting problems;
- conflicts between the market valuation methods used in CBA and the determination of significance in EIA
- Differences between the single criterion approach (NPV) in CBA and the MCA approaches commonly used in EIA
- Differences in the consideration of the timing of impacts, the handling of uncertainty and the treatment of distributional issues.

A second approach is being developed through the work of the European Forum on Integrated Environmental Assessment (*Environmental Modelling and Assessment*, vol. 3, 1998). This method combines the analytical and participatory methods of appraisal. The strengths and weaknesses of these methods of appraisal are outlined in the following table.

Table A3.4 Strengths and Weaknesses of Integrated Appraisal Methods

| Method of Integration | Description | Strengths | Weaknesses |
|---|--|--|---|
| Analytical Methods: | Methods which combine knowledge elements from various disciplines in an analytical framework, to assess the socio-economic and environmental consequences of human activities that affect the environment. | | |
| Models | Computer simulation frameworks that try to describe quantitatively, as much as possible of the cause-effect relationships of a specific issue, and of the interlinkages and interactions among different issues. | <ul style="list-style-type: none"> • exploration of interactions and feedbacks • flexible and rapid simulation tools • consistent frameworks to structure scientific knowledge • tools for communication • internal consistency • subject to formal sensitivity, robustness and uncertainty analysis • transportability | <ul style="list-style-type: none"> • high level of integration • inadequate treatment of uncertainties • absence of stochastic behaviour • limited calibration and validation • only well defined problems can be analysed • hard to represent the “softer” parts of IA • continuous intuition checks are absent |
| Scenario Analysis | In theory, hypothetical sequences of events, constructed for the purpose of focussing attention on causal processes and decision points. In practice, descriptions of alternative future predictions created from different perspectives of past, present and future developments. May be both quantitative and qualitative. | <ul style="list-style-type: none"> • articulate key considerations and assumptions • blend quantitative and qualitative knowledge • identify constraints and dilemmas • expand thinking beyond the conventional paradigm | <ul style="list-style-type: none"> • lack of diversity • extrapolations of current trends • inconsistent • not transparent |
| Risk Analysis | Considers the possibility that certain losses or damages occur as the result of a particular event or series of events. Also used for decision support. | <ul style="list-style-type: none"> • Familiar to decision-makers, stakeholders, general public and can easily incorporate their concerns | <ul style="list-style-type: none"> • lack of interdisciplinarity • inherent uncertainty |
| Participatory Methods: Dialogue methods Policy exercises Mutual learning methods | Aim to involve non-scientists as stakeholders in the process. May involve expert panels, Delphi methods, policy exercises, gaming, focus groups. | <ul style="list-style-type: none"> • Integrate quantitative and qualitative knowledge • can complement models and scenarios • involves non-scientists therefore more likely to have the support of the stakeholders and the public • less well defined problems can be analysed • easier to represent the “softer” parts of IA • able to incorporate continuous intuition checks | <ul style="list-style-type: none"> • not yet established procedures and work packages • lack of internal consistency • not subject to formal sensitivity, robustness and uncertainty analysis • not easily transportable |

Source: Rotmans, 1998; Tol and Vellinga, 1998.

The integrated environmental assessment (IEA) approach involves three stages (Tol and Vellinga, 1998):

- structuring the problem
- analysing the problem
 - by participatory methods
 - by modelling methods
- communicating the findings and insights

As is the case with the first approach to integrated assessment, much less progress has been achieved in applying the IEA method (so far, its application has been limited to climatic change) than in identifying the process to be followed.

Lessons for the SIA Methodology

There is no single integration model which will be universally applicable. The Sustainability Impact Assessment (SIA) Study will need to incorporate elements from both the weak and the strong models. Table A3.5 below gives an indication of the way in which a combination of the two polar approaches to integration may be combined in order to provide an appropriate approach to integration for the WTO Round SIA Study.

From an examination of the literature it does not appear to be feasible to undertake a fully integrated approach to appraisal as procedures and methodologies to deal with the complex issues which arise as a result of integration are not yet fully developed.

It is recommended in the literature that appraisals should be started as soon as possible and that the findings need to be integrated into the earlier stages of decision making. Timings and standardising requirements of different appraisal procedures need to be synchronised. In the case of the WTO Round SIA Study the environmental, social and economic appraisals may not all take place at the same time, but will be co-ordinated so that they can feed into each other and into the overall sustainability framework. For example, data obtained from the economic appraisal can feed into the other appraisals. In addition, the timings of the appraisal procedures need to be applied at the appropriate decision-making stage. It is important to ensure that there is co-ordination and consultation between the groups carrying out the different appraisals. An assessment of the cross-linkages and the possibilities of duplication or missing out certain impacts should be carried out and the results from this should be incorporated into the appraisals.

Table A3.5 ‘Strong’ and ‘Weak’ Integration Models and Implications for SIA

Methodology

| Weak model of integration | Strong Model of integration | Recommendation for SIA |
|---|--|--|
| Environmental, social and economic objectives are separately defined for the proposed action (some simple consistency checks of the likely compatibility and attainability of the three sets of the objectives) ↓ | An integrated set of environmental, social and economic objectives is defined for the proposed action (consistency checked against overall sustainability objectives) ↓ | An integrated set of environmental, social and economic objectives is defined for the proposed action (consistency checked against overall sustainability objectives) ↓ |
| Environmental, social and economic data collected separately (some consistency in data collection analysis and interpretation) ↓ | Combined programme of environmental, social and economic data gathered (data to be analysed and interpreted according to a set of criteria derived from the integrated objectives) ↓ | Data collection for each element of the appraisal will be co-ordinated but may be separated in time e.g. economic data collection first which will feed into the other two appraisals (data to be analysed and interpreted according to a set of criteria derived from the integrated objectives) ↓ |
| Separate predictions of the environmental, social and economic consequences of the proposed action. (major knock-on effects between systems identified) ↓ | Predictions of the environmental, social and economic consequences within an integrated framework (principal interactions and knock-on effects analysed and taken into account when making the predictions) ↓ | Separate predictions of the environmental, social and economic consequences but feeding into the integrated framework (principal interactions and knock-on effects analysed and taken into account when making the predictions) ↓ |
| Separate appraisals prepared each based on own set of appraisal criteria (these criteria will be compatible with the other appraisal criteria) ↓ | Overall appraisal using an integrated set of criteria (CBA or MCA) ↓ | Separate appraisals may be prepared at first, but each based on elements of integrated appraisal criteria. This will feed into an overall appraisal using an integrated set of criteria (CBA or MCA) ↓ |
| Decision-makers will have considerable discretion in how they “take into account” the findings of the separate appraisals. Typically they use informal non-explicit methods and do not provide justification for their decision | Decision-makers required to “take-into account” the results of the overall appraisal in reaching their decision and are required to publish the justified reasons for the decision | Decision-makers required to “take-into account” the results of the overall appraisal in reaching their decision and are required to publish the justified reasons for the decision |

Adapted from Kirkpatrick and Lee (1997)

It is also recommended that the specific regulatory and procedural context in which different appraisals are to take place is taken into account. This will help to check the relevance of the appraisal methodologies and indicate any adjustments to the regulatory and procedural frameworks which will enable the integrated appraisal to be carried out more satisfactorily. Inconsistencies between the different appraisal methods need to be resolved in terms of both the procedures and methods followed and the types of impacts covered. The problem of double counting needs to be addressed and the coverage of neglected types of impact (e.g. health, gender) within the overall appraisal, needs to be ensured. Use of scenario analysis is supported in the literature. (D.R.I., 1994; OECD, 1994; WWF, 1998, 1999).

APPENDIX 4

REVIEW OF CASE STUDY METHODS AND FINDINGS

4.1 Introduction

The appendix provides a detailed examination of case studies which have been undertaken for a selection of trade agreements and trade-related measures. The objective is to identify and evaluate the methodologies that have been used, to summarise the principal findings, and to highlight the main lessons to be drawn for the SIA methodology presented in Chapter 5. The appendix complements the literature review in the previous appendix by presenting case-specific experience.

The studies are mainly grouped and presented according to the type of trade agreement involved or the authorities involved in the appraisals, and cover:

- Uruguay Round Studies
- NAFTA Studies
- European Union Studies
- Other Studies

As was found in the previous appendix, most of the case studies concentrate on the assessment of a subset of the impacts, particularly on the economic impacts, and therefore often have a narrower coverage than will be required in a more comprehensive SIA.

4.2 Uruguay Round Studies

There is an extensive literature on the impact of the Uruguay Round, much of which focuses on the economic impact. The studies vary in their methodology, and in their coverage. As discussed in Appendix 3, two main methods of economic impact analysis have been used - *ex ante* and *ex post*. *Ex ante* assessment has been undertaken mainly using modelling methods (mostly applied general equilibrium, AGE) and has indicated how the impacts of trade reforms will vary by countries/regions and/or sectors/commodities. Impact is measured in terms of aggregate economic welfare. The *ex post* studies have relied on individual case studies and have assessed impact using a variety of economic variables (exports, imports, output etc.). Taken as a whole, the literature is predominantly *ex ante*, providing estimates of

the expected impact of changes in the international trade measures which formed part of the Uruguay Round negotiations.

The studies also vary in their coverage. Some have assessed the impact of the Uruguay Round (UR) as a whole, and others have focused on a particular subset of reforms, or on particular countries. The following sub-sections review the methodology and results of studies on the impact of agricultural liberalisation, textiles liberalisation, the reform of TRIMs and TRIPs, and the overall impact of the UR agreements.

- Evaluation of Liberalisation of Trade in Agriculture

Before applying any evaluation method, background data must be collected. In the case of price reforms, or reforms that have identifiable price effects, there will be quantifiable effects on particular products. Thus, for trade measures affecting agriculture, textiles, tariffs and quantitative restrictions more generally, the initial approach is the same. The first step is to identify the products most likely to be affected and establish base year values for domestic and world prices, production and trade volumes and any other indicators to be employed in the evaluation (e.g. employment and wages). The second step is to obtain estimates of the world price changes likely to result from the trade measure (typically, a range of estimates is available from AGE models). Finally, one needs estimates of responsiveness to prices – supply response of producers and exporters, demand response of imports and consumers, and substitution elasticities where possible.

We can illustrate the application by considering the possible impact of multilateral trade liberalisation (MTL) on Uganda (Blake et. al., 1999). The average volume traded over 1994-96 was used as the base year estimate of trade volume for the four principal export commodities (coffee, tea, cotton, tobacco) and cereals (the only agricultural import commodity likely to be affected). The price elasticity of export crops was assumed to be 0.35 (as estimated for Tanzania in McKay et. al., 1999). Results are very sensitive to the estimated change in world prices, which vary significantly in the literature, thus quantitative impact estimates are over a wide range. Total exports (of the four commodities) could increase by between \$0.6m and \$3.2m; at a maximum this is no more than 0.5 per cent of total exports. Thus the overall effect is quite small, but is almost certainly positive.

The complexity of reaching an overall evaluation is indicated in Table A4.1 (where + is positive, -ve is negative; ? implies one cannot be sure as it depends on relative price effects; n/a mean not applicable). For Uganda, a summary is presented by crop and indicator (such an exercise could be undertaken for any country chosen for individual analysis). Coffee and tea prices are expected to increase by more than for other export crops (hence indeterminate effects for cotton and tobacco). As Uganda is fertile and has a strong capacity to grow foods, the overall effect should be positive. This implicitly assumes supply response by export crop producers *and* in food crop production. Such an assumption may be unrealistic for other low-income countries.

The lower panel of Table A4.1 illustrates the possible impact on different types of countries, utilising a list of indicators. Cairns Group countries export temperate food crops hence are likely to be major beneficiaries. For Europe the situation is less clear. Although world prices of food crops will increase, prices received by domestic producers may fall as subsidies are reduced. The overall effect depends on complementary policies implemented. All AGE estimates suggest, however, that the overall effect will be positive, given large potential gains to EU consumers. For sub-Saharan African countries in general, export prices are expected to increase by less than import prices, hence the terms of trade effect is negative. However, the impact on imports depends on responsiveness of food crop producers hence is indeterminate in general. Similarly, the overall effect on the economy is indeterminate, but is potentially positive as exports increase and domestic food production may increase. Few South Asian countries export the cash crops for which prices will rise but many import food, hence the overall effect is indeterminate but unlikely to be positive.

It is worth noting that although significant liberalisation of agriculture was proposed in the Uruguay Round, conversion of non-tariff barriers to tariffs which would then be reduced by 36% over six years for developed countries and by 24% over ten years for developing countries, little has been achieved. Developed countries (in particular the EU, Japan and the US), availed of many exemptions, set tariffs at levels far higher than intended (as justified by

Table A4.1: Evaluating the Impact of Liberalisation of Agricultural Trade*The example of Uganda*

| | Coffee | Tea | Cotton | Tobacco | Foods | Overall |
|------------|--------|-----|--------|---------|-------|---------|
| Prices | + | + | + | + | + | + |
| Production | + | + | ? | ? | + | + |
| Exports | + | + | ? | ? | + | + |
| Imports | n/a | n/a | n/a | n/a | -ve | -ve |
| Incomes | + | + | ? | ? | + | + |

Example for alternative types of countries

| | Sub-Saharan African | South Asia | Cairns Group | Europe |
|-----------------|---------------------|------------|--------------|--------|
| Export Prices | + | n/a | + | ? |
| Import Prices | + | + | + | + |
| Terms of Trade | -ve | -ve | + | ? |
| Exports (value) | + | n/a | + | ? |
| Imports (value) | ? | + | + | + |
| Trade balance | ? | -ve | + | ? |
| Incomes | + | ? | + | ? |
| Overall effect | ?+ | -ve | + | ?+ |

prevailing averages), and retained domestic support measures. ‘The striking feature [of post-UR AGE estimates of impact] is the relatively small effect of liberalisation, reflecting the fact that ... the extent of liberalisation is modest. Although there are some changes of sign across models of the effects on particular countries or regions, almost all the estimates for Africa are negative, though not large’ (Srinivasan, 1998: 42). There is considerable scope for liberalisation of agricultural trade in the New Round. To avoid adverse impacts on the poorest countries (especially Africa), measures to ensure free market access to developed country markets will be important. The relative effects on temperate food and tropical cash crop prices will also be important. Existing AGE studies have projected the former to increase by more than the latter, but such an outcome depends crucially on the nature of liberalisation of the EU market in particular. The responsiveness of farmers in developed countries is also important, although not affected by multilateral liberalisation *per se*.

The extent of reform required in the area of agricultural tariffs is a major source of differences between AGE models. Two of the major models of the Uruguay Round, Harrison et. al.

(1995) and Francois et. al. (1995a), model agricultural tariff reductions in entirely different ways: Harrison et. al. account for dirty tariffication, with the result that little liberalisation occurs in some tariffs, notably for EU imports. Francois et. al. use 36% reductions in each agricultural tariff (24% for LDCs). Reductions in export subsidies and production subsidies are usually treated as corresponding reductions in *ad valorem* subsidy rates, although this treatment differs in some models. The production subsidy reduction for the US and the EU is given different rates by different authors. Harrison et. al. (1995) decompose the agricultural reforms into three elements: export subsidy reductions, output subsidy reductions, and import tariff reductions. Reform of export subsidies brings large benefits to the EU, with smaller gains to other agricultural exporters. Agricultural importers suffer welfare losses, as they pay higher prices for imports. Reform of production subsidies brings welfare gains to most countries, as most countries maintain at least some form of agricultural subsidies, but the resulting increase in food prices does lead to welfare losses for some food importers. Import tariff reforms lead to a large welfare gain for Japan, but a welfare loss for the EU. This is a curious result of this study, and occurs because the EU undertakes very little tariff liberalisation itself while other countries do. EU exports are therefore stimulated by foreign tariff cuts, and because export subsidies are modelled as *ad valorem* subsidies, the EU subsidises all extra exports at high levels. The EU then makes a welfare loss because of large expenditure increases.

These results show that the EU is likely to be a major beneficiary of agricultural reforms, and other developed countries also benefit. Most studies (see Table A4.2 below) suggests that developing countries as a group will derive the smallest gains, and may even lose.

Developing countries, however, are not a homogenous group and can be categorised into a few 'representative types' and the impact on economies of that type can be modelled. Three types that have been used give interesting results.

The first categorisation distinguishes net food-importing countries from net food-exporting developing countries (Roningen and Dixit, 1990). Developing countries who are net exporters of temperate zone agricultural products, like Argentina, are very likely to gain from agricultural trade liberalisation, while net food-importing countries, like Bangladesh, are expected to lose. One could go further by, for example, distinguishing the types of products imported (grains, for example) and their value from the products exported (tea and coffee, for example) and their value.

Table A4.2: Regional Welfare Gains: in \$bn (and as a percentage of 1992 income)

| | Full UR Reforms | | Agricultural Liberalisation | |
|---------------------------|-----------------|---------|-----------------------------|---------|
| | | | | |
| Australia and New Zealand | 1.04 | (0.36) | 0.96 | (0.33) |
| Canada | 1.57 | (0.30) | 1.03 | (0.20) |
| United States of America | 21.46 | (0.41) | 2.65 | (0.05) |
| Japan | 26.65 | (0.84) | 5.16 | (0.16) |
| European Union | 24.86 | (0.42) | 11.37 | (0.19) |
| China | 6.13 | (1.37) | 0.11 | (0.02) |
| Taiwan and South Korea | 1.57 | (0.47) | 0.70 | (0.21) |
| Hong Kong and Singapore | -1.68 | (-0.23) | -0.29 | (-0.04) |
| Economies in Transition | 2.50 | (0.52) | 3.93 | (0.82) |
| Other Middle-Income | -3.21 | (-7.11) | 0.01 | (0.02) |
| Brazil | -8.43 | (-0.34) | 0.18 | (0.00) |
| Other Low Income | 6.22 | (1.49) | 0.15 | (0.04) |
| Sub Saharan Africa | -0.49 | (-0.33) | 0.00 | (0.00) |
| World | 78.20 | (0.39) | 25.94 | (0.13) |

Source: Blake et. al. (1998).

The second grouping analyses developing countries according to region (Anderson and Tyers, 1991; UNCTAD, 1990; Page and Davenport, 1993; Zietz and Valdes, 1980). Latin America is expected to be the ‘big’ winner of agricultural trade liberalisation and Africa the ‘big’ loser. Results for Asia differ among studies and usually depend on which countries have been included. This approach is less satisfactory than the first, as implicitly one is assuming that some regions are predominantly net food exporters while others are net importers. This explains why results for Asia are so mixed.

The third grouping isolates low-income developing countries from middle/higher-income ones (Burniaux et. al. 1991; Zietz and Valdez, 1980). Low-income food-importing developing countries (among which many are African countries) suffer most from higher world prices for agricultural commodities (particularly cereals). In any impact evaluations of future agricultural liberalisation (that could be interpreted as actually implementing UR measures) these classifications of country types are a useful starting point for impact analysis.

- Evaluation of Liberalisation of Trade in Textiles

It is clear that the impact of phasing out the MFA will vary depending on the characteristics of the country in question. An indicative impact assessment for different types of countries is

provided in Table A4.3. The most likely losers are the ‘MFA Quota’ countries, relatively high-income producers benefiting from existing quotas (e.g. Hong Kong, Singapore, Mauritius). These countries will see the value of their exports eroded as (quota) protected markets are exposed to competition. However the terms of trade impact is ambiguous as the loss of export earnings may be offset by cheaper textile imports. The net effect will depend on the abilities of the economies to restructure and reallocate resources into other activities in which they are competitive (that Hong Kong has become a part of China will influence the impact there). AGE estimates (see below) suggest that relatively high cost producers in Latin America and the Middle East will also incur losses. The most likely gainers are low cost, high volume producers that are quota-constrained, and the potential gains are large – exports should increase considerably and imports (of textiles) are largely unaffected. These countries are referred to as ‘South Asia’ but include Bangladesh, Pakistan, India, Vietnam and China.

Table A4.3: Evaluating the Impact of Liberalisation of Textiles

Trade

| | <i>Example for alternative types of countries</i> | | | |
|-----------------|---|------------|-----------|--------|
| | Africa | South Asia | MFA Quota | Europe |
| Export Prices | + | + | -ve | ? |
| Import Prices | -ve | n/a | -ve | -ve |
| Terms of Trade | -ve | + | -ve | + |
| Exports (value) | ?+ | + | -ve | ? |
| Imports (value) | + | n/a | + | + |
| Trade balance | -ve | + | -ve | -ve |
| Incomes | ?+ | + | -ve | ? |
| Overall effect | ?-ve | + | -ve | ?+ |

Europe is taken to represent industrialised countries. Consumers will benefit from cheaper imports, but domestic producers in mass markets may lose out, so again the overall effect is ambiguous. Nevertheless, AGE estimates (that implicitly assume resources are shifted out of textiles into more efficient sectors) predict net gains. Relatively low volume producers may benefit in niche markets but are unlikely to be competitive against the major gainers. The net effect is difficult to tell, and depends on the extent to which large-scale domestic textiles producers are displaced by competition from cheap imports.

It is clear, even restricting attention to textiles, that it is difficult always to sign the net impacts. Large-scale low-cost producers will benefit, and these will be the large volume effects. Thus, 'South Asia' should benefit overall and MFA quota countries can be expected to lose overall (restructuring may alleviate the net loss). As major consumers, industrialised countries should gain in net welfare terms, although some producers will lose. The effect on African and other small-scale producers is unclear but, assuming they are unable to protect domestic producers, is likely to be negative as losses on mass production exceed potential gains in niche markets. Any net effects will depend on the ability of gaining sectors to respond and losing sectors to adjust and adapt.

The reform of textiles and clothing policies in the MFA is perhaps the easiest to treat in an AGE model. Because the MFA is to be abolished after the ten-year phase-out period, models usually simply remove the export tax *ad valorem* equivalent of the MFA quota. This is the "standard" treatment, although when not removing the MFA (to look only at the effects of other reforms), most authors retain the export quota as an *ad valorem* tax. There are some papers that treat the MFA reforms differently. Hertel et. al. (1995) model the world economy in 2005 after the acceleration of MFA quotas (with the price wedge endogenous) between 1995-2005, and (a separate simulation) the abolition of quotas in 2005. The results are summarised in Table A4.4.

The largest welfare gains accrue to the EU, Japan, the Newly Industrialising Countries and Malaysia, the last being a surprisingly large beneficiary, which the authors attribute to large output increases in processed food and heavy manufacturing stimulated by tariff cuts, presumably in Japan and the NICs. Malaysia, the Philippines, Thailand and the NICs make most of their gains from tariff cuts, whereas China and Indonesia make considerable gains from the MFA abolition - Indonesia's gains are some 3% of GDP, of which almost half comes from the reform and subsequent elimination of the MFA.

The three developed regions all gain significantly from the Round, and as a group they gain significantly in each component. Japan makes most of its gains from tariff reform, as it is not directly affected by the MFA. Meanwhile developing regions as a whole lose from the MFA abolition (although they gain from the quota growth rate acceleration), with the largest losses in the Newly Industrialising Countries, Latin America, and the Rest of the World.

Table A4.4: Hertel *et al.* (1995) Welfare Results

| | Welfare Gain from All Reforms | | Percentage of overall gain attributable to individual components | | |
|---|-------------------------------|-------------------|--|------------------|----------------------------|
| | Equivalent Variation (\$ bn) | Percentage of GDP | Tariff Cuts | MFA Quota Growth | MFA Abolition ¹ |
| United States and Canada | 32.130 | 0.40 | 9 | 18 | 73 |
| European Union | 56.650 | 0.72 | 51 | 5 | 44 |
| Japan | 43.009 | 1.04 | 97 | 1 | 2 |
| Newly Industrialised Countries ² | 39.002 | 3.82 | 116 | 0 | -16 |
| China | 19.993 | 1.46 | 73 | -3 | 29 |
| Indonesia | 7.101 | 2.94 | 51 | 14 | 35 |
| Malaysia | 34.187 | 21.38 | 102 | 1 | -3 |
| the Philippines | 10.531 | 6.63 | 97 | 6 | -3 |
| Thailand | 10.531 | 4.54 | 85 | 8 | 7 |
| Latin America | -1.258 | -0.08 | -195 | -46 | 341 |
| Sub-Saharan Africa | -1.233 | -0.51 | 45 | 6 | 48 |
| South Asia | 11.101 | 1.93 | 73 | 10 | 18 |
| Rest of the World | 1.147 | 0.03 | 998 | 35 | -933 |
| Total | 257.758 | 0.89 ³ | 81 | 5 | 14 |

¹ Excluding those gains from quota growth

² Three NIC regions (South Korea, Taiwan, and Hong Kong) are modelled separately but welfare results are reported as a group.

³ The global results were reported incorrectly in the original paper; correction from Francois *et al.* 1996.

Latin America and Sub-Saharan Africa both lose from the Uruguay Round projections, although the loss in Latin America is a very small percentage of GDP. Both of these regions undertake very little tariff liberalisation in the Uruguay Round, and neither are directly affected by the MFA. The position of Sub-Saharan African LDCs in the MFA is that they are exempt from the voluntary export levies and can export without restraint to developed countries, so the loss incurred when the MFA is removed is that they lose the privileges that the MFA had previously given them. On average, only one quarter of the total gains from MFA liberalisation come from the quota growth between 1992 and 2005; most of the gains are due to the elimination of quotas in 2005.

- The Impact of TRIMs Reform

Trade Related Investment Measures (TRIMs) refer to restrictions attached by host states to the activities of transnational corporations (TNCs) that have invested in the host. They are termed investment measures because they relate to TNCs that have engaged in foreign direct investment (FDI), i.e. that are undertaking production activities in the host (the discussion could be extended to investment in services). They are trade related because the activities of

the TNC impact on trade flows, in one or more of three essential ways. The TNC may be potentially able to export, and the TRIM may relate to export requirements (e.g. stipulating a share or value of output to be exported). Alternatively, the TNC may be producing import-competing goods, and the TRIM may restrict such competition (e.g. limiting the share or value of output that can compete with imports). Finally, the TNC may import inputs that are available locally, and the TRIM may require some minimum amount of inputs be sourced from local producers (such as local content requirements). A TRIM, therefore, affects trade flows, the level of imports and/or exports. It follows that the removal of a TRIM can affect trade flows, and such removal is the intention of the TRIMs Agreement. The literature on TRIMs relates almost exclusively to developing countries.

The underlying context is that FDI establishes a relationship between the TNC and the host state, and both parties to the relationship will wish to maximise the gains to them from the investment. The view implicit in the TRIMs Agreement is that TRIMs are a measure adopted by hosts to restrict trade (by restriction the actions of TNCs), although hosts may take the view that they are really only trying to restrict the activities of TNCs (implying that such activities are trade-distorting). In practice, the host's bargaining instrument (TRIMs) is restricted to a greater extent than is the TNC's behaviour, so that hosts may feel unfairly treated. One possible avenue of removing this bias is to ensure that the WTO addresses investment measures in general and associated restrictive business practices (RBPs), an intention enshrined in the Uruguay Round and in Article IX of the TRIMs Agreement (Morrissey and Rai, 1995, provide a detailed discussion).

Three broad types of TRIMs can be identified. First, export requirements that are intended to increase the value, from the host perspective, of exports (perhaps with the objective of reducing a balance of payments deficit). Second, with a related intention, are restrictions on imports. Such export and import restrictions could be achieved in a variety of ways (stipulating market shares, trade values or trade balancing). Third, are local content requirements which have associated aims of restricting imports and increasing local production (or at least local sales). We are not here concerned with whether such TRIMs are justified (see Morrissey and Rai, 1995).

The removal of a TRIM is a regulatory measure, or more strictly the prohibition of a regulatory measure. One cannot typically observe any direct economic impact, and cannot

even be sure that there is a direct economic impact. However, on the assumption that the TRIM had effects when in place, one can infer the impact of negating such effects. Table A4.5 illustrates, against the standard list of indicators we have been using, how removal of the three ‘TRIM-types’ may impact on the economy.

The impacts, from the perspective of the host country, is adverse. This must be the case if the purpose of the TRIMs was to increase the benefits from FDI for the host economy. If however the TRIMs were truly distortionary, such that they encouraged or supported inefficiency in resource allocation (by, for example, protecting inefficient local producers), there may be long-run (dynamic) efficiency gains to be reaped by the host. To hold this view it would be necessary to demonstrate that the TRIMs were indeed distortionary (and we are unaware of any studies that have done this). The conclusion must be that the economic impact of the removal of TRIMs will be adverse for the host. These adverse impacts may be offset by other regulatory measures under the New Round that relate to investment and competition policy. It should be acknowledged that many of the restrictions imposed by TRIMs were inefficient so that ‘their elimination should be beneficial’ (Srinivasan, 1998: 53) in the sense of promoting efficiency and attracting investment.

In conclusion, there are a number of steps that should be taken if one wishes to assess the implications of the abolition of TRIMs. First, one needs an inventory of the TRIMs in place; from this one can establish the implied impact of removing such measures. Second, one needs to identify the FDI policies and economic performance, especially in terms of impact on host, of any TNCs that have had TRIMs imposed on them. We are not aware of any evidence on which to undertake such an evaluation Third, one needs some indication of the

Table A4.5: Evaluating the Impact of Removing TRIMs

| | Import Restrictions | Export Restrictions | Local content |
|-------------------|---------------------|---------------------|---------------|
| Exports (value) | n/a | -ve | n/a |
| Imports (value) | + | n/a | -ve |
| Trade balance | -ve | -ve | -ve |
| Domestic linkages | -ve | ? | -ve |
| Local production | -ve | ? | -ve |
| Overall effect | -ve | ?-ve | -ve |

potential for RBPs on behalf of the TNCs, and an assessment of how this affects the allocation of benefits from FDI. This has implications for any regulatory measures that should be introduced regarding investment or competition policy.

- The Impact of TRIPs

In general economic terms, intellectual property rights are granted to confer protection to innovative goods, specifically to prevent unfair competition from theft of ideas, designs or technologies. A common (economic) justification is that research and development (R&D) costs can be very high and producers need protection for a period of time to recoup that cost. This would often apply in the case of new drugs, chemical compounds or technologies. Similar arguments are made to protect originality, such as copyright for recordings or written pieces and patent for inventions. The arguments are extended, but are somewhat less convincing, to protect brand names.

Most of the literature on intellectual property rights (IPR) is by lawyers, where the appropriate means for protection on an international level are subject to debate - there are no simple rules. 'Intellectual property protection of whatever type (patents, copyrights, trademarks, etc.) is not a homogeneous piece of property, but a system of protection balancing a wide variety of elements and interests including the public interest and consumer welfare' (Ullrich, 1989: 156). The basic point is that inventors and innovators deserve to be rewarded for their efforts, and so should be protected from imitators or pirates for some period of time. However, a point will come where competitors can replicate or reproduce the innovations, more cheaply and competitively. At what point should protection cease and competition start? This is a generally unresolved question.

The underlying motive behind bringing TRIPs under the Uruguay Round, on the instigation of the US in particular, was to protect R&D activities of leading technology industries. The implicit argument is that IPR protection is essential to generate R&D (Subramanian, 1990, provides a sceptical view). This is an extension of the principle of patent protection (conventionally conferred at a national level), to the international level. Rather than each country deciding on its own patent (or IPR) law, an international standard of protection is established (the reduction in discriminatory treatment does imply global efficiency gains). As copying in specific countries reduced the exports of innovators to those countries, and may

have reduced exports to third countries (supplied more cheaply by imitators), contravention of IPRs had trade effects, hence TRIPs.

The major beneficiaries of IPR protection are producers in developed countries (mostly in high technology, luxury goods and entertainment industries) who are able to charge higher prices. Consumers who have to pay these prices lose. In large markets, especially high-income markets, a period of protection may be warranted. In small markets, however, local imitators could supply the goods more cheaply, benefiting producers and consumers but without extending to third countries. The benefits to the small market are likely to outweigh the costs to the producer (of lost earnings in that market), so IPR protection should not be extended to all countries: 'patent protection is almost certain to redistribute welfare away from developing countries. And it may even lower world welfare [if] extended too far to cover all the countries of the world' (Deardorff, 1990: 507). Similarly, Subramanian (1990) recognised that the distributional impact of TRIPs would be against developing countries but believed they could (implicitly at least) be compensated.

In sketching the potential economic impact of TRIPs we begin with the assumption that developed and developing countries are beneficiaries and losers respectively (strictly, it is TNCs that benefit; consumers everywhere may lose, and producers in the latter lose). We will distinguish three types of products – technology products, luxury goods (brand names) and entertainment (copyright). In Table A4.6 we consider only the likely impact on developing countries. With respect to technology goods, they may benefit as TRIPs secure IPRs and encourage technology transfer (Braga, 1996); in the case of the other products they are assumed to lose as domestic production (by imitators) falls. In the latter context, as TNCs frequently locate production in developing countries, these losses may be offset (at least on aggregate). This highlights one respect in which TRIPs and TRIMs are closely linked in terms of their effects.

Consider Table A4.6 as applied to a particular country such as Thailand, where production of counterfeit goods is quite high, although copying of technology is low. This represents the typical developing country that will be affected by TRIPs (the poorest countries, especially in Africa, are not even active in counterfeit goods). The impact regarding technology goods will be low. Assuming some imitators are producing (or the country imports cheap imitations), the most likely direct effects will be to increase the cost of imports and (perhaps) reduce

domestic production (and thence employment/incomes). If IPR security serves to attract technology transfer, these effects will be offset.

Table A4.6: Impact on Developing Countries of Removing TRIPs

| | Technology products | Luxury goods | Entertainment |
|-----------------|---------------------|--------------|---------------|
| Exports (value) | ?-ve | -ve | -ve |
| Imports (value) | + | ? | ? |
| Trade balance | -ve | -ve | -ve |
| Domestic output | -ve | -ve | -ve |
| Employment | ?-ve | -ve | -ve |
| Incomes | ?-ve | -ve | -ve |
| Overall effect | ?-ve | -ve | -ve |

If the country in question is a producer of counterfeit goods (both copies of luxury and entertainment goods), TRIPs will be associated with adverse impacts in both respects. In some countries, such as Thailand, the losses could be considerable, and it is unlikely that increased output by TNCs would offset the losses (even if it were located in the country). It is worth noting that consumers in developed countries would also lose, as they seem quite willing to buy cheaper counterfeit goods (usually with full awareness of what they are doing). In both cases, for the developing country, output, employment, incomes and possibly exports (whether direct or through sales to tourists) would fall. Imports may not rise (if the counterfeit goods were not available, local people may simply not purchase).

The impact of TRIMs is least likely, however, to be realised in respect of luxury and counterfeit goods. Even if the legal force of the WTO is behind brand names in trying to enforce IPRs, there is little public sympathy for the companies, widespread consumer awareness that monopoly prices are charged, and evidence that the real and fake products are imperfect substitutes. Furthermore, much of the activity is illegal anyway and most is in informal sectors that would never be fully regulated.

The most important area, in terms of the impact of protecting IPRs, is probably technology products, but few developing countries are likely to be affected. The one exception may be in the case of medicines and drugs. The issue here is complicated, as much a dispute over the prices charged by TNCs than about the issue of IPRs *per se*. The current dispute between

South Africa and the USA regarding the price at which drugs for treating AIDS can be sold is likely to be a landmark dispute (and one in which the pharmaceutical companies will win no friends). In general, TRIPs is likely to generate a few very high profile disputes, but will not have many direct economic impacts.

- Overall Impact of UR Reforms

Harrison, Rutherford and Tarr (1995) use a large GTAP-based model to quantify the effects of the Uruguay Round. The specific aims of this broad study are to:

- quantify the global welfare benefits of the UR
- discover the quantitatively most important aspects of the Round
- assess the impacts of the Round on developing countries
- discover if any countries or regions lose from the Round
- assess the robustness of the estimates.

Given the breadth of the study, it can be taken as indicative of AGE results (comparisons with other studies are given in Table A4.8). The quantitative effects of the Uruguay Round are assessed via a 24 region, 22 commodity GTAP model. The Uruguay Round policy changes that are modelled are: (i) tariff reductions in manufactured products, (ii) tariffication of non-tariff barriers in agriculture and reductions in the level of agricultural tariff protection, (iii) reduction of agricultural export and production subsidies, and (iv) the elimination of the Multifibre Arrangement.

Harrison et. al. (1995) has two key advantages over most models: it is more disaggregated and includes detailed sensitivity analysis. The model used also has disadvantages: the treatment of agricultural distortions as price wedges, and the few agricultural goods included, raises doubts over the applicability of the model to the agricultural reform component of the Round.

Table A4.7 shows the base model welfare results, using a static constant returns to scale perfect competition (CRS/PC) model. The world as a whole gains \$93 billion annually, with the dollar gains being concentrated in the USA, EU and Japan. Several East Asian middle income LDCs make substantial gains as a proportion of income - most notably Malaysia (MYS), Singapore (SGP) and Thailand (THA).

Table A4.7: Harrison et. al. (1995) base model results (US\$bn)

AGR Agricultural Reform
MFA MFA Reform
MFRS Market access reforms in manufacturing sectors
FULL Complete UR
FULL % Complete UR as a percentage of base GDP

| | | AGR | MFA | MFRS | FULL | FULL % |
|------|------------------------------|--------|--------|--------|--------|--------|
| AUS | Australia | 0.717 | 0.024 | 0.391 | 1.135 | 0.383 |
| NZL | New Zealand | 0.298 | 0.002 | 0.083 | 0.381 | 0.964 |
| CAN | Canada | 0.238 | 0.939 | -0.045 | 1.160 | 0.204 |
| USA | United States | 1.659 | 10.136 | 0.772 | 12.842 | 0.216 |
| JPN | Japan | 15.232 | -0.531 | 1.978 | 16.692 | 0.469 |
| EU | European Union | 28.539 | 7.624 | 2.311 | 38.845 | 0.578 |
| KOR | South Korea | 4.604 | -0.469 | 0.518 | 4.574 | 1.532 |
| IDN | Indonesia | 0.170 | 0.617 | 0.559 | 1.301 | 1.059 |
| MYS | Malaysia | 1.225 | 0.082 | 0.696 | 1.864 | 3.254 |
| PHL | The Philippines | 0.618 | -0.002 | 0.363 | 0.890 | 1.631 |
| SGP | Singapore | 0.623 | -0.149 | 0.450 | 0.918 | 2.135 |
| THA | Thailand | 0.747 | 0.065 | 1.732 | 2.435 | 2.108 |
| CHN | China | -0.561 | 0.876 | 0.915 | 1.174 | 0.265 |
| HKG | Hong Kong | 0.598 | -1.698 | -0.188 | -1.267 | -1.358 |
| TWN | Taiwan | 0.011 | -0.450 | 0.825 | 0.404 | 0.203 |
| ARG | Argentina | 0.376 | 0.028 | 0.236 | 0.645 | 0.278 |
| BRA | Brazil | 0.272 | -0.027 | 1.076 | 1.310 | 0.343 |
| MEX | Mexico | -0.015 | -0.081 | 0.262 | 0.145 | 0.042 |
| LAM | Other Latin America | 1.437 | -0.498 | 0.283 | 1.198 | 0.439 |
| SSA | Sub-Saharan Africa | -0.292 | -0.112 | -0.005 | -0.418 | -0.241 |
| MNA | Middle East and North Africa | -0.448 | -0.499 | 0.624 | -0.388 | -0.065 |
| EIT | Economies in Transition | -0.246 | -0.627 | 0.526 | -0.421 | -0.050 |
| SAS | South Asia | 0.097 | 0.629 | 2.730 | 3.286 | 0.991 |
| EFTA | European Free Trade Area | 2.412 | 0.071 | 1.663 | 4.154 | 0.345 |
| | Developed total | 49.095 | 18.265 | 7.153 | 75.209 | 0.410 |
| | LDC total | 9.216 | -2.315 | 11.602 | 17.650 | 0.383 |
| | including: | | | | | |
| | NICs Newly industrialised | 5.836 | -2.766 | 1.605 | 4.629 | 0.730 |
| | LLDCs Least developed | -0.586 | 2.010 | 4.199 | 5.343 | 0.499 |
| | World total | 58.311 | 15.950 | 18.755 | 92.859 | 0.405 |

Note: NICs is the aggregate KOR+SGP+HKG+TWN.
LLDCs is the aggregate IDN+CHN+SSA+SAS

Table A4.8 provides some comparisons of results of AGE models of the final Uruguay Round agreement. Studies that simulate hypothetical trade liberalisation, or that simulate the reforms proposed at a certain stage of the Round are excluded from this table. The first panel lists the models and database, and bases/evaluation years. Most of these are GTAP-based, using various versions of the database. Four of the models use projections - for these models the base year and evaluation year are different, whereas they are the same for static models. The first four columns of the lower panel report the proportion of global gains that originate from each of the four main categories of reform. Blanks in any of these columns indicate that the authors did not report results for simulations of the components of the Uruguay Round, and a dash (-) indicates that that component is not included in the paper's characterisation of the Uruguay Round. The final four columns report the percentage welfare gain to three regions – the EU, Japan and the USA (in some cases the USA column is taken from results for USA & Canada or NAFTA regions) and for LDCs as a whole. The LDC column is rarely given in papers; in most cases it is estimated here.

A simple arithmetic average is given in the final row for the last four columns. The average global gain for constant returns to scale (CRTS) models with perfect competition (PC) is a good indication of the global welfare gains that AGE models predict for the Uruguay Round, and is an average of ten estimates ranging from 0.17 to 0.89 (not all ten estimates are reported in the table as some of the reported studies did not use CRTS/PC, whilst other unreported studies did). In general, models using increasing returns to scale and monopolistic competition give higher estimates of welfare gains.

The welfare gains from the Round for both the EU and USA are approximately the same percentage of GDP as the average global gains (unreported), with the EU gains slightly higher than the USA gains (note that in no paper do the USA gains exceed the EU gains). The gains to Japan are significantly higher than the world average. Although the average gains for all LDCs are comparable to the US, this masks wide disparities in estimates from individual studies. The reason for the high average is that specific LDCs gain strongly, as a share of GDP, from MFA reforms. Gains to specific LDCs vary considerably.

Table A4.8: Global Gains from the Uruguay Round

| Code | Paper | Database | Year |
|---------------------------|--|-----------|------------------|
| Uruguay Round Simulations | | | Base/ Evaluation |
| HRT | Harrison, Rutherford and Tarr 1995 | GTAP2 | 1992/1992 |
| FMN94 | Francois, McDonald and Nordstrom 1994 | GTAP1 | 1990/1990 |
| FMN95a | Francois, McDonald and Nordstrom 1995a | GTAP2 | 1992/1992 |
| BRR | Blake, Rayner and Reed 1996 | GTAP2 | 1992/1992 |
| HMYD | Hertel, Martin, Yanagishima and Dimaranan 1995 | GTAP2 | 1992/2005 |
| HBDM | Hertel, Bach, Dimaranan and Martin 1996 | GTAP3 | 1992/2005 |
| HME | Hertel, Masters and Elbehri 1998 | GTAP3 | 1992/2005 |
| RUNS | Goldin and van der Mensbrugge 1995 | RUNS | 1985/2002 |
| NPW | Nguyen, Perroni and Wigle 1995 | own model | 1993/1993 |

| | Percentage contribution of each Uruguay Round component (CRTS/PC model) | | | | Regional gains from CRTS/PC model or main model (percentage of GDP) | | | |
|---------|---|-----|--------------------|----------|---|------|-------|-------------|
| | Agriculture | MFA | Industrial Tariffs | Services | EU | USA | Japan | LDCs |
| HRT | 68 | 15 | 18 | - | 0.58 | 0.22 | 0.47 | 0.38 |
| FMN94 | 31 | 39 | 30 | - | 0.83 | 0.54 | 0.45 | -0.01 |
| FMN95a | 12 | 47 | 41 | - | 0.22 | 0.17 | 0.04 | <i>0.4</i> |
| BRR | 28 | 34 | 40 | - | 0.35 | 0.34 | 0.62 | 0.18 |
| HMYD | - | 86 | 14 | - | 0.72 | 0.40 | 1.04 | <i>1.40</i> |
| HBDM | 46 | 29 | 24 | - | 0.47 | 0.31 | 0.44 | - |
| HME | | | | | 0.5 | 0.4 | - | 1.0 |
| RUNS | | | | | 0.6 | 0.1 | 0.4 | <i>0.0</i> |
| NPW | 53 | 14 | 24 | 8 | 0.5 | 0.2 | 1.3 | 0.3 |
| Average | | | | | 0.5 | 0.4 | 0.7 | 0.4 |

Notes: Italicised figures are approximate estimates, as the authors do not give the appropriate result. A dash (-) in the first four columns indicates that the component is not included in the paper as part of the Uruguay Round; and in the final four columns that the region is not defined in the paper.

Source: Summary Tables and information provided by Adam Blake (CREDIT, Nottingham).

4.3 NAFTA Studies

Following the endorsement of the NAFTA Agreement in 1992 by Canada, Mexico and the United States, *ex ante* reviews of the environmental implications of the Agreement were undertaken by Canada and the United States. The Canada review concentrated on the environmental implications of the NAFTA Agreement for Canada, while the US review covered both Mexico and the United States.

After the implementation of NAFTA, the North American Agreement on Environmental Cooperation (NAAEC) was established. Article 10(6)(d) of the NAAEC, directs the Commission for Environmental Cooperation (CEC), to consider on an ongoing basis, the environmental effects of the North American Free Trade Agreement (NAFTA). A four year study by the NAFTA Effects Project Team into the development and application of a methodological approach for analysing major environmental changes under NAFTA was published by the CEC in 1999. The aim of the Final Analytic Framework (Draft) is “to develop an understanding of the connections between trade and the environment, to assist in anticipating important environmental impacts in the context of trade liberalisation, and to develop policy tools to better mitigate negative impacts and maximise positive ones”.

- **The US Environmental Review**

The NAFTA Report on Environmental Issues was co-ordinated by the Office of the US Trade Representative (USTR) and was published in November 1993. Its aim is to address the likely significance of the NAFTA and the side agreements on environmental and conservation issues.

The report commences by covering NAFTA’S environmental provisions. In this section the establishment of supplemental agreements such as the trilateral agreement, “The North American Agreement on Environmental Co-operation”, as well as the establishment of two new institutions: the Agreement on the Border Environment Co-operation Commission and the North American Development Bank, are also detailed. The report then goes on to discuss Mexico’s pollution control regime and the recent developments in the U.S.-Mexico environmental relationship. Specific reference is made in this section to the Integrated Environmental Plan for the Mexico-U.S. Border Area (“Border Plan”), issued in February 1992. Note is also made to the comparison of US and Mexican environmental laws

regulations and standards carried out by the US EPA in 1993. This was undertaken in order to address “pollution haven” and transboundary pollution concerns, and covered water, air, hazardous waste, pesticides, and industrial chemicals.

The potential environmental effects of NAFTA are not considered until section five in the review. This section commences with a discussion of the macroeconomic effects. The report states that implementation of the NAFTA is expected to promote additional development of both the U.S. and Mexican economies. It is recognised that the economic changes that will come with NAFTA have the potential to place additional stresses on the environment, particularly for the development of transport and other trade-related facilities at border crossings. However, the report emphasises that public and private resources for environmental protection will be increased and industry will be dispersed away from the already stressed border region.

The “sectoral effects” are then covered. These include: energy; agriculture; transportation and U.S. Environmental Technology and Services. There is then a discussion of “specific effects”. These include: product standards; pesticides and food safety; air quality; water quality and supply; control of toxic chemicals; hazardous waste; non-hazardous waste; chemical emergencies; wildlife and endangered species; fisheries; forest, parks and rangelands and health implications. The discussion of sectoral effects and specific effects considers both the potential impacts of NAFTA and trends in the absence of NAFTA.

The report emphasises the benefits of NAFTA to the environment in all sectors and there is little mention made of any adverse environmental effects. On the whole, there is a lack of a systematic approach and there is no clear methodology in this environmental review.

- **The Canadian Environmental Review**

The Canadian Environmental Review is an analysis of the potential environmental effects of Canada’s participation in the NAFTA Agreement. The review focused on the environmental implications for Canada alone, the other countries were only considered in relation to transboundary effects. The review was conducted by the NAFTA Environmental Review Committee, comprising representatives from several government departments. In carrying out the review, the Committee assembled and reviewed reports and data from Canadian and foreign governmental and non-governmental sources; met regularly with members of

Canada's negotiating team; exchanged information with U.S. and Mexican officials; consulted with members of the trade advisory committees; organised a workshop and two special briefing sessions on NAFTA and the Environment; and provided input for Memoranda to Cabinet.

The aim of the review was to ensure that the NAFTA would be consistent with Canada's commitment to the protection of the environment and to sustainable development, as set out in the "Green Plan" and to ensure that environmental concerns were integrated into each element of the NAFTA decision-making process. It also includes an analysis of the rights of Canadians to determine the level of environmental protection that would be the most appropriate for Canada.

The review examined four areas in relation to NAFTA:

- Environmental provisions: the likely consequences of the environmental provisions of the Agreement;
- Environmental Screening: the impact of NAFTA on Canada's air, water, land and natural resources;
- Industry migration: The possibility of industry and investment leaving Canada for Mexico due to environmental considerations;
- Follow-up Mechanisms: future action on environmental co-operation.

The following general conclusions can be drawn from the review:

Environmental provisions

NAFTA establishes a new benchmark for environmentally sensitive international trade and economic relations. The environmental provisions of NAFTA go well beyond those of any previous free trade agreement.

Environmental Screening

The NAFTA Agreement is not expected to have a measurable impact on Canada's environment, given the anticipated volume of trade between Canada and Mexico. The NAFTA Agreement is unlikely to significantly increase environmental pressures on Canada's air, land, water or natural resources or add to its generation of toxic substances and wastes.

Industry Migration

Canadian business generally does not anticipate that new environmental regulations will adversely affect its overall competitive position in the future. In the majority of cases good environmental policy is good business policy. The research has found that there is likely to be at most, a minimal relocation of Canadian industry due to the projected differences in pollution abatement costs and Mexico has given notice that it is upgrading its enforcement of its environmental protection laws which are already in existence.

Follow-up Mechanisms

The review concludes that the concerns of Canadians will continue to be addressed through the NAFTA as well as through bilateral (Canada-Mexico Environmental Cooperation Agreement), trilateral and international (UN, OECD) initiatives.

The Canadian environmental review considers the positive and negative effects of NAFTA from a purely Canadian environmental perspective. The review is logical and clearly written, however, there is no evidence of a detailed methodology even though there is a section in the conclusions entitled “Environmental review process and method” (page 69).

Both reviews emphasise the importance of follow-up agreements and undertaking a comparison of the environmental laws, regulations and standards within the countries involved in the agreement. In addition, both reviews conclude that there will be overall benefits as a result of the NAFTA agreement.

- Assessing Environmental Effects of the North American Free Trade Agreement. An Analytical Framework (Phase II) and Issue Studies (NAFTA) (CEC, 1999b)

The Final Analytic Framework (Draft) was developed in three distinct phases. In Phase I (1995–1996), an interdisciplinary group of experts undertook research to explore the trade and investment regime that NAFTA put in place, and the ways that NAFTA-associated economic change might relate to the environment. Before beginning Phase I, the CEC undertook a number of background studies in order to set the work in context and to identify appropriate stakeholders. These studies surveyed other attempts to assess the effects of economic activity and trade on the environment, identified other organisations working on

these issues and examined what the public and interested parties believed might be the Agreement's major effects.

Phase II (1996–1997) of the project built on the basic approach developed in Phase I and refined on the basis of review and consultation. Phase II also took into account the work done by international organisations, such as the Organisation for Economic Co-operation and Development (OECD), and by research and other communities in the NAFTA region and beyond, on trade-environment linkages. During Phase II, the Framework was further elaborated using the analysis of case-studies:

- a study on maize in Mexico,
- a study on cattle feedlots in the United States and Canada, and
- a study on electricity in Canada, the United States and Mexico.

The methodological framework is constructed in a linear fashion: i) conceptualisation of the issue - this provides the baseline from which the NAFTA-associated changes can be identified; ii) description of NAFTA rules and institutions and their trade and investment effects; iii) linkages to the environment; iv) environmental impacts and indicators. There are several major arguments which are used as an analytical guide in applying this framework. They are presented as hypotheses, are developed to focus the analysis, and can be supported or refuted as the evidence is gathered. There are six hypotheses which suggest views about how NAFTA might affect the North American environment through economic, social and political processes:

1. *Specialisation and Efficiency*: Does NAFTA-induced liberalisation re-inforce existing patterns of comparative advantage and specialisation, by concentrating production and transportation where it takes place most efficiently?
2. *Regulatory/migratory "race-to-the-bottom"*: Does economy-wide liberalisation associated with NAFTA intensify competitive pressures throughout the region, leading firms to lower their environmental regulatory burden?
3. *Competitive capital and technological modernisation*: Does liberalisation lead to the economic growth that promotes industrial modernisation and reduces environmental stress?

4. *Increased use of environmentally-friendly products:* Do NAFTA's liberalising rules in specific sectors and products lead to the greater use of imported, environmentally superior, products as substitutes for less-clean domestic alternatives?
5. *Private sector-led upward convergence of environmental practice and regulation:* Does NAFTA-associated liberalisation affect corporate practice and subsequent government policy by creating an upward movement of environmental standards and regulations toward a common, higher, regional norm?
6. *Government-led upward convergence of environmental regulation and practice:* Is upward regulatory convergence being led by the governments through individual adjustment, on a negotiated basis, or through NAFTA's trilateral institutions?

The first stage of the methodology is to put the issue in context in terms of the environmental, economic, social and geographic conditions. This contextual analysis is to provide a baseline from which NAFTA-associated change can be identified.

The Environmental Context: This section highlights the general environmental relevance and characteristics of the issue or sector being explored. It is designed to encourage the balanced consideration of a full range of environmental issues and changes that might be associated with a given issue.

The Economic Context: This section provides an inventory of the major economic factors that affect environmental and other changes in the North American economy, emphasising that NAFTA is one of a larger set of economic forces at work.

The Social Context: This section considers the social context and social institutions relevant to the specific issue.

The Geographic Context: This section considers the influence of geographic features in North America, such as climatic factors, population density and physical characteristics that can affect economic activity and the environment.

Within the framework the following key areas are recommended for consideration:

- NAFTA rule changes
- NAFTA's institutions

- Trade flows
- Transborder investment flows
- Other economic conditioning forces (e.g. domestic macroeconomic forces; microeconomic changes in each economy; international macroeconomic factors; changes in weather and climatic conditions).

Various methodologies are used, either alone or in combination. These include qualitative and quantitative methods, including partial and general equilibrium, economic and ecological modelling. In all cases, they seek to integrate the legal, economic, institutional, social, political and ecological factors.

The quantitative methods include the use of specialised interviewing techniques, particularly useful for examining legal, institutional, technological and social factors, as well as components relating to management, production, and policy. Partial or general equilibrium models of the economy are considered to be of limited use for assessing NAFTA's environmental effects. There are important components of the North American economy, such as technology and foreign direct investment, which have not been directly incorporated into existing economy-wide economic models applicable to an assessment of NAFTA effects. However, partial equilibrium models applied to the agricultural sector are used successfully to indicate how changes in trade are affected by macroeconomic forces. It is recommended that the development of quantitative models should focus on generating required data from all NAFTA countries, linking trade with environmental indicators, and identifying how the different processes unleashed by NAFTA-associated trade liberalisation affect the environment in distinct ways.

The framework methodology identifies four main processes through which activity generated by NAFTA's rules and institutions can affect the natural environment. The processes are:

- *Production, management and technology*: inputs to the production process; details of the production process; the physical technology employed in production; strategic management systems; product characteristics; sectoral and geographic concentration;
- *Physical infrastructure*: transportation/transmission infrastructure, service infrastructure, and the overall public and private investment in such infrastructure, the unused capacity

of existing systems, and the creation of, and need for, new systems to handle additional demand;

- *Social organisation*: civil society groups; property rights; culture; migration and associated demographic changes; transnational coalitions;
- *Government policy*: government intervention in the market; jurisdiction over environmental policy; balance between government branches; strength of market-oriented government policies; effects of specific government policies on the environment; environmental surveillance and enforcement; trilateral co-operation at various governmental levels outside the NAFTA institutions.

The environmental pressures and supports flowing from each of these four processes combine with existing environmental conditions to impact on sustainability in particular locations and in specific dimensions of the natural environment. The impact on the state of the four major media of the ambient environment: air, water, land and biota - is measured using selected indicators.

Social Impact

The focus of the case studies is on environmental impact. However, consideration is also given to social impacts. In considering the social impacts of NAFTA trade liberalisation, the study draws on the concept of social capital as networks of associational life and sets of social norm and values. Social capital can affect and be affected by the impacts of the NAFTA-associated changes in economic activity.

The environmental impacts of NAFTA are seen to depend on the way stakeholders operate collectively in networks of social organisations with ecological concerns. These networks will cover a wide range stakeholder groups - business, labour, consumer, community, environmental - and the environmental outcomes will be affected by the balance between the groups and the extent to which their 'voice' influences public decision-making.

The maize in Mexico case study illustrates how social impacts of NAFTA-associated production effects are examined. Maize is a staple in Mexico's diet and production represents 66% of total agricultural output, by value. Some 18 million persons depend on the production

of corn for their livelihoods. Impacts from the US have increased significantly under NAFTA and domestic prices have dropped to international levels.

The study indicates that changing production processes, technologies, social organisation and environmental impacts are closely related and interdependent. With respect to social impacts, the study focuses on three issues: social institutions and the closely related property rights regime; subsistence production and the availability of labour force; migration.

- *Social Institutions and Property Rights*

Shifts in production away from corn and into labour-intensive commodities such as fruit and vegetables could reduce the corn-producing population and erode the traditional social and community institutions responsible for resource management.

- *Subsistence Producers and Rural Employment*

A typical rural household supplies part of its corn production to the market to meet income needs and to purchase inputs. An additional source of income is the sale of labour in local labour markets. Although consumer prices for corn have not dropped, a reduction in producer prices of corn will adversely affect rural employment and income.

- *Migration*

Migration will increase as corn-producing households seek to sustain their household incomes. This can result in labour shortages at the household level, which could erode the ability to monitor and maintain agricultural practices which ensure sustainable traditional agriculture. Lack of local employment opportunities and off-farm income and the associated outward migration will weaken local institutions and relationships.

The direct social impacts of the changes in corn production and trade will also have environmental consequences. Migration reduces households' and communities' capacity to maintain social conservation infrastructure, and reduces the capacity to manage water resources, while the disruption of social organisation can affect capacity to maintain adequate management of genetic resources.

Conclusions

The approach is intended to contribute to an increased understanding of the possible environmental effects of trade and related economic and institutional developments in North America. It is largely qualitative and relies on scenario-appraisal. The report "does not provide a conclusive assessment of all of NAFTA's actual environmental effects. The lack of comprehensive baseline data on the relevant linkages and the short time NAFTA has been in effect means that such a definitive assessment is not yet possible" (CEC 1999 pp.8).

4.4 European Union Studies

- 1992: The Environmental Dimension (1988)

The Task Force Report on the Environment and the Internal Market was undertaken in 1988, and represents an early example of an environmental review of a trade agreement. The study aimed to identify and consider the implications of environmental issues arising from the completion of the Internal Market and to advise on policy implications.

In terms of the overall structure, the report first describes the context in terms of the implications of the completion of the Internal Market and the current state of the Community environment. It then turns to a discussion of the environmental impacts of the completion of the Internal Market in terms of so-called static and dynamic effects. It then identifies regional impacts, differentiating between areas of growth, industrial decline and peripheral regions. It also reports on the methodology for, and results of, a modelling exercise which aimed to assess the impact of the Internal Market on emissions of SO₂ and NO_x. Finally, it identifies a range of policy responses (environmental and economic) which could serve to mitigate the environmental and economic costs.

In terms of method the study has a number of defining characteristics:

- The environmental analysis was based on a comprehensive analysis of the economic impacts which included an regional dimension (focused on the 'peripheral' regions);
- The method relied heavily on a detailed understanding of the 'context' in terms of identifying the economic and environmental characteristics of the regions of the EU and thereby the likely economic and environmental impacts;

- The analysis included an assessment of both the sectoral and spatial distribution of environmental impacts;
- In terms of data sources, the study largely drew on existing data sources. However it did undertake modelling of the impact on sulphur dioxide and nitrogen dioxide emissions as an illustrative exercise;
- The analysis uses the framework used in the 'Economics of 1992' report – which distinguished between 'static' and 'dynamic' effects.

The method of approach for assessing the 'static effects' was first to describe the current role of border 'barriers', which included border checks (control movements of hazardous and nuclear waste); technical standards (ensure that products are environmentally acceptable); fiscal provisions (which may encourage environmentally positive or discourage environmentally negative behaviour).

The study then hypothesised, on the basis of mainly qualitative information, the potential environmental impacts of the removal or modification of these controls. The method drew on an existing analysis, which ranked industrial sectors according to the importance of technical (non-tariff) barriers. It concluded that there was considerable potential for negative impacts on environmental quality, particularly in relation to the control of waste and products with environmental standards, the preclusion of fiscal measures aimed at enhancing environmental performance, and an increase in transport activity.

In relation to dynamic effects, the method of approach again drew on an existing sectoral analysis which ranked industrial sectors according to the likely effects of increased market integration by classifying them as significant, minor or neutral. The study then undertook an analysis of the likely impacts of the Internal Market on those sectors for which the environmental impacts were judged to be significant. The sectors considered were energy, transport, tourism, agriculture and waste.

Each sector was examined on a case-by-case basis with the analysis first identifying how the Internal Market would affect the sector in question before going on to a mainly qualitative exploration of the impacts. The analysis drew as much as possible on quantitative data sets

(e.g. CO₂ emission projections for different economic growth scenarios or the trends in consumption of nitrogenous fertilisers) in order to reach and substantiate its conclusions on impact.

The study considered both short and long-term effects and used case studies as a means of illustrating wider concerns. Its conclusions emphasised that changes in economic activity resulting from the completion of the Internal Market would be most felt in relation to air pollution (from energy and transport), land-use impacts, and threats to habitats.

The analysis of the spatial dimensions of the Internal Market constitutes a key element of the method of approach. The study focused on the impact on peripheral regions (Objective 1) and commissioned an economic study in order to identify the 'winners' and 'losers' amongst the EU's regions. Particular attention was given to the peripheral (Objective 1) regions as these are the economically and most socially deprived with limited resources available with which to protect environmental assets.

The analysis starts with the question 'where might growth occur' and categorises the EU regions according to characteristics which were considered likely to 'help' or 'hinder' convergence.

The study then provides an overview of the 'state' or 'context' (economic, social and environmental) of Objective 1 regions (vulnerable in terms of low income, poor infrastructure and inadequate environmental management) and Objective 2 regions (vulnerable due to the risk of being marginalised economically and socially).

The analysis concludes that the environmental (and implicitly the social) effects of the Internal Market will depend on the capacity of the regions to transform their economies and environments.

The study models the impact of the Internal Market on sulphur dioxide and nitrogen oxide emissions. It makes use of five different models in order to analyse the separate stages in the linkage between economic growth, environmental impacts and the policy response. This exercise was carried out for a selected number of member states on the basis of which extrapolations were made for the EU as a whole.

The exercise concluded that in the face of increases in the levels of SO₂ and NO_x that welfare would not be increased without new flanking measures. In the absence of the latter, ecological thresh-holds will continue to be exceeded. In terms of methods, the study concludes that the findings of the modelling exercise underline the need for an analytical approach.

Conclusion

This study illustrates the need to focus on the spatial and sectoral dimensions and to identify the economic effects prior to assessing environmental effects. The use of the dynamic/static framework is conceptually useful, although the analysis itself shows that in reality the effects are hard to untangle as the impact of a removal of a technical barrier – e.g. opening up of public procurement – is influenced by dynamic (competitive) effects.

Overall, the methodology combines an analysis of economic and environmental impacts with an understanding of the existing economic and environmental characteristics of the regions and sectors in question. The analysis is underpinned by information covering a range of static and dynamic effects. Furthermore, the study's assessment of convergence characteristics as a means of understanding a region's likely response highlights the need to draw up a typology of countries/regions in order to characterise their likely economic response to a trade liberalisation scenario.

- The Maastricht Treaty and the Winnipeg Principles on Trade and Sustainable Development (1995)

This study was undertaken by the International Institute for Sustainable Development (IISD), a private non-profit organisation supported by the Canadian government which aims to promote sustainable development in decision-making.

The case study reviews the Maastricht Treaty, vis a vis its compliance with what are generally referred to as the 'Winnipeg Principles'. They were endorsed by an international Working Group, convened by IISD, which sought to identify principles for linking trade, environment and development. The seven principles are efficiency and cost internalisation,

equity, environmental integrity, subsidiarity, international co-operation, science and precaution, and openness.

The analysis is primarily focused on the internal trading regime i.e. between Member States, rather than its external trading arrangements between the EU and non-Member States.

The study is qualitative in approach. It combines a review of the constitutional, legal, policy social and environmental policy context of the Maastricht Treaty, with an assessment of the EU's performance in relation to each of the seven principles. Overall, whilst concluding that there is a significant degree of convergence between the Winnipeg principles and the practice of the EU, the report identifies key weaknesses in relation to the principles of efficiency, subsidiarity, science and precaution, and openness.

Conclusion

The 'method' adopted in this study was to develop an understanding of the implications of the Maastricht Treaty in order to review performance against the principles of sustainable development. As discussed above the report is wholly qualitative and draws on considerable in-depth understanding of both the Treaty and the wider constitutional, economic and political context. The report lacks a framework other than in terms of the seven principles which are derived from an understanding that sustainable development encompasses economic, environmental and social dimensions.

4.5 Other Trade Related Studies

- Trade Liberalisation in Less Developed Countries

Unilateral trade liberalisation has been a central part of the structural adjustment and economic reform programmes adopted by many developing countries in the 1980s and 1990s and there is now a sizeable literature on the ex post assessment of the impacts of these trade liberalisation measures.

The evidence on the impact of trade reforms is mixed. This is true whether reforms are evaluated according to the amount of liberalisation actually undertaken or the impact of economic growth (see Corbo et. al., 1992; Greenaway and Morrissey, 1993, 1994; McGillivray and Morrissey, 1999; Mosley et. al., 1991; Papageorgiou et. al., 1991). In a

detailed study of trade reform episodes on some 20 countries mostly developed or newly industrialising, during the 1960s and 1970s, Papageorgiou et. al. (1991) concluded that liberalisation tends to be associated with improved economic performance and growth. Although the econometric evidence on the links between liberalisation episodes and growth is weak (Greenaway et. al., 1998) such evidence must be interpreted with extreme caution. Cross-country studies are limited to using simple measures of liberalisation that are often inaccurate and misleading (Milner and Morrissey, 1999). Onafowora and Owoye (1998), in a time series analysis of 12 African countries over 1963-93, find evidence that exports are positively related to growth. Noorbakhsh and Paloni (1998) also find an association between liberalisation and export growth in African countries.

Table A4.9 presents an overview of the findings on the impact of trade liberalisation for the 18 studies listed. Two studies (both of Uganda, 10 and 12) found positive effects on agricultural production, although only one identified generally positive effects for other indicators, but two found a negative effect (9, for Nigeria, and 18 for a range of countries). One cross-country study had mixed results (15). Manufactures prices usually decline after (unilateral) liberalisation, with mixed impacts in most studies. What the range of studies show is that overall impacts will depend on how relative prices change and the relative responsiveness of different sectors. Thus, while Bennell (1998, study 14) expresses concern about the impact of economic liberalisation in sub-Saharan Africa, he finds that in some countries it appears to be associated with manufacturing decline but in others the sector responds well. Grenier et. al. (1999) for Tanzania and Rudaheranwa (1999, study 12) for Uganda, find no evidence that manufacturing output declined following liberalisation.

1. Flores (1997); Brazil, (1990-96),
2. Moreira and Correa (1998); Brazil (1986-96),
3. Kate (1992); Mexico, (1985-89),
4. Dijkstra (1996); Nicaragua, (1988-94),
5. Cuthbertson (1997); Sri Lanka,
6. Fane (1996); Indonesia,
7. Kambhampati and Howell (1998); India, (1991-96),
8. Bandara and McGillivray (1998); cross-country analysis; South Asia (1971-97)
9. Colman and Okorie (1998); Nigeria; (1970-92),
10. Belshaw, Lawrence and Hubbard (1999); Uganda, (1986-97),
11. Collier (1997); Uganda, (1987-95),
12. Rudaheranwa (1999); Uganda, (1987-97),
13. Mosley and Weeks (1993); cross-country (Sub-Saharan African countries) (1980-90),
14. Bennell (1998); cross-country analysis (mainly Sub-Saharan African countries), (1981-91),
15. Guillaumont (1994); cross-country analysis (African countries), (1970-88),
16. Greenaway (1993); Cross-country analysis, (reform periods vary)
17. Greenaway (1998); cross-country analysis, (reform periods vary)

18. Duncan and Jones (1993); cross-country analysis (1980-91),

Table A4.9 Impact of Trade Liberalisation (summary of selected studies)

| Study | Food crops | Cash crops | Manuf. | Exports | Imports | Total Output | Labour (N) | Income | Prices |
|-------|------------|------------|--------|---------|---------|--------------|------------|--------|--------|
| 1 | | | | + | + | | | | |
| 2 | | | mix | + | + | | -ve | | -ve |
| 3 | | | | + | + | | | | -ve |
| 4 | | | mix | + | + | -ve | | mix | |
| 6 | | | | | | | | | -ve |
| 7 | | | | | | + | mix | | |
| 8 | | | + | + | | + | | | -ve |
| 9 | | -ve | | -ve | | | | mix | + |
| 10 | + | + | | | | | | | + |
| 12 | + | + | + | Mix | + | + | | | -ve |
| 13 | | | | + | | | | + | |
| 14 | | | mix | | | | | | |
| 15 | mix | mix | | | | | | | -ve |
| 16 | | | | + | | mix | mix | | -ve |
| 18 | -ve | + | | | | | | | |

Notes: Studies are as listed in Table 9.1a. Coding is '+' where effect was positive, '-ve' negative and 'mix' indicates mixed evidence - either the impact of trade policy reforms impacted differently across sectors/countries or over time. Most price declines refer to manufactures (imported and domestically produced) as a result of removal of trade restrictions following the trade liberalisation. The exception to this is study (15) which refers to agricultural producer prices, thus the -ve indicator on prices suggests a disincentive to producers of these agricultural products. Labour (N) refers to employment.

The impact on exports tends to be positive (Nigeria being an exception, study 9) although imports also tend to increase following liberalisation, so the net impact on the trade balance is indeterminate. Taking total output as a measure of the impact on growth, evidence for Uganda and South Asian countries is favourable, and Nicaragua (study 4) provides the only evidence of liberalisation actually reducing output. Few studies address the impact on employment and wages (incomes), and those that do typically find mixed results. The overall story is mixed, within and across countries, although Greenaway (1998), a review that does not report indicators, concludes that while outward orientation and exports contribute to growth, trade liberalisation has not consistently led to increased exports. Partly this is because the extent of liberalisation actually implemented (in the study periods) may have been quite limited, and partly it is because economies are subject to external shocks that make it difficult to evaluate the impact of trade liberalisation.

Conclusion

These studies refer to unilateral liberalisation (often during a volatile external environment), whereas the concern here is more specifically with multilateral liberalisation. Specifically, for developing countries in particular, unilateral liberalisation is in a context of given world

prices (the price changes in Table A4.9 are domestic prices); they may be declining or rising, but they are beyond the control of developing countries. Many multilateral trade liberalisations will impact directly on world prices. Where the prices of goods exported by developed countries increase, and/or access to world markets is enhanced, the impact will be beneficial. However, where the prices of imports are increased, or where local production is constrained (perhaps through reform of TRIMs or TRIPs), the impact on developing countries may be adverse. In general, any multilateral trade related reform will have distributional effects – there will be winners and losers. The belief of reformers may be that the impact on global welfare will be positive, but impact analysis should identify sectors or countries that will experience losses (and may warrant compensation or support).

- Freight and the Environment: Effects of Trade Liberalisation and Transport Sector Reforms (OECD, 1997c)

In September 1995, the OECD Joint Session of Trade and Environmental Experts initiated a study examining the environmental effects of international transport of goods attributable to trade liberalisation and liberalisation/structural reforms in the transport sector itself.

The study looked at the extent to which trade liberalisation is contributing to increased pressure on the environment from the growth in transport, and at two questions in particular:

- i) are the changes in international freight movements associated with trade liberalisation a significant factor?
- ii) have the reforms undertaken to date towards freer access and increased competition contributed to greater pressure on the environment through negative scale effects or have the economic efficiencies they have engendered also been associated with positive environmental gains?

The review considered shipping, air cargo, trucking, rail, pipelines and inter-modal terminals. Stress on the environment arising from freight transport was assessed by measuring the volume (weight) of traded goods and the distances that such goods are carried. Attention was then paid to the particular environmental stresses imposed by different modes of freight used to transport the total volume of goods from their origin to their destination.

Transport affects the environment through the mechanisms of air pollution, global climate issues, water pollution, accidents and land-use planning. Data collected on air pollution presented the clearest comparison, with trucks being more polluting than rail or ships. As regards noise pollution, the data suggested that the mid-point of the range of external environmental costs for road noise was twice as high as for rail. In addition, social costs of other external environmental impacts were also higher for road than for rail.

Using an international trade model, the effects of Uruguay round commitments to reduce trade barriers and trade distorting measures were simulated. The results indicated that overall, intercontinental sea transport will increase slightly, but the magnitude and direction of these changes will vary by export or import flow, commodity sector and region. Sectoral projections also show much greater rates of growth in international transport for all manufactured goods than for agriculture and mineral commodities. However, changes in international transport associated with the implementation of the Uruguay Round are small compared to those resulting from economic growth.

Conclusions

In analysing the relationship between trade liberalisation, international transport and the environment, the effect of trade liberalisation on both quantities and distances transported needs to be considered. The enforcement of social regulations (e.g. driving and rest times) also seems to be a key factor for intermodal competition.

There is concern over the negative environmental impacts of a rise in freight activity. This is due in part to the fact that road haulage and heavy goods vehicles are carrying most of the increment. Energy use and various air pollutants are markedly heavier for trucking than for other modes of freight transport.

Liberalisation of the transport sector needs to be undertaken at the same time for each mode of transport. It needs to be accompanied by a framework of social, environmental and safety restrictions to harmonise inter-modal competition. In the absence of such harmonisation there is strong evidence to suggest that there will be a shift away from the more environmentally friendly forms of transport such as rail, inland waterways, coastal shipping and pipelines.

- Sustainability Reviews: Lessons and Potential for the Millennium Round: The Chilean Experience (UNEP, 1999)

The paper advocates the use of a Sustainability Review (SR) in helping to integrate and mainstream sustainability concerns in trade negotiations which is defined as an "analytical and policy-orientated process for predicting, analysing and interpreting the significant impacts of free trade policy and agreements on Sustainable Development". The sustainability review is applied to assessing the environmental effects of trade liberalisation on the mining sector in Chile.

In relation to the scope of a sustainability review, the study is not restricted to the economic, environmental and social dimensions of sustainable development, but also includes transparency and accountability of the system. In this regard a distinction is made between the 'trade and environment' approach as embodied by the WTO's Committee for Trade and Environment and a more integrated approach where trade reforms support the goal of sustainable development.

The method of approach used involved 2 inter-related stages:

- *Economic assessment*: the study assessed the economic impacts in relation to two scenarios a) business as usual and b) trade liberalisation. It compared growth achieved under the trade liberalisation scenario with the base-line scenario;
- *Environmental and social assessment*: the case mainly focused on the translation of economic into social and environmental impacts. Headline indicators are recommended to measure the significance of the environmental and social impacts associated with economic changes.

The impacts of different trade liberalisation measures in relation to natural resources, air water and bio-diversity are ranked as *positive*, *negative* or *uncertain*. These are presented as a matrix which correlates trade-related economic effects (sectoral growth, diversification of exports, technology transfer) with environmental media. In addition, the study attempted to determine the overall net environmental impact of each of the trade effects.

Overall, the study concluded that the environmental impact of sectoral growth and diversification of exports was mainly negative. The impacts of technology transfer are positive, other than in relation to natural resources where both positive and negative impacts were identified. Overall the study concludes that the net impact is negative other than in relation to 'air', where some positive impacts were identified.

Lessons

The study highlights a number of constraints to be considered in developing an SIA methodology. These include:

- constraints caused by lack of environmental data;
- difficulty of separating the influence of trade from other factors (cause and effect);
- difficulty of ascertaining a net effect due to the contradictory nature of the effects.

It also identifies a number of key lessons:

- the need to undertake an economic impact assessment as the first step of a sustainability review;
- the need for a qualitative approach based on in-depth analysis in view of the absence of data;
- the need to develop a multi-dimensional matrix analysing economic, social and environmental systems against which to measure the main types of effects;
- need to consider cumulative effects;
- need to involve all stakeholders.

4.6 Summary and Conclusions

This appendix provides a detailed examination of case studies which have been completed on the impact of trade agreements and trade related measures. We have not reviewed multilateral environmental agreements (MEAs) since these do not deal directly with trade. However, this body of literature may become relevant in the next phase of the SIA study, where it is necessary to undertake regulatory impact assessment of the New Round issues. It should also be noted that there is a growing body of unpublished case study work on Mediterranean regional free trade zone proposals, trade related studies under the auspices of UNEP, and on the multilateral investment agreement proposal initiated by OECD.

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