Systematic Review - Protocol

Main title	What is the evidence of the impact of agricultural trade liberalization on food security in developing countries?
Review group	DFID Systematic Review
Section	PROTOCOL
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Advisory group	3ie, EPPI, Centre for Evidence-Based Conservation, DFID
Conflicts of interest (if any)	None reported
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1. Background

The objective of this systematic review is to examine the evidence of the impact of agricultural trade liberalization on food security in developing countries. To our knowledge no systematic review in this area has been performed to date. Food security is critical to the well-being of people in developing countries, and agricultural trade liberalisation has been a prevalent policy trend. With confusion persisting over the impact of agricultural trade liberalisation policies on food security, this review will contribute greatly in clarifying the issue. It could also possibly identify the contexts under which such policies may or may not contribute to achieving food security or even to increasing food insecurity. Some of the most commonly used types of indicators in the assessment of food security conditions include those related to: food production; income; total expenditure; food expenditure; share of expenditure on food calorie consumption, and nutritional status. This review will examine evidence of impact where clear links are made between trade liberalization, these indicators and food security (not just food supply or agricultural production), and if adequate data presents itself, will look at the impact on any identified sub-groups such as those based on gender, socioeconomic levels, households or communities.

1.1   What is food security?

Food security is commonly defined as occurring when the nutritional needs of a country or population are met consistently (see Appendix 1 for a fuller definition).

The UN's annual report on global food security confirms that more than one billion people – a sixth of the world's population – are chronically undernourished.

With food demand set to double by the year 2050, the issue of food security is high on the political agenda as evidenced by a number of recent high-level summits.

Following on from the first G8 Agriculture Ministerial in April 2009, the G8 group of industrialised nations committed funding of $20 billion over 3 years to the L'Aquila Food Security Initiative (ASIF) in July 2009. In a statement issued from the L'Aquila session, world leaders agreed 'to act with the scale and urgency needed to achieve sustainable global food security. To this end, we will partner with vulnerable countries and regions to help them develop and implement their own food security strategies, and together substantially increase sustained commitments of financial and technical assistance to invest in those strategies.'

As part of this commitment, it was also stated that 'Open trade flows and efficient markets have a positive role in strengthening food security. National and regional strategies should promote the participation of farmers, especially smallholders and women, into community, domestic, regional and international markets. Markets must remain open, protectionism rejected and factors potentially affecting commodity price volatility, including speculation, monitored and analysed further. We are therefore committed to reduce trade distortions and refrain from raising new barriers to trade and investment and from implementing WTO-inconsistent measures to stimulate exports. To this end, we aim at an ambitious, comprehensive and balanced conclusion of the Doha Development Round and call for renewed, determined efforts to bring it to a timely and successful conclusion.'

1.2   What is trade liberalization?

Trade liberalization is the removal of or reduction in the trade practices that restrict trade, unilaterally or multilaterally, including the dismantling of tariffs as well as non-tariff barriers. See Appendix 1 for a fuller definition.

It is generally agreed that the impact of agricultural trade liberalization on a particular country depends on the magnitude of two effects: terms-of-trade effects and efficiency effects.

The terms-of-trade effect arises because a reduction in agricultural support will result in an increase in the world prices of the products subject to tariffs or subsidies, while domestic prices fall. Tariffs reduce the demand for the protected products on world markets, so removing them will increase import demand and world prices. Subsidies tend to increase production and exports of the subsidized products, so removing them will push up world prices. The increase in world prices will affect a country's real income differently depending on whether it is a net exporter or a net importer of the good whose world price has risen. For net exporters of a certain product, this price increase makes them better off; conversely, net importers of a product would be harmed. Another key factor determining how world prices change in response to changes in agricultural support is the degree of substitutability between foreign and domestic products. The second effect is that a reduction in support for agricultural producers will improve economic efficiency, because the support caused more resources to be used in agricultural production than would otherwise be the case. Therefore, a reallocation of resources from the agricultural sector to other sectors of the economy would tend to improve real income, although it is theoretically possible that this reallocation could be harmful, depending on whether pre-existing distortions in other sectors discouraged or promoted production of those goods.

The terms-of-trade effect and the efficiency effect can therefore, either reinforce each other or work in opposite directions: for example, a country could be worse off as a result of widespread agricultural liberalization if its terms of trade deteriorate and the magnitude of this effect exceeds any improvement in efficiency.
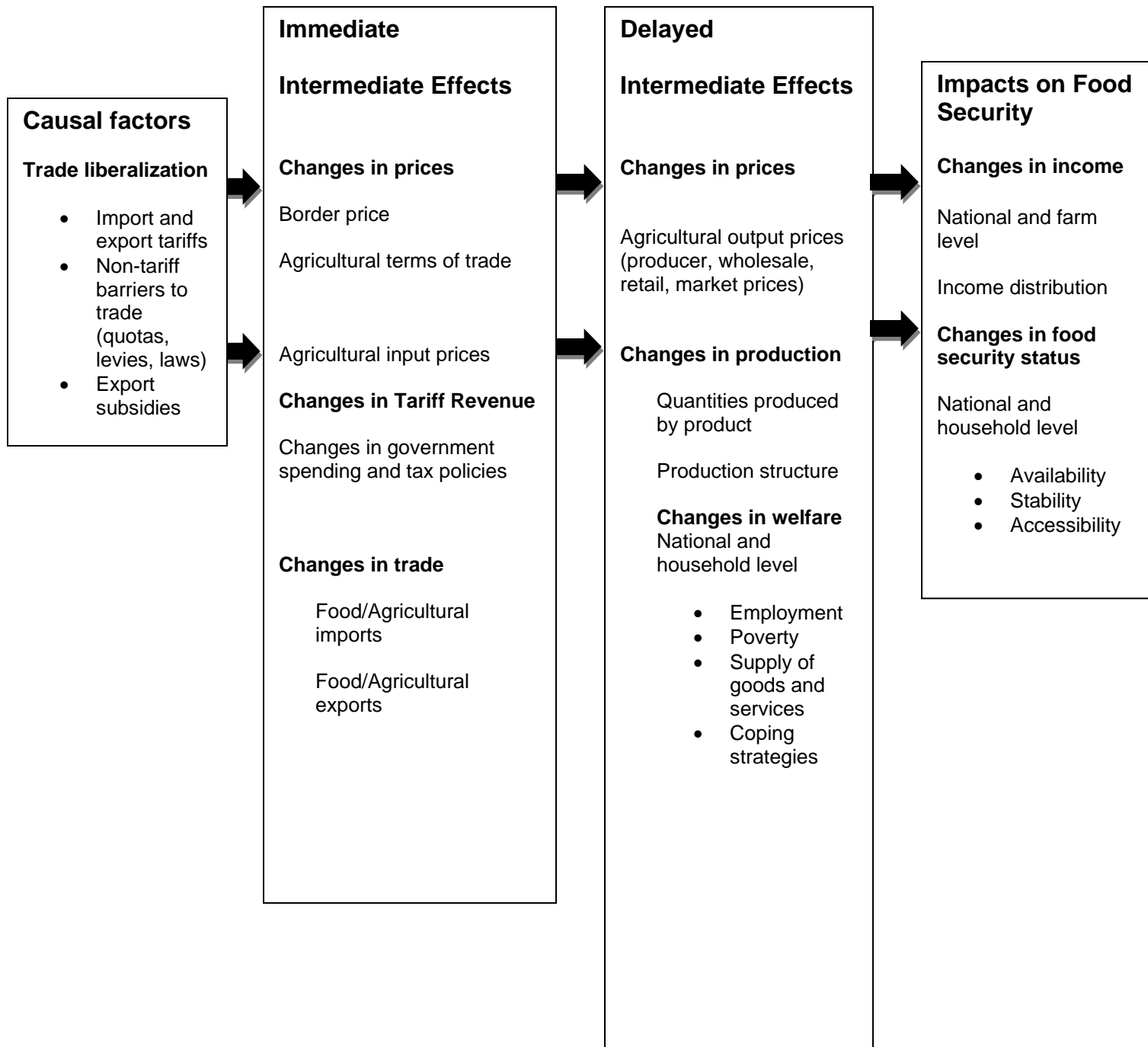
In view of the high-profile commitment to trade liberalization efforts, the potential positive or negative impacts of such policies on food security, particularly for the developing countries, needs assessing. This review will focus on studies following the 1986 Uruguay Round of the GATT which led to the creation of the current World Trade Organization (WTO). The WTO replaced GATT in 1995 and is committed to helping trade flow as freely as possible on the grounds that openness to trade contributes to economic growth and well-being. It will exclude studies on the impact of trade protection policies and look at the impact evidence of agricultural trade liberalization policies only on the food security of developing countries. These policies include the reduction or removal of export subsidies, tariffs, and quotas, of trade-restricting taxes and laws and other non-tariff barriers.

1.3 How are food security and trade liberalization linked?

The argument used by the WTO, for example, that openness to trade contributes to economic growth and is in turn beneficial for poverty reduction and food security seems to be well-grounded in conventional economic theory, and is supported by several empirical studies (Sapa & Ivans, 2009). However, the apparent lack of success in stimulating development in many rural economies following economic and trade policy reform programmes has resulted in a wide-ranging debate that has recently broadened to consider the impact of not only domestic structural adjustment programmes, but also of globalization forces, including the global trade reform agenda. A 2002 World Bank report reviews the evidence as to whether globalization supports poverty reduction and concludes that whilst a category of "new globalizers" are benefiting from greater integration into the world economy, a significant group are becoming more marginalized. There have been a number of country-level case studies undertaken on trade reform and food security within developing countries. For instance, Thomas & Morrison (2006) undertook a 15-country case study that explored the experiences of each individual country's agricultural trade-related reforms and food security in

low-income countries. Their study covered: (1) the motivations for, and types of, reform implemented in these countries; (2) the impact of reform on intermediate variables, agricultural prices, production and trade; (3) the relationship between changing agricultural sector performance and national-level and household-level food security indicators; and (4) the policy implications of the findings. Their results suggested that, for countries at early levels of development, trade reform can be particularly damaging to food security within the short to medium term, if introduced without a policy package designed to offset any negative effects of liberalization.

Figure 1. Causal factors, intermediate effects and food security

Causal factors

Trade liberalization

- Import and export tariffs
- Non-tariff barriers to trade (quotas, levies, laws)
- Export subsidies

Immediate Intermediate Effects

Changes in prices

Border price

Agricultural terms of trade

Agricultural input prices

Changes in Tariff Revenue

Changes in government spending and tax policies

Changes in trade

Food/Agricultural imports

Food/Agricultural exports

Delayed Intermediate Effects

Changes in prices

Agricultural output prices (producer, wholesale, retail, market prices)

Changes in production

Quantities produced by product

Production structure

Changes in welfare
National and household level

- Employment
- Poverty
- Supply of goods and services
- Coping strategies

Impacts on Food Security

Changes in income

National and farm level

Income distribution

Changes in food security status

National and household level

- Availability
- Stability
- Accessibility

Anderson and Neary (2005) used an aggregation procedure to address questions on trade and welfare implications resulting from trade policies, and Feenstra (1995) used a partial equilibrium model for the same purpose. Croser and Anderson (2010) favour the use of scalar indices – the instrument

trade reduction index and the instrument welfare reduction index, as they argue that these more accurately allow the addition of complex factors. While Timmer (2005) argues that real domestic rice prices can be used as a proxy for food security, the extent to which market prices impact household incomes is clearly an important issue (Brookes, 2003). In addition the extent of food self-sufficiency affects the degree of independence of market fluctuations, and the analysis also needs to take account of the impacts of policy at different stages of agricultural development and productivity.

If we take Thomas & Morrison's (2006) study as one of the examples of literature types that would be included in the systematic review, then the evidence base will consist of a mixture of both quantitative evidence (food prices) and qualitative evidence (policy documents & sentiment analysis). The use of computable general equilibrium models to interpret and predict effects is one approach.

In general, a review could adopt a fairly standard classification of the available methodological approaches according to whether they are (a) descriptive and/or qualitative; (b) data based and/or survey related; or (c) general equilibrium modelling-based approaches. Narayanan & Gulati (2002) provide a summary of methodological approaches focusing on the implications of globalization for smallholder agriculture.

1.4   Review Questions

Primary Objective
The objective is to provide a systematic review of the literature to provide a detailed review of "what is the evidence of the impact of agricultural trade liberalization on food security in developing countries?"

Secondary Objectives
We will identify, and synthesise where possible, the available evidence addressing the following questions:

i) What studies have been done on the impact of agricultural trade liberalization on food security in developing countries?

ii) What did these studies find about:
    a) The impact of agricultural trade liberalization on the food security of individual / household, community, regional and national levels?
    b) The gender impact?
    c) The impact at various socioeconomic levels?

iii) What do the findings suggest about appropriately measuring the impact of agricultural trade liberalization on food security?

iv) Are there variations in impacts of different types of agricultural trade liberalization policies on food security?

v) What are these variations and are they measurable in terms of impacts on different groups of people and indicators (such as food production; income; total expenditure; food expenditure; share of expenditure on food calorie consumption; nutritional status; food prices, and wages)?

vi) If any, what agricultural trade liberalization policies are associated with a positive impact on food security in developing countries?

1.5   Review Team

Dr. David Hemming (project manager, study quality assessment, write-up) will manage the CABI-led systematic review. David is the manager of the CAB Review product since its origins in 2006, overseeing the process of publishing up to 75 peer-reviewed review articles per year.

Professor Alexander Sarris (agricultural economics technical advisor, write-up) is currently based at the Department of Economics University of Athens, Athens, Greece. Alexander has 30 years' experience in agricultural economics and recently held the title of the Director, Trade and Markets Division, Food and Agriculture Organization of the United Nations. Alexander has published extensively on agricultural economics including three recent publications on the topic of trade liberalization and food security (Sarris & Morrison, 2010; Sarris *et al.* in press; Conforti & Sarris, 2010).

Janice Osborn (literature search, study quality assessment, write-up) is a senior content editor in Social Sciences (previously the team leader for Agricultural Economics). Janice has worked in the agricultural economics and rural development field since obtaining her BSc in Agricultural Economics in 1984. Janice has become well-versed in the trends and developments in both subject areas during her 25 years at CABI and is the CABI expert for Social Science literature databases.

Dr. Philip Roberts (literature search, study quality assessment, data extraction, quantitative analysis and write-up, general systematic review methodology consultant) is Business Innovations Executive at CABI. Philip holds a PhD (supervised by Prof. Andrew Pullin of the Centre for Evidence-Based Conservation) in ecological systematic review methodology. Philip was lead reviewer on three ecological quantitative reviews (CEBC 2007; 2006; 2005; 2004), subsequently publishing two in peer-reviewed journals (Roberts & Pullin, 2008; 2007). Philip also assessed the need for a more evidence-based approach within the Environmental and Ecological subject area publishing a major critique of existing review methodology in this subject area compared to the Cochrane methodology employed in medicine (Roberts *et al.* 2006).

Julien Lamontagne-Godwin (data extraction, quantitative analysis and write-up) is CABI consultant for knowledge management. Julien has recently

completed the methodology and evidence analysis for "The World Bank and African Development Bank Sustainable Land Management Portfolio for Sub-Saharan Africa". This project required the development of a Sustainable Land Management Portfolio Review methodology, which combined quantitative and qualitative assessment approaches, including Rio Markers, Relevant Activity Codes, and Land Degradation Strength Rating analysis. Since completing an MSc, Julien has 4 years experience of review and quantitative analysis.

2. Methods

The systematic review aims to synthesise both quantitative and qualitative information relating to the impact of agricultural trade liberalization on food security in developing countries.

The systematic review with be conducted by the review team of CABI and University of Athens for UK DFID to the Cochrane Collaboration (Higgins & Green, 2009) and NHS CRD standards (NHS, 2001).

Our review processes, including our electronic search string, inclusion and exclusion criteria, coding sheets and synthesis, will all be piloted initially and discussed amongst the review team before these tools are finalised. Any modifications will be noted and reported in the final report.

2.1   Criteria for Study Inclusion

The study selection criteria for this question are as follows:

- *Country of Research Focus*: Only those countries classified as "Developing countries", by World Bank data (see Appendix 1). However, we will include any studies found that cover countries that were developing countries during the agreed period of study but are no longer, such as South Korea, where these are readily identifiable.

- *Interventions*: The key interventions of interest include: agricultural subsidies (whereby countries attempt to protect their agricultural industries from outside competition by creating artificial low prices for their agricultural goods); taxes and tariffs (import and export); non-tariff barriers (such as regulatory legislation and quotas); and inter-government managed trade agreements (such as the North American Free Trade Agreement (NAFTA)) and any governmental market intervention resulting in artificial prices. All types of agricultural trade liberalization policies attempting to reduce any such interventions will be included in the review where they have an impact on food security.

Most states conduct trade policies that are to a lesser or greater degree protectionist. A truly liberalized trade regime allows traders to act and or transact without interference from government. According to the law of comparative advantage, such a system means trading partners can see mutual gains from the trade of goods and services. Under this system, prices are a reflection of true supply and demand and are the sole determinant of resource allocation. The free trade that results from this form of trade policy differs from the trade outcomes of policies where the allocation of goods and services amongst trading countries are determined by artificial prices that may or may not reflect the true nature of supply and demand. These artificial prices are the result of protectionist trade policies, whereby governments intervene in the market through price adjustments and supply restrictions. Such government interventions can increase as well as decrease the cost of goods and services to both consumers and producers. Trade policy can affect both tradable and non-tradable items, such as perishable foods – for the purposes of this systematic review we will consider any effects that impact food security.

- *Outcomes*: Indicators in the assessment of food security conditions include those related to: food production; income; total expenditure; food expenditure; share of expenditure on food calorie consumption, and nutritional status (quantitative measures of food security). This review will examine evidence of impact where clear links are made between trade liberalization, these indicators and food security. Other quantitative measures of food security could therefore include food prices or wages, for example. It is recognised that elasticity means that price and income alone may not represent full measures of food security. The food security scale (see Kennedy, 2002) and household survey data also include qualitative measures of food security, e.g. interviews with farmers, officials, focus groups, expert surveys (Delphi technique) etc. (see Wolfe and Frongillo, 2001). If adequate data

presents itself from the qualitative and/or quantitative measures, the review will look at the impact on any identified sub-groups such as those based on gender; socioeconomic levels; households or communities.

- *Study Inclusion Criteria*: We will include empirical impact evaluations, defined as comparative or non-comparative studies that set out to measure impact (i.e. outcomes, results or effects), and relevant qualitative case studies and relevant quantitative correlation studies. Both quantitative and qualitative studies will be included in this systematic review. However, for inclusion in a meta-analysis quantitative data is required.

- **Studies to be Excluded**:
  1. Any research focused on developed countries.
  2. Any research solely focused on "food supply chain" and "food safety".
  3. Review articles will be excluded from quantitative statistical analysis (unless the original research can not be obtained and a summary statistical can be reliably obtained from the review). However, they will obviously be key sources for study identification.

- **Language of the studies**: The language of the publication will not result in the study being excluded from the review, however, translation of studies is not viable within the time period of the Systematic Review. We will provide a list of non-English studies in the report appendix, with those studies that have English summaries being included within the systematic review process.

We will review the above inclusion/exclusion criteria after a 10% sample is complete at both "Title & Abstract" and "Full-Text" literature filtering stage, to assure that we are capturing all possible research for the systematic review. Any changes to these criteria will be documented in the full systematic review report.

2.2 Search Strategy

The following search strategy will be followed and adapted to the search requirements of each individual database:

Specialist systematic review databases:
- Campbell Library
- Cochrane Library

Specialist literature databases:
- Agricola
- CAB Direct

- EBSCO (Econlit & Food Science Source subsets)
- IDEAS (Economic & Finance Research – **this includes RePEc database**)
- ISI Web of Knowledge (Social Sciences Citation Index subset)
- Research4Development (R4D) - the portal to DFID centrally funded research
- Dissertations Express (http://disexpress.umi.com/dxweb)
- Networked Digital Library of Theses and Dissertations (NDLTD) (www.theses.org)
- British Library of Development Studies
- Eldis (Google Development websearch)
- Ageconsearch (http://ageconsearch.umn.edu/)USDA's Economic Research Service site

Reference on the following sites:
- Food and Agriculture Organization of the United Nations (FAO)
- The International Food Policy Research Institute (IFPRI)
- International Centre for Trade and Sustainable Development (ICTSD)
- International Food and Agricultural Trade Policy Council (IPC)
- International Fund for Agricultural Development
- United Nations Conference on Trade and Development (UNCTAD)
- World Bank
- World Trade Organization (WTO)

Hand search of the following key journal titles:
- Agricultural Economics
- American Journal of Agricultural Economics
- European Review of Agricultural Economics
- Food Policy

Other Literature Sources:
- Google (advanced search – see Appendix 3)
- Google Scholar

- Reference lists of included papers will be scanned for relevant articles as they are identified.
- Citation tracking will be investigated, subject to practicalities of scale
- Authors of included papers and any identified relevant experts will be emailed and requested to identify any studies relevant to the review.

The search terms that will be utilised in the electronic searches are detailed in Appendix 3. For the countries it is hoped that the literature database will accept the term "developing countries", however we will run two searches, in order to capture the largest amount of evidence as possible. The first search will include the term "developing countries"; the second will include an expanded list of named developing countries. This approach will hopefully uncover literature that would have otherwise been missed in the first search. Our experience indicates that for some databases or resources, individual country names cannot be used.

We will be using EndNote© (referred to as EN for the remainder of protocol) to store all of our literature searches. Each of the online searches will be stored in separate EN libraries for auditing purposes. The initial searches are limited to titles and abstracts. After all searches are complete all the separate EN libraries will be copied and amalgamated into a total literature captured library, ready for the citations to be 'cleaned' and all duplicates removed. A guide of how we will report the literature shifting process is included in Appendix 4.

Inclusion and exclusion criteria will be applied successively to (i) titles and abstracts, and (ii) full text during the literature screening process.

The full text will be obtained for those studies that appear to meet the criteria or where we have insufficient information to be sure. Any documents that can not be obtained will have their citation entered into a second database and will be reported in the appendices of the review document,

along with the citations of any non-English reports obtained during the literature search. The inclusion and exclusion criteria will then be re-applied to the full text and those that do/did not meet these initial criteria will be excluded for the final review synthesis.

Studies that are screened at full text will be scrutinised using a coding tool (see Appendix 5 for a draft version). This tool includes the various data characteristics, where available, that will be extracted for each of the included studies in the final review document.

Studies will be categorized and collated based on each trade liberalization intervention and impact being evaluated to allow easy data extraction. The main impacts as well as all possible details for further sub-group analysis e.g. gender impact; impact on differing socioeconomic levels will be noted for the data extraction stage.

The study quality itself will then be classified according to details of its design, sampling methods, data collection, including the outcomes measures examined, and the data analysis. These will all be used to weigh the evidence according to two quality classifications (High = studies based on sound experimental or quasi-experimental methods and modelling techniques; Low = studies based on inadequately described methods, no clear measurements of impact or control for potential confounding variables). The study quality will be assessed at the same time that screening at full text is undertaken on the same coding form.

The review team will take steps to reduce researcher-bias and ensure all the relevant literature is included with the final review synthesis. One reviewer will initially apply the inclusion and exclusion criteria to titles and abstracts and a second reviewer will then independently screen any studies the first reviewer excluded to ensure no relevant studies are accidentally left out of the review. Any disagreements will be resolved through discussion and a third reviewer when agreement can not be achieved.

The screening of studies at full text along with the coding and quality assessment of accepted papers will be conducted by two members of the review group working independently and then comparing their decisions and coming to a consensus, as before, a third reviewer will be consulted when consensus can not be achieved. At all stages of the review process KAPPA analysis will be performed and reported in the final review document.

2.3 Data Analysis

Data will be extracted by two reviewers, with arbitration by a third in cases of uncertainty, using a specially designed data extraction form. The data extraction forms will be designed and piloted on several papers and modified as required before use.

All authors of the original research will be contacted for clarification or missing information. Data will be excluded from the main analysis until further clarification is available, this research will be identified in the completed review for inclusion in any future update.

Quantitative Data Synthesis

Quantitative evidence from impact evaluations will be synthesised by random effects meta-analysis, using both R and Stats Direct packages. The meta-analysis estimates and 95% confidence intervals will be presented for each impact measure of the study, together with forest plots. We will be using both random effects model and also perform a weighted meta-analysis (weighting based on data quality, as defined by CASP tool, so a comparison of all data qualities can be performed). The weighting of evidence will first be performed on a sample group of the data, prior to being applied to the entire dataset, this methodology will be reported in full in the final systematic review and has been used by Gavin Stewart and Andrew Pullin in Centre for Evidence Based Conservation reviews. Where appropriate, sub-group

analysis will be performed to examine heterogeneity among the study results based on the characteristics examined (e.g. gender effects and country/continental effects, or types of intervention). It is important that all evidence, that is statistically sound to combine, is included in one overall analysis, and then broken down into categories of quality and study characteristics. Statistical tests for publication bias and heterogeneity will be carried out as appropriate and the presented in the final report (e.g. funnel plots for publication bias).

Qualitative Data Synthesis

Although systematic reviews have largely focused on the synthesis of quantitative evidence of impact or effectiveness, especially in Cochrane reviews, the contribution of different types of evidence, including qualitative research is becoming more commonplace especially in when examining the impact of social science policy, where randomised control trials are near-impossible to undertake (see Campbell Collaboration and EPPI Centre). In addition to the synthesis of quantitative data, the review document will also provide a synthesis of the qualitative evidence on the impact of agricultural trade liberalization on food security. A summary table of each study will be constructed organised under the preliminary themes of intervention and delivery mechanisms to provide a summary of the impact. Characteristics that are being studied for quantitative sub-group analysis (such as gender differences, income levels, country/region of study focus), will also be included. The main synthesis of the qualitative data will be performed by Professor Alexander Sarris, the review team's academic lead.

2.4 Communication Plan

CABI will feature the review in both press releases and blog articles on its website and on other sites. Through CABI's PR function we will work to get the key findings into science and development-focussed sections of the mainstream media.

We will engage with the academic and policy audience through the publication of a Policy brief, and a submission of a full review paper based on the work to open access peer review journals. The policy brief and full review will be made available to policymakers through CABI's global network of Member Country Representatives.

In addition the academic lead of the review will make the brief and any review documents available to his contacts, and we will alert relevant authors through a courtesy e-mail that have been identified by data-mining the agricultural economics subset of CAB Abstracts. The contact author for all studies included within the final report synthesis will also be contacted with a courtesy e-mail.

The systematic review will be abstracted in the CAB Direct bibliographic database (http://cabdirect.org) and the full text made available in targeted subsets and journals.

The full review and policy brief will be featured on R4D (with an accompanying news article and blog features). CABI as the developer of R4D for DFID will be well-placed to ensure that any news story produced is thoroughly distributed through R4D alerts and feeds. Review findings will be made available to DFID's other communication partners including SciDev.net and Eldis, and other possibilities for onward dissemination and repurposing of findings will be discussed with DFID's research evidence brokers.

2.5 Plans for Updating the Review

The review will be updated after a period of 36 months, or once a significant amount of new primary study evidence is available[1].

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[1] This is subject to successful acquisition of further funds. We will make available to any research groups all EndNote libraries to allow further updates of this review.

3. Timetable

Estimates of the start and end dates for the following stages (contracts were awarded in June) Please note that some stages overlap:

	Start date	End date
Registration of title with DFID	15/05/10	15/06/10
Preparation of protocol	15/06/10	15/07/10
DFID and External Review of protocol	15/07/10	07/08/10
Protocol Revision	11/08/10	25/08/10
Study search & obtaining studies	31/10/10	15/11/10
Assessment of study relevance	31/10/10	30/11/10
Study quality assessment & extraction of data	31/10/10	30/11/10
Synthesis and/or statistical analysis	15/11/10	30/12/10
Preparation of draft report	15/12/10	15/01/11
DFID review of draft report (please allow 2 weeks)	15/01/11	01/02/11
Dissemination of draft report	15/01/11	01/02/11
External review of draft report	15/01/11	15/02/11
Revision	15/02/11	15/03/11

Deliverables (nature and due date)

	Due date
Title	15/06/10
Protocol	15/07/10
Draft report	15/01/11
Final report	15/03/11
Policy brief and short summary	15/03/11

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APPENDICES

Appendix 1.   Glossary

Food Security

World Trade Organization and FAO definition: When the nutritional needs of a country or population are met consistently. This is commonly described as when people or populations "at all times have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for a healthy life".

Trade liberalization

General agreement amongst organizations and businesses (e.g. BusinessDictionary.com and the UN): Removal of or reduction in the trade practices that restrict trade, unilaterally or multilaterally, including the dismantling of tariffs (such as duties, surcharges, and export subsidies), imposition of export tariffs as well as non-tariff barriers (such as licensing regulations, quotas, and arbitrary standards).

Developing Countries

As defined currently (July 2010) by the World Bank, economies are divided according to 2008 GNI per capita, calculated using the World Bank Atlas method. The group of countries included consists of the: 43 low income economies, $975 or less; and 55 lower middle income economies, $976 - $3,855. Studies that relate to countries that were developing countries during the study period but no longer are will not be explicitly sought, but will be included where identified.

http://data.worldbank.org/about/country-classifications/country-and-lending-groups#Low_income

Appendix 2.　　　　　Databases Searched

Agricola

CAB Direct

Social Sciences Citation Index (ISI Web of Knowledge)

IDEAS (Economic and Finance Research) this includes the RePec database

Ebsco (Food Science Source and Econlit)

Dissertations Express (http://disexpress.umi.com/dxweb)

Networked Digital Library of Theses and Dissertations (NDLTD)

(www.theses.org)

Ageconsearch (http://ageconsearch.umn.edu/)

USDA's Economic Research Service site

Other information sources

Google (Advanced Search)

Google Scholar

British Library of Development Studies

Eldis (Google Development websearch)

Research4Development (R4D) - the portal to DFID centrally funded research

Hand search of the following key journal titles: European Review of
Agricultural Economics, Agricultural Economics, American Journal of
Agricultural Economics, Food Policy

Websites of the following organizations:

World Bank; WTO; FAO; UNCTAD; IFPRI; ICTSD; International Food and
Agricultural Trade Policy Council (IPC), International Fund for Agricultural
Development

Appendix 3.   Search terms

<u>Search One:</u>

"food security" AND "developing countries" AND ("trade liberali*tion" OR "export subsidies" OR "trade barriers" OR tariffs OR "World Trade Organi*ation" OR "non-tariff barriers to trade" OR "free trade" OR GATT OR "General Agreement on Tariffs and Trade" OR "international trade" OR "agricultural trade" OR "trade relations" OR "trade agreements" OR "trade negotiations" OR "terms of trade" OR "comparative advantage")

<u>Search Two:</u>

"food security" AND("trade liberali*tion" OR "export subsidies" OR "trade barriers" OR tariffs OR "World Trade Organi*ation" OR "non-tariff barriers to trade" OR "free trade" OR GATT OR "General Agreement on Tariffs and Trade" OR "international trade" OR "agricultural trade" OR "trade relations" OR "trade agreements" OR "trade negotiations" OR "terms of trade" OR "comparative advantage") AND (Afghanistan OR Albania OR Angola OR Armenia OR Azerbaijan OR Bangladesh OR Belize OR Benin OR Bhutan OR Bolivia OR "Burkina Faso" OR Burundi OR Cambodia OR Cameroon OR "Cape Verde" OR "Central African Republic" OR Chad OR China OR Comoros OR "Cote d'Ivoire" OR "Ivory Coast" OR "Democratic Republic of the Congo" OR Djibouti OR Ecuador OR Egypt OR "El Salvador" OR Eritrea OR Ethiopia OR Gambia OR Ghana OR Georgia OR Guatemala OR Guinea OR "Guinea-Bissau" OR Guyana OR Haiti OR Honduras OR India OR Indonesia OR Iran OR Iraq OR Jordan OR Kenya OR Kiribati OR "Korea Democratic People's Republic" OR Kosovo OR "Kyrgyz Republic" OR Kyrgyzstan OR "Lao People's Democratic Republic" OR Lesotho OR Liberia OR Madagascar OR Malawi OR Maldives OR Mali OR "Marshall Islands" OR Mauritania OR Micronesia OR Moldova OR Mongolia OR Morocco OR Mozambique OR Myanmar OR Nepal OR Nicaragua OR Niger OR Nigeria OR Pakistan OR "Papua New Guinea" OR Paraguay OR Philippines OR Rwanda OR Samoa OR "Sao Tome and Principe" OR Senegal OR "Sierra Leone" OR "Solomon Islands" OR Somalia OR "Sri Lanka" OR Sudan OR Swaziland OR Syria OR Tajikistan OR Thailand OR "Timor-Leste" OR Togo OR Tonga OR Tunisia OR Turkmenistan OR Uganda OR Ukraine OR "United Republic of Tanzania" OR Uzbekistan OR Vanuatu OR Vietnam OR Yemen OR Zambia OR Zimbabwe)

Further detail of basic Google search

A search for further documents will be undertaken using Google, this will be done using the advanced search and limiting document type to just .doc, .pdf for documents and .xls and .csv for any possible datasets.

Appendix 4.   QUOROM statement flow diagram of the study selection process
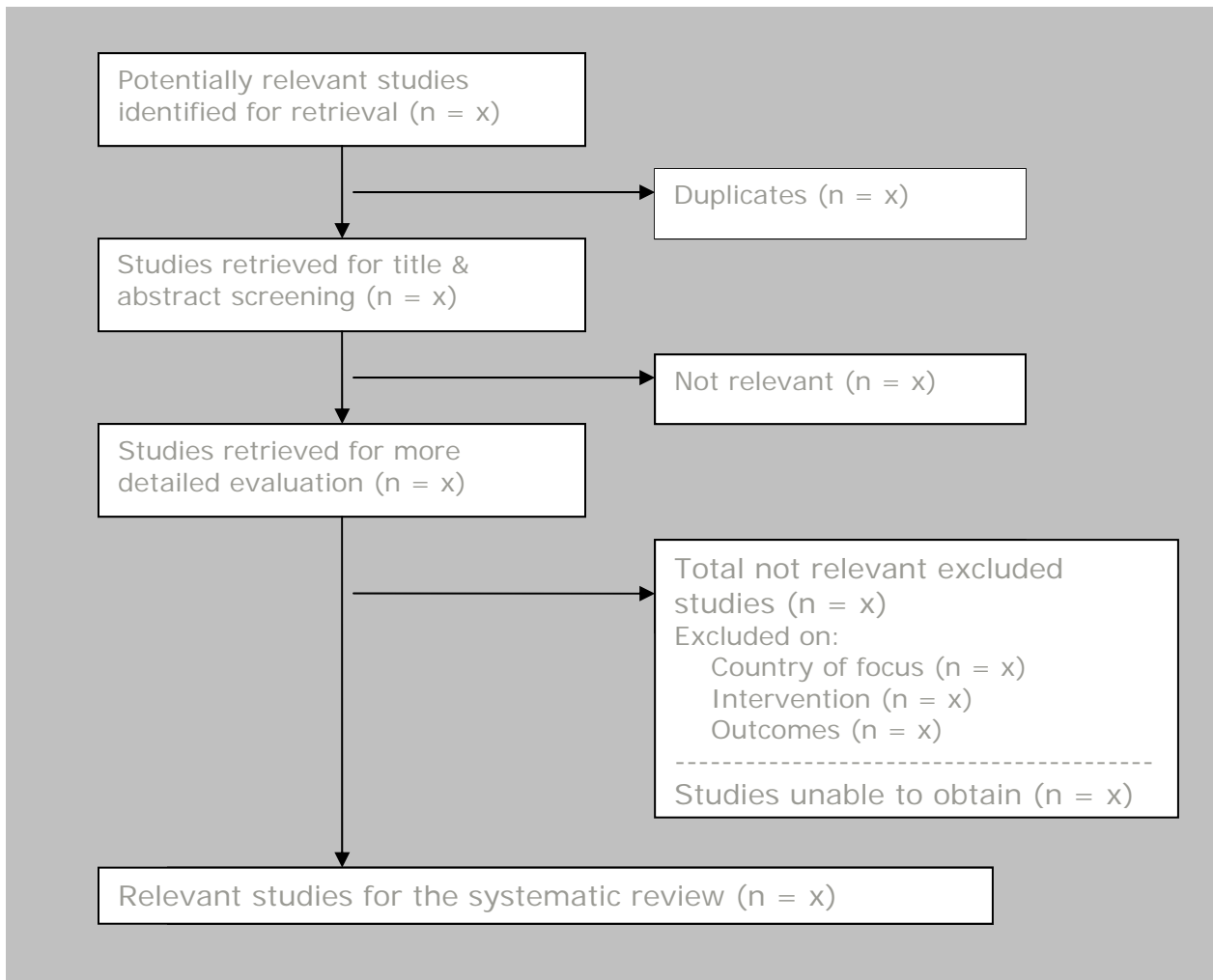
Results of literature search and screening process, showing both the final number of studies included in the final synthesis of the systematic review (bottom box) and the numbers of studies removed at each stage of the process.

Values (n) are the number of studies at each stage

(Based on QUOROM statement flow diagram – see Moher *et al* 1999).

Appendix 5. Draft coding tool

INITIAL SCREENING QUESTIONS TO DETERMINE WHETHER OR NOT TO INCLUDE THE STUDY

A. Is the research based in or referring to at least one Developing Country? If not, EXCLUDE

B. Is the research focused on a trade liberalization intervention/policy? If not, EXLUDE

C. Does the intervention include focus on an outcome measure of food security? If not, EXCLUDE

D. Is the study an English language study? If not, EXCLUDE, but note for listing in the appendix of the final report.

Please complete section 1 for ALL studies.
For studies that fulfil ALL the above questions complete the entire form

1. Basic description of the paper

1.1. Title

1.2. Authors

1.3. Date of publication

1.4. Language

1.5. Stand alone paper or one of several from a study

2. Description of the intervention studied (circle all that apply)

2.1. Intervention

    2.1.1. Export subsidies

    2.1.2. Tariffs (import or export)

    2.1.3. Quotas

    2.1.4. Trade-restricting taxes

    2.1.5. Trade-restricting laws

    2.1.6. Import subsidies

    2.1.7 Other non-tariff barriers

    2.1.8. Trade agreements

2.2. Population

    2,3,1 Rural, urban, total, other subgroup

    2.3.2. Gender specific

    2.3.3. Age

    2.3.4. Unspecified

2.3. Country

    2.3.1. Specify which developing countries

    2.3.2. Specify whether other developing countries are also included

3. Study design
 3.1. Outcome evaluation (if not one of the below, should be excluded)

 3.1.1. before-after designs (CBA, with a counterfactual directly related to food security)
 3.1.2 Using micro survey data
 3.1.2 interrupted time series
 3.1.3 statistical matching
 3.1.4. Other non-comparative study

 3.1.5. Modelling studies

 3.1.5.1 Partial equilibrium models

 3.1.5.2. Computable general equilibrium (CGE) models

 3.1.5.3. Other type of counterfactual model

 3.2. Does the study also include a process evaluation? (i.e. examining how trade liberalization works, not just whether it works)

 3.3 other studies
 3.3.1 Qualitative case studies
 3.3.2 Empirical qualitative before/after comparison, without a counterfactual (with an assessment made for empirical validity).
 3.3.2 Quantitative correlation studies

 3.4 Does the study consider a specific variable related to food security, and whether they utilize empirical information, rather than making generalized statements on the basis of a-priori beliefs?

4. Outcomes assessed / outcome variables relating to food security
 4.1. Income/poverty levels

 4.2. Food Expenditure

 4.3. Food consumption

 4.4. Nutritional status

 4.5. Food prices

 4.6. Any other outcome related to food security described in the study

5. Outcomes assessed by subgroup
 5.1. Individual/Household, community, regional, national levels

 5.2. Local economy

 5.2.1. employment

 5.2.2. wages

 5.2.3. production structure

 5.2.4 production levels of foods

5.3. Sub-groups

    5.3.1. women

    5.3.2. socioeconomic levels

5.4. Terms of trade

5.5. Agricultural trade (imports/exports)

6. Sampling methods employed
The papers will include a range of study types macro or sectoral data, micro non-survey based data, micro survey based data. For the last two categories the following elements would be noted:

6.1. Population from which sample is drawn

6.2. How sample was selected

    6.2.1. Methods of identification of population from whom participants are selected

    6.2.2. Methods used to identify the participants from this population

    6.2.3. Planned (a priori) sample size

    6.2.4. Actual sample size

6.3. How people were recruited into study

6.4. Whether consent was sought, how and from whom

6.5. Data collection methods

    6.5.1. Types of data collected

    6.5.2. Details of data collection methods or tool(s)

    6.5.3. Who collected the data

    6.5.4. Location of data collected

    6.5.5. How did the study team ensure the data collection methods were trustworthy, reliable and valid

7. Data analysis methods
7.1. Which methods were used to analyse the collected data

7.1.1. comparative descriptions

7.1.2 before/after comparison

7.1.3 econometric-based

7.1.4 model-fitting based

7.2. How did the study team ensure the analysis was trustworthy, reliable and valid

The study will involve robustness checks and sensitivity analysis, whether they verified results with another method, The analysis will include some level of

confidence for the comparisons, and whether the analysis built counterfactuals to make comparisons

8. Screening qualitative studies.

For these studies, a modified CASP tool will be used

1. Was there a clear statement of the aims of the research?
Consider:

– what the goal of the research was

– why it is important

– its relevance

2. Is a qualitative methodology appropriate?

Consider:

– if the research seeks to interpret or illuminate the actions and/or subjective experiences of research participants

3. Was the research design appropriate to address the aims of the research?
Consider:

– if the researcher has justified the research design (e.g. have they discussed how they decided which methods to use?)

4. Was the recruitment strategy appropriate to the aims of the research?
Consider:

– if the researcher has explained how the participants were selected
– if they explained why the participants they selected were the most appropriate to provide access to the type of knowledge sought by the study

– if there are any discussions around recruitment (e.g. why some people chose not to take part)

5. Were the data collected in a way that addressed the research issue?
Consider:

– if the setting for data collection was justified

– if it is clear how data were collected (e.g. focus group, semi-structured interview etc)
– if the researcher has justified the methods chosen
– if the researcher has made the methods explicit (e.g. for interview method, is there an indication of how interviews were conducted, did they used a topic guide?)
– if methods were modified during the study. If so,has the researcher explained how and why?
– if the form of data is clear (e.g. tape recordings,video material, notes etc)
– if the researcher has discussed saturation of data

6. Has the relationship between researcher and participants been adequately considered?
Consider whether it is clear:
– if the researcher critically examined their own role, potential bias and influence during:

  – formulation of research questions

  – data collection, including sample recruitment and choice of location

– how the researcher responded to events during the study and whether they considered the implications of any changes in the research design

7. Have ethical issues been taken into consideration?

Consider:

– if there are sufficient details of how the research was explained to participants for the reader to assess whether ethical standards were maintained
– if the researcher has discussed issues raised by the study (e. g. issues around informed consent
or confidentiality or how they have handled the effects of the study on the participants during and after the study)

– if approval has been sought from the ethics committee

8. Was the data analysis sufficiently rigorous?

Consider:

– if there is an in-depth description of the analysis process
– if thematic analysis is used. If so, is it clear how the categories/themes were derived from the data?
– whether the researcher explains how the data presented were selected from the original sample to demonstrate the analysis process
– if sufficient data are presented to support the findings
– to what extent contradictory data are taken into account
– whether the researcher critically examined their own role, potential bias and influence during analysis and selection of data for presentation

9. Is there a clear statement of findings?

Consider:

– if the findings are explicit

– if there is adequate discussion of the evidence both for and against the researcher's arguments
– if the researcher has discussed the credibility of their findings (e.g. triangulation, respondent validation, more than one analyst.)
– if the findings are discussed in relation to the original research questions

10. How valuable is the research? Write comments here

Consider:

– if the researcher discusses the contribution the study makes to existing knowledge or understanding (e.g. do they consider the findings in relation to current policy,
or relevant research-based literature?)

– if they identify new areas where research is necessary
– if the researchers have discussed whether or how the findings can be transferred to other populations or considered other ways the research may be used

WEIGHT OF THE QUALITY OF EVIDENCE
DRAWING ON 1-7 ABOVE, MAKE A JUDGEMENT ON THE FOLLOWING CRITERIA

A. How appropriate were the methods used for addressing the question posed in the study? (for example, the use of only qualitative data for assessing impact will be considered inappropriate and ranked as 'low') HIGH, MEDIUM, LOW
B. To what extent were the methods are applied appropriately? HIGH, MEDIUM, LOW
C. To what extent are the findings of the study in keeping with the methods employed? (for example, a study which concludes on the acceptability of an intervention to a population when no qualitative methods were employed will be considered low-quality) HIGH, MEDIUM, LOW

WHERE STUDIES ARE RATED AS **LOW QUALITY** ON ANY OF THE CRITERIA ABOVE, THEIR FINDINGS SHOULD BE REPORTED AND SENSITIVITY ANALYSIS SHOULD BE PERFORMED (INCLUDING THEN EXCLUDING FROM THE SYNTHESIS AND DISCUSSING IMPLICATIONS).

8. Findings (PLEASE DOCUMENT FOR REPORT SUMMARY TABLE)