Trade Sustainability Impact Assessment in support of negotiations of a DCFTA between the EU and Georgia and the Republic of Moldova

Final report

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Client: European Commission - DG Trade

Rotterdam, 27 October2012

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This report was commissioned and financed by the European Commission. The views expressed herein are those of the Contractor, and do not represent an official view of the Commission.

ECORYS CASE

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Preface

The European Commission, Directorate general for Trade (DG Trade) awarded the contract to conduct a trade sustainability impact assessment (TSIA) relating to the negotiations of a deep and comprehensive Free Trade Area (DCFTA) between the EU and respectively Georgia and the Republic Moldova to the Ecorys-CASE consortium. The main objective of this TSIA is to assess the potential economic, social, environmental and human rights impacts of these DCFTAs and to provide policy recommendations. In this way, it provides inputs into the negotiation process. The study entails the use of both quantitative and qualitative analysis. This also includes extensive stakeholder consultations, as these are a key element of the TSIA.

This Final Report presents the main findings of the study, encompassing:

- A summary of the applied methodologies;
- Overall analysis of the economic, social, human rights and environmental sustainability impact;
- A summary of the consultation process and main inputs received;
- In-depth analysis of sustainability impact for a set of selected sectors and issues;
- A synthesis of the main potential economic, social and environmental impact;
- Policy recommendations and flanking measures based on the identified impacts.

The study consists of two separate modules, one for Georgia (A) and one for Moldova (B). Although this implies that there is some overlap, notably with respect to more general sections (e.g. a large part of the methodology is shared between the two modules) it allows the reader to read the results for EU-Georgia and EU-Moldova independently from each other.

We would like to thank all stakeholders for their active involvement, as the study has benefitted from their inputs, comments and suggestions.

More information on the study is available at the project's websites: http://tsia.ecorys.com/georgia/ and http://tsia.ecorys.com/moldova/ and comments and suggestions can be e-mailed to tsiageorgia@ecorys.com and tsiamoldova@ecorys.com.

The Ecorys-CASE Team
27 Ocober 2012

This report was commissioned and financed by the European Commission. The views expressed herein are those of the Contractor, and do not represent an official view of the Commission.

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List of abbreviations

Abbreviation	Meaning
ANP	Animals
ATP	Adaptation to technical progress
ATP	Air transport
B_T	Beverages & tobacco
CAFÉ	Clean Air for Europe
CCA	Causal Chain Analysis
CDE	Constant Difference of Elasticities
CGE	Computable general equilibrium
CMN	Communication
CNS	Construction
CRP	Chemicals
CSD	Civil Society Dialogue
CSR	Corporate Social Responsibility
CU	Customs Union
DCFTA	Deep and Comprehensive Free Trade Area
DDT	Dichlorodiphenyltrichloroethane
DG	Department General
EA	Environmental agreements
EAERE	European association of Environmental and Resource Economists
EC	European Commission
EESC	European Economic and Social Committee
EGY	Energy
ELE	Electronic equipment
EMEP	European Monitoring and Evaluation Programme
ESF	European Social Fund
EU	European Union
FAO	Food and Agriculture Organisation
FIS	Financial services
FMN	Ferrous metals
FMP	Metal products
FRS	Forestry
FSH	Fishing
FTA	Free Trade Agreement
GDP	Gross Domestic Product
GRN	Grains
GSP+	General System of Preference
GTAP 8.0	Global Trade Analysis Project 8.0
HIV/AIDS	Human immunodeficiency virus /Acquired immune deficiency syndrome
HR	Human Rights
HS	Harmonized System
IA	Impact Assessment

Abbreviation	Meaning
ICT	Information and communications technology
IIASA	International Institute for Applied Systems Analysis
ILO	International Labour Organisation
IPA	Impact Pathway Approach
IPR	Intellectual property rights
ITUC	International Trade Union Confederation
LGBT	Lesbian, gay, bisexual, and transgender people
LUP	Wood & paper
MacMap	Market Access Map
MFN	Most Favoured Nation
MIL	Dairy products
MPN	Mineral products
MPT	Animal products
MSC	Marginal social cost
MT	Metric Tones
MVH	Motor vehicles
NACE	National Classification of Economic Activities
NAMA	Non-agricultural market access
NRF	Nomenclature for Reporting Format
NT	National Treatment
NTM	Non-tariff measures
OBS	Other business services
OCR	Sugar cane
OECD	Organisation for Economic Cooperation and Development
OFD	Rice
OMC	Open Method of Coordination
OME	Other machinery
OMF	Other manufactures
OMN	Minerals
OSC	Public services
OTN	Transport equipment
P_C	Petroleum & coal products
PM	Particulate matter
PPM	Parts per million
PRTP	Pure Rate of Time Preference
ROS	Recreation
ROW	Rest of the World
SC	Steering Committee
SGR	Sugar
SME	Small and Medium Enterprise
SPS	Sanitary and Phyto sanitary
SSC	Social cost of carbon
TBT	Technical Barriers to Trade
TCE	Tariff Costs Equivalents
TRD	Trade
TRQ	Tariff Rate Quota

Abbreviation	Meaning
TSIA	Trade Sustainability Impact Assessment
TSP	Road & rail transport
TSS	Total Suspended Solid
TWL	Textiles
UECBV	European Livestock And Meat Trading Union (l'Union Européenne du Commerce du Bétail et de la Viande)
UN	United Nations
UNCRC	The United Nations Convention on the Rights of the Child
UNECE	United Nations Economic Commission for Europe
UNICEF	United Nations International Children's Emergency Fund
US	United States
UTI	Utilities
V_F	Vegetables, fruits & nuts
VA	Value Added
VOL	Vegetable oils & fats
WHO	World Health Organisation
WITS	World Integrated Trade Solution
WTO	World Trade Organisation
WTP	Water transport

Executive summary

Background of the study

In the context of the European Neighbourhood Policy, the EU and Georgia are in the process of negotiating an Association Agreement (AA) to replace the current Partnership and Co-operation Agreement (PCA). A Deep and Comprehensive Free Trade Agreement (DCFTA), underpinned by regulatory approximation, will be part of this AA. This study supports the negotiation process by analysing how the trade and trade-related provisions of the DCFTA will affect economic, social and environmental developments in the EU and in Georgia.

Summary of methodology and approach

The main objective of this Trade Sustainability Impact Assessment (TSIA) is to assess the potential economic, social, environmental and human rights impacts of a Deep and Comprehensive Free Trade Agreement (DCFTA) to be negotiated between the EU and Georgia. This TSIA combines quantitative and qualitative research, in line with the general methodology designed for TSIAs by DG Trade. This methodology covers the following elements: screening and scoping analysis, scenario analysis and quantitative modelling, additional quantitative and qualitative social, human rights and environmental impact analysis, causal chain analysis and sectoral analysis.

In addition, throughout the study we engage extensively in stakeholder consultations. We employ five main consultation activities to gather inputs from key stakeholders: (1) electronic consultation and documentation (discussion forum, websites, feedback forms); (2) public meetings with civil society in the EU; (3) a TSIA workshops in Georgia; (4) visiting other relevant conferences and workshops; (5) and personal interviews with individual stakeholder representatives, and targeted surveys.

It is important to note that this study takes an incremental approach, i.e. the impact of the DCFTA is analysed by comparing a specified liberalisation/integration scenario encompassing the DCFTA, with a baseline scenario that assumes no DCFTA in place. The only difference between the two scenarios is thus the DCFTA. Specifically, and important for interpretation of all results presented in this report, no additional policy measures have been included in the scenarios. Nonetheless, such accompanying measures are likely to be taken, both on EU and Georgian side, in order to maximise and enhance gains from trade integration and/or mitigate potential negative effects. Indeed, one of the objectives of this study is to highlight areas in which it is advisable to consider policy action.

Expected economic effects of the EU-Georgia DCFTA

Overall macro-economic effects

In the long run (i.e. after the time that is required for capital reallocation between economic sectors), the change in national income for Georgia is estimated to be around EUR 292 million. For the EU, the long run effects will be negligible, with a 0.00 percent change in EU GDP (minus EUR47 million). For Georgia, the increase in national income is sizeable in relative terms - a 4.3 percent growth of GDP in the long run. Thus the DCFTA would have a much more pronounced impact on Georgia's economy than on the EU's. This reflects partly the relative importance of the EU and

Georgia as trading partners for each other. Furthermore, the EU is a much larger economy than Georgia.

Georgian exports are estimated to increase by 12 percent, while imports rise by 7.5 percent. This implies that the DCFTA is expected to improve the trade balance for Georgia in relative terms, although in absolute terms the trade deficit may still grow, given that exports expand from a much lower baseline than imports. The DCFTA-related effects on the EU trade are negligible. Average wages in Georgia are projected to increase 3.6 percent over the long run. Meanwhile, the overall consumer price index is expected to decrease by about 0.6 percent. This implies that – on average – purchasing power of Georgian citizens increases because of the DCFTA especially in the long run. For the EU changes in wages and prices are again negligible.

The DCFTA will contain a range of policy measures for liberalising trade, i.e. lowering tariffs and reductions in non-tariff barriers, e.g. related to sanitary and phyto-sanitary measures (SPS), and technical barriers to trade (TBT) and for liberalising services trade. The reduction of non-tariff measures (NTMs) are the single most important measure for reaping the benefits of the DCFTA for Georgia, while for the EU tariff liberalisation is most important.

Estimated third country effects

For the rest of the countries in the region, the EU-Georgia DCFTA is expected to have a limited effect, with only Russia and Azerbaijan benefiting to a small extent. The liberalisation of trade between the EU and Georgia is expected to have a negligible effect for the EU-Turkey Customs Union.

Sector-specific changes in output

As is typical for all trade liberalisation the impact of the DCFTA on economic sectors will differ. There will be both sectoral winners and losers. The biggest effect (in relative terms) is the expected 62 percent increase in the output of chemicals, rubber and plastic, which is due to a combination of tariff reductions and TBT reductions. Other important sectors, where output is expected to increase more than five percent, are other machinery and equipment and primary metals. Livestock and meat products, other processed foods, electronics & computers, and other manufacturing are all expected to contract by 8-24 percent in terms of output.

Expected social effects of the EU-Georgia DCFTA

Effects related to employment and wages are expected to be the main drivers of overall social impact of the DCFTA. The overall employment and wage levels are likely to increase in line with rising output. Since the computable general equilibrium (CGE) model used for quantification of effects assumes fixed employment, the predicted social effects are reflected in rising wages, which is an indication that in reality wages rise and/or employment goes up. This, combined with predicted fall in consumer price inflation is expected to support improvements in average living standards.

As any other trade liberalisation (or globalisation) process the DCFTA will necessarily lead to reallocation of resources – notably labour and capital- between sectors: from less productive to more productive ones. Our analysis suggests that the DCFTA will lead to approximately four percent of the Georgian labour force needing to change sector of employment. The scale of these sectoral reallocations would be somewhat higher for the less skilled workers compared to the more skilled workers (5 versus 3.5 percent). The ease of this labour transition in practice will be crucially important for determining the timing and scale of expected gains from the DCFTA that may be delayed and/or limited if labour reallocation proves difficult and lengthy.

The additional quantitative social analysis utilising household budget survey data, based on an analysis of DCFTA-induced changes in relative prices and income, shows that poorer strata of the population appear to benefit less from DCFTA than those with above average incomes. This is mainly due to the fact that while overall consumer prices are expected to decrease, food prices increase slightly, and less affluent households spend a higher share of their total expenditures on food products. The analysis thus shows that several poverty indicators are likely to improve, but not all of them and especially those describing the situation of the bottom 10% of the income distribution. The DCFTA may also exacerbate inequality (and slightly worsen relevant indicators such as relative poverty, Gini coefficient or decile and quintile ratios), albeit to a very small degree, as changes in disposable income are generally limited.

The potential DCFTA impact on labour rights is of significant importance – also from the human rights perspective – given weaknesses of the current situation in this regard. Our conclusion is that while the DCFTA may trigger various forces acting towards either improving or worsening the labour rights situations, on balance positive forces are likely to be somewhat stronger implying an overall positive contribution of the DCFTA as regards labour rights. This assessment is based inter alia on expectations of a positive impact of the DCFTA on both administrative capacity to implement labour rights and public demand for rising standards in this area.

The (indirect) favourable DCFTA impact on equality may come about if and when increasing living standards begin to support gradual changes in societal preferences on equality issues. Other mechanisms of positive influence may be related to international conventions supporting equality and condemning discrimination. On the negative side, sectoral employment re-allocations that will be required by the DCFTA may disproportionally affect the weakest workforce groups, those with low education and skill levels. This implies a risk of exacerbation of currently observed inequalities. The aggregate direction and strength of these forces is difficult to predict, although worsening of the situation relative to trends currently observed does not appear likely.

In terms of human rights, the expected increase in income could positively contribute to the human rights situation. Although no major negative effects are expected *à priori*, challenges remain, e.g. with respect to possible rising inequality and the risk of pressure for lowering labour standards as a means to reduce costs and face increased competition for some companies.

Expected environmental effects of the EU-Georgia DCFTA

Georgia faces several environmental problems related to air and water pollutions, improper waste management and use of land as well as marine and coastal contaminations.

The estimated environmental effects of the DCFTA in terms of CO2 emissions and land use intensity in Georgia are expected to be very small based on the CGE results. CO2 emissions hardly increase (0.2 percent), while land use intensity is estimated to increase by 2 percent as a result of the DCFTA. The additional quantitative analysis shows that air emissions of other pollutants are expected to rise by up to 3.1 percent in the long, translating into associated total external costs of the DCFTA to the tune of EUR 20 million for Georgia.

International cooperation and taking up international obligations appear to be among important drivers of the environmental agenda in Georgia. Our assessment suggests that the DCFTA should be at least as effective as the current GSP+ regime in supporting Georgian efforts in this field.

We expect the DCFTA to have a weak but positive effect, encouraging more effective implementation of international environmental agreements in Georgia that should – in a gradual manner – also contribute to solving some of the outstanding environmental challenges facing the country. This mechanism may prove important in greening economic growth in Georgia in general and limiting the environmental burden from a boost to economic development due to the DCFTA.

Policy recommendations and flanking measures

Our analysis has identified expected positive and negative sustainability effects of the DCFTA. Appropriate policies and flanking measures can enhance the positive effects and/or help mitigate or prevent the negative effects. We distinguish between recommendations that can be addressed within the DCFTA (i.e. directly related to provisions to of the DCFTA) and those that could be addressed outside the DCFTA (i.e. non-trade related (accompanying or flanking measures). Recommendation concerning measures outside the DCFTA could be addressed to national governments, the private sector and/or civil society.

The main recommendations are presented in the tables below. Although there is a separate table for each pillar of sustainability (economic, social, environmental), they should be read in conjunction as they are complementary and interrelated.

Table 0.1 Recommendations for the economic pillar

Policy measure	Potential to address	
	Within DCFTA	Outside DCFTA
Provision of technical assistance and capacity building in regulatory approximation process, especially in SPS, TBT, trade facilitation, and IPR	√	√
Allow for phasing in of tariff reductions or regulatory approximation at sector level , especially for those sectors where the economic, social and environmental impact will be high	√	
Stimulate ongoing improvements in investment/business climate	√	√
Support efforts facilitating structural adjustment across sectors resulting from implementation of the DCFTA	√	√
Stimulate entrepreneurship and competitiveness of SMEs		√

Table 0.2 Recommendations for the social pillar

Policy measure	Potential to address	
	Within DCFTA	Outside DCFTA
Support flexibility of labour market – easing the reallocation between sectors		√
Support training programmes to allow easier update and upgrade of human capital, especially competencies and skills required in expanding sectors		√
Prevent risks of pressures to lower labour standards due to rising international competition	√	√
Allow for phasing in of trade barrier reductions and increases at sector level, especially for those sectors where the social impact may be high	√	
Consider creating mechanisms for monitoring of social (and environmental) impact of the DCFTA (and more broadly EU-Georgia relations in these areas)	√	
Provision of technical assistance and budget support programmes upgrading human capital and improving institutional and regulatory environment in the social policy sphere		√

Table 0.3 Recommendations for the environmental pillar

Policy measure	Potential to address	
	Within DCFTA	Outside DCFTA
Create incentives for environmentally friendly production		√
Maintain incentives and encouragement to implement international environmental agreements	√	√
Consider creating mechanisms for monitoring of environmental (and social) impact of the DCFTA (and more broadly EU-Georgia relations)	√	
Provision of technical assistance, capacity building and budget support in environmental policy broadly defined		√

1 Overview methodology and Phase 1

This chapter summarises the methodology and conceptual framework that is being used for this study (for the more extended version we refer to the Inception Report). It pays specific attention to the quantitative methods applied in the overall analysis of Phase 1 of the study.

1.1 TSIA methodology and approach to this study

1.1.1 General approach: three phases

The main objective of this Trade Sustainability Impact Assessment (TSIA) is to assess the potential economic, social, environmental and fundamental human rights impacts of a Deep and Comprehensive Free Trade Agreement (DCFTA) to be negotiated between the EU and Georgia.

This TSIA has a quantitative and qualitative research angle, in line with the general methodology designed for TSIAs by DG Trade.[1] The main activities and analyses conducted in these phases consist of the following:

- **Phase 0:** Methodology finalisation and preliminary scoping of key issues;
- **Phase 1**: Assessment of overall economic, social and environmental impacts of the DCFTA, including:
  - Scenario analysis and Computational General Equilibrium Modelling (econometric simulation) on DCFTA impacts at macro-economic and sector level;
  - Additional quantitative modelling of social effects;
  - Additional quantitative modelling of environmental effects;
  - Additional analysis of fundamental human rights issues;
  - Stakeholder inputs on key impacts to be expected.
- **Phase 2:** In-depth analysis of two or three sectors or horizontal issues where we assess the impacts of the DCFTA for Georgia and the EU. The selection of sectors or issues is based on the outcomes of Phase 1. The assessment is based on causal chain analysis as well as key stakeholder inputs.
- **Phase 3:** Based on the findings in the previous phases, policy recommendations are formulated. These can relate to both measures within the scope of the DCFTA and broader issues.

The present final report presents the results of Phase 2 and 3.

1.1.2 Six main methodological pillars

The six fundamental pillars of the methodology used in the present study are the following:

1. screening and scoping analysis;
2. scenario analysis and CGE modelling;
3. additional quantitative and qualitative analysis;
4. sectoral analysis;
5. causal chain analysis (CCA);
6. dissemination of key findings to, and consultations with, key stakeholders, including notably civil society.

[1] European Commission (2006) Handbook for Trade Sustainability Impact Assessment, March 2006.

Table 1.1 Use of pillars in different phases of the study

Phase	Pillar 1 Screening / scoping	Pillar 2 Scenario/ CGE	Pillar 3 Add. analysis	Pillar 4 Sectoral analysis	Pillar 5 CCA	Pillar 6 Consultation &Dissem.
Ph 0: Inception	X				X	X
Ph : Overall analysis	X	X	X		X	X
Ph 2: Sectoral analysis			X	X	X	X
Ph 3: Policy recommendations					X	X

Pillar 1: Screening and scoping analysis

The screening and scoping analysis is mostly used for the identification of sectors and issues that are crucial for the impacts of a DCFTA. A preliminary screening took place in the inception phase in order to focus the methodology. The screening process is done in more detail at the end of Phase 1, in order to select sectors or horizontal issues for in-depth analysis (Phase 2), based on the outcomes of the overall analysis conducted. The four criteria used for selection of most relevant sectors or horizontal issues are:

1. Initial importance of a sector/issues for the economy.
2. Impact as a result of DCFTA.
3. Social/environmental/fundamental rights importance of impact.
4. Stakeholder issues of special importance.

Based on these criteria and in close consultation with the Steering Committee for this study, the final sector / horizontal issues selection is made.

Pillar 2: Scenario analysis and Computable General Equilibrium modelling

In consultation with the Steering Committee, a scenario for the EU-Georgia DCFTA has been developed, based on the assumptions regarding a likely outcome of the negotiations. This scenario forms the input for a Computable General Equilibrium (CGE) model. The CGE modelling exercise compares the outcomes of the DCFTA scenario to the outcomes of the baseline scenario (i.e. the likely future scenario if there would be no DCFTA). The CGE model used is dynamic and non-linear. It is based on data from the most recent GTAP 8.0 database, with a combination of 2010 data and projections made from the most recent available 2007 data to 2010 with regards to overall macroeconomic dynamics. The exact specifications used are described in the next section; more details on the CGE model are provided in Annex A1.

Pillar 3: Additional quantitative and qualitative analysis

To complement the CGE results especially regarding social and environmental impacts of the DCFTA, we perform additional quantitative analyses of these issues. For instance, the consumption effect and labour income effect that logically follow from the changes in trade patterns are assessed making use of household level data for the social aspects (see section 1.3). In addition, the costs of airborne emissions and greenhouse gasses are examined as proxies for environmental burden resulting from the shifts in trade activities (see section 1.4).

Next to these quantitative assessments, we conduct a qualitative analysis with respect to social, environmental and human rights issues, examining the potential outcomes of the DCFTA in combination with the implementation of international agreements to which Georgia has signed up. For example, we look at possible changes in labour standards or adoption of certain environmental regulations, as well as the transformation of attitude to fundamental human rights. For this we use

all possible sources of qualitative information – available literature, the requirements of international conventions, continuous consultations with stakeholders etc.

Pillar 4: Sectoral or horizontal issue analysis

This pillar covers the in-depth analysis of a sector or horizontal issue that is selected through the final screening and scoping analysis at the end of Phase 1. The in-depth analysis is carried out for two sectors for Georgia. The analysis aims to provide a profound insight into the potential impacts of the DCFTA for the selected sectors, including economic effects (e.g. the impact on SMEs), social effects (e.g. employment, decent work issues), fundamental rights (e.g. the right to food) and environmental effects (e.g. CO2 emissions or biodiversity). The analysis starts from the results of the CGE modelling exercise and the additional quantitative and qualitative analyses, and is subsequently complemented by causal chain analysis, literature review, interviews, and inputs from sector experts.

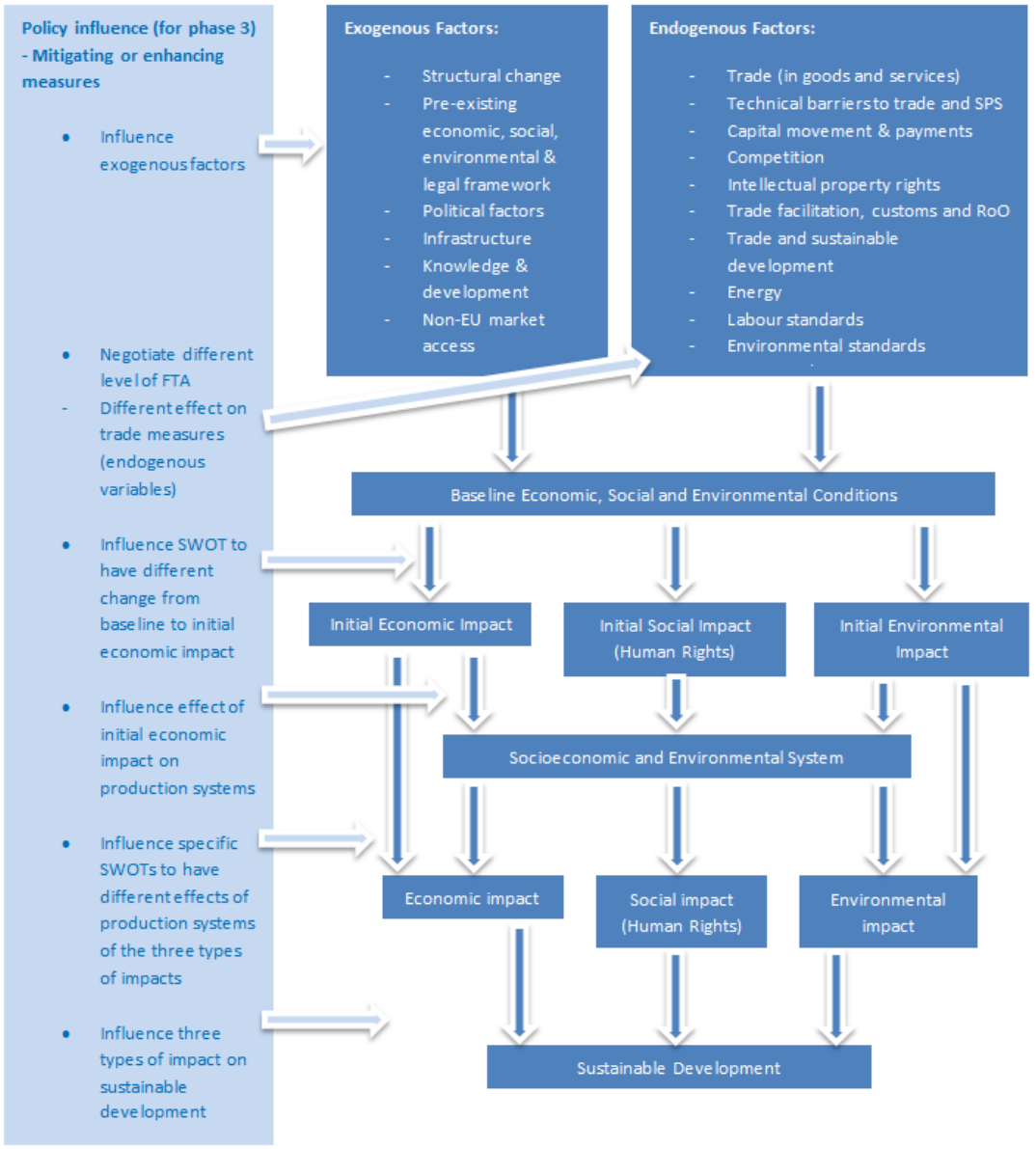
Pillar 5: Causal Chain Analysis (CCA)

Causal chain analysis (CCA) examines the significant cause-effect relations between the proposed trade measures and the social, economic and environmental impact that they will eventually cause. This conceptual tool traces the described links and inter-connections and tests their strength and likelihood. It provides a framework of analysis that is applied throughout the different Phases of the study, including the sectoral and cross-cutting analyses. This framework is illustrated in Figure 1.1.

Pillar 6: Dissemination and consultation

Consultations with a wide range of stakeholders groups represents a key element of the present study and is applied throughout all Phases of the study. They are considered essential for the identification of DCFTA-related issues of specific importance. An overview of the consultation activities, as well as a summary of input received so far, is provided in Chapter 4.

Figure 1.1 Causal Chain analysis: from trade measures to impact on sustainable development

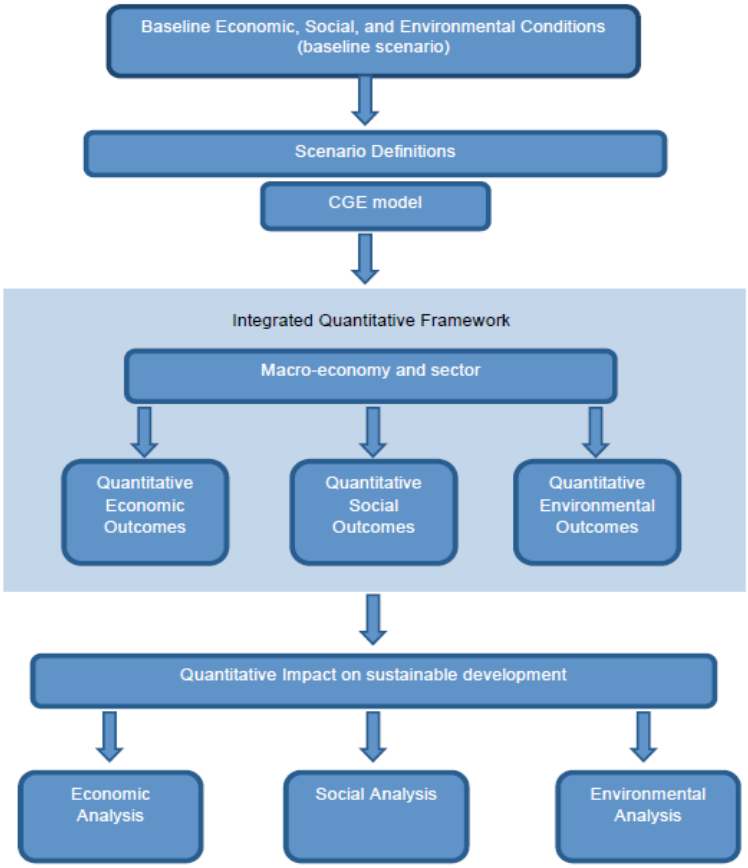


Source: Trade SIA Handbook, chart 3 (from Indufor, 2004)

1.2 Computable General Equilibrium modelling specifications

The CGE modelling approach has been discussed and agreed upon with the Steering Committee during the inception phase of the study. The CGE methodology is schematically depicted in Figure 1.2. The specifications of the model used are summarised in this section.

Figure 1.2 CGE methodology



1.2.1 Country specifications

In order to assess the impact of the liberalisation scenario for the EU-Georgia DCFTA , the following countries / regions are included separately in the CGE model. All countries not specifically mentioned are aggregated into Rest of World (ROW).

Table 1.2 Countries / regions included separately in the CGE model

EU27	Ukraine
Georgia	Azerbaijan
Moldova	Armenia
Russia	China
Turkey	Rest of World (ROW)

1.2.2 Base year

The base year used for the modelling is 2010. The original data used are from either the 2007 GTAP 8.0 dataset or from 2010 sources and used directly or further recalculated for 2010 with the use of adjusted actual projections based on IMF figures of trade and growth. This extrapolation to 2010 allows us to include the period of economic crisis and thus brings more accuracy to the modelling (i.e. in the baseline).

1.2.3 *Sector specifications*

The sector selection and aggregation is based on the available classification from the GTAP 8.0 dataset that is used. Some aggregations have been made in order to obtain a relevant list of sectors for this exercise.

Provided that the modelling is done in parallel for the TSIA EU- Moldova and EU-Georgia, the sector selection applies to both. Obviously, the relative importance of some sectors will be larger for Georgia than for Moldova and vice versa in terms of share of GDP, exports and imports.

Table 1.3 lists the focused set of 37 sectors used for the modelling exercise in this TSIA (composed by aggregating some sectors from the original 58 sectors in GTAP). We have split the table into the three main agriculture, manufacturing and services sectors.

Table 1.3 Sector selection for this TSIA per each of the major sectors

Agriculture	Manufacturing	Services
Grains - GRN	Energy – EGY	Utilities – UTI
Vegetables, fruits & nuts – V_F	Minerals – OMN	Construction – CNS
Sugar beet- OCR	Animal products – MPT	Trade – TRD
Animals – ANP	Vegetable oils & fats – VOL	Road & rail transport – TSP
Forestry – FRS	Dairy products – MIL	Water transport – WTP
Fishing - FSH	Sugar – SGR	Air transport – ATP
	Rice – OFD	Communication – CMN
	Beverages & tobacco – B_T	Financial services – FIS
	Textiles – TWL	Other business services – OBS
	Wood & paper – LUP	Recreation – ROS
	Petroleum & coal products – P_C	Public services – OSC
	Chemicals – CRP	
	Mineral products – MPN	
	Ferrous metals – FMN	
	Metal products – FMP	
	Motor vehicles – MVH	
	Transport equipment – OTN	
	Electronic equipment – ELE	
	Other machinery – OME	
	Other manufactures – OMF	

Source: GTAP 8.0

1.2.4 *Scenarios*

In the CGE modelling exercise, we compare the effects of a DCFTA (scenario) with a baseline scenario to derive estimated impacts. The scenarios for the EU Georgia DCFTA are not symmetrical in terms of imports and exports. In the simulation of the EU-Georgia DCFTA, we assume that the EU-Georgia DCFTA is in the baseline and vice versa (to simulate how the effect would be for Georgia and the EU in case the EU-Moldova DCFTA were in place as well).

The baseline scenario discussed in this report assumes that there will be no Doha Agreement (DDA) in the WTO. In addition, a baseline that does include DDA is modelled – the results of this exercise are provided in Annex B – accompanied by a short note that explains the differences between the DDA and non-DDA simulations. In the main part of the report we only describe the scenario impacts compared to the baseline without DDA effects. The baseline does include all

FTAs until now, including the Georgia-Turkey and Georgia-Ukraine FTAs, as well as Russia's accession to the WTO (anticipated for the summer of 2012).

The scenario modelled contains three main elements of liberalisation:

1. Tariff measures.
2. Services non-tariff measures.
3. Other non-tariff measures (TBT and SPS).

These elements are modelled in the way summarised in Table 1.4 and briefly elaborated below.

Table 1.4 Scenario DCFTA modelled

Element	Liberalisation
Tariff liberalisation	• EU --> Georgia: 100% liberalisation; • Georgia --> EU: 100% liberalisation for all sectors; • Georgia --> EU: TRQs for some of the most important sensitive products.
Services NTMs	• EU --> Georgia: average liberalisation of 14% - specified per sector; • Georgia --> EU: overall liberalisation of 14% - specified per sector; • Georgia: addition 25 % NT/MFN spill-over effect to third countries.
Other NTMs	• EU --> Georgia: 4% / 6% point reduction in TCE; • Georgia --> EU: 6% / 10% point reduction in TCE; • Georgia: addition 25 % NT/MFN spill-over effect third countries.

1. Tariff liberalisation

The scenario modelled will include a tariff liberalisation of 100 percent in all sectors (so no tariffs remaining) for the EU exports to Georgia. For the mirror image, tariffs for Georgian exports to the EU, a 100 percent liberalisation is also modelled for all sectors, except for sensitive sectors. For those, Tariff Rate Quotas (TRQs) are modelled, based on the information available.

2. Services non-tariff measures

Whereas tariff reduction mainly impact goods sectors, liberalisation in services sectors is modelled in a different manner. The modelling scenario for services non-tariff measures (NTM) is based in part on the final negotiating text for the EU-Ukraine DCFTA, adapted for the specific case of EU – Georgia, especially with respect to binding existing commitments. Liberalisations are then modelled as National Treatment (NT) and Most Favoured Nation (MFN) liberalisation for all services sectors.

Services NTM reduction for the EU to Georgia and Georgia to the EU:

1. Broad national treatment (NT) and most favoured nation (MFN) liberalisation for all services sectors of 6%;
2. The following exceptions to those liberalisation levels (sub a) apply:
   a. 95% preferential liberalisation for communication (telecommunication, postal & courier services) into EU and vice versa into Georgia.

3. This leads to an overall services NTM liberalisation of approximately 14% vis-à-vis the EU (un-weighted) – weighted values differ somewhat depending on sector shares.

4. For effects on other trading partners of Georgia (exports and imports) – due to services NTM and other NTM alignment – we also model MFN spill-overs worth 25% of the liberalisation level with the EU. Rising standards in Georgia due to the regulatory approximation towards EU standards are likely to increase market access for Georgian firms to third countries as well.

3. Other non-tariff measures

In addition to tariff and service sector liberalisation, additional NTM reduction are of special importance for all sectors in this DCFTA. Therefore overall NTM reductions for all sectors are modelled, to account for impacts of regulatory approximation. In doing so, the following assumptions are made:

- The focus is mainly on SPS and TBT measures;
- Approximation is not symmetric – Georgia will mostly approximate towards EU standards. Modelling is hence done asymmetrically (Georgia double that of EU). Provided that regulatory approximation also means further access for EU firms, even if EU standards are higher from the outset, EU reductions are nonetheless larger than zero. It is the difference in standards that matter, not the level of standards per se.

Other NTM reductions from EU to Georgia:

- 4% point reduction in tariff cost equivalents, TCE (based on literature) for those EU sectors affected heavily by SPS and TBT differences with Georgia;
- 2% point reduction in TCE (based on literature) for those EU sectors affected more moderately by SPS and TBT differences with Georgia;
- 2% point reduction in TCE for all agriculture & manufacturing sectors due to trade facilitation.

Other NTM reductions from Georgia to EU:

- 8% point reduction in TCE (based on literature) for those Georgian sectors affected heavily by SPS and TBT – 50% is already taken off to compensate for higher production costs to meet the higher standard = de facto 8% point reduction;
- 4% point reduction in TCE (based on literature) for those Georgian sectors affected more moderately by SPS and TBT – 50% is already taken off to compensate for higher production costs to meet the higher standard = de facto 4% point reduction;
- 2% point reduction in TCE for all agriculture & manufacturing sectors due to trade facilitation.

1.

Other NTM reductions from spill-over effects:

Similarly as for the services NMTs (see above), an additional NT/MFN spill-over effect is modelled for general NTM reductions. We again assume that Georgian barriers with other trading nations will be reduced by 25% of the assumed scenario liberalisations at sector level as presented above.

1.2.5 Short-run versus long run effects

In the CGE modelling exercise, we compare the short-run effects to the long-run effects. The short- and long-run does not refer to a specific time period, but to the time it takes for economic effects to adjust. In the short-run the capital stock is kept constant and fixed. In the long-run, we allow capital to move freely. This means that the static short-run effect – without a dynamic investment effect – is purely based on immediate cost and price effects the moment the FTA is signed. In the long run, capital (that is fixed in investment projects in the short-run) is allowed to reallocate, which implies that capital will move towards the more competitive sectors. These are the sectors that already gained in the short-run and as a result of the changes from the FTA will now experience improved perspectives (e.g. exports and output increases). Capital will flow towards such sectors in the long run version of the model (as it will in the 'real' economy as a result of higher return on investment prospects) and will in turn make a sector even more competitive (and a declining sector where capital moves out – less competitive). The long-run effect is generally expected to take place over a period beyond 5-10 years from the moment of implementation of the DCFTA.

1.2.6 *Outputs from the CGE model*

The CGE model provides outputs for the variables listed in the table below. The outcomes and their interpretation are presented in the remainder of this report.

Table 1.5 Indicators generated by the CGE model

Theme	Indicator	Measurement
1. Aggregate results	a) Employment (skilled and unskilled) b) GDP c) Total exports d) Total imports e) National income f) Terms of trade	a) Percent change b) Percent change c) Percent change d) Percent change e) Billions of dollars f) Percent change
2. Sector results	a) Exports b) Output c) Value added d) Employment (skilled and unskilled)	a) Percent change b) Percent change c) Percent change d) Percent change
3. Environment variables	a) Emissions b) Agricultural c) Fisheries	a) Percentage change in CO2 emissions b) 1.Percentage change in output 2. Changes in land use c) Percentage change in fish catch (production)
4. Social variables	a) Unskilled wage changes b) Labour displacement c) Measure of inequality	a) Percent change in household income b) Percentage of workers required to move jobs c) Change in relative share of unskilled workers in total income.

1.2.7 *Limitations*

On a final note, we must mention that while CGE modelling is a powerful tool, it also has some assumptions that it is based on and issues that we want to make explicit:

1. **Assumptions**
   a. **Assumption 1:** It is impossible to make adjustments for the costs related to approximation – in terms of domestic cost levels. We have used very conservative NTM liberalisation effects (e.g. 8% instead of 15% for ambitious liberalisation; 4% instead of 7.5% for limited liberalisation) to take this cost increase effect into account to some extent.

   b. **Assumption 2:** The CGE model applies long run closure conditions that are based on economic theory, but clearly relate to the long run and may not reflect the short-run situation or even a long-run situation where other events have taken place (i.e. it assumes the ceteris paribus condition). These closure conditions are among others things that the trade balance is in equilibrium, and the assumption of full employment. Any deviations from this long run situation may lead to (small) differences in results.

   c. **Assumption 3:** The CGE model employed here uses an average firm and therefore does not include the latest insights on firm heterogeneity (i.e. differences in productivity between domestic firms, exporters and multinationals). This is a challenging data and modelling issue.

2. **Issues**
   a. **Issue 1:** Tariff revenue changes affect the budget of the government in case tariff levels are reduced. The CGE model does not explicitly generate separate estimates on the potential losses in tariff revenues, but looks at the economy-wide picture: the effect of removing tariffs for national income. This effect includes the loss in tariff revenues for government, but also the more indirect changes in national income due to economic adjustments as a result of tariff reductions (especially since the relative importance of tariff reductions will differ by sector).

   b. **Issue 2:** If trade flows at present are zero because of some regulatory barrier that is totally prohibitive, CGE cannot model anything because it does not have a base to start from – this will have to be added qualitatively (e.g. based on shares in similar markets) after the CGE exercise.

1.3 Social modelling specifications

Existing economic literature suggests that FTAs areas may not always be welfare enhancing.[2] FTAs can influence welfare and the social situation of population in different ways. A direct effect occurs via changes in prices as a result of the new trade regime. Broader effects can be expected due to changes in the macroeconomic situation triggered by an FTA, including faster economic growth, changes in sectoral composition of an economy, wages and employment changes. These effects are typically captured by CGE models, but they may translate differently to the social situation of various groups of the population, thus affecting poverty and the distribution of welfare among individuals and households. These social effects depend both on the aggregate macroeconomic effects (e.g. changes in relative prices) and the characteristics of the analysed economies, specifically the distribution of household income and expenditure shares among economic sectors and particular product groups, which are difficult to incorporate into the CGE model. Therefore, a closer look at social effects of FTA beyond the CGE framework is needed.

The key social effects that are typically analysed in the literature include the consumption effect and the labour income effect. The consumption effect arises as a result of changes in relative prices of the basket of goods and services purchased by households. For instance, higher food prices will – other things being equal – particularly negatively affect poorer strata of the population that spend a higher proportion of their total expenditures on food. As an illustration, in Georgia, the share of expenditures on food and non-alcoholic beverages exceeds 50 percent of household expenditures for the two lowest quintiles. Income effects arise when relative wages and/or prices of goods sold by households (e.g. agricultural products) change.

The analysis carried out in this study follows the methodology presented in Chen and Ravallion (2003) that allows estimating changes in welfare caused by changes in relative prices.[3] This is a two-step analysis. First, the relative price changes induced by the trade policy intervention (here, a DCFTA) are obtained from the CGE model (see Chapter 2). Then these results are incorporated into the household level data and changes in the households' welfare are simulated. Technical details of this process are presented in Annex A.2. This approach allows for a detailed analysis of distributional effects among various groups of the population, including vulnerable groups and, in

[2] For a popular exposition see e.g. D. Rodrik, The Globalization Paradox: Democracy and the Future of the World Economy, W.W. Norton, New York and London, 2011

[3] Shaochua Chen, Martin Ravallion (2003). Household Welfare Impacts of China's Accession to the World Trade Organization, The World Bank Policy Research Working Paper 3040. For some comments on the methodology see Alain de Janvry, and Elisabeth Sadoulet (2008). Methodological Note: Estimating the Effects of the Food Price Surge on the Welfare of the Poor, mimeo, UC Berkeley.

particular, effects on occurrence and severity of poverty and on inequality. Thus, this method significantly enriches the information obtained from the results of CGE model.

The modelling relies on the data provided within the household budget surveys. Specifically, we rely on the 2009 Household Integrated Survey Database. The sample size is around 22,000 households, representative for the whole country, but not including Abkhazia and South Ossetia. The quality of the survey data is deemed satisfactory, and the large sample size is a strength.

Modelling of welfare changes by households provides information to calculate indicators that cast light on changes in absolute and relative poverty, social inclusion, inequality and vulnerable groups composition caused by a new trade regime. More details on calculation of indicators is also provided in Annex A2.

1.4 Environmental modelling specifications

Regulation or any exogenous change might involve various kinds of environmental impacts that are associated either with changes in environmental state (e.g. in emission level) or pressures (e.g. airborne concentrations). Both changes, in environmental state or pressures result in changes in the environmental burden. We can identify four possible drivers of changes in the environmental burden. These drivers represent changes in i) the scale of the economy, ii) the output mix, iii) the input mix and iv) the state of technology. The total change in environmental burden can be decomposed into each of these effects (see e.g. de Bruin 1997; Stern 2002; or Ang 2004)[4]. Any regulation or policy change, including changes in trade policy as in this study, can activate each of these drivers.

The first driver of changes in environmental quality is change in the scale of production, or of the economy. Basically it means that an increase in the scale of production implies expanding production at a given factor, output mix, and state of technology. Because there is no change in factors or technology, the change in the scale of production also changes burden proportionally; i.e. a one percent increase in production leads, *ceteris paribus*, to a one percent increase in the burden. This is called *the scale or the level effect*.

However, different industries have different pollution and resource intensities. If economic activity would reallocate from more pollution (resource) intensive industries to less intensive ones with lower emissions (resource used) per unit of production, the overall environmental burden would decline. This is referred to as *the composition or structure effect*.

The next two drivers of environmental change are related to changes in technology, which lead to changes in emission (resource) intensity. Environmental intensity of production might be affected either by changes in the input mix – when less environmentally damaging inputs substitute more damaging inputs, for instance using low sulphur coal or natural gas instead of dirty lignite, or by changes in the state of technology when innovations in process or product result in less resource use or pollutant released per unit of production keeping the input mix constant. This used to be called *the intensity effect*. An analyse of *the intensity effect* state would require incorporating the environmental variables properly into, ideally, a dynamic-type model. One possible solution would be attributing emission intensities for each factor (i.e. fuel type) in each sector for each country in the model. Such an exercise, however, would require environmental data at a very detailed level of

[4] As shown in relevant economic papers (e.g. de Bruin 1997, Stern 2002; or Brůha and Ščasný 2005) any change in environmental indicator might be then decomposed into the scale effect, the intensity effect, or composition effect. In the case of emission indicators, Torvanger (1991) or Ang (2004) introduce also other two effects measured by changes in emission coefficients and fuel share effect.

disaggregation, which are not usually available in standard data sources. Moreover, the effect of induced technological change or innovation transfer would require using a very specific and dynamic type model. This type of modelling is beyond the scope of this project. Therefore we can assess any possible effects on the environment due to technology change and/or improvements in product quality only qualitatively.

Changes to the burden on the environment do not necessarily need to have an impact on utility or welfare of humans. However, if we attach an economic value to it, changes in the quality of environment will be reflected in welfare or utility. In principle, one can distinguish two ways of assessing the environmental effects. The first – ecologic perspective – considers any changes in environmental burden that are measured mostly in physical terms and that we have presented above. Although, change in, for instance, certain pollutant is a useful proxy indicator of potential damage, it does not provide any information about welfare impact. The second – economic – one tries to link the changes in burden to the effects on welfare. While the former approach can provide a clear picture about changes in each measured state or pressure, it cannot be compared to other results measured in terms of income or utility. On the other hand, results from the later approach might be linked and thus add up to the estimates from other approaches such as macro modelling, allowing in such a way to draw a more integrated picture. A detailed look at each element of the measured environmental state and pressures might be hidden in the final aggregate generated by the later approach. We consider the advantage of the later approach in our study and thus use the approach that allows us to link the estimates from CGE modelling with environmental impact assessment.

This study therefore goes beyond a standard evaluation of environmental "impacts", which usually assesses the effect on state or pressures on the environmental quality. Benefiting from the results from ExternE project series, namely from EU funded projects NEEEDS and CASES, we quantify impacts of changes in airborne pollution on welfare. This approach has several advantages: first, it allows considering several changes in state simultaneously by expressing damage in terms of money that reflects corresponding welfare changes. Secondly, expressing the impacts in monetary terms allows us to directly compare involved changes on the environment with other welfare changes coming from CGE modelling results of chapter 2.

Our quantitative environmental analysis thus complements the macro analyses preformed in the general equilibrium framework of the CGE model. Evaluation of environmental impacts is thus based on the results from the CGE model, which are exogenous to our exercise. On the other hand, the effects due to changes in environmental quality do not affect the endogenous variables in the CGE model. Technical details on the calculations are presented in detail in Annex A3.

Data

Base economic output values are taken from the GTAP database and results of CGE modelling (see Chapter 2). Emission of SOx, NOx and particulate matters for Georgia are taken from CLRTAP/EMEP Emission inventory status report 2008 and EMEP Status Report 2010[5].Specifically, Georgian emission data for 2007 are used. The CO2 emission are already included in the CGE model used in this study.

External costs per unit of pollutant for the EU are taken from the database of default damage values created within the FP6 funded projects NEEDS and CASES. Values of external costs for Georgia have been derived by the same method – the impact pathway analysis – and kindly provided by

[5] See http://emep.int/ for more information.

University of Stuttgart – IER[6]. These values have been also used in the study on social and economic benefits of enhanced environmental protection in European Neighbourhood Policy Countries and the Russian Federation edited by Van Breusegem and Abramia (2011)[7]. Annex A3 contains tables reporting the values of external costs related to release of 1 tonne of respective pollutant in both regions. Due to changes in background concentration and meteorology, transportation of substances in the atmosphere, and receptor density around the world, damages per country vary and it thus matters where emissions are released.

[6] We are namely grateful to Wolf Muller and Philipp Preiss from University Stuttgart, IER for provision of the external cost values and Alistair Hunt from University of Bath and Metroeconomica for consultations on environmental impact assessment of betterment of air quality.

[7] Van Breusegem, W. and Abramia, G. 2011. Analysis for European Neighbourhood Policy (ENP) Countries and the Russian Federation of social and economic benefits of enhanced environmental protection – Georgia Country Report.

2 Quantitative results

In this chapter, we report the economic impacts of the EU-Georgia DCFTA using CGE simulation. First, the aggregate level results are presented. We then take a closer look at these results by examining the effects on a more disaggregated, sector-specific level. Next, we present and discuss the estimated effects on environmental variables and social indicators. Finally, we offer some concluding comments on the modelling results.

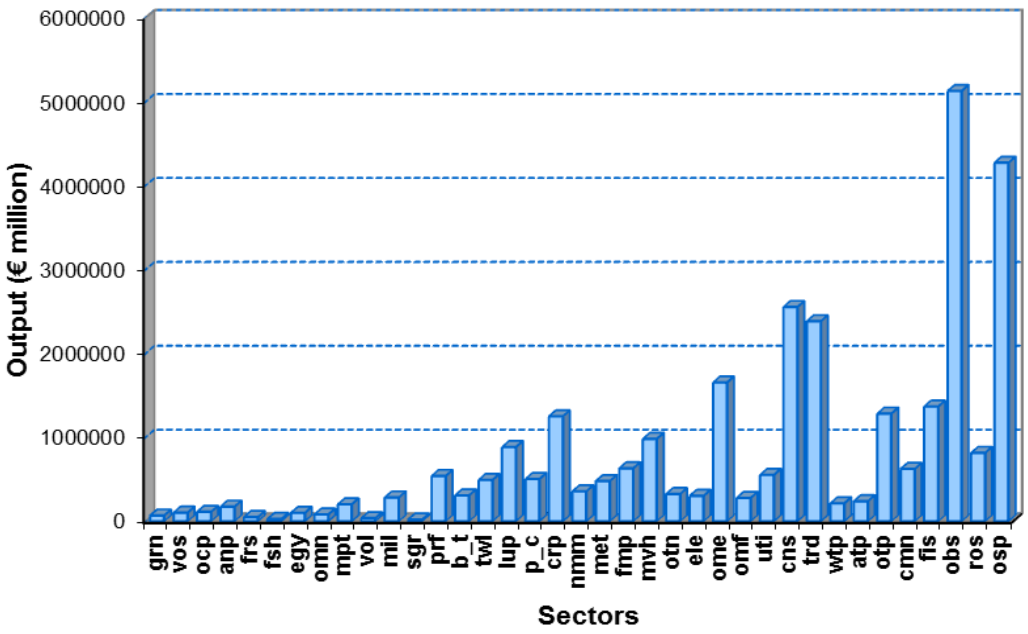
2.1 The EU-Georgia baseline

In this chapter, we report the expected macro-economic and sector-specific effects that stem from the DCFTA between the EU and Georgia. In order to place these results in the right context, especially with regard to percentage change figures, we need to be clear on the EU-Georgia baseline information, especially the sector-specific weights in each of the economies. The baseline matters because a small percentage change in a large export sector will have large export effects, while a similar percentage change for a small sector may be insignificant for total exports and the overall economy.

2.1.1 Sector-specific baseline figures: output

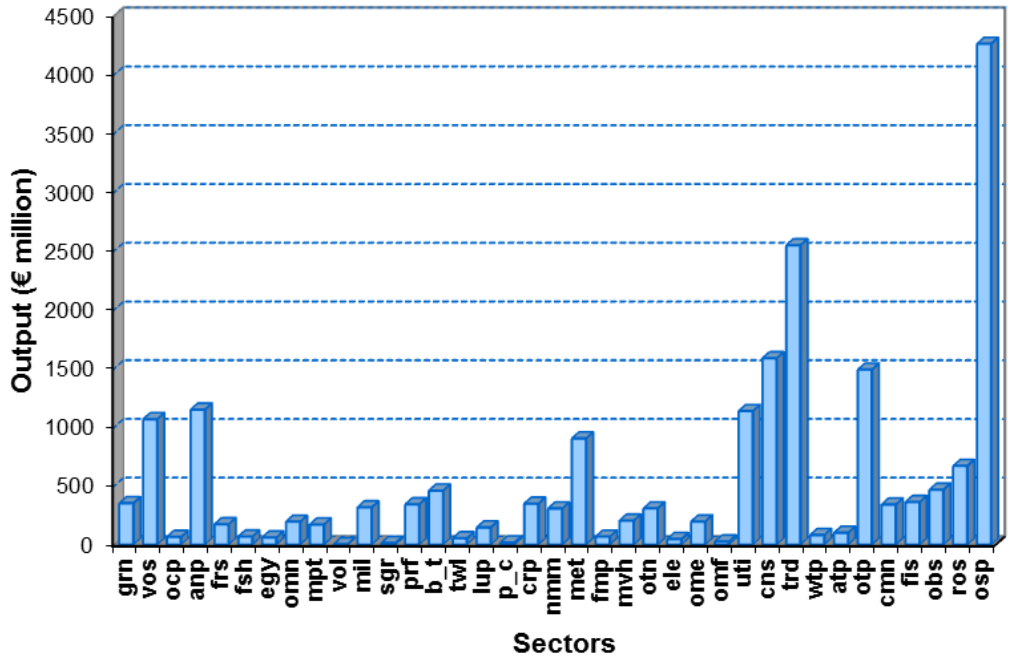
For the EU, by far the most important sectors in terms of output are other business services (obs), public services (obs), construction (cns), trade (trd), machinery and equipment (ome), chemicals, rubber and plastics (crp) and financial services (fis). The output values in EUR million are presented in Figure 2.1 below.

Figure 2.1 Output values at sector level for the EU (€ million)



For Georgia the main sectors in terms of output are public services (osp), trade (trd), construction (cns), other transport (otp), utilities (uti), animal products (anp), and vegetables, fruits & nuts (vos). See Figure 2.2 below for the Georgian output shares in EUR million.

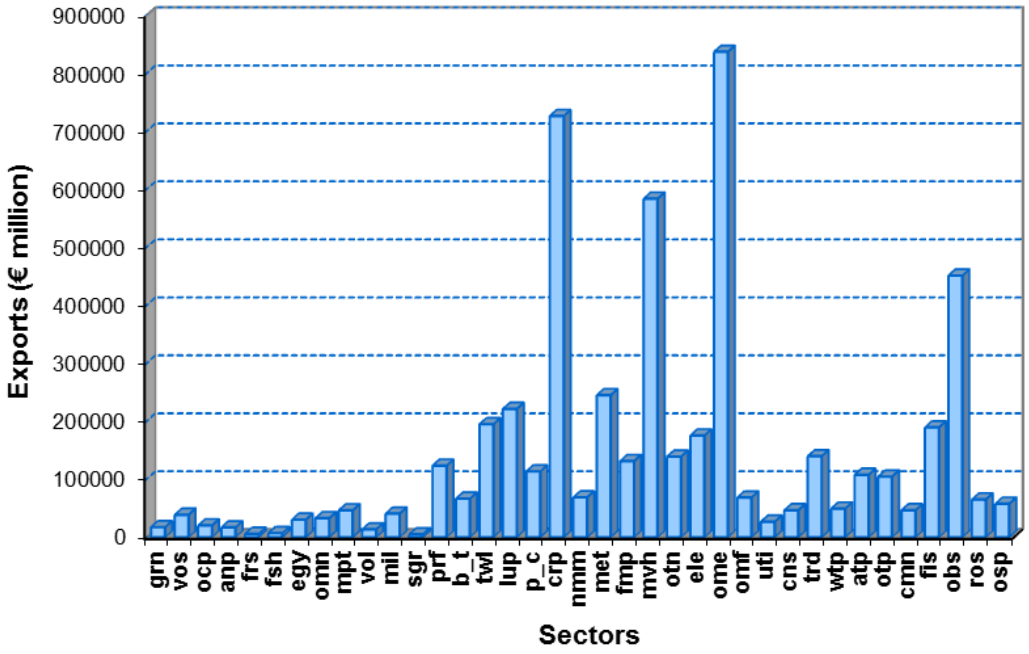
Figure 2.2 Output values at sector level for Georgia (€ million)



2.1.2 *Sector-specific baseline figures: exports*

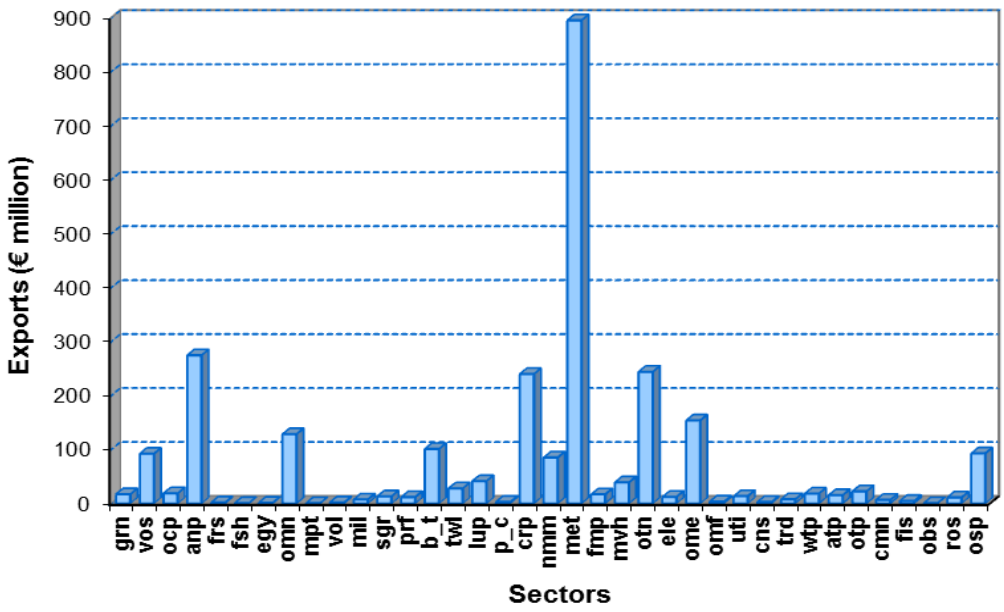
The sectors that constitute the bulk of EU exports are machinery and equipment (ome), chemicals, rubber and plastics (crp), motor vehicles (mvh) and other business services (obs) as Figure 2.3 below shows.

Figure 2.3 Export values at sector level for the EU (€ million)



For Georgia, the main export sectors are metals (met), animal products (anp), chemicals, rubber & plastics (crp), other transport equipment (otn), and other machinery and equipment (ome) as Figure 2.4 below shows.

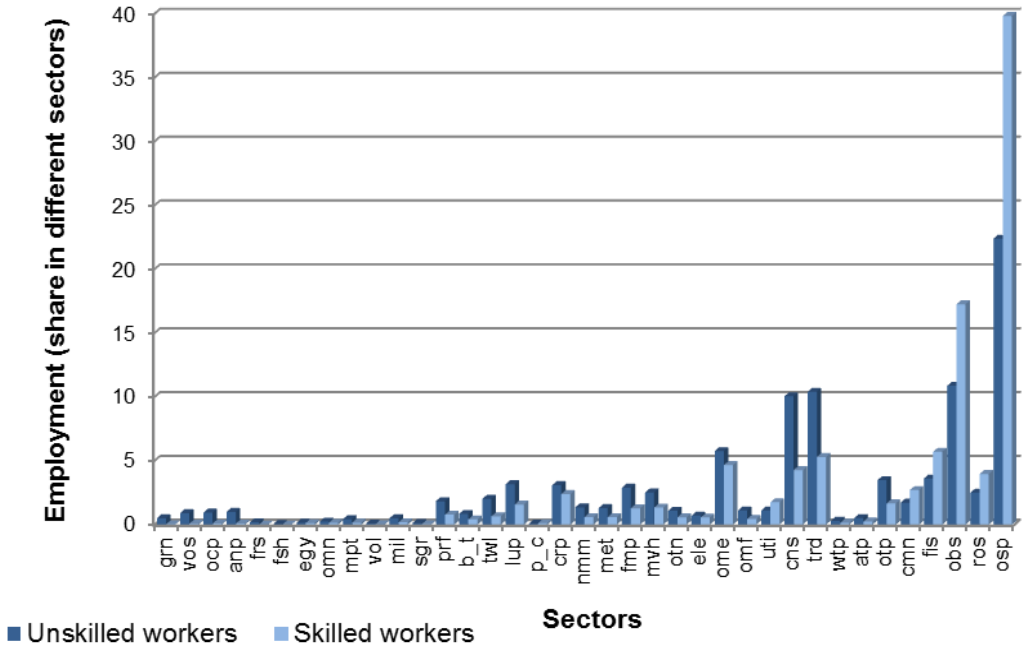
Figure 2.4 Export values at sector level for Georgia (€ million)



2.1.3 *Sector-specific baseline figures: employment (high- and low-skilled)*

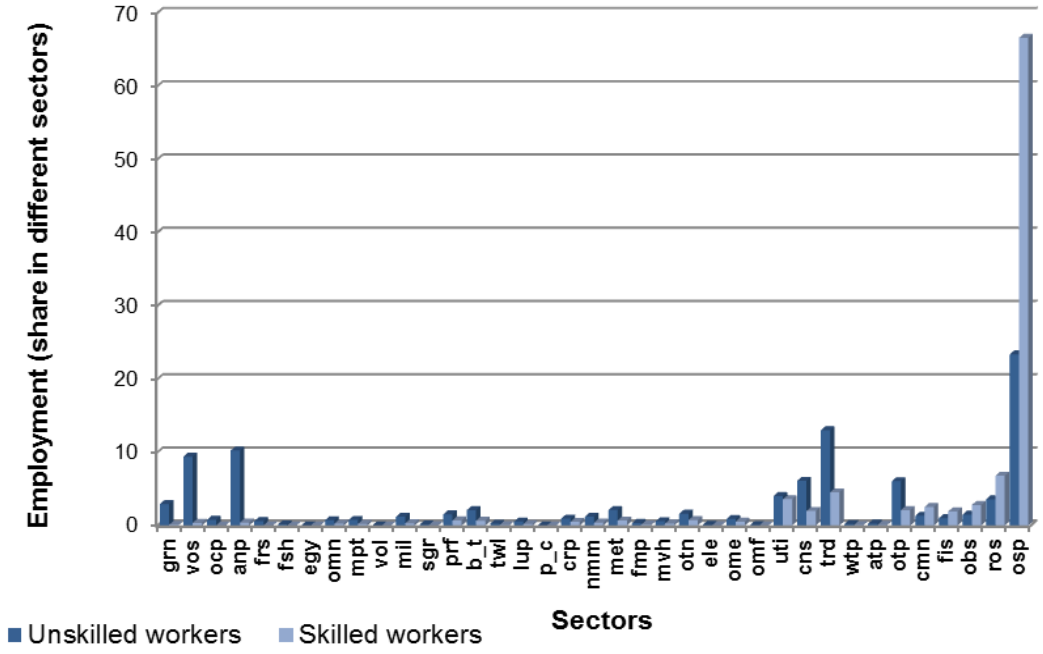
In terms of employment, we differentiate between high- and low-skilled employees. Figure 2.5 shows the high- and low-skilled employee shares for the EU and Figure 2.6 for Georgia. From these two figures the following becomes clear. For the EU the main sectors with low-skilled employment are public services (osp), other business services (obs), trade (trd) and construction (cns) followed by machinery and equipment (ome). High-skilled employment is highest in public services (osp), other business services (obs), trade (trd), financial services (fis), and machinery and equipment (ome).

Figure 2.5 Employment shares at sector level for the EU (percent)



For Georgia the main sectors for low-skilled employment are public services (osp), trade (trd), animal products (anp), vegetables, fruits and nuts (vos), and other transport (otp). High-skilled employment occurs most in public services (osp) (65%) followed (at a distance) by trade (trd), utilities (uti), and recreational services (ros).

Figure 2.6 Employment shares at sector level for Georgia (percent)



These values enter the model as baseline figures for 2010. The CGE model then continues to report changes (sometimes in EUR millions but more often in percentage changes) from this baseline.

2.2 Macro-economic effects of the EU-Georgia DCFTA

2.2.1 Overall effects

We start with the overall macroeconomic results for Georgia, EU, and the rest of the world. These results are summarised in the Table 2.1 below for the short and long run estimates.[8] In the short run, the FTA is expected to lead to an increase in national income of EUR 79.1 million for the EU and EUR114 million for Georgia. In the longer run, the estimated change in national income for Georgia would be more than double at EUR 292 million. For the EU, the long run effects will be marginally negative resulting in EUR 47 million contraction in national income. In relative terms, for the EU, these changes in national income translate into a negligible, 0.00 percent change in European GDP (rounded figure). For Georgia, the increase in national income translates to an increase in GDP of 1.7 in the short run and 4.3 percent in the long run.

Thus the DCFTA would have a much more pronounced impact on Georgia's economy than on the EU's. This reflects partly the relative importance of the EU and Georgia as trading partners for each other. For Georgia, the EU is a much more important trading partner than Georgia for the EU. Furthermore, in terms of economic size, the EU is much larger. Thus a DCFTA between the two

[88] The difference between the short-run and the long-run lies in the way capital mobility is modelled. In the short-run capital is assumed fixed, while in the long run it is mobile. That implies that with free capital mobility, capital in the long run will move to those sectors with the strongest comparative advantages, leading to highest capital returns. This reinforces comparative advantages in the economy and lead to stronger results. We call this the dynamic investment effect in the long run.

parties will have a much larger impact on Georgia than on the EU. Thus the impact of the DCFTA on European consumer prices, wages and trade is also expected to be negligible.

Table 2.1 Macroeconomic results of an EU-Georgia DCFTA

Variable/ Country	EU	Georgia	Moldova	Russia	Turkey	Ukraine	Azerbaijan	Armenia	China	RoW
Short run										
National Income, mln €	79.1	114.4	-0.1	3.3	-1.8	-0.8	0.3	0.2	10.4	9.1
GDP, % change	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consumer prices, % change	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wages, less skilled % change	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wages, more skilled % change	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Terms of Trade, % change	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Imports, % change	0.0	4.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Exports, % change	0.0	8.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Long run										
National Income, mln €	-47.0	291.9	2.1	113.2	-110.8	16.3	53.0	3.3	-17.8	-118.5
GDP, % change	0.0	4.3	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Consumer prices, % change	0.0	-0.6	0.0	0.0	0.0	-0.1	0.4	-0.1	0.0	0.0
Wages, less skilled % change	0.0	3.6	0.0	0.0	0.0	0.0	0.5	0.1	0.0	0.0
Wages, more skilled % change	0.0	3.6	0.0	0.0	0.0	0.0	0.5	0.1	0.0	0.0
Terms of Trade, % change	0.0	-0.6	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	0.0
Total Imports, % change	0.0	7.5	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0
Total Exports, % change	0.0	12.4	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0

Source: CGE modelling calculations

For Georgia, the DCFTA would have a significant impact on the economy with somewhat more pronounced changes in the long run when dynamic investment effects kick in. Exports are estimated to increase by 9 and 12 percent in the short and long run respectively , with imports going up by 4.4 and 7.5 percent respectively. This implies that – on average – the DCFTA is expected to improve the trade balance for Georgia in relative terms, although given that imports currently exceed exports, the trade deficit may still increase.in absolute terms Wages are estimated to increase by 1.5 and 3.6 percent respectively. Meanwhile, consumer prices are expected to decrease by about 1 and 0.6 percent over the short and long run respectively, mainly due to increased competition of imports(not only for end-products but also intermediate products) and, economies of scale associated with increased market access brought about by the FTA This implies that – on average – purchasing power of Georgian citizens would increase because of the DCFTA especially in the long run.

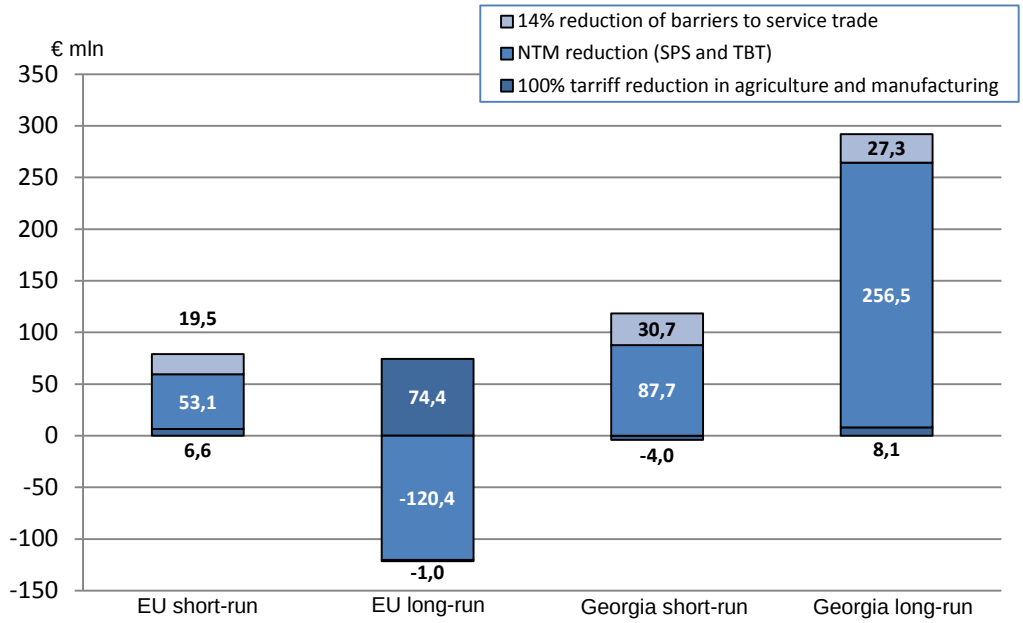
2.2.2 *Estimated third country effects, including the EU-Turkey Customs Union*

For the rest of the countries in the region, liberalisation of trade between the EU and Georgia is shown to have some effects. In the long run, Russia will gain over EUR110 million in national income while Turkey would face a contraction in national income of the same scale. However, these changes are all very small, when translated into percentage changes of GDP. For Russia, the effect is mainly due to more indirect access to the EU market and due to the fact that with higher Georgian standards, cheaper Georgian products may enter those markets more easily. The EU-Turkey Customs Union is affected negatively because of the similar production structure of Georgia to that of the Turkish economy, implying that when Georgian goods have easier access to the EU – due to the DCFTA – trade diversion effects from Turkey will take place.

2.2.3 *Decomposition of the impact by trade policy*

As previously discussed, the FTA contains different trade policy measures for liberalising trade, i.e. lowering tariffs, NTMs and liberalising services trade. In the Table below we present the changes in national income for Georgia and the EU, decomposed by the trade liberalising measures, tariffs, NTMs and services.

Figure 2.7 Changes in national income (per trade liberalising measure)



Source: IIDE CGE modelling calculations

As pointed out in the presentation of Table 2.1 above, national income in the EU and Georgia are estimated to increase by EUR 79 and EUR 114 million respectively in the short run. As can be seen from Figure 2.7, the majority of these increases are attributable to the lowering of NTMs, EUR 53 and EUR 88 million euros respectively for the EU and Georgia. The second most important contribution for Georgia originates from services trade liberalisation, amounting to EUR 31 million euros, while tariff reductions would lead to a reduction in national income. In the case of the EU, reduction of tariffs would lead to an increase in national income by EUR 7 million, and an increase of EUR 20 million for services trade liberalisation. Services trade liberalisation has relatively small effects mainly due to the fact that the EU-Georgia DCFTA is expected to bind already expressed commitments in services, implying a six percent services liberalisation (with the exception of communication where liberalisation is expected to be significantly higher).

In the long run, for Georgia, the reduction of NTMs is also the single most important measure for reaping the benefits of liberalising trade, amounting to EUR 257 million. In the long run, both tariff and reductions in barriers to services trade are shown to lead to positive national income effects. In

the long run, for the EU, the most important contribution to the decrease in national income is due to reductions in NTMs. The overall EUR 47 million decrease in the long run stems from EUR 120 million decrease that is attributable to NTM reductions. Tariff reductions and reductions in barriers to services trade lead to further increases in the national income, although in smaller magnitudes.

2.3 Sector-specific effects of the EU-Georgia DCFTA

In order to find out more about the underlying changes across the economies, we now focus on the underlying sector specific changes in value added, output, employment and imports. Table 2.2 below contains a summary of the effects for Georgia in the most affected sectors in the long run setting. For the EU also the sectoral effects are close to zero and therefore not separately presented here. The complete tables with sectoral effects are available in Annex B.

Table 2.2 Georgian sector-specific shares of total value added (VA), and DCFTA effects by sector

	Share of Total VA in baseline	Value Added, % change, long run	Output, % change, long run	Total exports, % change, long run	Total imports, % change, long run
Veg, fruits, nuts, oilseeds	5.9	2.7	3.4	21.9	19.1
Other crops	0.4	-2.3	-2.0	3.0	15.1
Animal products	10.0	2.5	3.1	5.7	19.8
Livestock and Meat Products	1.0	-14.7	-14.8	169.9	17.8
Vegetable oils and fats	0.0	5.4	6.7	6.5	3.4
Sugar	0.2	-2.5	-2.4	-1.5	1.6
Other processed foods	1.1	-6.2	-8.8	14.5	13.0
Beverages and tobacco	1.9	-1.1	-4.0	2.5	22.5
Petrochemicals	0.0	-1.4	-1.0	16.5	1.8
Chemicals, rubber, plastics	0.5	46.5	62.2	64.5	-2.7
Primary metals	1.0	7.3	7.9	8.5	4.9
Fabricated metals	0.2	-3.5	-3.2	6.6	6.1
Motor vehicles	0.4	-3.8	-3.5	8.3	5.9
Electronics, computers	0.1	-8.1	-9.3	16.3	8.8
Other machinery and equipment	0.4	18.8	23.7	48.1	4.1
Other manufacturing	0.1	-20.2	-24.0	-13.8	14.3
Construction	5.6	4.1	4.5	7.7	6.6
Trade	14.8	2.9	3.1	8.2	14.0
Water transport	0.6	3.8	4.1	2.9	2.5
Air transport	0.7	-4.6	-4.4	21.1	7.9
Communications	2.2	2.1	3.6	4.8	5.4
Business and ICT	3.1	0.2	0.4	12.0	4.2
Public and other services	28.0	1.5	1.7	1.8	20.6

Note: Total exports and imports refer to Moldova's total exports to and imports from the world, not only the EU.
Source: Shares GTAP, IIDE CGE modelling calculations

Sector-specific changes in output and value added

The modelling results show that output in all sectors in Georgia will be affected by liberalising trade with the EU. The biggest effect is the estimated 62 percent increase in output of chemicals sector.

While this sector specific expansion is big in relative terms (percentage change), the fact that this sector accounts for only 0.5 percent of total value added in the economy, and the fact that the absolute level of change for this sector is thus small, means that the overall effect on the economy from this increase is limited.

Other sectors, which are expected to increase more than five percent, are other machinery and equipment, primary metals, and vegetable oils and fats. For other machinery and equipment and primary metals, reductions in TBT NTMs are the main driver for output growth, while for vegetable oils and fats, the tariff reduction is expected to be the main cause for output increases.

Livestock and meat products, other processed foods, electronics & computers and other manufacturing are all expected to contract by 8-24 percent in terms of output. In the case of livestock and meat products this is most likely due to the elimination of Georgian tariffs on imports from the EU under the DCFTA.

The table shows that while the agricultural sector will come under pressure due to increased competition from abroad, some subsectors are still expected to expand due to the DCFTA. This is the case for vegetable oils and fats, vegetables, fruits and nuts, and animal products.

As previously noted, the DCFTA is estimated to have very limited effects on the EU. Looking at the sector specific changes in output across the EU, the changes are estimated at 0.0 percent for all sectors, with the exception of the chemicals sector which is expected to contract by 0.1 percent and the livestock and meat products sector, which is expected to grow by 0.03 percent.

2.3.1 Sector-specific changes in trade

Sector-specific changes in trade for Georgia

When we look at changes in exports and imports for Georgia, the following picture emerges. The most affected sectors in terms of expected changes in total exports are livestock & meat products (+170 percent), chemicals, rubber and plastics (+65 percent), other machinery and equipment (+48 percent), air transport (+21 percent), utilities (+18 percent) and petrochemicals (+17 percent). Imports change most, relatively, in the following sectors: dairy products (+27 percent), beverages & tobacco (+22 percent), animal products (+20 percent) and vegetables, fruits & nuts (+19 percent).

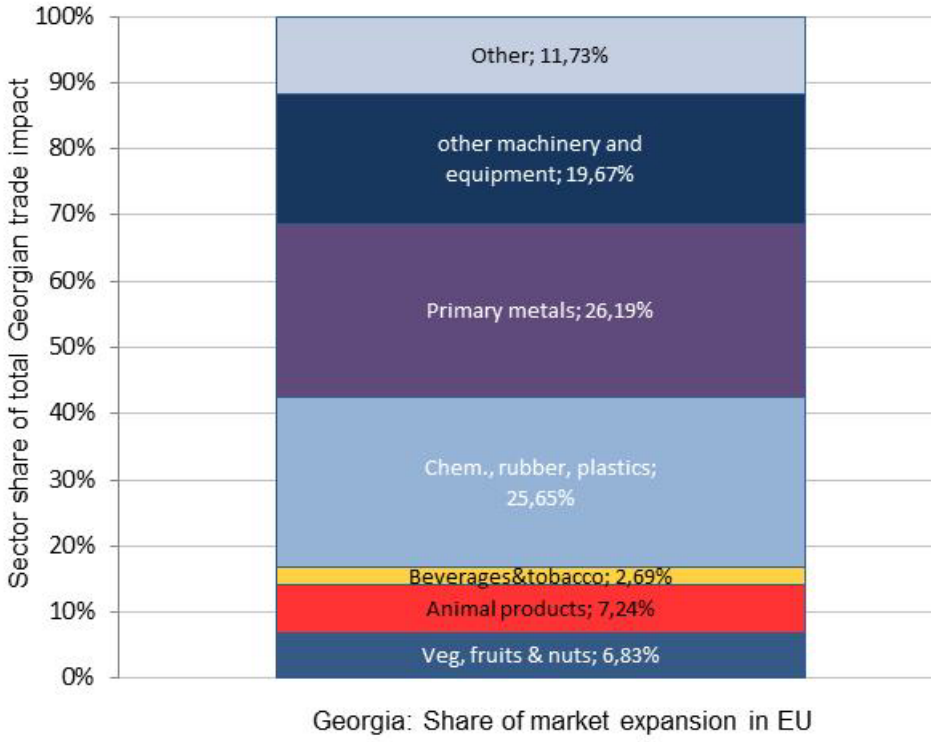
In the modelled scenario, total Georgian imports from the Rest of the World (all countries except for the EU) will expand by an estimated 7.8 percent (from EUR 6.7 billion to EUR 7.2 billion). Georgian imports from the EU are expected to increase much more, from EUR 1.7 billion to EUR 2.05 billion, an increase of 23 percent.

The sector-specific impact of the EU-Georgia DCFTA is best measured by looking at the total trade impact as the multiplication of change in market share for Georgia times change in EU market size. Using this definition of Copenhagen Economics (2007),[9] Figures 2.8a shows what sectors – according to the CGE outcomes – are expected to contribute most to the increase in EU imports from Georgia and thus also experience the largest trade impacts.[10]

[9] Copenhagen Economics and J.F. Francois (2007), 'Economic Impact of a Potential Free Trade Agreement (FTA) between the European Union and South Korea', March 2007.

[10] Please note that the percentages in this figure relate to the share of the sector in the total bilateral export increase, and are thus different from the figures in Table 2.2 since these are increase in total exports by sector.

Figure 2.8a Sectoral decomposition of the estimated DCFTA-related expansion of Georgian exports to the EU (% of total increase of Georgian exports to the EU



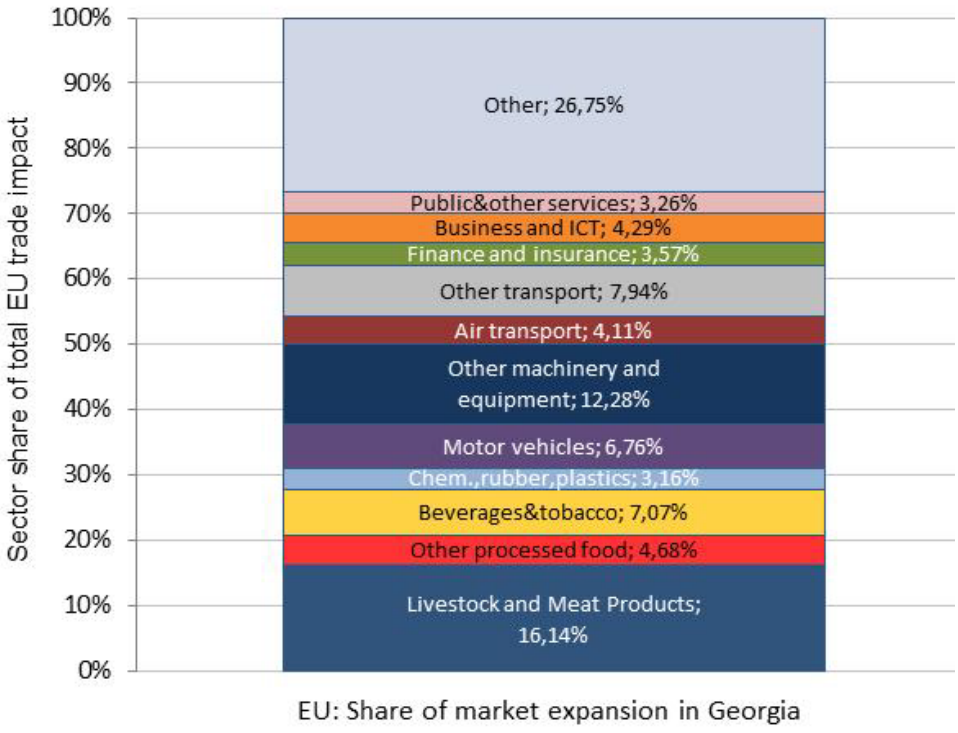
Source: Ecorys and IIDE, own model simulations

From Figure 2.8a, we conclude that the largest expected trade impacts for Georgia are found in primary metals (26 percent of the total increase in the value of EU imports from Georgia), followed by chemicals, rubber & plastics (26 percent), other machinery and equipment (20 percent), and animal products (7 percent).

Sector-specific effects for EU trade with Georgia

With respect to total exports and imports for the EU there will be no impact as a result of the DCFTA, but it will have an impact on bilateral trade with Georgia. Total EU imports from the Rest of the World are expected to go up by 0.05 percent while EU imports from Georgia are expected to rise by 43 percent as a result of the DCFTA. Figure 2.8b shows the share of important export sectors to Georgia in the expected total EU exports increase to Georgia as a result of the DCFTA (similar to Figure 2.8a).

Figure 2.8 b Sectoral decomposition of the estimated DCFTA-related expansion of EU exports to Georgia (% of total increase of EU exports to Georgia

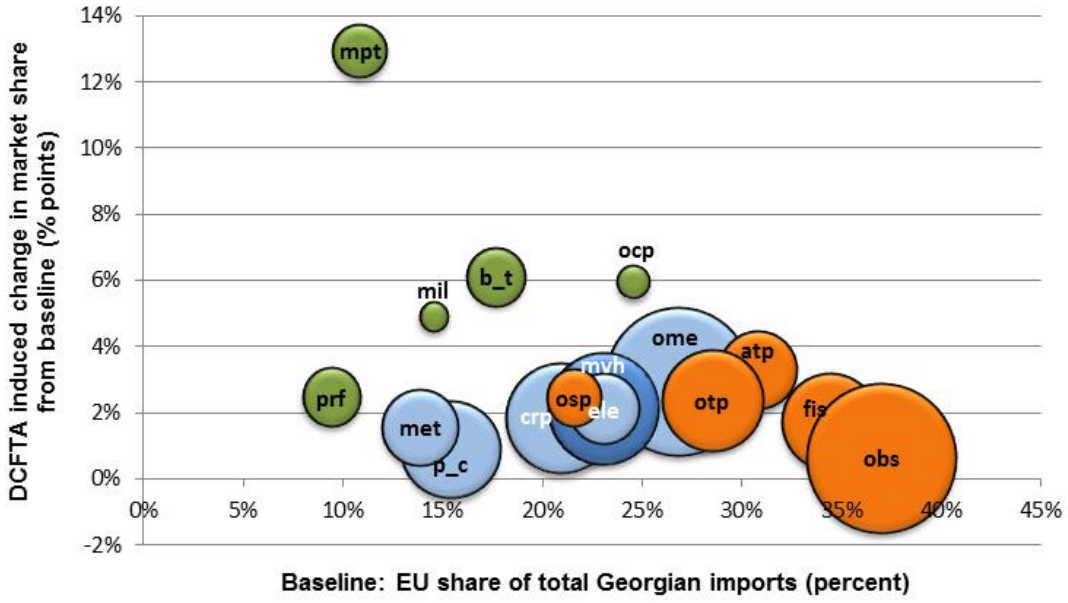


Source: Ecorys and IIDE, own model simulations

For the EU, according to the modelling results, livestock and meat products count for 16 percent of total increase in Georgian import value, followed by machinery and equipment (12 percent), beverages & tobacco (7 percent), and motor vehicles (7 percent).

Figure 2.9 shows the changes in market shares for key EU exports to Georgia induced by the DCFTA, relative to the EU market share in total Georgian imports in the baseline, where the size of the bubble reflects the size of total Georgian imports in the sector, and the colour of the bubble presents the main economic sector (green is agriculture, blue is manufacturing and orange is services).

Figure 2.9 Changes in market shares for key EU exports to Georgia following from the DCFTA



Note: TWith respect to the bubbles, they reflect the following sectors. Green is agriculture representing livestock and meat products(mpt), diary products(mil), other processed food(prf), other crops(ocp), beverages and tobacco(b_t) ;blue is manufacturing sectors representing primary metals(met), petrochemicals(p_c), chemicals, rubber, plastics(crp), electronics, computers(ele), motor vehicles(mvh), other machinery and equipment(ome); orange is service sectors representing public and other services(osp), other transport(otp), air transport(atp), finannce and insurance (fis), business and ICT(obs).
Source: Ecorys and IIDE, own model simulations

From Figure 2.9, we conclude that the DCFTA improves the market share of the EU in Georgian imports across the board for all sectors (also for those sectors not reported). The combination of the size of the bubble with the upward potential in import shares from the DCFTA (vertical axis) provide the most interesting offensive interests from an EU perspective. These lie in the following sectors: other machinery and equipment (ome – significant impact and large Georgian import market), air and other transport (atp/otp – significant impact and medium-large Georgian import markets), financial services (fis – medium impact of the DCFTA and medium-large Georgian import market), and livestock and meat products (very high impact of the DCFTA and medium size Georgian import market).

2.4 Social effects of the EU-Georgia DCFTA

Some of the estimated variables from the CGE analysis are used as basis for the impact analysis with regards to resulting social impact assessment. It should be kept in mind that the CGE model assumes fixed employment (the so-called closure rule explained in in section 1.2.7), as for modelling purposes it is not possible to let both wages and employment adjust. The model does therefore not predict changes in total employment, but does estimate the effects of a DCFTA on wages and labour displacement and thus gives a picture of distributional effects in employment. Table 2.3. summarises results on wage changes and the scale of necessary between-sectoral labour re-allocation.

Table 2.3 Selected social indicators modelled in the CGE exercise

	Wage change (%)	Labour displacement (% of labour force	
	Less skilled Labour	Less skilled	More skilled
European Union	0.0	0.0	0.0

	Wage change (%)	Labour displacement (% of labour force	
	Less skilled Labour	Less skilled	More skilled
Georgia	3.6	5.1	3.6

Source: IIDE CGE modelling calculations

The first column shows the estimated changes in wages for less skilled labour. In Georgia, both less and more skilled labour are estimated to experience an increase in wages of 3.6 percent on average.

The last two columns illustrate how much labour movement (i.e. labour displacement) is expected to take place between sectors for both parties to the agreement. This is measured as the share of the labour force that will relocate across sectors as a result of the DCFTA.[11] As could be expected, no labour relocation is estimated to take place in the EU. In Georgia approximately 4 percent of the labour force is expected to migrate between sectors as a result of increased trade with the EU. This migration is slightly higher for the less skilled labour compared to the more skilled labour. It should be noted that the model assumes easy migration between sectors for workers. In reality this may be more difficult – as is also explained in more detail in section 3.1.

Sector-specific social effects: employment changes

The largest relative increases in employment in Georgia (see Table 2.4 below) – that closely mirror the estimated changes in output as presented in Table 2.2 above – can be found in the chemicals, rubber & plastics, machinery and equipment, other manufacturing and livestock & meat product sectors.

In absolute terms, changes in employment for unskilled workers will be generally more pronounced than for skilled workers. Most new jobs for unskilled workers will be created in the chemicals, rubber & plastics, vegetables fruits and nuts and other machinery and equipment sectors. Largest employment losses will likely occur in other transport, trade, livestock and meat products and other processed food sectors. For skilled workers, a substantial number of new jobs is expected in the chemicals, rubber & plastics and other machinery and equipment while losses are projected in business and ICT and other transport sectors[12].

Table 2.4 Georgian sector-specific employment shares and projected changes of less & more skilled employment (% change, long run)

	Less skilled employment		More skilled employment	
	Baseline (% of total)	% change	Baseline (% of total)	% change
Veg, fruits, nuts, oilseeds	9.4	2.5	0.4	2.6
Other crops	0.8	-2.5	0.0	-2.4
Animal products	10.3	2.3	0.4	2.4
Livestock and Meat Products	0.8	-15.8	0.2	-15.5
Vegetable oils and fats	0.0	4.3	0.0	4.7
Sugar	0.1	-4.2	0.1	-3.9
Other processed foods	1.5	-7.3	0.7	-7.0

[11] This is based, technically, on the weighted "standard deviation" in employment shares.

[12] It should be remembered that these absolute and relative changes in employment predicted in the model only arise due to workers' reallocation between sectors given that total employment is fixed in the model.

	Less skilled employment		More skilled employment	
	Baseline (% of total)	% change	Baseline (% of total)	% change
Beverages and tobacco	2.1	-3.3	0.7	-2.9
Petrochemicals	0.0	-3.3	0.0	-2.9
Chemicals, rubber, plastics	0.9	41.6	0.5	42.1
Primary metals	2.1	4.3	0.7	4.7
Fabricated metals	1.4	-4.9	0.1	-4.5
Motor vehicles	0.6	-5.8	0.3	-5.5
Electronics, computers	0.1	-10.2	0.1	-9.9
Other machinery and equipment	0.9	16.0	0.5	16.5
Other manufacturing	0.1	-21.1	0.0	-20.8
Construction	6.1	0.3	2.0	0.7
Trade	13.0	-1.5	4.5	-1.1
Water transport	0.2	-1.3	0.1	-0.8
Air transport	0.3	-8.4	0.1	-8.0
Communications	1.3	-1.0	2.5	-0.7
Business and ICT	1.5	-3.5	2.8	-3.1
Public and other services	23.4	-0.4	66.6	0.0

Source: Shares GTAP, CGE modelling calculations

2.5 Environmental effects of the EU-Georgia DCFTA

The estimated environmental effects of the DCFTA resulting from the CGE model are on CO2 emissions and land use. The results are presented in Table 2.5 below. The DCFTA is not expected to have any implications for land use in the EU. In Georgia, land use intensity is expected to increase by 2 percent.

Table 2.5 Environmental variables, long run setting; emissions measured in million MT CO2

	Change in CO2 emissions (MT)	Change in land use intensity (%)
European Union	0.0	0.0
Georgia	0.2	2.0
World	0.3	-
World, %	0.0	-

Source: CGE modelling calculations

In terms of CO2 no significant changes would take place after the DCFTA. In relative terms, the increase is negligible globally; there will be no significant changes at world level in emissions.

2.6 Synthesis and implications of the quantitative analysis

The purpose of this chapter was to present and discuss the estimated effects of liberalising trade between the EU and Georgia, using a CGE model. We incorporated trade liberalisation assumptions with regards to tariffs, SPS and TBT NTMs and barriers to services trade and analysed the estimated effects in a short and long run setting.

Due to the asymmetry in size between the EU and Georgian economies, the DCFTA was expected to have negligible effects on the EU. This was confirmed by the data. For Georgia, there are potentially significant effects stemming from liberalising trade with the EU. Reducing NTMs is the key to reaping the positive effects for Georgia – which implies that regulatory approximation in the fields of SPS and TBT are key.

Third country effects are very small. For the EU-Turkey Customs Unions, the EU-Georgia DCFTA has a negative effect, but in percentage shares of GDP this effect is very small. Russia and Azerbaijan are the two countries benefiting most from the DCFTA due to the fact that Georgia provides an extra 'trade route' into the EU for these countries, and the fact that Georgia, if it manages to approximate its standards to EU-levels (which will create spill-over effects to third countries) will increase its exports (at low prices) to these third countries as well.

Looking at the effects at a more detailed, sector, level, the most pronounced change would take place in the chemicals, rubber and plastics, and machinery and equipment sectors. However, since the share of these sectors in Georgia's total value added is limited (i.e. the importance of these sectors for the economy as a whole is very small), the resulting changes will only have a very minor overall effect.

Georgian wages are expected to increase by approximately 3.6 percent in the long run, while consumer prices are estimated to decrease by 0.6 percent implying – on average – improved purchasing power of the population. A more detailed analysis is carried in Chapter 3.

The estimated effects on environmental variables are very small, both in terms of CO2 emissions and in terms of land use.

3 Additional analyses of social, environmental and human rights issues

From Chapter 2, we have obtained general results (both macro-economic and sector-specific) for the EU and Georgia as potential DCFTA effects. These results, however, can be broken down further to see what the effects are for the population in Georgia specifically at a more disaggregated level, in terms of social, environmental and human rights impact.

3.1 Additional analyses of social issues

3.1.1 Quantitative analysis of poverty and inequality effects

As discussed in Section 2.4 by its construction the CGE model cannot predict both overall employment and wage changes in Georgia. When total employment is assumed constant and wages are allowed to vary the results indicate close 3.6% increase in wages in the long run (and rising output). Our interpretation of these modelling results is that actual employment and wage effects of the DCFTA are likely to be positive, although the joint quantification of the two variables (disentangling the share of effects materialising in the form of higher employment and in the form of higher wages) is not possible. The results also suggest that around 4% of all employed will change employment at sector level. Another important CGE result is a projected fall in the overall consumer price level in the Georgian economy. This clearly implies rising average real income in the population.

Given that households differ with respect to their consumption baskets and sources of revenues gains and losses from the DCFTA are not evenly distributed among the population. Apart from specific DCFTA provisions, social effects are determined by the composition of households, their consumption patterns and structure of income. In this section we report on the results of a quantitative assessment of poverty and inequality impacts of the EU-Georgia DCFTA based on the methodology outlined in section 1.3 and Annex A.2. It allows for an estimation of the consumption and labour income effects arising from changes in prices and labour remuneration.

In Georgia these effects are modelled via five distinct channels:

- change in non-food consumption expenditures due to changed prices;
- change in food expenditures due to changes prices on food products;
- change in in-kind income from subsistence farming due to changed prices on food products;
- change in cash income from the farming due to changed prices on food products;
- change in cash income due to changed wage levels in the economy.

Most of the channels are related to DCFTA-induced price changes (their estimates based on the CGE modelling exercise of the previous Chapter), and prices of food products in particular. Rising prices of most food products inevitably leads to welfare deterioration for (parts of) the population, as food products constitute a substantial share of household expenditures. This problem is especially acute for households from the lowest quintile that spend 43.6 percent of their disposable income[13] on food products, beverages and tobacco. For households from the upper quintile the relevant share is just 26.5 percent.

[13] For interpretation of disposable income see Annex A2.

This negative welfare effect related to increased food prices is partly compensated for by a reduction of non-food prices. This is relatively more important for households from upper quintiles. However, some low-income households have significant outlays on public services, including healthcare, that are also estimated to become cheaper due to a DCFTA. Other channels of positive welfare effects due to price changes are through subsistence farming activities and individual agricultural entrepreneurship. Higher food prices boost income from these kinds of activities. According to 2009 Household Integrated Survey data, 65.8 percent of households receive this type of in-kind income. However, overall, low income households cannot be viewed as major beneficiaries of in-kind income increases. Among households from the lowest quintile 64.2 percent have some form of income from this source, a share that is only somewhat below the average: In-kind income on average contributes 18.5 percent to disposable income of the first quintile, while for the whole population the average is 17.9 percent.

The combined welfare effect from relative price changes (i.e. through the first three channels) is negative. Average and median disposable income decline by 0.4 percent and 0.7 percent in the short- and the long-run, respectively[14]. For the lowest quintile the negative effect related to price changes is more pronounced with an estimated 1.2 percent reduction of disposable income – this is explained by higher importance of food products in consumption baskets of least affluent households.

However, the negative price effects discussed above are more than offset by income growth as a result of relative wage changes in the economy. Higher wages are estimated to boost average disposable income by 1.6 percent in the long-run (0.7 percent in the short-run). Effects through the wage channel are neutral with respect to initial income distribution (e.g. welfare of the lowest quintile also grows by 1.6 percent in the long-run).

It is a combination of the price and wage effects discussed above that determines the overall welfare impact of the DCFTA. After doing this we conclude that at the aggregate level the DCFTA is expected to be associated with small positive changes in the average welfare of the population as a whole, as price and wage effects cancel each other out, with positive wage effects slightly dominating negative price effects. Average disposable income grows by 0.3 percent in the short-run. A long-run DCFTA welfare effect is higher with average disposable income growing by an estimated 1.2 percent. Median income changes are less pronounced (reduction by 0.1 percent in the short-run and long-run growth of 0.8 percent). Less affluent households would benefit relatively less from the DCFTA and only in the long-run. The lowest quintile is expected to see its disposable income decline by 0.7 percent in the short run before materialisation of long-run gains to the tune of 0.6 percent. This points to the DCFTA contributing to a small increase in inequality.

Table 3.1 provides a snapshot of the results on poverty and inequality indicators in various decompositions[15]. The absolute poverty rate (i.e. the share of the population with income or expenditure levels below an official poverty line) remains table in the short-run (at 22.6 percent) to subsequently minimally decrease in the long run (by 0.3 percentage points). The relative poverty rate is expected to go up, albeit to a limited extent (by 0.3 percentage points). An increase of relative poverty indicates an unequal distribution of gains from the DCFTA with disposable income of poor population strata growing slower than income of more affluent groups.

[14] This also suggests that using the consumption patterns from the 2009 household budget survey would render different overall consumer price inflation estimates than those emerging from Georgian data in the GTAP 8.0 database. Such discrepancies are not unexpected, e.g. given the overall quality of Georgian statistics. This also suggests that the simulation results should be treated with caution. It is advisable to focus on direction and magnitude of effects rather than any particular point estimates that are subject to substantial error margins.

[15] Definitions of indicators are provided in Annex A.2. Methodology of absolute and relative poverty lines estimation is also provided there. Absolute poverty line was set at GEL 126.2 a month (EUR 54.2). Relative poverty line is set as 50 percent of median disposable income, which equals to GEL 106.9 (EUR 45.9) in the baseline.

While the poverty rate (headcount) is probably the most often used poverty indicator, an important drawback of this measure is that it is insensitive to income / expenditure distribution below the poverty line. For instance, the poverty rate will be unaffected when poor people become poorer. This deficiency is overcome the poverty gap, an indicator which reflects the depths of poverty and can be thought of as measuring the average distance of disposable income of poor population from the poverty line. The poverty gap calculated against both absolute and relative poverty lines minimally increases both in the short- and the long-run.

Yet another measure of poverty impacts of the DCFTA is provided by poverty rates calculated for values close to the absolute and relative poverty lines. The poverty headcount at 80 percent of the relative poverty line that can be thought of as a proxy for extreme poverty, increases by 0.2 percentage points. The share of the population with income slightly above the relative poverty line does not change as a result of the DCFTA, while for those slightly above absolute poverty line it deceases. Hence, the group at potential risk of poverty is not expected to grow due to the DCFTA.

The DCFTA leads to a slight increase of inequality as measured by decile and quintile ratios and the Gini coefficient, calculated by percentile groups. The decile dispersion ratio, i.e. the ratio between income of the highest and lowest deciles, increases the most by 0.2 in the long-run. It is still a very modest increase.

The above analysis also identifies the most vulnerable population groups in Georgia such as people with low levels of education (primary and basic education) or illiterate, unemployed and pensioners. Most of these groups experience absolute poverty increase in the short-term due to the DCFTA. The sharpest increase in absolute poverty is expected for people with only primary education. Poverty rates for these groups may grow also in the long-run, although the scale of rises in poverty rates is expected to be small. Inhabitants of Shida Kartli and Mtskheta-Mtianeti regions are exposed to higher risk of poverty growth compared to other regions and Tbilisi in particular.

In summary, while the DCFTA is expected to boost average real incomes our simulations suggest a possibility for certain negative relative social outcomes of the DCFTA. Poorer strata of the population appear to benefit from DCFTA less than those with above average incomes. There is a risk of a rise in certain poverty indicators. The DCFTA may lead to an increase in inequality, albeit to a very small degree, as changes in disposable income are generally limited.[16]

In interpreting these results it is important to recall that our analysis compares two hypothetical scenarios: the situation with and without a DCFTA. There is clearly a scope for policy action of Georgian authorities in addition to the DCFTA mitigating any potential negative effects and promoting inclusive growth in general. Recommendations for specific policy measures are presented in Section 9.2.

Table 3.1 Estimates of DCFTA impact on poverty and inequality indicators

	Baseline	Short-run value	Long-run value
Poverty rate (headcount)			

[16] As with any other modelling approach the above results should be interpreted cautiously. In particular, negative effects of DCFTA may be overestimated due to the model limitations and specifically its lack of accounting for elasticity of consumption and labour mobility. While these factors can arguably be ignored in the short-run (*Alain de Janvry, and Elisabeth Sadoulet (2008) Methodological Note: Estimating the Effects of the Food Price Surge on the Welfare of the Poor, mimeo, UC Berkeley*), in the long-run they are likely to play a more important role improving welfare especially of the poorest given the agricultural employment growth predicted by the CGE model. Other limitations are homogenous growth of wages across sectors and skilled/unskilled labour force, rooted in the CGE model specification, and a rather poor fit of non-food expenditures of households with GTAP sectors. While these limitations may affect estimates of absolute values of some indicators, especially related to inequality, they do not undermine general conclusion over direction of DCFTA consumption and income effects and their scale.

	Baseline	Short-run value	Long-run value
absolute poverty line	22.6	22.6	22.3
relative poverty line	15.4	15.5	15.7
Poverty gap			
absolute poverty line	31.6	31.7	31.8
relative poverty line	30.4	30.6	30.5
Inequality indicators			
Quintile dispersion ratio	7.79	7.86	7.88
Decile dispersion ratio	13.98	14.11	14.16
GINI	0.398	0.399	0.400
Dispersion of poverty headcount around poverty line			
80% of the absolute line	14.4	14.3	14.2
120% of the absolute line	31.4	31.5	31.1
80% of the relative line	9.3	9.5	9.5
120% of the relative line	22.5	22.5	22.6
Poverty headcount by sex			
Male	22.2	22.2	21.9
Female	22.9	22.9	22.6
Poverty headcount by age			
0-18	23.2	23.2	22.9
19-29	22.4	22.3	22.0
30-39	23.4	23.3	22.9
40-49	21.5	21.5	21.2
50-59	22.5	22.5	22.1
60+	22.2	22.5	22.2
Poverty headcount by education			
Primary	35.1	35.6	35.3
Basis secondary education	29.5	29.7	29.2
Secondary education	26.3	26.4	26.1
Vocational education	23.3	23.5	23.1
Secondary specialized education	21.1	21.1	20.8
Higher education	12.6	12.5	12.2
Illiterate	35.2	35.6	35.4
Poverty headcount by place of residence			
City	20.2	20.3	19.9
Rural	24.8	24.9	24.5
*P*overty headcount by *geographical region*			
Kakheti	36.5	36.3	35.9
Tbilisi	17.9	17.8	17.4
Shida Kartli	29.8	30.3	29.9
Kvemo Kartli	30.2	30.2	29.6
Samtskhe-Javakheti	23.8	24.0	23.7
Ajara	25.4	25.7	25.4
Guria	24.0	24.3	24.1
Samegrelo	16.9	16.7	16.4
Imereti	15.3	15.4	15.4
Mtskheta-Mtianeti	31.6	32.0	31.8
Poverty headcount by employment status			
Economically active, incl.	20.3	20.3	19.9
Employed	12.1	11.9	11.3
Self-employed	21.4	21.5	21.2

	Baseline	Short-run value	Long-run value
Unemployed	31.4	31.6	31.4
Inactive, incl.	24.7	24.9	24.6
Pensioners	26.3	26.6	26.4
Students	17.6	17.8	17.4
Housewives and househusbands	23.3	23.3	23.1

Source: Own calculations

3.1.2 DCFTA and the ILO Decent Work agenda and other social issues

This section provides an additional qualitative analysis of social issues, in particular those covered by the ILO Decent Work agenda (job creation, labour rights, social protection, social dialogue and gender equality). It is based on the analysis of existing studies and other literature and consultations with stakeholders, including an on-line survey.

The current situation

The presence of labour-related issues in the Georgia-EU trade relations has a long tradition. In 2000/2001 Georgia applied for a membership in EU's Special incentive arrangement for the protection of labour rights, a predecessor of the GSP+ regime.[17] No positive decision on the application was taken at that time. Since 2006 Georgia has benefitted from tariff preferences under GSP+. These preferences are in particular conditional on ratification and effective implementation of the eight core ILO conventions. The core conventions refer to four areas: the freedom of association and the right to collective bargaining, the abolition of forced and child labour and the prohibition of discrimination in the field of employment and occupation.

Ratification of ILO conventions in voluntary and a decision whether to do it or not rests with authorities of a respective ILO Member State. Once a country ratifies a convention, it is obliged to report at regular intervals on its implementation and undergoes scrutiny of the ILO monitoring mechanism. Still, these ILO monitoring mechanisms per se do not constitute a strong mechanisms that could mobilise a country to effective implementation. On the other hand unilateral GSP+ preferences provide such a layer of incentives given the possibility of preference withdrawal. This is not a purely theoretical possibility and a few countries have lost their GSP or GSP+ preferences this way (e.g. Burma, Sri Lanka and Belarus).

Since the onset of its GSP+ status Georgia has had problems with ILO conventions, especially due to the provisions contained in the labour code adopted in 2006 which has severely limited workers' rights and led to criticism from the EU and other sides. The language of EU criticism was quite strong as illustrated by the following quote:
"*As regards labour law and rights at work, no progress can be reported as regards unrestricted strike rights. The 2006 labour code, which was prepared without prior consultation with trade unions, is not in line with the ILO standards. In particular, it falls short in addressing the obligations of the ILO Conventions on freedom of association, and on the right to organize and collective bargaining. Furthermore, the labour code contradicts both EU standards and the European Social Charter that the country ratified in July 2005, on a number of fundamental issues such as the duration of overtime work and termination of employment'.*[18]"

[17] Commission notice OJ, 27.4.2001, C 127/13, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2001:127:0013:0013:EN:PDF. More details on Georgia's experience with GSP+ can be found in CARIS (2010), 'Mid-term Evaluation of the EU's Generalised System of Preferences', report for DG TRADE, http://trade.ec.europa.eu/doclib/docs/2010/may/tradoc_146196.pdf. The following discussion draws from that study.

[18] The European Commission Staff Working Document (SEC(2008) 393).

Despite some improvements the situation has remained problematic on a number of fronts.[19] This in particular relates to the following issues:

- Several elements of the Labour Code are believed to be incompatible with ILO convention no. 87 on the Freedom of Association and Protection of the Right to Organise. Specific recommendations stipulated in convention-specific monitoring instruments in this respect include lowering of the minimum trade union membership, establishing functional procedures for settling disputes, easing limitations to the right to strike, improvement of protection against anti-union dismissals, etc.
- With regard to ILO convention no. 98 on Application of the Principles of the Right to Organise and to Bargain Collectively there is a view that the Labour Code did not provide for an adequate protection against anti-union discrimination and meaningful promotion of collective bargaining.
- With regard to ILO convention no. 100 on Equal Remuneration of Men and Women Workers for Work of Equal Value the Labour Code is believed to fall short of giving legislative expression to the principle of equal remuneration for men and women for work of equal value.
- With regard to ILO convention no.111 on Discrimination in Respect of Employment and Occupation recommendation of ILO committees aimed at amending the existing non-discrimination provisions of the Labour Code to provide for a clear definition of direct and indirect discrimination; and to clarify that the prohibition of discrimination also applies to recruitment and selection.
- There are also some doubts as regards practical aspects of implementation of the ILO convention no. 138 on Minimum Age for Admission to Employment.

Various elements of the above assessments have also been confirmed by our stakeholder survey and analysis of recent documents and voices of social partners.[20] At the same time there are several voices, including from the Georgian economic experts community which point out the apparent trade-off between a competitive economy and workers' rights. In this view, a very liberal labour code provides more room for manoeuvre for the employers to maintain competitiveness. There are also voices pointing to the fact that given deficiencies in institutional capacity, labour legislation that would better protect workers' rights could either remain on paper only or could lead to a further increase of the informal sector where labour regulations do not apply at all. There is currently no labour inspectorate in the country, but the institution that existed until 2006 is said to have been inefficient and prone to corruption.

More generally, given the current economic situation of the country its institutional capacity and the need or desire for an economic catch-up with more affluent countries, social considerations remain to a degree subordinated to economic development priorities in Georgian public opinion. It is difficult to evaluate how widespread opinions are along such lines, but in any case these should be taken into account in the DCFTA process and related stakeholder consultation and social dialogue. Societal valuations of different elements of the socio-economic environment may differ between Georgia and the average for EU countries.

Yet another aspect worth keeping in mind in any attempt to precisely assess the situation with respect to labour rights including the core ILO conventions and dimensions of decent work agenda faces serious methodological challenges. Putting it simply, it is very difficult to compare performance of various countries, and also not easy to compare progress of a given country over

[19] The following exposition draws on the analysis carried in Commission Staff Working Paper GSP+ /* SEC /2011/0578 final -*/, 17 May 2011 as well as more recent documents related to the monitoring system for ILO conventions (available at http://www.ilo.org/dyn/normlex/en/f?p=1000:11100:1656590393549041::NO:11100:P11100_COUNTRY_ID:102639) and the most recent Joint Staff Working Document, Implementation of the European Neighbourhood Policy in Georgia. Progress in 2011 and recommendations for action. Accompanying the document Joint Communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Delivering on a new European Neighbourhood Policy {JOIN(2012) 14 final} 15 May 2012.

[20] E.g. Interview: Irakli Petriashvili (Georgian Trade Union) http://www.scoop.co.nz/stories/WO1110/S00536/interview-irakli-petriashvili-georgian-trade-union.htm. [accessed 4 April 2012]

time. While monitoring / supervisory mechanisms of the ILO are most likely best positioned to provide objective and accurate assessments of the situation, there are still several limitations of any appraisals based on ILO supervisory schemes[21]. This in particular can be related to characteristics of primary information sources for ILO monitoring schemes. For instance counties that have more free and vocal labour unions may also see more complaints being filed by these unions. Consequently in such countries the situation may be followed and monitored more closely with any underlying problems promptly unveiled. This may not necessarily be the case in countries with oppressive government regimes or where labour unions and other civil society institutions are influenced or controlled by the authorities.

The scope for DCFTA role and potential impact on decent work and equality

Given the current GSP+ status of Georgia it is to be expected that the DCFTA will contain clauses that ensure that progress made so far in relation to social and labour rights is maintained and – in view of somewhat limited progress so far – possibly enhanced so that the focus could gradually shift towards a more ambitious decent work agenda.

It should be remembered that several elements of the decent work and equality agenda are likely to be covered by the Association Agreement (AA) and these may be more important than the DCFTA in affecting several issues discussed below.

We discuss the potential impact of the DCFTA on the decent work agenda following the ILO's approach that distinguishes four dimensions that crucially matter for the agenda as a whole with gender equality as a crosscutting objective:

- creating jobs;
- guaranteeing rights at work;
- extending social protection;
- promoting social dialogue.

With regard to job creation both the CGE modelling results (rising output and hence likely also higher total employment) and opinions of stakeholders suggest optimism about potentially positive net employment effects. However, sectoral reallocations will be needed and this may be problematic for certain groups of workers, especially those with lower human capital endowment and those currently discriminated against in the labour market. The quantitative simulations discussed above confirm a potential for a negative welfare impact on the weakest groups. For these groups, changing jobs or finding employment will be of primary importance, but at the same time this may be more difficult than for people with higher skills, a better employment record and more wealth. However, the overall DCFTA contribution to the job creation aspect of the decent work agenda is expected to be positive.

The key question concerning the DCFTA effects on guaranteeing the rights at work is whether it will prove to be a more or less effective pressure and/or encouragement mechanism compared to GSP+. It is hard to assess whether DCFTA trade preferences, once in place, may be more difficult to withdraw than GSP+ preferences. Another factor relates to the fact that full implementation of the DCFTA will take time and much progress could be achieved during this period. Also, even with the GSP+ it does not seem to be the case that its influence on labour rights works mainly through the threat of preference withdrawal. The labour unions have not supported withdrawal of tariff preferences and cooperated with the government at the moments crucial for the EC assessment.[22]

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[21] See e.g. discussion in D. Kucera, Measuring Trade Union Rights: A Country-Level Indicator Constructed from Coding Violations Recorded in Textual Sources, Working Paper No. 50, International Labour Office, Geneva, 2004; I. Georgiu and L. Baccaro, Coding CEACR Reports on ILO Conventions Nos. 87 and 98: A Proposed Methodology, RUIG project on Social dialogue regimes. Working report. International Institute of Labour Studies and University of Geneva 2006.

[22] See CARIS (2010), 'Mid-term Evaluation of the EU's Generalised System of Preferences', report for DG TRADE, http://trade.ec.europa.eu/doclib/docs/2010/may/tradoc_146196.pdf and Interview: Irakli Petriashvili (Georgian Trade

The attitude of the general public also matter for progress in labour rights as it can create pressure on decision makers to modify regulations and/or improve their implementation.

As discussed in more detail below in the section on human rights (also covering the rights related to employment) the expected positive overall economic effects of the DCFTA can gradually improve administrative capacity to implement labour rights. These effects may also increase public demand for stronger protection of rights as is typical when real wages and living standards are on the rise. On the other hand increased economic competition may continue to exert pressure on limiting workers' rights, which may be associated with higher labour costs, although the DCFTA will most likely contain clauses preventing race to the bottom in labour standards.

Our conclusion is that while the DCFTA may ignite several forces acting towards either improving or worsening the labour rights situations, on balance positive forces are likely to be somewhat stronger compared to the current situation.

The main channel of DCFTA impact on extending the coverage and effectiveness of social security schemes (pension, health insurance, etc.) is likely to be through higher economic growth. Two mechanisms may be at play here. First, higher average living standards and hence gradually increasing public demand for elements of a broader and more efficient social protection system. Second, some effects may be due to DCFTA-related changes in fiscal revenues (mainly the balance of tariff revenue losses due to tariff elimination and additional tax collection due to economic growth) and hence changes in available funds and administrative capacity to implement social security policies. These will be indirect impacts of the DCFTA unlikely to materialise in the short- to medium-term. Such a view appears to be confirmed by preliminary results of a stakeholder survey that indicate very poor assessment of the current social protection system and quite limited expectations of improvement as a result of the DCFTA. This appears to be a realistic assessment, given the very limited scope for DCFTA-related effects on Georgian social policies at large – this mainly remains in the domestic policy sphere. At the same time it should be noted that possible unfavourable DCFTA impact on the poorest strata of the population strengthens the case for adopting additional social security measures for the groups that are vulnerable to poverty risk and whose livelihood may be hampered by a new trade regime.

With regard to one specific area where changes could materialise somewhat more quickly i.e. protection of vulnerable groups such as workers in the informal economy, internally displaced people and their families, etc. we lack evidence that would allow us to clearly identify channels of DCFTA impact and their strength.[23]

One area where a range of forces, including GSP+ conditionality, and EU funding has already led to some improvement of the situation, albeit from a very low basis, is the social dialogue, i.e. a dialogue between employers and workers (with both groups together being referred to as social partners) or as a tripartite dialogue involving social partners and public authorities. In particular tri-partite dialogues has been institutionalised. Further progress in this area will likely take time. Positive DCFTA contributions may be mostly related to the impact on higher economic growth, higher average living standards and hence gradually increasing interest of the society in stronger engagement of their representatives (social partners) in design of the employment and social policy, conduct of the overall reform process, consultation of legislative proposals, assessment of impacts resulting from the trade policy and dialogue about restructuring and flanking measures. The

Union) http://www.scoop.co.nz/stories/WO1110/S00536/interview-irakli-petriashvili-georgian-trade-union.htm. [accessed 4 April 2012]

[23] For a brief overview on IDPs labour market situation see http://www.internal-displacement.org/idmc/website/countries.nsf/(httpEnvelopes)/C3D334B77955EA84C12579C70059E6CA?OpenDocument. [accessed 5 April 2012]

strength of these effects is likely to be limited and social dialogue will continue to be mostly influenced by factors that are unrelated to the DCFTA process.

The situation with respect to equality, including gender and ethnic equality is considered problematic by international sources, as discussed above. This assessment may not be shared by the majority of Georgian stakeholders (with an exception of actors directly involved in the work on promoting equality). For instance there is a large heterogeneity of views expressed in the on-line stakeholder survey on the general assessment of the current situation in Georgia with respect to gender equality at work (equality of employment chances, professional career, salaries, etc.) with responses ranging from 'very good' to 'poor'.

CARIS (2010) has identified gender equality as one area where GSP+ conditionality appears to be having a visible positive effect on countries granted this form of preferential market access.[24] The exact channels of this influence are, however, difficult to identify. In contrast, a study looking at the impact of 2006 Labour Code in Georgia on wage equality among worker groups defined by gender and ethnicity did not find any effects, i.e. the labour code does not seem to have worsened or improved the situation of female and minority workers relative to the situation before the policy change (the discrimination level per se is confirmed to be quite significant).[25] This study also indirectly indicates that inequality in earnings may largely result from inequalities in other fields, such as access to education and occupations segregation, where women and minority workers are overrepresented in professions with lower average wage levels.

The DCFTA may promote equality by increasing living standards and contributing to gradually changing societal preferences on equality issues. Other mechanisms of positive influence may be related to international conventions supporting equality and condemning discrimination. On the negative side, sectoral employment re-allocations that will be required by the DCFTA may disproportionally affect the weakest groups of the workforce, those with low human capital and hence groups currently subject to unequal treatment and chances. The aggregate direction and strength of these forces is difficult to predict, although worsening of the situation relative to trends currently observed does not appear likely.

Social aspects of changes in the SPS field

Approximation of Georgian SPS measures with the EU system is likely to lead to a range of effects relevant from the social perspective. Some of them are already addressed in other sections of this study – e.g. an impact on food prices and household expenditure, or effects at the sectoral level affecting agricultural and food producing sectors. Building the food quality control system will be a costly undertaking posing significant challenges from the fiscal perspective as well as from the institutional capacity perspective. In this subsection we focus on one specific aspect of SPS reforms, i.e. potential impact on health of the Georgian population[26].

As part of its reform policies in mid-2000s Georgia has mostly withdrawn from regulatory functions in the sphere of SPS measures. To assess the potential impact of reinstating a well-functioning SPS regime one could look at the evidence on health trends over the last few years. Hard data are difficult to find and attribution of effects is not straightforward. However a few observations are noteworthy.

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[24] CARIS (2010), 'Mid-term Evaluation of the EU's Generalised System of Preferences', report for DG TRADE, http://trade.ec.europa.eu/doclib/docs/2010/may/tradoc_146196.pdf.

[25] S. Skhirtladze, Does a Liberal Labor Law Increase Discrimination? The Evidence from Georgia, International School of Economics, mimeo, November 2008.

[26] We are grateful to Lia Todua and Vakhtang Kobaladze for suggesting us to cover this issue in more detail and for providing us with background data and information. This subsection draws from the materials provided by them.

First, occasional monitoring of the Georgian food market carried out by the Center for Strategic Research and Development of Georgia (a Georgian NGO) in Tbilisi from August 2011 till May 2012 revealed 49 cases of food safety standard violations and misleading of consumers. While these data are not representative, the situation in other parts of the country is more likely to be worse considering that Tbilisi is the most developed city in the country. The violations were revealed not only among the small food enterprises, but also among several large food producers and traders with substantial market shares.

Second, evidence suggest that Georgian citizens are not informed about food safety and lack information on how to fight for consumer rights in this area[27].
Third, according to the information from the National Center for Disease Control and Public Health of Georgia, the number of bacteriological food related poisoning has steadily increased from 280 cases in 2000 to 2,603 cases in 2011. Cases of diarrhoeas, presumably caused by infections related to food consumption, increased from 6,075 in 2000 to 19,576 in 2011[28]. Again, these data refer to reported cases and are not representative for case actually occurring in the population. Factors such as improved statistical system and development of medical insurance schemes have also played a role in the increased number of *reported* cases. Still, there are reasons to believe that health trends have been negative.

Combining the above information we conclude that it is likely that limited food control system during the last few years has contributed to non-negligible negative health outcomes in the population. This in our view would also imply that success in introducing an SPS regime partly approximated to the EU model could contribute to better social conditions in Georgia, by improving health outcomes and ensuring better protection of consumer rights.

3.2 Additional analysis on environmental issues

3.2.1 Environmental profile of Georgia

Georgia, while being a relatively small country (69,875 km^2), is a residence to one of the richest natural environments in the world. It is home to an immense variety of ecosystems, climate zones and natural features like rivers, mountain ranges, alpine meadows, wetlands and strands along the Black Sea.

The country faces several environmental problems related to air and water pollutions, improper waste management and use of land as well as marine and coastal contaminations. Some of Georgia's environmental problems are related to the legacy from Soviet times, e.g. obsolete infrastructure.

One proxy measure assessing the performance of a country in terms of the environmental situation and environmental policies (2012 Environmental Performance Index) ranks Georgia as no. 47 out of 132 classified countries (among 'moderate performers' and better than a few 'new' EU member states such Romania, Estonia and Bulgaria').[29] Based on this measure the country performs relatively well in areas such as fisheries, climate change, and ecosystem effects of air pollution, while most problematic areas include risks to biodiversity and habitat, the functioning of the agricultural sector, effects of air pollution on human health and ecosystem effects related to the use of water resources.

[27] Food Safety in Georgia, Caucasus Research and Resource Centers (CRRC), http://crrccenters.org/activities/research/?id=7.
[28] Competition Policy in Georgia, Transparency International Georgia, Tbilisi, 2012, p. 47 (in Georgian)
[29] See http://epi.yale.edu/epi2012/rankings

Air pollution

According to the Ministry of Environment Protection and Natural Resources of Georgia, air quality problems have become a grave concern during the last decade.[30] The main sources of pollution mostly affect urban areas and include motor transportation (a mobile pollution source) and the industrial sector (a stationary pollution source). Increased road transport leads to higher fuel consumption resulting in turn in higher emissions of harmful substances into the air. The most problematic industrial sectors include facilities of metallurgical, chemical and construction sectors. Limitations of existing information on air quality may lead to an underestimation of air pollution. The measurement methodology is outdated and the number of measurement stations is not sufficient. This impedes the government planning of necessary actions in order to reduce the environmental risks related to human health.

Agglomerations such as Tbilisi, Kutaisi, Batumi, and certain smaller cities such as Zestaphoni are characterised by high air pollution. A number of factors explain the increasing vehicle emissions in Georgia. First, the number of private cars has been rising over the last few years. Given the generally old vehicle fleet (several cars are older than 15 years) their emission levels per kilometre travelled are high. There are substantial used car imports from the EU (partly then re-exported). Fuel quality standards are below levels seen in the EU countries. Furthermore, major cities (Tbilisi in particular) have not developed traffic optimisation systems which means frequent traffic jams are a fact of life, contributing to increases in gasoline consumption and emissions.

Certain regional problems are related to single large pollutants. This for instance applies to concentrations of manganese dioxide in the air in Zestaphoni above levels defined in relevant norms due to the operations of the Zestaphoni Ferro-alloys Plant. It should be noted that several of these plants have been implementing modernisation plans, aimed at limiting air and other pollutions (e.g. installation of modern dust abatement systems in cement plants in Rustavi and Kaspi, rehabilitation and modernization of air filters at the Zestaphoni Ferro-alloys Plant).[31]

Water pollution

Georgia is rich in water sources (2.5 times the world average) but these are unequally distributed within the country. The majority of rivers and lakes are located in the western part of the country covering about 11 percent of Georgia's territory.

The water quality monitoring network covers only a small part of Georgian fresh water bodies and there is no groundwater monitoring, limiting the information base and potentially creating health hazards.[32] Untreated municipal wastewater discharges are believed to be among key factors negatively affecting quality of water resources.

The majority of the population has access to piped water but the quality of the water supply infrastructure and services has deteriorated (Table 3.2).[33] Table 3.2 also illustrates a significant rural-urban divide in access to piped water and sewage systems. In rural areas, the other source of drinking water are local wells and springs. However, there is a problem of water supply reliability in Georgia. Only some cities enjoy an uninterrupted water supply. About 30 percent of people living outside Tbilisi are provided with water for less than 12 hours a day.

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30 Ministry of Environment Protection and Natural Resources. (2011). National Environmental Action Plan 2011-2015 (NEAP-2). Tbilisi.

31 SoE – Georgia 2007-2009. The Ministry of Environmental Protection and Natural resources of Georgia and the Division of Environmental Protection and Natural Resources of Adjara AR of the Environment Georgia. (2010). National Report on the State of the Environment Georgia.

32 SoE – Georgia 2007-2009. The Ministry of Environmental Protection and Natural resources of Georgia and the Division of Environmental Protection and Natural Resources of Adjara AR of the Environment Georgia. (2010). National Report on the State of the Environment Georgia.

33 OECD. (2008). Financing strategy for the urban water supply and sanitation sector in Georgia.

The main source of drinkable water in Georgia is groundwater (about 65 percent) and the rest is taken from surface water (reservoirs and springs in the mountains). Problems with drinking water quality, especially in larger cities owe to poor condition of water pipelines. Besides, groundwater sources in larger cities are polluted by improper waste management and many water intakes are not secluded as protected sanitary zones.

Less than 50 percent of the citizens have access to toilets connected to sewage networks, which are almost non-existent in rural areas (Table 3.2). More than half use other improved toilet facilities. About five percent of the population does not dispose of any improved sanitation. The poor technical condition of existing sewage networks impedes the quality of drinkable water.

Table 3.2 Household access to drinking water and sanitation facilities, percent of population (2008)

Drinking water	Urban	Rural	Total
Piped water on premises	92%	51%	73%
Other improved water sources	8%	45%	25%
Unimproved water sources	0%	4%	2%
Sanitation			
Toilet connected to sewage network	78%	4%	43%
Other improved sanitation	18%	89%	52%
Unimproved sanitation including toilet facilities shared by households	4%	7%	5%
of which: Open defecation	0%	2%	1%

Source: Source: WHO/UNICEF quoted in Van Breusegem, W. and Abramia, G. 2011. Analysis for European Neighbourhood Policy (ENP) Countries and the Russian Federation of social and economic benefits of enhanced environmental protection – Georgia Country Report.

Several initiatives are under way that should over time improve the quality of surface waters. These include projects aiming at sewage networks renovation, construction of wastewater treatment plants, and modern landfills.

Waste

Waste is a major environmental and health challenge for Georgia. Lack of its proper management significantly contributes to water pollution, but also to land and air pollution. While current domestic waste production per capita is below EU levels it has been rising fast in recent years. The bad situation negatively influences the livelihood and living standards of the population, significantly detracting public health. Besides, it negatively affects the tourism sector, which is an important source of income for the Georgian economy. There is no government strategy for waste management, no comprehensive law on waste treatment and the effectiveness of enforcement of existing regulations is low.

Only 30 percent of the population was provided with a regular waste collection services in Shida Kartli and Mtskheta-Mtianeti in 2009.[34] The situation looks very similar in the other parts of the country and regular household waste collection service only covers larger cities. The rural population is forced to solve their waste management problems themselves.

Very few of existing official landfills used for waste disposal meet environmental standards, while the other ones contribute to environmental hazards, polluting water and land and endangering biodiversity. Another problem relates to the lack of a system for disposal of hazardous waste, including medical waste that often ends at municipal landfills, with the exception of Batumi and

[34] Van Breusegem, W. and Abramia, G. 2011. Analysis for European Neighbourhood Policy (ENP) Countries and the Russian Federation of social and economic benefits of enhanced environmental protection – Georgia Country Report.

Kobuleti that have developed systems for collection, transportation the neutralisation of medical waste.[35]

There are also local/regional problems related to substantial quantities of industrial waste remaining at the sites of former Soviet factories.

Biodiversity, deforestation and land degradation

The Caucasus region belongs to the planet's 25th most diverse natural regions and hence plays an important role in the global ecosystem. It is a site of 221 of the world's endemic bird areas.[36] It is also home to a number of other globally threatened and endemic species.

Almost 40 percent of Georgia's territory is covered by forests (2,742,000 ha).[37] Additionally, 97 percent of them are natural forests. As much as 70 percent of Georgia's territory is accounted for by forests, bushes, meadows and pastures and only around 15 percent is cultivated. Suboptimal agricultural practices add to the process of land degradation in various forms. It is estimated that about 80 percent of the Georgian land area suffers from human induced degradation.[38]
Key risks to biodiversity include deforestation (due to illegal and excessive logging) poaching and overgrazing and other unsustainable agricultural practices.[39] Lack of broader public awareness and the recognition of environmental devastation as an important issue also adds to problems.

Georgia has developed a National Biodiversity Strategy and Action Plan (fulfilling the requirement of the Convention of Biological Diversity) that is currently being updated. There have been plans for starting biodiversity monitoring, but the system does not appear to be operational yet.

Climate change

The climate in Georgia is consistently mild and pleasant. There are several climate change challenges that are related to sea level rise, temperature rise and water scarcity. The high mountains, sea coast and the semi-deserts of East Georgia are considered to be most exposed to the effects of climate change. Frequent heavy storms and rising sea levels along the Black Sea Coastal zone are already evident and will affect the economic development of this part of the country in the future. Higher temperatures can lead to the creation of better conditions for the production of citrus fruits and to a longer vegetation period for other fruits and vegetables. However, overall global warming can lead to the growing frequency of droughts and a reduction of water resources and soil degradation.[40]

The contribution of Georgia to global greenhouse gas emissions is very low. Following major structural changes in the economy, the current level of emissions is a fraction of levels observed around 1990. In 2006 total greenhouse gas net emissions / removals including land-use change and forestry were almost 74% below 1990 level[41]. Changes in the energy use and production were

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35 SoE – Georgia 2007-2009. The Ministry of Environmental Protection and Natural resources of Georgia and the Division of Environmental Protection and Natural Resources of Adjara AR of the Environment Georgia. (2010). National Report on the State of the Environment Georgia.

36 UNDP. (2010). Catalyzing financial sustainability of Georgia's protected areas.

37 FAO. (2000). *Land resource potential and constraints at regional and country levels. World Soil Resources Report 90.* Rome.

38 FAO. (2000). *Land resource potential and constraints at regional and country levels. World Soil Resources Report 90.* Rome.

39 SoE – Georgia 2007-2009. The Ministry of Environmental Protection and Natural resources of Georgia and the Division of Environmental Protection and Natural Resources of Adjara AR of the Environment Georgia. (2010). National Report on the State of the Environment Georgia.

40 SoE – Georgia 2007-2009. The Ministry of Environmental Protection and Natural resources of Georgia and the Division of Environmental Protection and Natural Resources of Adjara AR of the Environment Georgia. (2010). National Report on the State of the Environment Georgia.

41 UN Climate Change Secretariat, Emissions Summary for Georgia, http://unfccc.int/files/ghg_data/ghg_data_unfccc/ghg_profiles/application/pdf/geo_ghg_profile.pdf . Accessed 16 August 2012.

a very important driver of this emissions decline. At present a large majority of total electricity generation in Georgia comes from hydropower and the government plans to make Georgia fully rely on hydropower in the 10 years perspective.

3.2.2 *Environmental impact: quantitative estimates of air emissions and associated costs*

This section provides a quantitative assessment of the DCFTA effects in terms of released air emissions of classical pollutants of air. It also provides a valuation of costs associated with these emissions. The LMDI (logarithmic mean Divisia index) method according to Ang & Liu (2007) is used for the emission decomposition. Due to lack of disaggregated emission data for Georgia, the emission decomposition can calculate the composition effect based only on utilities and transport sectors and the rest of the economy.

Table 3.3 presents the baseline emission levels from 2007 and estimated effects of the DCFTA in terms of released air emissions of classical pollutants at the country level. In the short run the DCFTA would involve the change of emission of all analysed pollutants. SOx and NOx would decrease by 0.1 and 0.3 percent, respectively.PM2.5 and PMcoarse would increase both by 0.5 percent. In the long run, the effect is larger generally and all air emissions of classical pollutants are expected to rise at least by 2.2 percent. Since these estimates include only the scale effect and composition effect and do not take into account other effects (e.g. changes of technology), the estimated effects can be considered as upper bounds of emission changes. The CO2 emission change is already simulated in the CGE model. The DCFTA implies an increase of CO2 emissions by 91 and 224 thousand tonnes in the short run and the long run, respectively. This corresponds to a change of 1.6 percent and 4 percent compared to the baseline level.

Table 3.4 reports the emission factors calculated from the 2007 reported emission levels and baseline outputs.

Table 3.3 Baseline values and DCFTA-induced changes of emissions of classical pollutants

	SOx	NOx	PM2.5	PMcoarse
Baseline emission level (t)	18000	46000	8825	33095
Short run change (t)	20	131	46	174
%	0.1%	0.3%	0.5%	0.5%
Long run change (t)	439	1018	280	1050
%	2.4%	2.2%	3.2%	3.2%

Source: Own calculations

Table 3.4 Emission factors (tonne of emission per € million of output)

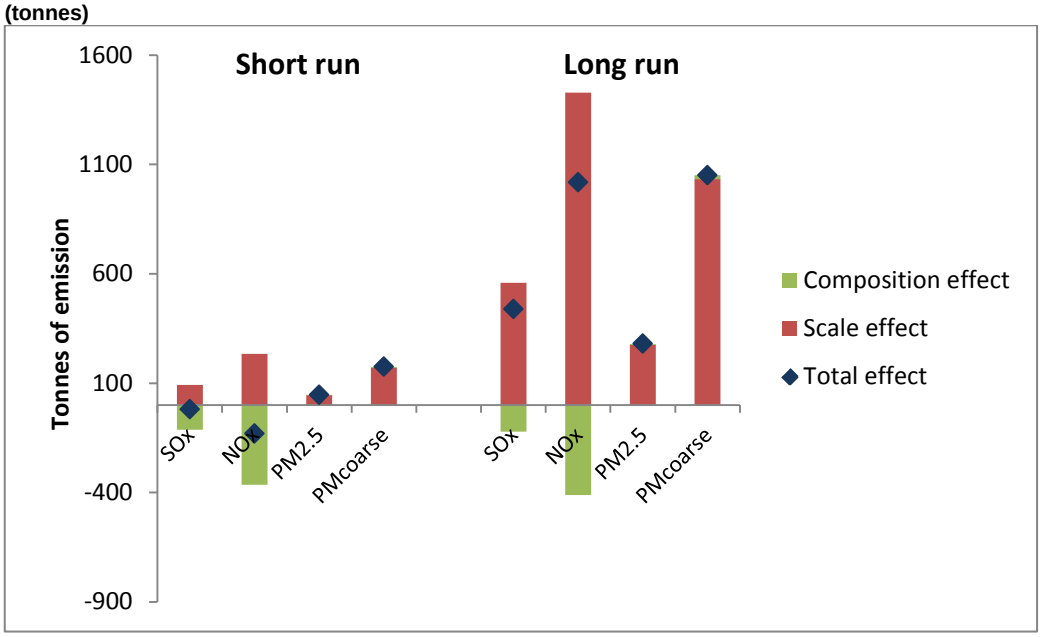
	SOx	NOx	PM2.5	PMcoarse
Utilities	4.0	5.8	1.7	6.2
Transport	4.5	12.9	0.6	2.4
Rest of the economy	0.3	1.0	0.3	1.3
Economy total	0.9	2.3	0.4	1.6

Source: Own calculations

Figures 3.1 and 3.2 show the decomposition of emission changes of classical pollutants on scale and composition effects. The long run emission changes are significantly higher than the short run changes. Since the DCFTA is expected to positive effect on output of the Georgian economy, the scale effect is positive for all classical pollutants. On the other hand, due to expected changes in the economy structure the composition effect is negative for SOx and NOx emissions and almost negligible for PM2.5 and PMcoarse emissions. In the short run, the composition effect even outweighs the scale effect for SOx and NOx emission.

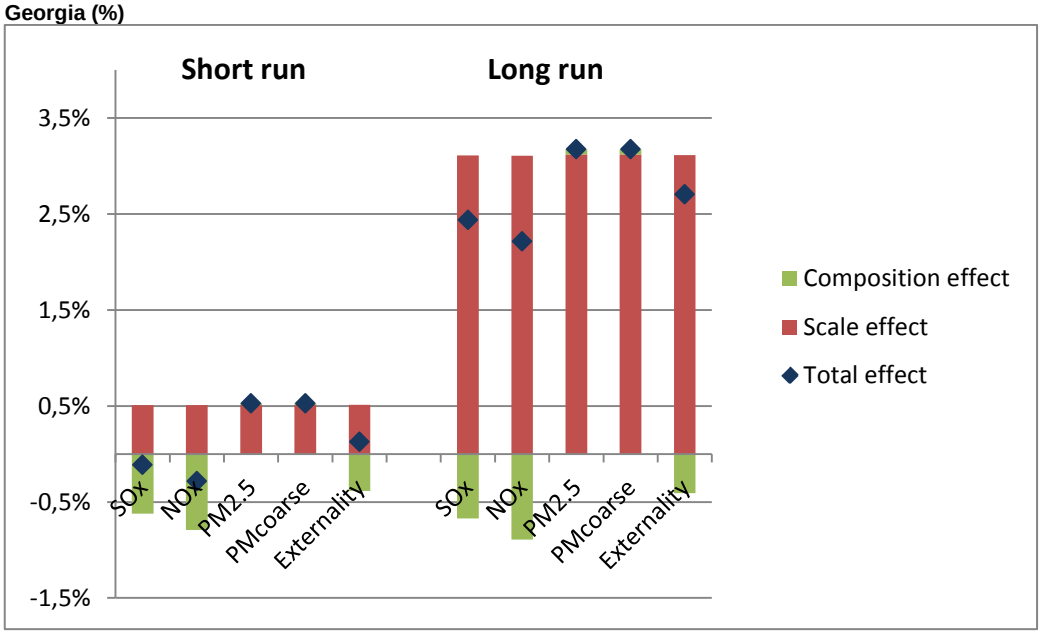
Figure 3.2 also shows decomposition of expected externality change. The negative composition effects by SOx and NOx emissions have impact also on the externalities leading to only minimal increase of externalities in the short run (0.1%). In the long run externalities are expected to rise by 2.7 percent.

Figure 3.1Decomposition of DCFTA- induced change in emissions of classical pollutants in Georgia (tonnes)



Source: own calculations

Figure 3.2 Decomposition of DCFTA-induced change in emissions of classical pollutants in Georgia (%)



Source: own calculations

Externality and welfare assessment

In this subsection we quantify the damage due to airborne pollution reported above by an application of the ExternE method (see Annex A.3 for an exposition). Table 3.5 reports the external costs in the benchmark (i.e. damage costs associated with releases of air quality pollutants in the

year 2007) caused by the classical air pollutants.[42] For the evaluation of climate cost related to CO2 emissions we use a central value of EUR 20 per 1 tonne of CO2.[43]

Table 3.5 Benchmark externality associated with releases of air quality pollutants in Georgia (EUR million)

	SOx	NOX	PM2.5	PMco	CO2
Total	164	235	292	48	110
Utilities	41	33	62	10	Na
Transport	69	110	35	6	Na

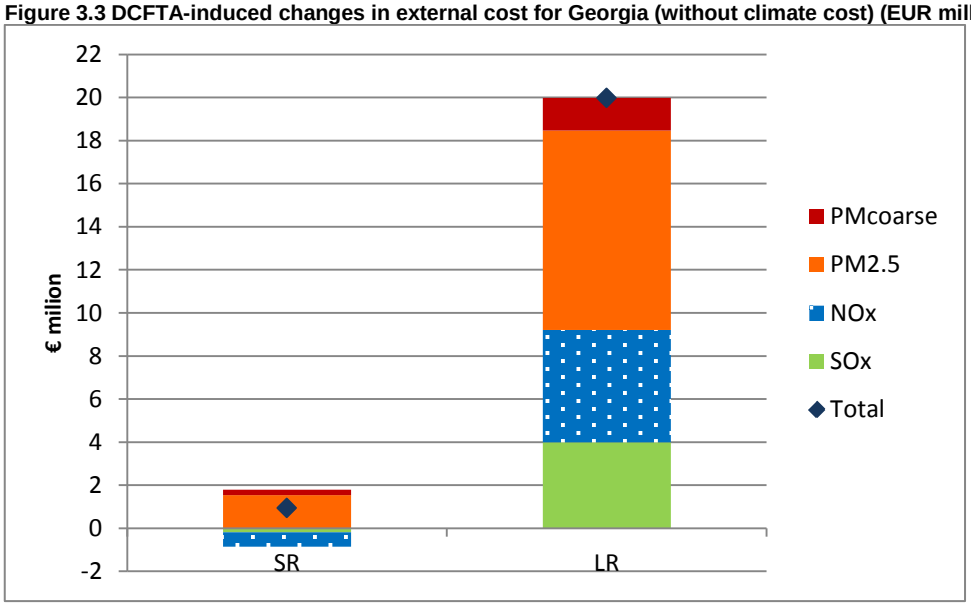
Source: own calculations

At current emission levels for Georgia as a whole, the PM2.5 is the most harmful pollutant.

Given the estimates of emission changes, we can quantify the changes of external cost likely to ensue due to the DCFTA. Our assessment also incorporates the CO2 emission change as calculated by the CGE model at the country level. Assuming the CO2 cost of EUR 20 per tonne, the DCFTA is expected to involve additional climate costs of EUR 1.8 and 4.5 million, respectively in the short and the long run.

The DCFTA is found to have a more pronounced effect in the long run than in the short run in terms of environmental damage (through the airborne emissions channel). Changes in PM2.5 emissions are responsible for the largest part of total cost changes. In the long run, the total external costs of the DCFTA are estimated at EUR 20 million for Georgia. The short run changes of the environmental damage amount to approximately EUR 1 million.

Figure 3.3 DCFTA-induced changes in external cost for Georgia (without climate cost) (EUR million)



Source: own calculations

3.2.3 *Additional qualitative results*

Beyond air emissions we also consider a number of other potential DCFTA effects in such spheres as waste management, including for hazardous chemicals, water, air and land pollution, maintaining biodiversity, etc. As discussed above Georgia faces crucial environmental challenges

[42] Air quality pollutants cause the biggest effect on human health. For Georgia only damage factors for total external costs related to several air quality pollutants are available and thus no further impact disaggregation can be provided.

[43] The sensitivity analysis for damage due to climate change ranging between € 5 and 30 € per tonne of CO2 was carried. . The results are not reported here but available upon request.

related to the situation in these areas. The DCFTA has a potential to affect the situation in these areas in significant ways, although it should be remembered that the environmental chapter of the Association Agreement will contain elements with respect to enhanced environmental cooperation and to improve the regulatory policy in this area. The separation of the potential environmental effects of these two instruments can in practice be quite difficult and the impact of the Association Agreement may prevail. Moreover, developments in the domestic policy agenda only indirectly linked to Georgia's relations with the EU can be crucially important to the future progress in environmental sphere.

The crucial difficulty of the analysis and the limitation of the following discussion and ensuing recommendations is that the DCFTA effects in these key areas are very difficult to predict with a useful degree of precision. One complication is related to the limited information concerning the baseline situation in Georgia as some key environmental parameters (e.g. quality of waters, conditions of forests, etc.) are not effectively monitored. Second, the effects may depend on specific decisions concerning individual companies (e.g. large plant that may start to treat waste water before releasing to a river), cities (e.g. introduction of management systems for medical and other hazardous waste) or regulatory decisions by the Georgian authorities (e.g. on enforcing emission standards for personal vehicles). The analysis of likelihood of such changes occurring would need to explore very detailed information and goes beyond the scope of this TSIA.

Furthermore there is also an issue of separating environmental effects related to higher level of economic activity and the evolution of environmental burden in Georgia per dollar of GDP. While higher economic growth due to the DCFTA will lead to higher environmental burden the more important question is to what extent DCFTA-induced economic growth in Georgia will become greener. Assessing the latter is not an easy task.

Keeping the above limitations in mind we present here the preliminary results based on analysis of secondary sources, a stakeholder on-line survey, communication with stakeholders through other channels, and interpretation of CGE modelling results. We focus on two dimensions or channels of propagation of DCFTA effects, namely ratification and effective implementation of multilateral environmental agreements and sectoral effects.

Multilateral environmental agreements

Georgia has ratified a number of international environmental conventions and protocols. In particular it has ratified all international environmental agreements (EA) that are among the necessary conditions for maintaining the EU's GSP+ tariff preferences (an incentive scheme for the respect of labour, human, environmental and good governance rights and rules), including:

- Montreal Protocol on Substances that Deplete the Ozone Layer.
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal.
- Stockholm Convention on Persistent Organic Pollutants.
- Convention on International Trade in Endangered Species (CITES).
- Convention on Biological Diversity.
- Cartagena Protocol on Biosafety, and
- Kyoto Protocol to the UN Framework Convention on Climate Change.[44]

In the case of two EA from the above list their ratification by Georgia was likely directly influenced by the willingness to maintain GSP+ status. The Stockholm Convention on Persistent Organic Pollutants (POPs) was ratified in 2006 and the Cartagena Protocol on Biosafety only in late 2008.

[44] A list of other EA ratified by Georgia is available at http://www.aarhus.ge/index.php?page=148&lang=eng

This is an important observation as it illustrates the functioning of a mechanism where international environmental commitments are linked to trade preferences.

It is important to realise that ratification of a convention per se does not guarantee any progress in environmental performance. This will be achieved only if a country effectively implements key elements of EAs. Indeed, GSP+ is conditioned not only on ratification but also on effective implementation of conventions.

From the perspective of the TSIA the key question is therefore whether and under what conditions the DCFTA may create a more conducive environment for effectively implementing already ratified EAs and/or promoting ratification and implementation of additional EAs not yet ratified by Georgia relative to the current situation. One aspect of this question is on costs of implementing conventions and the extent to which the EU will be willing to support implementation by bearing some of these costs as part of the DCFTA/AA process or the extent to which Georgian authorities will be willing to use general budget support from donors to this end. EU funding in this sphere is more likely to be related to the Association Agreement process than specifically the DCFTA.

It should be noted that effective implementation of conventions is being monitored by the EU in line with the GSP Regulation. This monitoring primarily relies on reporting and monitoring schemes foreseen within individual EAs. We have reviewed these sources, updating the most recent EC monitoring.[45] They indicate some implementation problems in particular concerning the Basel Convention, and CITES. At the same time they indicate gradual progress in implementation, e.g. concerning POPs, where Georgia submitted its National Reports pursuant to Article 15 of the Convention in November 2011.

Effective implementation of environmental conventions can be a costly and lengthy process requiring the building of institutional capacity, raising public awareness of certain issues, etc. As such EA offer no easy solution to environmental challenges. Rather, they provide an opportunity to gradually upgrade environmental management and policies, also as a result of peer learning and support available within EAs. In the Georgian context there are reasons to believe that international commitment and external pressure, e.g. in the form of EAs and possibly other elements that may be incorporated in the DCFTA are the main incentives for developing environmental protection policies.
One interesting observation stemming from the mid-term evaluation of the GSP in 2010 was that in Georgia implementation of EAs has come to be perceived as an element of 'meeting EU standards', rather than standards of EAs per se or international standards.[46] This association that was found also among several experts likely owes to GSP+ conditionality. In our assessment this should make it easier to bring in elements of environmental protection to the DCFTA negotiations. On the other hand, ultimately it is up to Georgian authorities, businesses and civil society institutions to make Georgian development greener. Such things can be encouraged or supported by external actors but cannot be forced or implemented from outside the country.

Overall, we conclude that DCFTA is likely to have a weak but positive effect encouraging more effective implementation of EAs in Georgia that should – in a gradual manner – also contribute to solving some of the outstanding environmental challenges facing Georgia. This mechanism may prove important in greening economic growth in Georgia in general and limiting the environmental burden from faster economic development due to a DCFTA.

[45] Commission Staff Working Paper GSP+ /* SEC /2011/0578 final - */, 17 May 2011.

[46] CARIS (2010), • 'Mid-term Evaluation of the EU's Generalised System of Preferences', report for DG TRADE, http://trade.ec.europa.eu/doclib/docs/2010/may/tradoc_146196.pdf

Sectoral channels of transmission of environmental effects

Sectors differ in their impact on the environment. The following sectors are considered as exerting substantial effects on the environment and in which the DCFTA may lead to significant changes: agriculture and forestry, transport, industry and energy. The DCFTA environmental effects through changes in these sectors will be a combination of effects on sectors' growth, and technological and other transformations influencing environmental burdens. Below we briefly discuss the sectoral channels of DCFTA environmental influences.

The CGE modelling exercise predicts an increase in output of most agricultural and forestry subsectors. The history of changes in agricultural practices and technologies in the last years and decades shows that improving practice and applied technology can have a major impact limiting the environmental burdens from the sector. The use of high volumes of pesticides and fertilizers in decades before 1990 resulted in pollution of both the surface and groundwater with nitrates and pesticides. The subsequent fall in the use of chemicals led to a significant improvement in the situation during the last 20 years. A boost to agricultural output from the DCFTA may provide incentives for more intensive farming and heavier use of fertilisers and other chemicals. The application of standards and/or good agricultural practice use will largely determine the environmental impact. As regards livestock where the CGE model suggests a substantial decrease in output it should be noted that this may have some positive impact on the conditions of pastures. It is noted that despite reduction of herds in recent period, substantial degradation of pastures has been observed particularly in alpine meadows.[47]

In the forestry sector where output is expected to modestly expand the key environmental challenge relates to preventing illegal (and excessive) forest exploitation, mainly in the form of illegal logging. To the extent that the DCFTA is not likely to create major changes in the demand for non-certified wood and wood products from Georgia and may provide additional stimuli for strengthening forest management system in Georgia the net environmental effects in the forestry sector may be slightly positive. It is relevant to note that the process of improving forest management and preventing illegal logging has been under way for some time. In particular the situation improved considerably after the creation of an environmental inspectorate in 2005.[48]

The transport sector (with the possible exception of the air transport) is expected to expand following the DCFTA. The strong trend of a rising number of motor vehicles per capita is likely to yet accelerate somewhat given the overall positive DCFTA effects on household purchasing power and the still relatively low number of cars per capita. This will increase the environmental burden. This increase can be mitigated if the DCFTA promotes development of a cleaner vehicle fleet. For instance, some improvement could be achieved by ending the temporary suspension of regular testing of light vehicles (currently suspended until 2013), although the process may need to be gradual given that a quite significant share of the vehicle fleet may have problems in meeting the emission standards (equivalent to the EU ones) if they were to be strictly enforced[49]. Promotion of water and rail transport and public passenger transport in general could be part of the flanking measures.

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47 SoE – Georgia 2007-2009. The Ministry of Environmental Protection and Natural resources of Georgia and the Division of Environmental Protection and Natural Resources of Adjara AR of the Environment Georgia. (2010). National Report on the State of the Environment Georgia.

48 SoE – Georgia 2007-2009. The Ministry of Environmental Protection and Natural resources of Georgia and the Division of Environmental Protection and Natural Resources of Adjara AR of the Environment Georgia. (2010). National Report on the State of the Environment Georgia.

49 SoE – Georgia 2007-2009. The Ministry of Environmental Protection and Natural resources of Georgia and the Division of Environmental Protection and Natural Resources of Adjara AR of the Environment Georgia. (2010). National Report on the State of the Environment Georgia. Another aspect of this is that – in order to be effective – any system of technical control of vehicles would need to be safeguarded from corruption.

The CGE model predicts growth in energy imports and a decline in domestic energy production in Georgia. Some caution is justified in interpretation of these results as international trade in energy products in the region may be affected by a range of factors. Georgia meets a large part of its energy demand from renewable resources, although the use of some of them (e.g. use of timber for heating) may have quite substantial environmental costs, especially given the low effectiveness of burners, inefficient building insulation, etc. There is room for substantial energy efficiency improvements at all stages from energy generation up to end-use. Should the DCFTA be able to better mobilise energy efficiency efforts, its environmental effects transmitted through the energy sector could even become positive.

The DCFTA is expected to have a diverse impact on a range of industrial sectors that may be associated with a substantial environmental burden (e.g. slight decline in output in cement, ceramics, etc., slight decline in petrochemicals, large increase in chemicals, rubber, plastic). While it may be possible to approximate expected changes in air emissions resulting from such changes (see above), the impact on water and land pollution, waste production, biodiversity and other key aspects of environmental performance of Georgia would require a careful case-by-case approach that is not feasible as part of this study. It is thus not possible to assess the direction of environmental effects stemming from DCFTA and channelled through changes in industrial sectors. A general point to make here is that among factors that matter for these effects one can mention:

- The degree to which the DCFTA will encourage technological change limiting environmental burden.
- The degree to which DCFTA will lead to effective implementation of higher standards concerning various forms of pollution.
- The degree to which DCFTA will prevent relocation of particularly polluting businesses from other countries (EU and non-EU) to Georgia.
- The pace of changes in social preferences towards greener growth as the living standards improve thanks to the DCFTA and associated changes in business practices in certain sectors (towards higher corporate social responsibility) as well as changes in public policies (e.g. in supporting green investments in some sectors).

3.3 Human rights issues

In carrying out the Human Rights (HR) impact assessment of the DCFTA with Georgia, we base ourselves on our experience in conducting other sustainability pillars of FTAs in previous studies, the HRIA approach developed methodologically by Walker (2009), and experience in the analysis of Human Rights issues. Our HRIA approach consists of three steps that are closely aligned with the TSIA approach of the DG Trade Handbook (2006). First, we describe the current overall and DCFTA related status of Human Rights in Georgia (i.e. the human rights baseline). Second, we screen for main (overall) potential HR impacts that could occur when this DCFTA would come into effect. Third, we look at the importance of these effects.

In this section we look at the HR effects at the macro-economic level , sectoral effects are addressed in the sectoral chapters (Chapter 6 and 7). In interpreting the analysis of this section, it should be noted that many of the issues relating to the HR situation in Georgia are related to domestic policy and direct impacts from the DCFTA on the situation at large are expected to be limited only. The effects described in this chapter should be interpreted in this context.

3.3.1 *The Human Rights landscape in Georgia – the baseline*

Georgia is a state situated in the Caucasus region of Eurasia with a population of 4.7 million, almost 1.2 million of whom live in Tbilisi, the capital.[50] Approximately 84 per cent of the total population is of Georgian origin, while there are also minorities like Azerbaijanis, Armenians, Ukrainians, Russians, Ossetians, Abkhazians and some others. Georgia has ratified most of the core UN human rights treaties. Out of the nine core human rights treaties, Georgia has not signed the Migrant Workers Convention, and the International Convention for the Protection of All Persons from Enforced Disappearance. Georgia also ratified many of the regional human rights treaties, like the European Convention for the Protection of Human Rights and Fundamental Freedoms and a number of its protocols, as well as the European Convention for the Prevention of Torture and Inhuman or Degrading Treatment or Punishment as well as its Protocol No. 1. Since the DCFTA is specifically relevant for social economic and cultural rights, it is important to note that the Optional Protocol to the International Covenant on Social, Economic and Cultural rights has not been ratified or signed yet.[51]

Georgia has thus ratified most UN human rights treaties and its legislation formally preserves fundamental rights and freedoms. In addition, Georgia has shown progress over the past years in the areas of rule of law, reform of the justice system, and fight against corruption. Nevertheless, there are several issues with respect to the effective implementation of the human rights treaties. This also includes stepped up efforts to reform the justice system. According to the most recent reports of various human rights organisations, problems include the interference of the authorities with freedom of assembly, forced evictions of internally displaced people, labour rights violations, lack of freedom of expression, lack of accountability for laws of war violations,[52] violation of the right to fair trial, [53] abuse of prisoners, detainees and poor prison conditions, arbitrary arrest and detention,[54] violation of the rights of minorities,[55] sectarian discrimination, trafficking of human beings and forced labour, some cases of infringement of religious freedom and lack of progress on religious issues.[56] Some reports mention harassment of opposition and NGO members, and government interference with labour associations.[57] Georgia was found to export equipment widely used in torture or ill-treatment.[58]

A specific issue relates to the two separatist regions of Abkhazia and South Ossetia that remain largely outside the control of the central government (see Figure 3.3 below). The movement of local population in and out of those areas is restricted and the potential DCFTA effects may differ significantly in these regions compared to the rest of Georgia.

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50 See statistical data provided at: http://www.ungeorgia.ge/eng/countryprofile.php *Accessed on 26 March 2012.*

51 See full list of ratifications to all the human rights treaties at: http://treaties.un.org/Pages/Treaties.aspx?id=4&subid=A&lang=en Accessed on 26 March 2012.

52 Human Rights Watch Report on Georgia, January 2012, available at: http://www.hrw.org/sites/default/files/related_material/georgia_0.pdf Accessed on 26 March 2012.

53 International Federation for Human Rights (fidh), The Right to a fair trial for the Arrested Photo-Journalists in Tbilisi must be respected, 19 July 2011. Available at: http://www.fidh.org/IMG/article_PDF/article_a10288.pdf Accessed on 25 March 2012.

54 European Commission (2010) 'Commission Staff Working Document – Progress Report Republic of Georgia', COM (2010) 207.

55 CERD/C/GEO/CO/4-5, Concluding observations on Georgia, Consideration of reports submitted by States parties under article 9 of the convention. Seventy-ninth session 8 August – 2 September 2011, available at: http://www2.ohchr.org/english/bodies/cerd/docs/GeorgiaCObs_CERD79.pdf Accessed on 24 March 2012.

56 US Department of State (2010) '2010 Human Rights Report: Georgia', Bureau of Democracy, Human Rights and Labor, April 8, 2010, available at: http://www.state.gov/documents/organization/160457.pdf Accessed on 27 March 2012.

57 UN expert raises alarm on arbitrary restrictions against opposition, unions and NGOs, 13 February 2012. Available at: http://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=11818&LangID=E Accessed on 25 March 2012.

58 www.amnesty.org/en/news-and-updates/legal-loopholes-allow-europena-companies-trade -tools-torture-2010-03-16.

Figure 3.2 Map of Georgia and the two breakaway regions of Abkhazia and South Ossetia

Source: UN Cartographic Section, downloaded on 27.3.2012 from http://en.wikipedia.org/wiki/File:Georgia_high_detail_map.png

Table 3.5 below shows an overview of the HR situation in Georgia at present, with a specific view on the current situation in the human rights issues that show limited or no development.

Table 3.5 Human rights situation in Georgia

Human Rights issue	Status Georgia (2010-2011)
Discrimination of minorities	Integration and rights of minorities remain an area for concern. The CoE Framework Convention on Protection of National Minorities is not fully transposed into domestic law, and the European Charter for Regional and Minority Languages is not signed. Repatriation of Meskhetian people is cumbersome. Abkhazi and Ossetian minorities rights are regularly violated, Azeri and Armenian minorities still do not receive full protection of their rights.
Restricted freedom of religion	Incidental violations of the right to freedom of religion of the minorities has been found – religious groups other than the Georgian Orthodox Church do not have equal legal status, are not recognised officially as religions and did not have the right to enjoy the same privileges as the GOC, have difficulties in receiving permits and licenses for building or occupying the houses of worship, etc.[59]
Trafficking of human beings and forced labour	A number of initiatives were taken to fight the problem of trafficking of human beings within the ILO.[60] Also through other organisations, such as GRETA, supported by the Council of Europe.[61] The problem still remains though and still needs strong governmental support.[62]

[59] International Religious Freedom Report on Georgia, Bureau of Democracy, Human Rights, and Labor, U.S. Department of State, 13 September 2011, available at: http://www.state.gov/documents/organization/171695.pdf Accessed on 25 March, 2012.

[60] Regional Conference in Tbilisi, Georgia: Building Partnerships to combat human trafficking and forced labour, held on 18-19 May 2011, see full report on the event at http://www.ilo.org/wcmsp5/groups/public/---ed_norm/---declaration/documents/event/wcms_152816.pdf

[61] Questionnaire filled in by the Georgian government during the GRETA country visit specifies also other initiatives taken by the government to tackle the THB, see full questionnaire at http://www.coe.int/t/dghl/monitoring/trafficking/Source/GRETA_2011_6_R_Q_GEO_en.pdf

Human Rights issue	Status Georgia (2010-2011)
Ill-treatment	Detention conditions and overcrowding of prisons are an area for concern. The use of parole or alternatives to imprisonment are inadequate. The Code of Administrative Violations is not fully in compliance with international HR standards. The ECHR highlights problems in administering adequate medical care to prisoners. The new ministry has made little progress so far.
Freedom of expression and media pluralism	Some initiatives were taken (e.g. within 2nd wave of democratic reforms), but opposition minded TV channels still had (financing) problems, and the TV environment is highly polarised and biased. Transparency regarding ownership of media outlets and broadcasting remains problematic. [63]
Freedom of assembly and police violence	Anti-government protests of 26 May 2011 were marked by excessive use of force by police. A closed internal investigation of the Ministry of Interior was held but authorities did not investigate allegations of ill-treatment by police. [64]
Forced evictions of internally displaced people	Following the situation of June 2010 when thousands of IDPs were evicted from state-owned temporary collective centres in Tbilisi, the government adopted guidelines for eviction procedures, which resulted in some improvements but the process still failed to meet the international standards. [65]
Civil society	Civil society and NGOs have seen their role and importance through dialogue increase of the past years. But the issue still remains if the dialogue is strong enough. [66]
Children's rights	Reform of juvenile justice system was launched, increasing minimum age of criminal responsibility from 12 to 14, and developing rehabilitation and education activities. A lot of issues remain with street children, discrimination of children from minorities, children with disabilities, and other vulnerable groups of children, limited access to medical care for children from rural areas, etc.[67]
Trade union's rights and core labour standards	Serious inconsistencies were found in the labour code of 2006 of Georgia and its international commitments to respect workers' human rights –severe restrictions on the trade union rights of workers, [68] discrimination, forced labour, limitations on freedom of association.[69]
Protection of personal data	Draft Law of Georgia on Personal Data Protection fails to ensure inviolability of private life as well as it fails to reach a balance between the right of private life and freedom of information.[70]
Gender equality	A new package for elimination of domestic violence was adopted in December 2009. A draft law on gender equality was developed together with NGOs, IGOs and national government, but a gender pay gap still exists (43% in early 2009).

Sources: Own compilation based mainly on US Department of State (2010) and European Commission (2010)

62 ILO publication, Strengthening of comprehensive anti-trafficking responses in Armenia, Azerbaijan and Georgia (final External Evaluation Summary), 16 December 2011, Project REP/08/02/EEC, available at: http://www.ilo.org/wcmsp5/groups/public/---ed_mas/---eval/documents/publication/wcms_172252.pdf Accessed 26 March 2012.

63 Human Rights Watch Report on Georgia, January 2012, available at: http://www.hrw.org/sites/default/files/related_material/georgia_0.pdf Accessed on 26 March 2012.

64 Human Rights Watch Report on Georgia, January 2012, available at: http://www.hrw.org/sites/default/files/related_material/georgia_0.pdf Accessed on 26 March 2012.

65 Human Rights Watch Report on Georgia, January 2012, available at: http://www.hrw.org/sites/default/files/related_material/georgia_0.pdf Accessed on 26 March 2012.

66 UN expert raises alarm on arbitrary restrictions against opposition, unions and NGOs, 13 February 2012. Available at: http://www.ohchr.org/EN/NewsEvents/Pages/DisplayNews.aspx?NewsID=11818&LangID=E Accessed on 25 March 2012.

67 For a more detailed situation on the children's rights in Georgia, see CRC/C/GEO/CO/3, Concluding Observations on Georgia by the Committee on the Rights of the Child, 23 June, 2008.

68 Human Rights Watch Report on Georgia, January 2012, available at: http://www.hrw.org/sites/default/files/related_material/georgia_0.pdf Accessed on 26 March 2012.

69 International Trade Union Confederation (ITUC) Report, Internationally Recognised Core Labour Standards in Georgia, Report for the WTO General Council Review of the Trade Policies of Georgia, Geneva, 7 and 9 December, 2009), see full report at: http://www.ituc-csi.org/IMG/pdf/20091203094519-Microsoft_Word_-_Georgia_2009_final_.pdf

70 HRH Tbilisi News, Draft Law of Georgia on Personal Data Protection Fails to Ensure Inviolability of Private Life, 11 February, 2011, see http://humanrightshouse.org/Articles/15920.html

Various of the issues stipulated here, defining the HR landscape, have been noted and put forward by the EU in its Neighbourhood or Eastern Partnership programmes and remain open for further discussion/negotiation and development. Since 2010, the EU is negotiating with Georgia also about an Association Agreement in a broader sense. Insofar the mentioned HR issues are not covered within the DCFTA, they may be covered in these broader negotiations.

3.3.2 *Screening for main HR impacts from the EU-Georgia DCFTA*

Screening for the main potential HR effects of the EU-Georgia DCFTA implies comparing the current HR situation before signing the DCFTA (see previous section) to the likely situation afterwards based on predicted DCFTA impacts. The information sources we use for this screening are the following:

- Information provided above in the HR landscape for Georgia – HR treaties that Georgia has or has not signed, status of implementation, and specific HR issues relevant for Georgia;
- The outcomes of the Computable General Equilibrium (CGE) model that provide information on the main macro-economic changes that stem from the EU-Georgia DCFTA and the results from the social analysis.. These predicted changes serve as the basis for potential HR effects;
- An online survey conducted among key stakeholders. Key stakeholders were asked to comment on the current HR situation in Georgia (main challenges), and expected effects for HR in Georgia from the DCFTA;
- Discussions with local HR experts and HR-related NGOs in Georgia on specific issues.

The main HR impacts found to stem from trade agreements are summarized by Walker (2009).[71] These impacts are used and adapted in Table 3.6 below to give an overall assessment of the potential HR impact of the EU-Georgia DCFTA. Table 3.6 combines the information from the above sources with the impacts and specifies the expected significance, expressed in terms of:

- The extent of HR effects (i.e. HR stress) for each of these expected impacts;
- The direction of changes compared to the baseline of each of these expected impacts;
- The nature, magnitude, geographic extent, duration and reversibility of changes per impact.

3.3.3 *Analysis of the results*

The expected impact of the DCFTA on fundamental rights issues has positive and negative elements. The expected positive effects on HR occur through the fact that the DCFTA is expected to raise national income by 3.6 percent, exports by 12.4 percent and is also expected to have a positive effect on wages (3.6 percent for both high and low skilled workers), which in turn is likely to affect the general standard of living for Georgians, and therefore, have a positive impact on their right to adequate standard of living. A challenge here is that also income inequality is expected to increase and that the poverty rate for some groups may increase. Also positive is the EU-Georgia approach to make the FTA an encompassing DCFTA (promoting broader HR values also), and the fact that it should lead to increased levels of market access to third countries which in turn leads to positive economic impacts on people's livelihoods.

Potential negative effects could also materialise, but depend on the degree to which mitigating social and HR policies are taken, mostly by the Georgia authorities in context of the AA, and in general the degree to which Georgia has effectively implemented the core HR treaties. In the latter respect, Georgia has ratified various HR treaties, but a more pro-active approach of the State in this area (especially implementation of ratified HR treaties) is expected to ensure better protection of human rights in the country.

[71] Walker S., (2009), '*The Future of Human Rights Impact Assessments of Trade Agreements',* Intersentia, Antwerp, Oxford, Portland 2009, pp. 61-86.

A potential HR risk could be related to a race-to-the-bottom regarding labour standards in the face of increased competitive pressure following signing of the DCFTA. Nonetheless, this will most likely be partly prevented by specific DCFTA clauses not allowing competition by lowering social standards. Moreover, this risk could be mitigated by Georgian policies, in particular effective implementation of the already ratified ILO core labour conventions, including conventions No 87 and 98 on the freedom of association and the right to collective bargaining. More specifically, the risks could be reduced if Georgian authorities ensured that the existing legislation in the area of labour is effectively implemented and enforced and that the legislation is not changed in a way that would allow lowering labour standards in order to attract trade or investment. Such measures however fall outside the direct scope of the DCFTA and at least to a large extent reside in the domain of domestic policies.

The issue of Abkhazia and South-Ossetia is also relevant from an HR perspective as the question is whether the projected gains also accrue to the citizens living in those areas or not. The direction of magnitude of some effects is not clear.

Table 3.6 Screening of overall EU-Georgia DCFTA for Human Rights effects

Categories of impact of DCFTA on HR overall	Potential Human Rights effect	Significance: • HR stress • Direction of change compared to baseline • Nature, magnitude, geographical extent, duration and reversibility of changes
Trade law complements HR law • ***Effect: positive*** • ***Size effect: small***	The EU does approach FTAs as part of a constitutional framework to support democracy, political stability and respect for HR, hence the name ***DC***FTA. This implies that human rights are in a broader sense also looked at, alongside the pure trade-related FTA. We expect therefore a positive effect of the DCFTA on human rights (civil and political rights in particular). This applies to the human rights situation in Georgia in general. Conventions that have not been ratified yet by Georgia may have the chance to be ratified as it could be one of the agreements stemming from the broader Association Agreement negotiations.	A small positive effect of the 'DC' element of the FTA is expected because of the constitutional framework the EC employs in these negotiations. The geographical extent may fall short of Abkhazia and South-Ossetia where *de facto* Georgia is currently not in control. The chance for reversibility of this change is low as it will be enshrined in the DCFTA as well as – in part – in national law in Georgia.
DCFTA promotes growth and resources for realization of HR • ***Effect: positive*** • ***Size effect: medium – strong***	The CGE model predicts growth in national income for Georgia (€ 292 mln in the long run), and growth in Georgian exports (12.4 percent). Especially the reduction of barriers to food exports (SPS) and to a lesser extent manufactured products (TBT) contribute to these effects. This implies that the DCFTA may lead to more (efficient) production, which is good for firms, government tax revenues, and those living in poverty. Lower barriers may empower those living in poverty to improve their living standards (the human right to an adequate standard of living, the right to adequate food).	This may be a medium to strong positive effect of the DCFTA due to the strength of the macro-economic income and export growth effects..
Increased competitive pressure as a result of the DCFTA in some sectors can undermine implementation of HR in practice • ***Effect: undetermined*** • ***Size effect: small – medium***	More openness following the DCFTA is expected to lead to more competition, wage and labour displacement effects and other effects (like IPR and standards). Regarding competition, a potential negative HR effect would be occurring in those domestic sectors unable to compete. The CGE model shows that wages, on average, are going up in Georgia by 3.6 percent. This implies that workers leave sectors for better wages in other sectors. For some workers in the short-run labour displacement may be forced by declining sectors shedding workers. In this case, there is mainly a role for the state to help mitigate this effect for the few – as in the short-run the right to employment of the people involved may be violated. However, overall changes may help in ensuring better protection of	This may be an issue, depending on how the DCFTA is flanked by mitigating policy measures. For example, vulnerable groups may need protection from competition and cultural heritage needs to be protected. The geographical extent of this measure is very broad. Competition may touch upon all sectors in society and affect both internationally oriented and domestic ones. Market forces introduce efficiency, not only in private but also in (semi-) public sectors. The pull-effect on average dominates as is shown by rising wages, which implies that workers move away

Categories of impact of DCFTA on HR overall	Potential Human Rights effect	Significance: • HR stress • Direction of change compared to baseline • Nature, magnitude, geographical extent, duration and reversibility of changes
	workers' rights (the right to the enjoyment of just and favourable conditions of work, right of trade unions to function freely, right to social security, etc). Finally, it should be mentioned that IPR aspects have not been explicitly modelled, whereas stronger IPR protection can have an upward effect on prices. The effects of the market approach in practice through engaging with civil society and key stakeholders can be further investigated. Commercial and industrial interests are allowed to become more powerful due to the DCFTA as investments are liberalised. This may have a divisive effect for some sectors (e.g. health care – that is already rather liberalised – or education).	from declining sectors to growing sectors because they can earn higher wages. This is a strong effect, leading to minimal HR violations.
DCFTA can limit government capacity to promote HR • ***Effect: negative in short run, positive in long run*** • ***Size effect: small***	A potential reduction in government revenue due to ta loss in tariff revenue could imply that there are fewer funds for ensuring people's rights to education and health as well as other ESCR, depending on the extent to which the declining revenues from tariffs are compensated by other sources of government income (e.g. income taxes). Although the model does not present the overall fiscal effects, the positive effects on national income are likely to work out positively for the government budget as well, also given that tariffs are already low.	Although a reduction of the government budget could be possible due to a decrease in tariff revenues, other government revenues are likely to increase as a result of the DCFTA and thus increase the budgetary space of the government.
DCFTA can lead to 'race-to-the-bottom' in HR protection to remain competitive • ***Effect: negative*** • ***Size effect: small***	In general a risk of FTAs is seen in a potential 'race-to-the-bottom' on standards (e.g. labour standards) to remain competitive. For the EU-Georgia DCFTA this potential risk may not be very pronounced. First, because the DC-part in the FTA emphasizes the social and HR impacts of the FTA – ensuring labour standards are adhered to and even improved as part of the DCFTA and the DCFTA is likely to include a clause to prevent this. Second, with Georgia already adhering to GSP+, the effects may even be positive if it follows the EU's stance on social and HR standards.	Changes compared to the baseline are small but indicate that wages are expected to go up. The geographical coverage is nation-wide.
DCFTA affects the use of	Georgia has – as party to GSP+ - already been under a preferential scheme of the EU to	Medium effect in a positive way due to catching up a relative lag

Categories of impact of DCFTA on HR overall	Potential Human Rights effect	Significance: • HR stress • Direction of change compared to baseline • Nature, magnitude, geographical extent, duration and reversibility of changes
trade measures to improve enjoyment of HR abroad • ***Effect: positive*** • ***Size effect: very small***	provide trade incentives based on good HR practices. The DCFTA is therefore not expected to affect Georgia by providing additional incentives in this respect. . From the CGE model it becomes clear that compared to some countries Georgia gains. For example, the DCFTA has a negative impact on the EU-Turkey Customs Unions: Turkey being a country that has enjoyed strong preferences through a Customs Union with the EU. The CGE model includes another effect here: the MFN spill-over effect – allowing Georgian exporters access to other countries as well when standards are adjusted upward to EU-level. This gives another positive boost to incomes and employment possibilities in Georgia, improving their economic, social and cultural human rights.	with countries that get preferential treatment and due to getting higher market access to third markets also, which leads to faster growth, income gains and employment possibilities.
Enforcement of DCFTA stronger than enforcement of HR law – DCFTA a higher priority • ***Effect: positive*** • ***Size effect: small***	The DCFTA approach seems to – overall – support HR law (especially through the '***DC***' addition) and thus enforcement of DCFTA helps enforcing HR law. There are some possible exceptions that are addressed in this study.. For example, in the short-run in some sectors, people's right to employment may be violated due to the economic production structure's restructuring following the implementation of the DCFTA.	This impact may be small since DCFTA and HR law seem to work in the same direction. The exceptions need to be noted, however.
Lack of respect for the right to take part in conduct of public affairs in the processes regarding negotiation and implementation of the DCFTA in Georgia • ***Effect: undetermined*** • ***Size effect: medium***	In several processes surrounding FTA negotiation and implementation, problems in engaging civil society into the process have been observed. That is a risk also here, especially since in Georgia the civil society landscape is weak. The DCFTA is likely to emphasise and promote inclusion of civil society in policy choices. Yet on the other hand, with the DCFTA leading to more efficiency – this being one of the goals of the DCFTA – other considerations might play 2nd fiddle – which might in particular affect those less vocal like minorities, small-scale domestic producers of produce, or women. Attention is paid by the DCFTA negotiators to be as inclusive as possible, and this TSIA study takes special precautions to ensure participation. Nonetheless participation is a crucial fundamental right	Medium potential negative impact if participation in the DCFTA negotiation process that started since 27 February 2012 is not properly monitored. Caution is needed here as especially the vulnerable groups (e.g. minorities, small-scale domestic producers, women) may suffer if not properly engaged and listened to.

Categories of impact of DCFTA on HR overall	Potential Human Rights effect	Significance: • HR stress • Direction of change compared to baseline • Nature, magnitude, geographical extent, duration and reversibility of changes
	that cannot be taken for granted.	
Trade 'values' threaten human rights 'values' • ***Effect: negative*** • ***Size effect: small – medium***	Where trade values emphasise 'efficiency', HR valued emphasise 'human dignity'. This DCFTA is expected to be beneficial for the country and for most people. Efficiency is the driving force behind those gains, but less focus is given to human dignity. Some people may lose out and from an HR point of view that is unacceptable as each and every individual has fundamental rights. For those affected negatively, alternative options need to be found, which is the state's responsibility. The few against the many is not an acceptable trade-off in HR.	This may be an issue as the DCFTA may hurt people, especially in the short-run (e.g. declining versus growing sectors). Policy recommendations this needs to be flanked strongly. Especially at sector level. At the aggregate this picture is not yet clear.

4 Overview of consultations

4.1 Stakeholder consultation activities

At the start of the study we developed a stakeholder consultation plan for involving relevant stakeholders; this plan has been successfully implemented throughout the study. The main inputs received from stakeholders in the process are summarised in the next section. Here we summarise the implementation of the five main activities included in our stakeholder consultation plan.

1) Electronic consultation and documentation

The electronic interaction with stakeholders constitutes an important base for communication and has been built around a dedicated TSIA website for Georgia and an email address. The website allows for both dissemination of information on the study and for collection of feedback from stakeholders located anywhere. Some vital functions of the website include:

- a discussion forum;
- feedback forms;
- links to websites of main stakeholders in the study;
- a collection of relevant documents on the background of the study and other relevant documentation.

Through the website, Ecorys-CASE receive feedback in order to validate results, obtain the right focus and place results in a proper perspective. In addition, other ways of electronic consultation are used, such as the dissemination of an online newsletter, and a web-based survey. As of 5 October 2012, the number of hits on the website amounted to 3160.

The website for the TSIA of Georgia can be found at: http://tsia.ecorys.com/georgia
The dedicated email address is: tsiageorgia@ecorys.com

2) Public meetings

In order to engage in interactive discussions and learn from the input from civil society in the EU, we organise two public meetings in Brussels. The public meetings are used to present the methodology, (interim and final) results of the study, and recommendations. The first public meeting was held on 16 February 2012 for a presentation and discussion of the draft Inception report. The second public meeting was held on 14 September 2012, for a presentation and discussion of the draft final report.

3) Workshops in Georgia

In addition to encouraging Georgian stakeholders to make use of the TSIA website, a local workshop was organised in Georgia –in Tbilisi on 14 June 2012. At this workshop the interim technical report was presented and discussed, as were issues relevant for the final report. Some 40 stakeholders participated in the workshop.

4) Other relevant conferences and workshops

Linking up to other conferences and workshops relevant to the study is another vital ingredient of the stakeholder consultation plan. We participated in an EESC meeting in Brussels on 4 July 2012.

5) Personal interviews with individual representatives and/or targeted surveys

A last crucial consultation activity concerns in-depth face-to-face interviews on specific topics of the study with key stakeholders or independent experts. These interviews were mainly held in the margins of the TSIA workshop and in the second phase of the study for the sectoral analyses. On

the 13th of June 2012, we held interviews with the government of Georgia. At the start of the study we also set up a small web-based survey to collect information (opinions, background material, relevant organisations) on the potential sustainability impact of the DCFTA, although the response rate was low when it was closed in July 2012 (less than 10 percent).

4.2 Implementation of stakeholder consultation plan – inputs from civil society

In this section we present a short overview of the main comments received from stakeholders and our response to them. A complete overview of all comments received can be found in the audit trails in Annex C.

Main points raised	Incorporations of comments in thee report(s)
Statistics only capture the formal economy, while there is also a large informal economy in both countries	The reports are careful in interpretation of the statistics and there is additional qualitative analysis. The analysis through bottom-up household surveys will capture part of the issue on the informal economy.
The additional quantitative analysis should have a broader focus, rather than only air pollution (environmental) and income (social) aspects. A suggestion was made to cover a broader range of aspects in the analysis.	The quantitative effect on environment indeed focuses on air pollution, but in the qualitative analysis other effects are taken into account as well. Similarly for the social analysis, we look at various aspects, not only income.
Regarding the role of SPS issues: ability of Georgia to meet standards,	This has been addressed in the in-depth sectoral analysis and at the end of section 3.1. .
The involvement of and cooperation with the European Economic and Social Committee has been encouraged	We have been in touch and attended some of their events the results of which are reflected in the report.
The importance of conducting face-to-face interviews and providing translated texts for local stakeholders was emphasised.	This has been done and the results are reflected in the report.
What is the distinction between short-term and long term effects?	The short-run are the immediate effect, while in the long run capital is not assumed fixed. This has been better explained in the methodological chapter.
Does the study take into account expected changes in the CAP and other policies?	The study takes an incremental approach, i.e. it looks at the situation with or without the DCFTA, without taken into account changes in other policy areas. This has been better explained in the executive summary and methodological chapter.
The proposed flanking measures are not calculated in the evaluation of benefits of the DCFTA. If an assumption is made regarding proposed flanking measures, then they should subsequently be incorporated in calculation. Introduction of the flanking measures may significantly change benefits provided by this report.	This study takes an incremental approach, i.e. it only compares the situation with and without the DCFTA. This way it can show where flanking measures would be desirable, as presented in the policy recommendation in the final report.
If production goes up, environment will be damaged more (scale effect). In the report, the quantification of environmental costs is only done for air pollution. The	The environmental impact is also expressed in monetary terms, but this was only possible for air pollution. Other environmental consequences of the

Main points raised	Incorporations of comments in thee report(s)
environmental impact should be compared with the size of the economic impacts.	DCFTA are only described qualitatively.
It is stated in the report that there will be less government budget for social programmes. In HR section and the social section there are contradictory findings related to the income taxes. These parts should be double checked and rephrased if necessary. It should not be stated that the taxes should be increased.	These have been rephrased in the final ITR.
In Bulgaria, the SMEs did not benefit from the increased trade after it joined the EU. We should avoid these effects in Georgia. At the local level the SMEs are essential. How do you take into account this issue? How diversified are the exports?	The position of SMEs and the possibilities to benefit from the DCFTA differ between sectors. For example, service sectors generally have a better position. We address the issue in the chapters on in-depth sector analysis and have also included a recommendations in this area.
The model shows relocation between sectors. This can be especially an issue in agriculture.	There is indeed relocation between sectors, which is taken into account in the social analysis and also policy recommendations have been made in this context.

5 Screening and scoping

5.1 Screening criteria and indicators

The sectors or horizontal cross cutting issues that are expected to have a significant impact on Georgia as a result of the DCFTA are studied in detail in the next chapters, so as to understand the important dynamics and key concerns that are at play in these sectors in relation to these issues. The selection of these sectors or horizontal issues was done through the screening and scoping exercise which is described in detail in the Interim Technical Report. The following four main criteria were used in doing so:

1. initial importance for the economy;
2. expected economic impact of the DCFTA;
3. expected social, environmental and human rights impact;
4. stakeholder issues of special importance.

5.2 Sector selection

For Georgia, in total two sectors were selected on the basis of the four screening criteria (see table 5.1), and in consultation with the Steering Committee. These are the sectors **1) vegetables, fruits, nuts and oilseeds,** and **2) Chemicals, rubber, plastics.**

Table 5.1 Screening and selection of sectors

Sectors	Cr 1: Initial importance	Cr 2: Economic impact	Cr 3: Social/ Environmental	Cr 4: Civil Society
Animal products	✓			
Dairy products				✓
Grains and Crops			✓	
Livestock and Meat Products		✓	✓	
Other crops		✓	✓	
Other processed food			✓	
Sugar		✓	✓	
Vegetables, fruits, nuts, oilseeds	✓	✓	✓	
Vegetables oils and fats		✓		
Energy		✓	✓	
Fish products				
Forestry products			✓	
Other minerals				
Primary metals	✓	✓	✓	
Beverages and tobacco				
Ceramics, cement, etc.			✓	
Chemicals, rubber, plastics	✓	✓	✓	
Electronics, computers		✓		
Fabricated metals		✓		
Motor vehicles		✓		
other machinery and equipment	✓	✓		
Other manufacturing			✓	

Sectors	Cr 1: Initial importance	Cr 2: Economic impact	Cr 3: Social/ Environmental	Cr 4: Civil Society
Other transport	✓			
Petrochemicals				
Textiles and Clothing				
Wood, paper, publishing				
Air transport				
Business and ICT	✓			
Communications	✓			
Construction	✓	✓		
Finance				
Other transport				
Personal and recreational services	✓			
Public and other services	✓			
Trade	✓			
Utilities	✓		✓	✓
Water transport				

In the following chapters we will take a closer look at expected changes in these two sectors in the context of the DCFTA negotiations and implementation.

6 Detailed analysis: Chemicals, rubber and plastics

6.1 The chemicals, rubber and plastic sector in Georgia

Chemicals, rubber and plastic production is an important part of the Georgian economy accounting for about 9% of total industry output and just below 8% of total employment in industry. GTAP data indicate 1.7% share in economy-wide output, 0.7% share in total value added, and 0.9% and 0.5% shares in, respectively unskilled and skilled employment. During the last decade the chemicals, rubber and plastics (CRP) sector outperformed industry as a whole, increasing its share in total output. The shares in value added and fixed investments have been fluctuating but generally remained at a high level (Table 6.1). The sector is not labour intensive but employment gains have been consistent in recent years (apart from the decline in 2011 as suggested by preliminary data).

The main share of output in the CRP sector comes from medium and large enterprises. Chemicals company “Rustavi Azot” is the largest producer and exporter in the sector. The company specializes in mineral fertilizers, ammonia, sodium cyanide, nitric acid, ammonia water and other products. Currently the factory works at half capacity and the company plans to expand its production by launching new products.

An interesting subsector that we cover in some more detail in this chapter is pharmaceutical production. In contrast to other subsectors of chemicals, there are many small pharmaceutical manufacturers (about 70 small, medium and large producers) and there is significant competition among them.

Table 6.1 Output, value added, fixed investments and employment in the chemical, rubber and plastic sector

Year	Share in total industry output (%)	Share in total industry value added (%)	Share in industry fixed assets investments (%)	Employment (thousands)
2001	4.2	n/a	n/a	5.5
2002	4.2	n/a	n/a	5.3
2003	4.4	n/a	n/a	5.2
2004	7.2	n/a	n/a	5.5
2005	7.1	n/a	n/a	8.8
2006	8.8	9.2	20.8	6.1
2007	8.2	6.5	5.6	7.6
2008	8.5	6.0	4.4	6.9
2009	8.6	5.2	5.7	8.0
2010	8.6	7.4	8.0	8.2
2011	9.2	n/a	n/a	6.8

Source: Geostat. http://geostat.ge/index.php?action=page&p_id=464&lang=eng

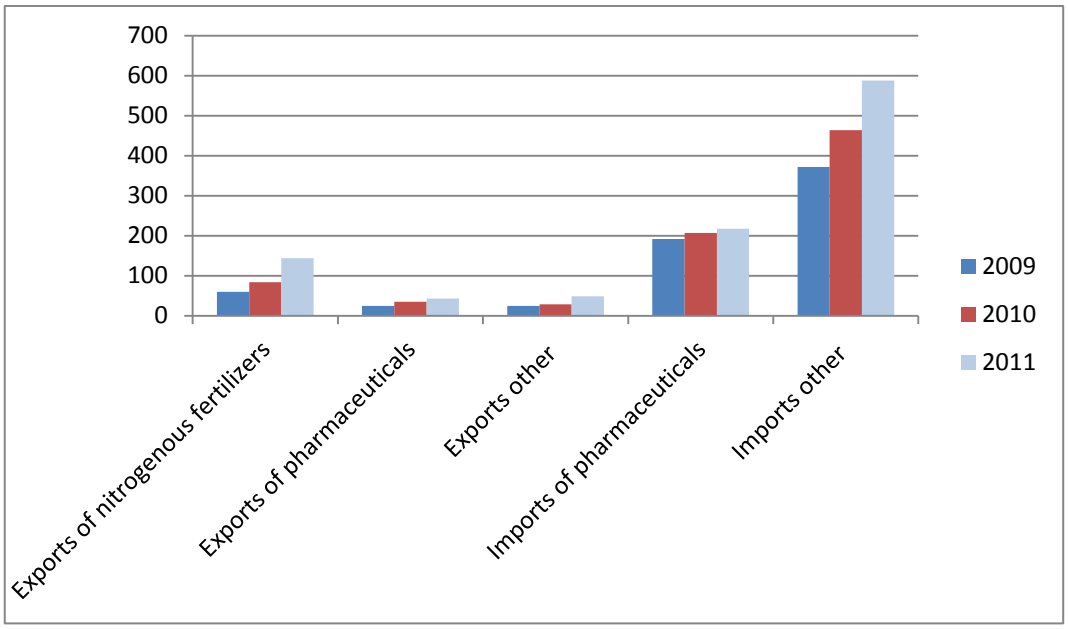
According to Georgian trade statistics, exports of products in the chemicals, rubber and plastic section reached USD 114 million or 8.9% of total exports in 2010.[72] Exports are quite concentrated with the top three products (ammonium nitrate (HS310230), medicaments (HS300490), and

[72] The data come from Comtrade database setting Georgia as a reporting country.

manganese oxides other than manganese dioxide (HS282090)) accounting for over USD100 million or 88% of total sectoral exports[73].

More recent data suggest particularly strong dynamics of ammonium nitrate exports from Georgia and continued fast pace of Georgian imports in the sector (Figure 6.1).

Figure 6.1 Georgian trade with the world in chemicals, rubber and plastic, 2009-2011 (USD million)



Source: Calculation based on Geostat data.

Exports to the EU reached USD40 million or 15% of total Georgian exports to the EU in 2010. There is a similar export concentration in Georgian trade with the EU, with ammonium nitrate (HS310230) accounting for 82% of total Georgian exports to the EU in this sector and together with the other two products mentioned above accounting for USD38 million or 94% of Georgian sectoral exports to the EU. Ammonium nitrate has been the top Georgian export product for some years now, but there was quite some variability in the export shares of other products with non-negligible Georgian exports to the EU. The EU import statistics from Georgia give a broadly similar picture.

Total Georgian 2010 imports of products in this sector amounted to USD660 million with the EU accounting for one third of this figure. Imports are much more diversified than exports. Medicaments are the top import product (HS300490) (USD 141 million total imports, including USD 84 million imports from the EU). The top ten products account for just about 21% of total sectoral imports.

6.2 Market access issues

6.2.1 The situation in Georgia

The DCFTA is likely to remove some remaining Georgian tariffs for imports from the EU. However, as of 2011, applied tariffs were non-zero only for a small group of products from the CRP sector. Table 6.2 provides information on tariffs in HS chapters (2 digit level). The highest tariffs (12%) applied to certain products from HS chapters 34 (soap, organic surface-active agents, washing preparations, lubricant preparations, artificial waxes, etc.) and 39 (plastics and articles thereof).

[73] 6-digit codes after names of products are codes of harmonised system trade nomenclature.

Table 6.2 Georgia applied ad valorem (AV) tariff in chemicals, rubber and plastic, 2011 (%)

HS code	Description	Average of AV duties	Minimum AV duty	Maximum AV duty	Duty free tariff lines (%)
28	Inorganic chemicals: organic or inorganic compounds of precious metals, of rare-earth metals	0	0	0	100
29	Organic chemicals	0	0	0	99.7
30	Pharmaceutical products	0	0	0	100
31	Fertilizers	0	0	0	96.2
32	Tanning or dyeing extracts; tannins and their derivatives; dyes, pigments	0	0	0	97.8
33	Essential oils and resinoids; perfumery, cosmetic or toilet preparations	1.4	0	5	71.4
34	Soap, Organic Surface-Active Agents, Washing Preparations, Lubricant	4.9	0	12	37.5
35	Albuminoidal substances; modified starches; glues; enzymes	0	0	0	100
36	Explosives; pyrotechnic products; matches; pyrophoric alloys; certain combustible prep	0	0	0	100
37	Photographic or cinematographic goods	0	0	0	100
38	Miscellaneous chemical products	0	0	0	100
39	Plastics and articles thereof	3.5	0	12	51.5
40	Rubber and articles thereof	0	0	0	100

Source: WTO, Integrated Database (IDB) notifications.

As evident from Table 6.4, tariffs are hardly a barrier for entering Georgian market for chemicals, rubber and plastic. Non-tariff barriers are also low as existing regulations are minimal. In the case of a sector such as chemicals this creates certain risks, e.g. when low quality dangerous products legally appear on the market. This has become an issue that has also alerted Georgian civil society. The Declaration on the Regulation of Hazardous Chemical Substances, developed by Georgian NGOs and experts includes the following statement: "*We are concerned about the facts of importing through official channels the hazardous chemical substances and substances prohibited under international conventions, as well as about saturation of the Georgian market with hazardous chemicals substances (pesticides) of suspicious origin which have not been examined*"

In Georgia, there is no effective and properly working legislative and monitoring system that would regulate the production process of chemicals or its trade. In some sub-sectors monitoring schemes are in place. For example, to introduce imported or domestically produced medicaments in the Georgian market one needs to obtain a certificate, but these procedures are still much simpler than typically found in other countries and EU countries in particular..As a result, while market access as such is not an issue for EU producers, the Georgian medicament market consists of cheap medicaments imported from different (especially Asian) countries, combined with domestically produced medicaments. The generally higher quality and more expensive (due to tight regulations and standards in the EU, including IPR protection) medicaments imported from Europe find it hard to compete with these segments.

The majority of medicaments produced in Georgia is exported to neighbouring countries. However, these exports are projected to decline in the near future as Georgian producers will need to obtain

international certificates. After 2013 it will not be possible to export to CIS countries without Certificate of a Pharmaceutical Product compliant with Good Manufacturing Practice (GMP) as recommended by the WHO. Currently several Georgian companies claim to adhere to GMP standards but there is no government authority to certify this. According to the Drug Agency and the Ministry of Labour, Health and Social Protection, GMP certification will become mandatory for pharmaceutical companies from January 1, 2016.

Georgian producers try to follow international standards and apply production practices enabling them to sell their production abroad. Fertilizers and some other chemicals produced in Georgia are already exported to the EU and non-EU countries with non-EU markets typically remaining more important destinations.

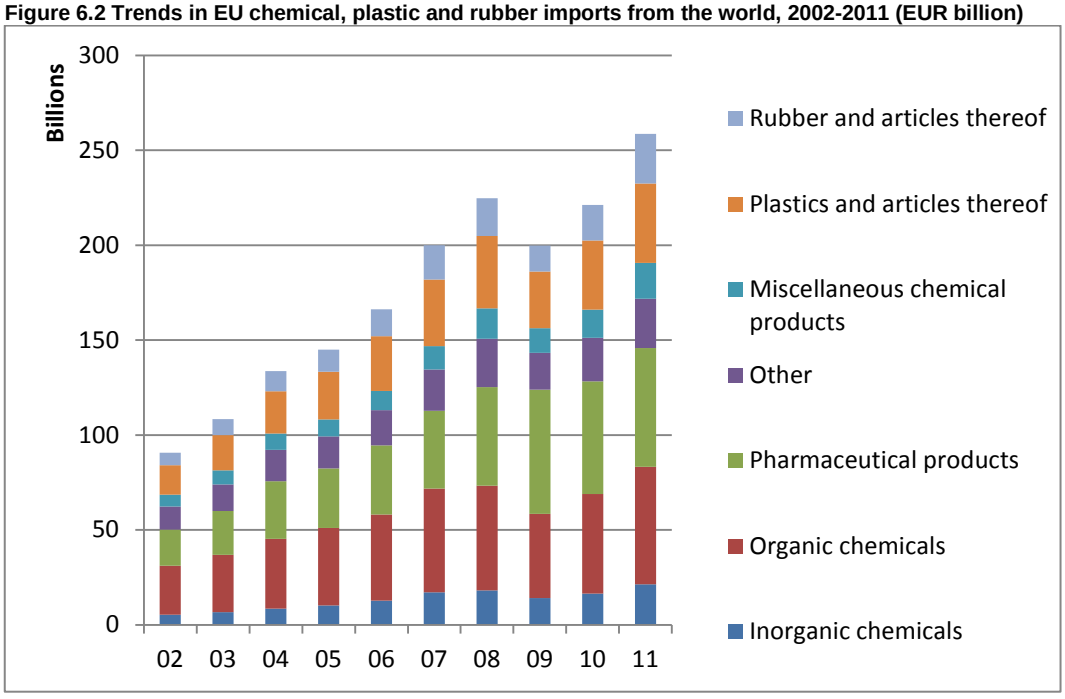
6.2.2 EU market access

Trade data from 2002 to 2011 show that CRP imports into the EU experienced a steady and upward growth trend (Figure 6.2); after a two year decline in overall imports, in 2011 imports exceeded pre-crisis levels again. Total EU imports of chemicals, rubber and plastics were just over €250 billion in 2011 reaching an all-time high. The EU is also very competitive in this sector and a net CRP exporter.

Nearly all sub sectors have experienced growth over the past decades, with organic chemicals, pharmaceutical products and plastics accounting for the largest share of EU imports of this sector.

The top origins of CRP imports into the EU27 (2002-2011) include the US (26.7%), Switzerland (19.9%), China (9.9%), Japan (5.1%), Singapore (4.7%) and other (33.6%).

Figure 6.2 Trends in EU chemical, plastic and rubber imports from the world, 2002-2011 (EUR billion)



Source: own calculations with Comtrade data

Barriers

The EU market for CRP products is highly regulated and the EU sets some the highest quality standards in the world for CRP and particularly chemicals production and use, making it challenging

for countries both inside and especially outside the EU to produce for, and export to this market.[74] On top of EU level regulations, moreover, certain member state countries within the EU have additional regulations.

At the EU level, an important piece of legislation governing chemicals and the environment is REACH (Registration, Evaluation, Authorisation and Restriction of Chemical substances) [Regulation (EC) 1907/2006][75]. Although meeting the requirements of REACH is formally the responsibility of the importers, in practice, part of these responsibilities is shifted to the companies exporting to the EU.

Other regulations and requirements relevant to the CRP sector and affecting market access to the EU[76] include among other things:

- Regulations regarding active pharmaceutical ingredients include packaging and labeling for pharmaceutical products (Directive 2001/83/EC, Directive 2003/94/EC, Directive 2005/28/EC[77]. These ensure good manufacturing and clinical practice.
  The classification of chemical substances being exported to the EU such as paints or varnishes are outlined by regulation (EC) 1272/2008)[78]. There is in addition, legislation regarding ozone-depleting chemicals (CFCs, HCFCs, halons and others) [Regulation (EC) 1005/2009][79].
- Additional regulations at Member State level, e.g. Austria and Denmark having stricter standards than the EU for Pentachlorophenol (PCP) in products[80].
- Minimum standards for packaging and packaging waste (Directive (EC) 94-62) and specifically for the use of wood as a packaging material (Directive (EC) 2000-29). For example the EU prohibits the use of DMFs (Dimethylfumarates) [Decision 2009/251/EC][81].

There also remain some small tariff barriers on a limited number of products from the analysed sector that are not included in the list of products for preferences under the GSP+ scheme. This for instance applies to alkali or alkaline-earth metals; rare-earth metals, acyclic hydrocarbons, and cyclic hydrocarbons.

Thus, while the DCFTA could lead to abolishing of remaining EU tariffs for imports of these products, the importance of this effect is likely to remain marginal given already largely duty free access to EU market. Non-tariff measures appear to be more important and accordingly are more likely to be of impact if successfully included in the DCFTA.

6.3 Impact assessment for Georgia

This section presents a detailed impact assessment of the DCFTA, starting with the baseline for the chemicals, rubber and plastics sector, combined with quantitative model outputs, and based on further literature review, causal chain analysis and interviews.

[74] http://www.cbi.eu/marketinfo/cbi/docs/the_chemicals_market_in_the_eu
[75] http://www.cbi.eu/marketinfo/cbi/docs/eu_legislation_chemicals_reach
[76] It should be noted that these regulations apply to EU and non-EU producers alike and as such do not constitute a trade barrier. However, the costs of compliance may be relatively higher for non-EIU producers wishing to export to the EU market, as these would need to comply with such regulations for only part of their production (i.e. the part destined for the EU market) but cost to do so may apply to all of their production.
[77] http://www.cbi.eu/marketinfo/cbi/docs/the_pharmaceutical_products_market_in_the_eu
[78] http://www.cbi.eu/marketinfo/cbi/docs/eu_legislation_classification_packaging_and_labelling_of_chemicals
[79] http://www.cbi.nl/marketinfo/cbi/docs/eu_legislation_ozone_depleting_chemicals_cfcs_hcfcs_halons_and_others
[80] http://www.cbi.eu/marketinfo/cbi/docs/austria_legislation_pentachlorophenol_pcp_in_products_additional_requirements
[81] http://www.cbi.eu/?pag=85&doc=5450&typ=mid_document

6.3.1 *Summarised CGE results for chemicals, rubber, plastic*

The CGE model predicts the DCFTA to lead to a strong output boost in Georgia in the chemicals, rubber, and plastic sector with associated employment gains (Table 6.3). The sector's exports are projected to increase substantially while imports remain broadly unchanged relative to the baseline scenario (the model predicts a slight decline in imports). Of all sectors in the CGE model, the CRP sector is expected to see the largest gains in absolute number of new jobs for both unskilled and skilled workers. These results primarily materialise only in the longer run, .i.e. after the time that is required for capital reallocation between economic sectors to materialise (Table 6.4).

An analysis of forces driving these results reveals that they mostly relate to a reduction of technical barriers to trade, and much less so to services non-tariff measures, while the impact of reducing tariffs is marginal (Table 6.4).

Table 6.3 Summary of CGE modelling results for the chemicals, rubber, plastic sector

Share of total value added baseline value	Value added % change (LR)	Output % change (LR)	Exports % change (LR)	Imports % change (LR)
0.5	46	62	64	-3
Less skilled employment		**More skilled employment**		
Baseline (% of total employment)	**% change (LR)**	**Baseline (% of total employment)**	**% change (LR)**	
0.9	42	**0.5**	41	

Table 6.4 Decomposition of overall modelled changes in output into effects of reduction of tariffs, NTMs and services liberalisation for the chemicals, rubber, plastic sector (% change relative to the baseline)

Short run				Long run			
tariffs	NTMs	Services NTMs	**total**	Tariffs	NTMs	Services NTMs	**Total**
0.7	4.4	1.7	**6.7**	1.8	47.4	13.0	**62.2**

6.3.2 *Economic impacts*

The CGE modelling results suggest that the chemicals, rubber and plastic sector may experience a strong boost in output that would be mainly directed to foreign markets (exports and output are seen as growing by around 60% in the long run, while the impact on imports is around zero). Associated employment gains may also be substantial, at an estimated 40%.

Not surprisingly, reductions of non-tariff barriers to trade (and not tariffs) are the main driver of the results. Adaptation of much stricter standards for chemical products (approximating EU regulations) by Georgia may have very pronounced effects. It is likely to largely restrict inflow of low quality chemicals (including medicaments) that currently play an important role in the market. This gap can be filled by (rising) domestic output and imports – most likely from the EU or other countries that have chemical regulations similar to the EU ones.

Exports to the EU (not a dominant export direction at present) may increase as it should become significantly easier to enter EU markets for domestic producers who will anyway need to comply with much stricter domestic regulations. The key issue is to what extent smaller producers will be able to comply with higher domestic standards and carry the costs of required compliance checks. This may particularly be of importance for pharmaceutical producers, as these tend to be smaller companies (than e.g. companies in the chemicals industry). Interviews with companies in this subsector confirmed that non-tariff barriers at present create main obstacles for entering the EU market. Obtaining required certificates to enter the EU market is not economically feasible for small and medium enterprises, hence they prefer to export to neighbouring or other non-EU countries. The DCFTA may give these companies a chance to lower fixed costs of entering the EU market if complying with relevant domestic regulations after the DCFTA is not more expensive than combined costs of complying with current regulations applicable to Georgian market and separately those applicable to access to the EU market. If Georgia manages to establish such an efficient regulatory system in the future this could provide a strong boost to expansion of the sector. On the other hand, if costs of complying with new regulatory requirements(approximated to the EU) ones are high this could be limit the sector's growth, driving some companies out of business.

There may be potentially substantial investment effects. Disappearance of low quality chemicals from the Georgian market may stimulate expansion of production capacity by domestic as well as foreign investors.

Since the production of chemicals are highly concentrated in urban areas, mostly in Tbilisi and Rustavi and it is expected to continue developing in those areas, the majority of economic effects will be felt in these regions.

Prices of products in the CRP sector (including medicines) are likely to rise. The CGE model predicts the effects to the tune of 3% on the long run mainly driven by reduction of NTMs, i.e. approximation of technical and other Georgia regulations pertaining to the sector with the EU ones.

6.3.3 Social impacts

Employment effects, potential impact on prices (including of medicaments) and health effects are likely to be among key drivers of social impact of the DCFTA in relation to the CRP sector.

Chemicals production is very capital intensive but it also requires (mainly high-skilled) human resources. Employment gains are expected mainly in the regions where chemicals production is likely to further develop (Tbilisi, Rustavi). This may act as an additional stimulus for migration from rural areas towards cities. Shortages of skilled personnel are likely with higher wages in the sector as a likely result, while also creating a challenge for the education and training system.

A significant reduction of the presence of cheap, low quality (but possibly also some generic) chemicals including pharmaceuticals in Georgia may imply a rise in average prices, negatively affecting purchasing power of some groups. Health outcomes are difficult to predict here – on the one hand access to medicines may decline due to higher prices. On the other hand average quality of available medicines is likely to improve. This also suggests that outcomes may very between income groups – with more scope for positive impacts among the more affluent groups of the population and higher chances of negative outcomes among the poor. Putting it differently, inequality of health outcomes may increase.

We see scope for a small positive DCFTA impact on labour standards in the CRP sector. The driving force for this is likely to be general upgrade of standards of operations of Georgian

enterprises in the sector to meet higher standards for their products. This is likely to lead to positive spill-over effects on labour rights.

Indirect effects of DCFTA on social issues may be related to the market entry of foreign (EU) firms bringing with them corporate culture for higher work standards including safety standards.

6.3.4 Environmental impacts

The expected significant sector expansion due to the DCFTA is likely to add to associated environmental pressure. However, limiting the inflow of particularly dangerous substances and improved overall control on trade in chemicals (that hardly exists at present) is likely to lead to potentially significant improvements in chemical-related pollution.

The environmental effects of the DCFTA in the CRP sector also relate to the functioning of (certain) chemical plants, undeveloped system for managing hazardous chemicals (including chemical waste), and the use of chemicals in other sectors such as agriculture. For instance, the decline in soil pollution and reduced water pollution from the functioning of the agricultural sector in the last two decades or so owes much to the reduced use of fertilisers and other chemicals – a trend that is likely to be reversed in the future. (see e.g. discussion in chapter 7 in relation to vegetables, fruits and nuts).

In addition the DCFTA may change competitive situation of the sector and its environmental effects due to potential implementation of elements of the EU policy on chemicals. However, stricter regulations and higher standards in alignment with EU ones are likely to reduce the relative pollution of the sector.

Overall there are thus both positive and negative expected impacts, which are hard to quantify at this point. The precise overall impact is therefore hard to predict, but we expected a moderately positive effect of the DCFTA on environmental pressures related to the CRP sector.

6.4 Conclusions

In summary, our analysis identifies positive and significant overall economic impact of the DCFTA in the CRP sector. Output, value added, exports and employment are all expected to see significant gains. Positive investment effects are likely, including by foreign investors. These changes will be primarily driven by Georgia introducing or upgrading its standards applicable to CRP production and trade.

Employment and wage gains and positive health outcomes are important aspects of the overall social impact. On the other hand, potential for price increases (e.g. for pharmaceuticals) may be problematic for less affluent households.

While expanding domestic production of CRP is likely to lead to rising emissions and pollution at the production stage, more stringent standards applicable to domestically produced and imported chemicals may limit environmental burden from the chemicals stock in Georgia if there is gradual improvement in compliance with stricter regulations and higher standards in the sector. The overall effect is ambiguous.

7 Detailed analysis: Vegetables, fruits and nuts

7.1 The vegetables, fruits and nuts sector in Georgia

Thanks to its climate and geography Georgia has ideal growing conditions for a wide range of vegetables, fruits, and nuts. Historically the vegetables, fruits and nuts (VFN) sector was very strong but its situation has deteriorated over the last two decades and currently Georgia is a net importer of vegetables and fruits. The agricultural sector as a whole accounts for approximately 8-9% of Georgian GDP. There are no official data on contribution of vegetables, fruits and nuts to this number. GTAP data indicate 5.3% share in economy-wide output, 4.5% share in total value added, and 9.4% and 0.4% shares in, respectively, unskilled and skilled employment. Table 7.1 provides information on the dynamics of output of key products in the sector. It reveals broadly stable output during the last few years, although certain fruits show substantial year-on-year variations. Table 7.2 provides information on land use and farm mechanisation.

Table 7.1 Production of selected vegetables, fruits and nuts, 2006-2011 (thousand tonnes)

Type	2006	2007	2008	2009	2010	2011
Vegetables	180	190	165	170	176	186
Tomatoes	70	80	63	51	56	62
Cucumbers	19	20	19	31	29	26
Cabbages	36	34	42	40	27	35
Fruits						
Apples	33	101	42	81	21	64
Pears	23	20	16	11	14	18
Peaches	5	8	14	18	7	19
Sour plums	24	19	18	7	12	10
Subtropical fruits	21	22	24	21	22	25
Grapes	163	227	176	150	121	160
Tangerines	48	94	52	91	49	53
Hazelnuts	24	21	19	22	29	31

Source: Geostat

Table 7.2. Land use data for vegetables, fruits and nuts sector, 2004

Indicator	%
Land used for orchards, % of the land under permanent use	37%
Land used for apple production, % of the land used for orchards production	22%
Land used for hazelnuts production, % of the land used for orchards production	49%
Land used for peach production, % of the land used for orchards production	7%
Land used to produce vegetables, % of the land used for temporary crops	8%
Farms using at least one type of tractors	52%

Source: Geostat. Agriculture Census, 2004

Productivity in the sector is low; for instance apple yields are often below 3 tonnes per hectare, while improved production practices and investments in certain production inputs could bring up yields to around 20 tonnes per hectare.[82] This low productivity is related to high labour intensity, and low mechanisation and commercialization. This also results in limited land use.

[82] http://www.investmentguide.ge/files/156_147_369764_MajorInvestments.doc

Lack of access to agricultural insurance and access to affordable long-term financing are serious constraints on sector's development. The financial sector considers vegetables, fruits and nuts production (and agriculture as a whole) as too risky, possibly due to volatile output depending on weather and other external factors. This volatility is also due to underdeveloped irrigation systems, among other reasons.

Producers of vegetables, fruits and nuts are predominantly small and medium sized farmers cultivating from 3 to 30 hectares land and selling products in the domestic market. There are less than 100 farmers cultivating plots larger than 500 hectares. Fruits and vegetables production is mainly seasonal as greenhouse production is very small in Georgia and there is no infrastructure to store products till off-season period. This lack of cold storage infrastructure is a major impediment to the sector's development. In particular this leads to large seasonal variability of prices that go down in peak season (summer) when all Georgian farmers try to sell their output and go up in the winter period when Georgia relies on imports (i.e. prices are high). A partly related issue concerns lack of links and cooperation of activities between small and medium enterprises (SME).

On the more positive side, clean soils and little reliance on agricultural chemicals could be seen as a potential strength of the sector. There is much unused land available which can be used for expanding production instead of focusing on more intensive exploitation of currently cultivated land. In addition, there are almost no genetically modified vegetables and fruits in the country. In most cases the internally produced fruits and vegetables are ecologically clean and consumer would probably be willing to pay more if this information was provided to them (or if farmers would obtain organic certification and market their products as such).

The long tradition of fruit and vegetable production has helped to build a pool of skills and capacities in the sector. These factors indicate substantial growth potential of the sector. Production can be increased by utilizing the free land and by adopting modern production methods and further upgrading skills of individual farmers in specific fields. The latter would increase productivity and reduce costs.

Creating a cold storage infrastructure could act as a major force changing the situation in the domestic market, by limiting seasonal price swings and allowing to sell products at higher average prices, e.g. also during off-season (both domestically and in foreign markets).

Georgia is among the leading producer of hazelnuts globally and one of the largest exporters. The sector consists of a large number of small independent producers and a few large ones, including foreign owned companies (e.g. investments by Italian Ferrero, the global largest hazelnut producer), or projects with EBRD involvement. Individual producers receive practically no public support. Down the production chain there are about 20 collectors providing services such as cleaning, sorting, grading, packing, and removing the shells.[83]

According to Georgian trade statistics total exports of vegetables, fruits and nuts sector reached USD 86 million or 6.7% of total exports in 2010.[84] Hazelnuts are by far the most important export product. Counting both shelled and in shells hazelnuts (HS080222 and HS080221) this product accounted for 75% of total Georgian exports in the entire sector.[85] Mandarines (HS080520) are another important product with a 14% share in sectoral exports, followed by some other fruits and vegetables including potatoes, cabbage, apples and tomatoes. More recent data suggest even

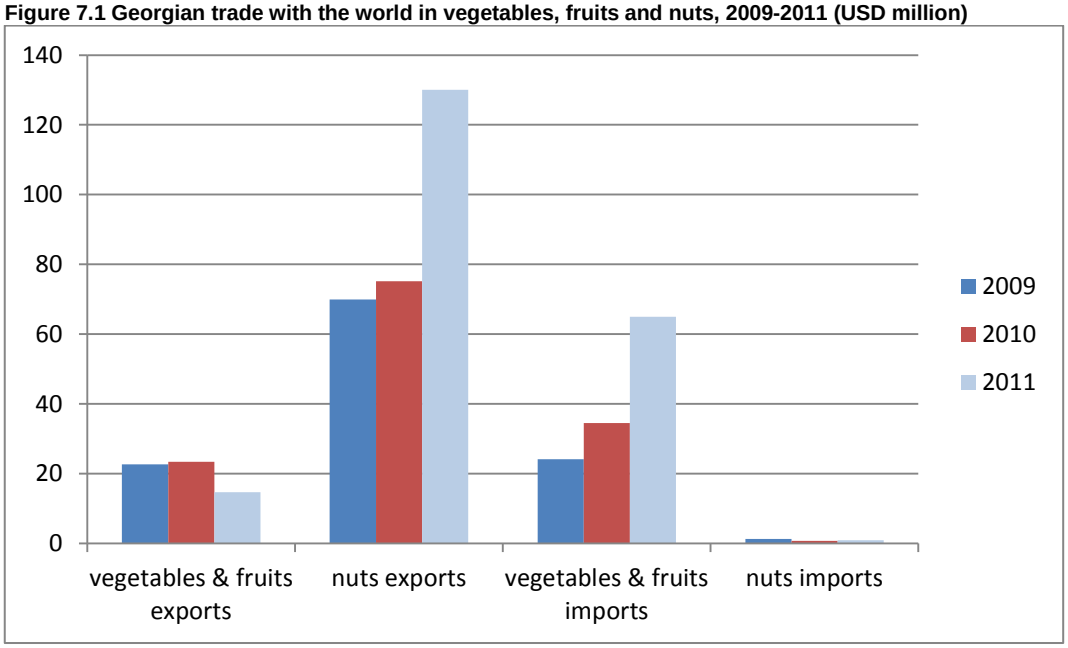
[83] This paragraph draws from the report prepared for the USAID: Deloitte Consulting LLP, Economic Prosperity Initiative: Sector Assessment Report, January 2011.

[84] The data come from Comtrade database setting Georgia as a reporting country. Sector definition according to GTAP.

[85] 6-digit codes after names of products are codes of harmonised system trade nomenclature.

stronger dominance of nuts in total sectoral exports with Georgian exports of fruits and vegetables contracting in 2011 (Figure 7.1).

Figure 7.1 Georgian trade with the world in vegetables, fruits and nuts, 2009-2011 (USD million)



Source: Calculation based on Geostat data.

EU accounts for almost half of total Georgian exports in the sector or USD 42 million in 2010, consist almost entirely of hazelnut exports (98% of the total). Only some vegetables and dried apples and some other dried fruits were exported, although in very small quantities. Such trade patterns have been largely unchanged in the last few years. EU import data from Georgia are consistent with those based on Georgian records.

Total Georgian 2010 imports of products in the FVN sector accounted for USD 59 million, implying that this was one of a few sectors in which Georgia records trade surplus with the world (this, however, is driven only by hazelnuts exports and Georgia is a net importer of vegetables and fruits). Top import products in 2010 were bananas, onions and shallots, tomatoes, kidney beans, aubergines, oranges, cucumbers, dried grapes, and garlic. Imports from the EU were minimal at USD 2 million in 2010. Fresh apples accounted for a quarter of this figure.

7.2 Market access issues

7.2.1 The situation in Georgia

The DCFTA is likely to remove Georgian tariffs for imports from the EU. Currently applied tariffs are 12% for the majority of products, with custom duties on a few specific products at 5% and some products being duty free (Table 7.3).

Table 7.3 Georgia applied ad valorem (AV) tariff in vegetables, fruits, and nuts, 2011 (%)

HS code	Description	Average of AV duties	Minimum AV duty	Maximum AV duty	Duty free tariff lines (%)
07	Edible vegetables and certain roots and tubers	11.2	0	12	6.6
08	Edible fruit and nuts; peel of citrus fruit	9.4	0	12	21.8

HS code	Description	Average of AV duties	Minimum AV duty	Maximum AV duty	Duty free tariff lines (%)
	or melons				

Source: WTO, Integrated Database (IDB) notifications.

Non-tariff barriers to enter Georgian market are low. No standards apply that would regulate the quality of products produced domestically or imported. As such Georgia becomes an attractive place for export from countries producing low quality agricultural products. This can be one of the explanations (apart from distance) for limited market penetration by EU products that face stiff competition from low-quality and low price products from elsewhere.

Some companies involved in agricultural production have been trying to obtain international standards in hope of exporting their products abroad and distinguishing them from sub-quality competition in the domestic market. Standards indicating higher quality could help support higher prices thus increasing producers' incomes.

7.2.2 EU market access

The EU market for fruits, vegetables and nuts

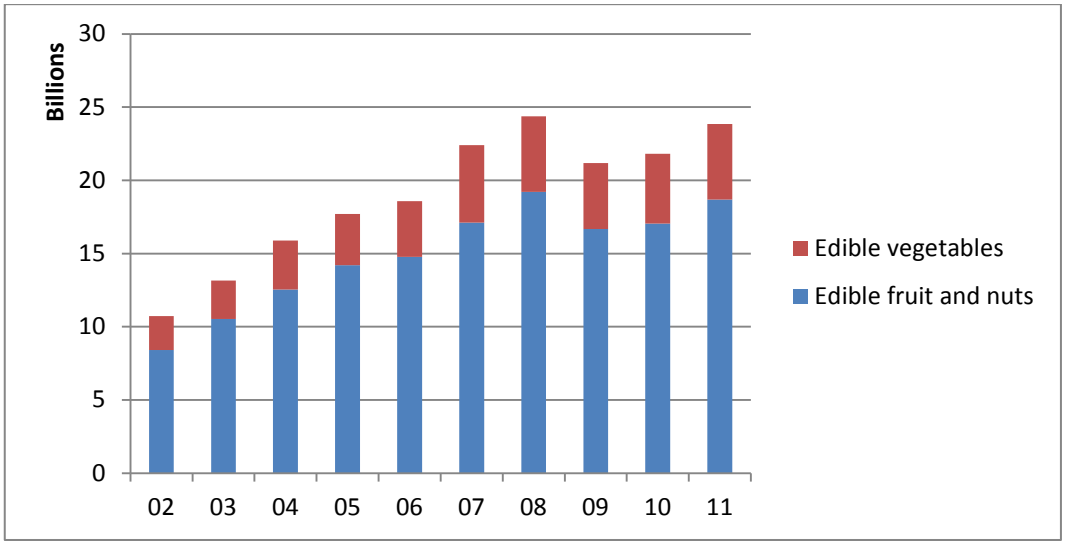
The demand for fruits, vegetables and nuts in the EU is substantial, with total EU imports in 2011 at nearly €24 billion. Over the past decade, imports of fruits and nuts have been growing steadily and although the economic crisis caused a slight drop in 2009, imports have picked up again afterwards (Figure 7.2). There are differences between Member States however. In many of the older Member States, the food market is nearly saturated and competition is very strong. Especially total consumption of preserved fruit and vegetables is therefore not expected to grow much (total EU imports of canned fruit and vegetables increased 2.5 per cent annually in the period 2005-2009 in terms of value but slightly decreased in terms of volume[86]). In the new EU Member States, however, food sales show higher growth rates.[87] Opportunities on the EU market could also be found in the demand for new products and for organic and fair trade products, which provide small but quickly growing niche markets.

Competition from other EU import sourcing countries differs by product. Turkey is the leading supplier of a variety of edible nuts and dried fruits. China and Thailand are the main suppliers of canned fruit and vegetables and Brazil dominates the supply of fruit juices and concentrates to the EU.

Figure 7.2 EU vegetables, fruits and nuts imports from the world, 2002-2011 (EUR billion)

[86] www.cbi.eu/marketinfo/cbi/?action=showDetails&id=5876

[87] www.cbi.eu/marketinfo/cbi/docs/report_summary_of_the_edible_nuts_and_dried_fruit_and_vegetables_market_in_the_eu



Source: Own calculation with comtrade data

The top origin countries of import into the EU-27 (2002-2011) include Turkey (9.7%), USA (9.5%), South Africa (7.2%), Costa Rica (6.1%), and Chile (5.8%).

If we look at more disaggregated product level the top imported vegetables are tomatoes, string beans and red kidney beans, whereas in the fruits and nuts segment, the top three imported products are bananas, grapes and almonds.

EU tariffs

There remain certain tariff barriers as some vegetables and fruits are not included in the list of products for preferences under the GSP+ scheme. This for instance applies to cucumbers (in high season), and oranges. The DCFTA could lead to abolishing of remaining EU tariffs for imports of these products from Georgia assuming they are not excluded as sensitive products.

EU non-tariff measures[88]

There is a range of regulations in the EU relevant to the sector to protect the safety of EU citizens. Certain Member States also have additional requirements which also must be taken into account. The Sanitary and Phytosanitary (SPS) standards set by the EU cover the entire process from 'farm to fork', are required by law and include the following regulations:

- The General food law [Regulation (EC) 178/2002] ensures food safety, food hygiene such as Hazard Analysis Critical Control Point standards [Regulation (EC) 852/2004, Regulation (EC) 853/2004 and Regulation (EC) 854/2004]. There is also a ban on certain pesticides [following Directive 79/117/EEC] and chemical contaminants [Directive EC/466/2001].
- Security and controls such as documentary, identity and physical checks [Regulation (EC) 882/2004] are used to ensure product legitimacy and safety.
- Strict food labelling [Directive 2000/13/EC] and packaging [Directive 94/62/EC] are also required by EU law and are of high importance when attempting to enter the EU market. There are strict legal regulations regarding wooden packaging [outlined in Directive 2004/102/EC].

There are also many non-legislative standards and regulations that do not pose formal requirements to enter the EU market, but that may be requested from EU importers, for instance:

- UNECE developed a range of international quality standards for 48 types of fresh fruits and vegetables and some dried fruits which have become widely adopted and recognised within the EU[89].

[88] This subsection draws from CBI Market Information Database • URL:www.cbi.eu • Contact: marketaccess@cbi.eu • www.cbi.eu/disclaimer

- There has been a growing demand for biodegradable packaging and other environmental requirements (e.g. ISO 14001).
- The organic and fair trade markets provide opportunities, but certification is timely and costly.

7.3 Impact assessment vegetables, fruits and nuts sector Georgia

This section presents a detailed impact assessment of the DCFTA, starting with the baseline for the fruits, vegetables and nuts sector, combined with quantitative model outputs, and based on further literature review, causal chain analysis and interviews.

7.3.1 Summarised results obtained in the CGE modelling for vegetables, fruits and nuts

The CGE modelling results of the DCFTA scenario predict a moderate increase in output of the VFN sector with associated employment gains (Table 7.4). This translates into an important effect given the large initial (baseline) size of the sector in terms of value added and less skilled employment. Foreign trade in vegetables, fruits and nuts is expected to increase significantly, with exports rising by just above 20% and imports just below 20%. This would further increase Georgian trade surplus in the sectoral trade. The model predicts that the sector will see one of the largest gains in absolute number of new jobs for unskilled workers. These results to a substantial degree materialise already in the short run although long run effects (i.e. after the adjustment of capital in the sector) are still somewhat stronger (Table 7.5).

An analysis of forces driving these results reveals that they mostly relate to reduction of non-tariff trade barriers – related to SPS standards - and much less so to services non-tariff measures. There is hardly any impact of reducing tariffs (Table 7.5).

Table 7.4 Summary of CGE modelling results for the vegetables, fruits and nuts sector

Share of total value added baseline value	Value added % change (LR)	Output % change (LR)	Exports % change (LR)	Imports % change (LR)
5.9	3	3	22	19
Less skilled employment Baseline (% of total employment)	**Less skilled employment % change (LR)**	**More skilled employment Baseline (% of total employment)**	**More skilled employment % change (LR)**	
9.4	2.5	0.4	2.6	

Table 7.5 Decomposition of overall modelled changes in output into effects of reduction of tariffs, NTMs and services liberalisation for the vegetables, fruits and nuts sector (% change relative to the baseline)

Short run				Long run			
Tariffs	NTMs	Services NTMs	Total	Tariffs	NTMs	Services NTMs	Total
0.1	1.8	0.5	**2.4**	0.0	2.7	0.7	**3.4**

[89] http://www.cbi.eu/marketinfo/cbi/docs/eu_legislation_marketing_standards_for_fresh_fruit_and_vegetables

7.3.2 *Economic impacts*

The CGE modelling exercise suggests that a reduction in SPS-related barriers to trade between the EU and Georgia is likely to lead to strong effects on Georgian foreign trade and long-run output is expected to increase by 7% with associated employment gains. However, in the case of Georgia the aggregation of nuts fruits and vegetables is likely to turn into an average trends that may actually occur within the sector.

Nuts are the key Georgian export product in the sector and practically the only product that is currently exported to the EU. While SPS measures are relevant for this sector (e.g. the majority of cases reported in the Rapid Alert System for Food and Feed (RASFF) for Georgian products refer to hazelnuts) meeting EU SPS standards for hazelnuts does not appear to be problematic for Georgian producers, processors and traders of hazelnuts (some of them are owned by EU capital). Based on interviews conducted with producers we do not expect major problems in complying with higher SPS standards that would be implemented as a result of the DCFTA.

Given that hazelnuts are covered by the GSP+ regime there are also no tariff barriers for exports to the EU. Hence, the DCFTA is unlikely to change much in the situation of the sector, and especially is unlikely to affect foreign trade trends. Some changes may take place in the domestic market and affect some small producers only serving the domestic market.

The situation in the fruits and vegetables sectors is different. Georgian output is small and currently does not meet domestic demand making Georgia a net importing country. There are negligible exports of products in this category to the EU market while there are substantial exports to other markets. This mainly owes to a combination of factors: high sophistication of EU fruit market that relies on complex logistics, specific requirements on product packaging, and application of the minimum entry price system.[90] Looking at experience of another country that can be comparable to Georgia i.e. Moldova, some studies have found minimum entry prices a significant barrier to Moldovan apples in some EU markets.[91] In the case of Georgia, distance to EU markets is also an issue and with small volumes of domestic production transport costs could be prohibitive. For instance, high air transport costs related to low volume of output are the barrier for greenhouse producers from the western part of Georgia – who mainly focus on herbs, tomatoes and cucumbers – to enter EU markets.

Given that the DCFTA is not expected to change the situation in any of the above fields, we assess that the expansion of exports of Georgian fresh fruits and vegetables to EU markets is unlikely. Instead, other effects can be expected. Upgrading domestic standards for fruits and vegetables might restrict entry into the Georgian market of low quality imports. This can lead to some increase in domestic prices and promote expansion of the domestic sector that – assuming the costs of compliance with new domestic SPS measures will be manageable – will be better able to compete with imports.

Although export expansion to the EU may thus be improving, but to a limited extent, still some export expansion is likely to occur, but mainly focusing on nearby countries such as Armenia, Azerbaijan, Turkey and Russia. Overall, also export gains to other countries are expected due to higher Georgian standards.

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[90] The analysis of effects of the entry price system can be found e.g. in Goetz, Linde & Grethe, Harald, 2009. "The EU entry price system for fresh fruits and vegetables - Paper tiger or powerful market barrier?," Food Policy, Elsevier, vol. 34(1), pages 81-93.

[91] Viorel Leahu, Fresh fruit sector in Moldova Comprehensive baseline study, 2012. Mimeo.

Establishment of standards in the domestic market that are recognisable globally may spur interest in investments, including by foreign capital. These can target the sector directly, but also associated sectors such as cold storage and processing of fruits and vegetables. The DCFTA may strengthen the opportunities in these sectors that are currently already visible . If this happens a smoothing of seasonal variability is likely as currently large seasonal price swings largely owe to lack of storage facilities for fresh fruits and vegetables. One further indirect implication of this could be some limiting of inflation volatility that would support the inflation targeting regime implemented by the National Bank of Georgia.

A final argument supporting the view on limited DCFTA impact on EU-Georgia trade in fresh fruits and vegetables is related to the popularity of private certification standards among EU supermarkets chains and their suppliers. For instance Globalgap, the most popular private farm management practice standard for food of non-animal origin, focuses on good agricultural practices, i.e. how the product is produced or processed. This is a very different approach than equivalence of risk outcomes in the WTO SPS Agreement. Some evidence suggests that private SPS standards such as Globalgap constitute an important trade barriers for developing countries trying to enter EU markets[92]. We do not attempt an analysis of its relevance for Georgian fruit and vegetable producers. We note, however, that the DCFTA is unlikely to change much in the ease or costs of obtaining such private certificates for Georgian producers (according to some sources at present only one Georgian company has a GlobalGap certificate[93]). Hence, we see the role played by such standards merely as limiting potential gains for Georgian producers in EU market access that could arise from approximation of domestic SPS legislation and measures with the EU ones.

Rising domestic output can be expected to support employment growth. Sectoral wages are unlikely to change much given abundant supply of low skilled workers from rural areas.

The fiscal costs of implementing SPS measures related to the sector are difficult to assess.

7.3.3 Social impacts

Social effects of the DCFTA the related to vegetables, fruits and nuts sector will be primarily driven by employment changes and to a lesser extent wage and price effects and health effects.

The sector accounts for close to 10% of less skilled employment. Employment gains concentrated on low skilled workers from rural areas could contribute (to a very limited extent) to a fall in inequality and poverty. The combined effects on prices of VFN is difficult to quantify – on the one hand much more developed SPS measures could lead to rising production costs (due to compliance costs) but if DCFTA-related investment effects materialise in the associated sector of fruit and vegetable storage (cold storage chain) this may limit the off season price peaks of these products. A slight average increase in prices is still likely with associated negative social outcomes, although own production of vegetables and fruits –e.g. among many poorer households in Georgia - may limit the scale of the effects for many households. The upward pressure on sectoral wages is expected to be minimal hence, so we expect no significant further impacts from this.

Introduction of higher SPS standards is expected to improve food quality and limit the risks related to contaminated or unhealthy food. These effects, however, are unlikely to be strong in the vegetables, fruits and nuts sector.

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92 For a discussion see e.g. Grace Chia-Hui Lee, Private Food Standards and Their Impact on Developing Countries, mimeo, http://trade.ec.europa.eu/doclib/docs/2006/november/tradoc_127969.pdf. Accessed 13 August 2012.

93 http://herbia.ge/prod.html

Labour standards are more likely to improve somewhat, but this effects is not expected to be significant in the sector.

7.3.4 Environmental effects

Predicted production gains in the VFN sector will be associated with some increase in land use, although a significant share of output growth may be related to rising yields in already existing plantations.

Increased CO2 emissions caused by potential increases of greenhouse production and building new cold storage facilities for fruits and vegetables constitutes one of the potentially negative effects on the environment. At the same time some decline of emissions related to transportation of vegetables and fruits cannot be excluded if domestic output replaces part of imports leading to lower average transport distances from the point of production to the point of consumption.

An increasing application of fertilisers and other agricultural chemicals will add to the environmental burden of the sector, but the new SPS regime and DCFTA-related upgrading of standards concerning chemical products (see chapter 6) may help to limit the use of particularly dangerous substances.

Overall, environmental impacts are thus assessed to be limited.

7.4 Conclusions

In summary, we expect different outcomes in the nuts sub-sector and on the one hand and vegetables and fruit subsector on the other. For nuts the DCFTA is unlikely to lead to substantial changes and especially given its already strong position in relation to foreign trade. The effects on the domestic market should also be limited provided the costs of compliance with the reformed SPS system are limited for businesses in the sector.

For fresh vegetables and fruits we expect positive, yet difficult to quantify output gains as domestic production is more protected from low quality imports following much stricter SPS measures to be introduced in Georgia. No significant effects are expected for EU-Georgia trade but exports to other countries may increase significantly.

We see scope for overall positive social impact mainly due to creation of employment opportunities for low skilled labour from rural areas. A potential rise in the environmental burden from the sector due to higher production levels and more intensive production methods may be minimised by improvements in the quality of applied agricultural chemicals, and lower transportation distances as domestic vegetables and fruits replaces imports.

8 Conclusions on the sustainability impact of the EU-Georgia DCFTA

8.1 Economic impact

Based on our quantitative economic analysis, we can conclude that - at the macro-level - the DCFTA is beneficial for Georgia, leading to an expected increase in national income of EUR 292 million in the long run, translating into a GDP growth of 4.3 percent. This growth can be largely attributed to the reduction NTMs. For the EU, the long run effects will be negligible, with a 0.0 percent change in EU GDP (minus EUR47 million).

Georgia also experiences other positive changes at the macro level. Exports are estimated to increase by 12.4 percent in the long run, while imports are estimated to increase by 7.5 percent, implying an improvement in the trade balance. In addition, wages are expected to increase by 3.6 percent. In combination with the expected decrease in consumer prices (-0.6 percent) this means that disposable income would go up. All effects on macroeconomic indicators for the EU are negligible. The DCFTA has virtually no impact on third countries, as the percentage change in GDP for these countries is close to zero.

Thus the DCFTA would have a much more pronounced impact on Georgia's economy than on the EU's. This reflects partly the relative importance of the EU and Georgia as trading partners for each other. In addition, in terms of economic size, the EU is much larger than Georgia.

The modelling results show that output in all sectors in Georgia will be affected by liberalising trade with the EU. The biggest effect (in relative terms) is the 62 percent increase in the output of chemicals, rubber and plastic, which is due to a combination of tariff reductions and TBT reductions. Other important sectors, where output is expected to increase more than five percent are other machinery and equipment and primary metals. Livestock and meat products, other processed foods, electronics & computers, and other manufacturing are all expected to contract by 8-24 percent in terms of output.

The DCFTA will also bring about a reform agenda in the country, through the regulatory approximation that is part of the agreement. This will induce changes in areas such as SPS, TBT, IPR, competition and customs. This will not only have benefits in terms of increased market access to the EU and other countries, but can also bring other positive changes for Georgia, e.g. improved SPS will contribute to better food safety, better protection of IPRs may induce innovation, and improved competition policy and implementation will prevent abuse of market power and may therefore decrease prices.

8.2 Social impact

Effects related to employment and wages are expected to be the main drivers of overall social impact of the DCFTA. The overall employment and wage levels are likely to increase in line with rising output. Since the computable general equilibrium (CGE) model used for quantification of effects assumes fixed employment, the predicted social effects are reflected in rising wages, which is an indication that in reality wages rise and/or employment goes up. This, combined with predicted fall in consumer price inflation is expected to support improvements in average living standards.

As any other trade liberalisation (or globalisation) process the DCFTA will necessarily lead to reallocation of resources – notably labour and capital- between sectors: from less productive to more productive ones. Our analysis suggests that the DCFTA will lead to approximately four percent of the Georgian labour force needing to change sector of employment. The scale of these sectoral reallocations would be somewhat higher for the less skilled workers compared to the more skilled workers (5 versus 3.5 percent). The ease of this labour transition in practice will be crucially important for determining the timing and scale of expected gains from the DCFTA that may be delayed and/or limited if labour reallocation proves difficult and lengthy.

The analysis utilising household budget survey data shows that poorer strata of the population are less likely to benefit from DCFTA than those with above average incomes. While several poverty indicators are likely to improve, some other are projected to worsen, especially those describing the situation of the bottom 10% of the income distribution. The DCFTA may also enhance inequality (and slightly worsen relevant indicators such as relative poverty, Gini coefficient or decile/quintile ratios), albeit to a very small degree, as changes in disposable income are generally limited.

The potential DCFTA impact on labour rights is of significant importance – also from the human rights perspective – given weaknesses of the current situation in this regard. Our conclusion is that while the DCFTA may trigger various forces acting towards either improving or worsening the labour rights situations, on balance positive forces are likely to be somewhat stronger implying an overall positive contribution of the DCFTA as regards labour rights. This assessment is based inter alia on expectations of a positive impact of the DCFTA on both administrative capacity to implement labour rights and public demand for rising standards in this area.

The (indirect) favourable DCFTA impact on equality may come about if and when increasing living standards begin to support gradual changes in societal preferences on equality issues. Other mechanisms of positive influence may be related to international conventions supporting equality and condemning discrimination. On the negative side, sectoral employment re-allocations that will be required by the DCFTA may disproportionally affect the weakest workforce groups, those with low education and skill levels. This implies a risk of exacerbation of currently observed inequalities. The aggregate direction and strength of these forces is difficult to predict, although worsening of the situation relative to trends currently observed does not appear likely.

In terms of human rights, the expected increase in income could positively contribute to the human rights situation. Although no major negative effects are expected *à priori*, challenges remain, e.g. with respect to possible rising inequality and the risk of pressure for lowering labour standards as a means to reduce costs and face increased competition for some companies.

8.3 Environmental impact

The estimated environmental effects in terms of CO2 emissions and land use intensity in Georgia are expected to be very small based on the CGE results. According to these results, CO2 emissions hardly increase (0.2 percent), while land use intensity is estimated to increase by only 2 percent as a result of the DCFTA. The additional quantitative analysis shows that air emissions of other pollutants are expected to rise by up to 3.1 percent in the long, translating into associated total external costs of the DCFTA to the tune of EUR 20 million for Georgia.

International cooperation and taking up international obligations appears to be among important drivers of the environmental agenda in Georgia. Our assessment suggests that the DCFTA should be at least as effective as the current GSP+ regime in supporting Georgian efforts in this field.

We expect the DCFTA to have a weak but positive effect encouraging more effective implementation of international environmental agreements in Georgia that should – in a gradual manner – also contribute to solving some of the outstanding environmental challenges facing the country. This mechanism may prove important in greening economic growth in Georgia in general and limiting the environmental burden from a boost to economic development due to the DCFTA.
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9 Policy recommendations and flanking measures

The quantitative and qualitative analyses in the previous chapters have highlighted the potential positive and negative effects of a DCFTA in terms of its economic, social and environmental impact. Based on these findings, this chapter presents policy recommendations and flanking measures that can help enhance positive effects and prevent or mitigate negative effects.

We distinguish between recommendations that can be addressed within the DCFTA (i.e. directly related to provisions to be included in the DCFTA) and those that would be addressed outside the DCFTA (i.e. non-trade related (accompanying) measures). The recommendations in this Chapter are provided by the Ecorys-CASE research team and do not reflect any commitment from the European Commission or the Government of Georgia.

9.1 Policy context and approach

9.1.1 Context

There are a number of issues to keep in mind before presenting the policy recommendations and flanking measures, related to the modelling assumptions, the policy and socio-economic context and on-going structural transformation processes.

Modelling assumptions

The impacts identified in this TSIA are partly based on the CGE and other modelling techniques, implying that they are influenced by the assumptions underlying these models. Some of these assumptions directly relate to the policies measures of the parties involved, implying that it may seem as if a policy measure is already in place even though it is a model assumption that has specific impacts *if* agreed and implemented.

An important example in this context is that the outcomes of the CGE model are based on Georgia's approximation to the EU especially in the field of SPS, TBT, IPR, etc. These results thus crucially hinge on the DCFTA negotiations and actual implementation of policies related to approximation in these fields.

Policy and socio-economic context

While negotiating and subsequently implementing the DCFTA – including preventative, mitigation and enhancement measures – both the EU and Georgia need to be aware of the socio-economic and policy context in which the agreement is implemented. The DCFTA and its mitigating and enhancing measures have a socio-cultural context in which they are implemented. Context factors (including political pressure, silent resistance, geographical distribution effects, etc.) may lead to different outcomes than expected. It is therefore considered crucial to:

- involve relevant stakeholders (with varying interests being adequately represented) in the process in order to achieve implementation of effective preventing/mitigating and enhancing measures for sustainable development.
- put adequate monitoring and evaluation mechanisms in place, making sure the effect of policy measures are monitored, reviewed and if necessary amended.

On-going structural transformation processes

The impacts assessed in this TSIA for the DCFTA between the EU and Georgia should be seen in the context of on-going structural transformation processes within Georgia, the EU and at a global level. In line with this, some of the impacts expected in the DCFTA can be seen as a reinforcement or acceleration of already on-going structural adjustments, while other impacts of the DCFTA may (temporarily) ease this adjustment process (e.g. increased employment opportunities in some agricultural sector, while the long-term trends is a decrease in employment in the sector due to improved technologies) . Likewise, policy recommendations should take these processes and the ensuing policies into account.

9.1.2 Approach

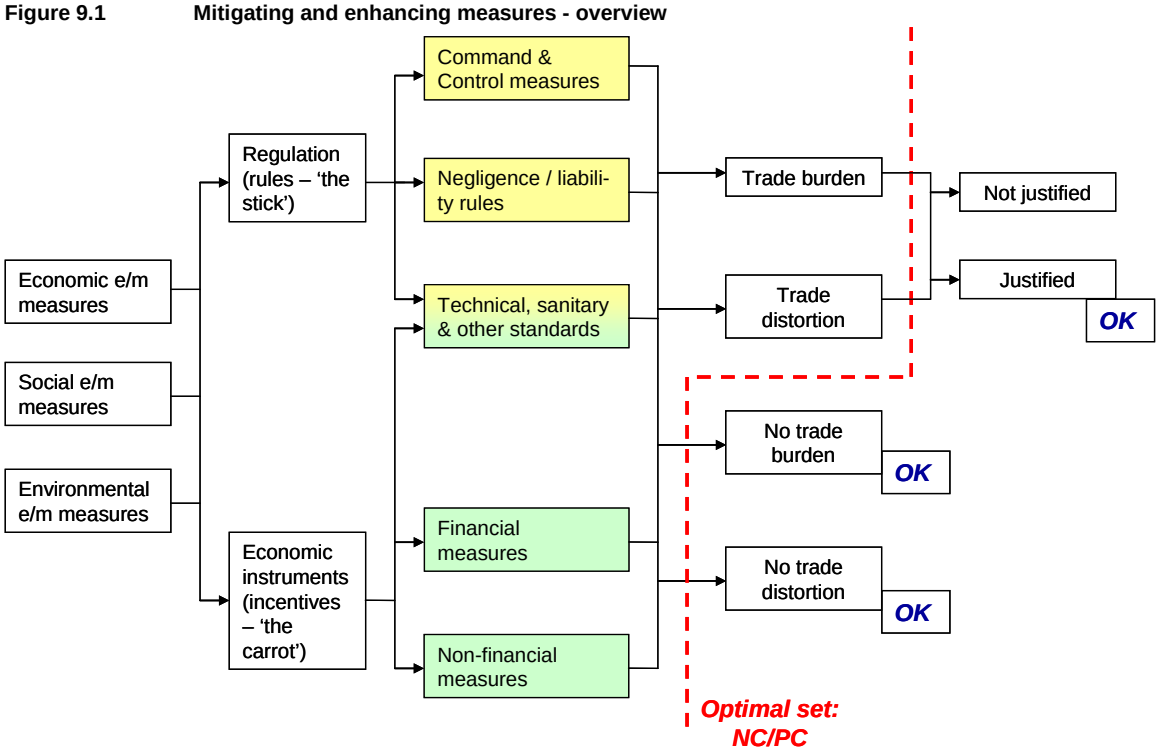
Taking into account the above-mentioned issues, a mix of a substantial number of instruments can be employed in order to generate the desired outcomes. There are two main approaches to preventing/mitigating and enhancing measures: the legal approach through regulation ('the stick') and the economic approach through economic instruments ('the carrot'). A schematic overview of choosing the optimal set of mitigating and enhancing measures policy measures is provided in Figure 9.1. Schematically, we need to look at:

- Which measures to employ (from Command & Control[94] to Non financial measures);
- Assess whether these measures create trade burdens or distortions;
- Assess whether they meet the normative and positive criteria for an optimal policy mix (the dotted line);
- If the measures create a trade burden or distortion, and if so, assess whether these are justified;
- Subsequently determine the preventative, mitigation and enhancement measures to be imposed: those that do not create trade burdens and/or distortions and those that do but are nonetheless deemed justified.

Thus, several preventative, mitigation and enhancement measures which do not create trade burdens or distortions may then be implemented. Several environmental and/or social regulations and economic instruments that may create trade distortions or burdens knowingly can also be implemented if they fit in the ex ante agreed decision making framework as 'justified'.

[94] The OECD defines Command & Control (CAC) policy as: "policy that relies on regulation (permission, prohibition, standard setting and enforcement as opposed to financial incentives, that is, economic instruments of cost internalisation." This approach has e.g. been used widely with respect to environmental damage brought about by economic activities.

Figure 9.1 Mitigating and enhancing measures - overview



Finally we should note that this DCFTA is clearly part of a more general process of enhanced cooperation and dialogue between the EU and Georgia in the context of the EU's Neighbourhood Policy and will form an integral part of the Association Agreement. The DCFTA should build on the positive experiences, initiatives and relations built up over the past decades and maintain the policy and technical dialogue and co-operation that have been established through these means. The mainstreaming of trade into the overall assistance programmes and cooperation agreements will enhance policy coherence and encourage further economic integration between Georgia and the EU and sustainable development.

9.2 Overall recommendations

9.2.1 Policy recommendations related to the economic pillar

Although the DCFTA is expected to enhance economic growth as presented in the previous chapters, it is clear that some sectors will gain while other will lose, thereby inducing or reinforcing a process of structural transformation. Table 9.1 summarises the economic policy recommendations in the context of the DCFTA, which are subsequently explained in more detail.

Table 9.1 Recommendations for the economic pillar

Policy measure	Potential to address	
	Within DCFTA	Outside DCFTA
Provision of technical assistance and capacity building in regulatory approximation process, especially in SPS, TBT, trade facilitation, and IPR	√	√
Allow for phasing in of tariff reductions or regulatory approximation at sector level , especially for those sectors where the economic, social and environmental impact will be high	√	
Stimulate on-going improvements in investment/business climate	√	√
Support efforts facilitating structural adjustment resulting from implementation	√	√

Policy measure	Potential to address	
	Within DCFTA	Outside DCFTA
of the DCFTA		
Stimulate entrepreneurship and competitiveness of SMEs		√

As noted in the first section of the chapter, the estimated impact of the DCFTA is based on Georgia's approximation to the EU in areas like SPS, TBT, trade facilitation, IPR, etc., which will be part of the DCFTA. Without this approximation, many of the benefits may not materialise. Substantial investments are needed for the approximation process. It requires amendments in Georgia's laws and regulations and also the appropriate infrastructure needs to be further developed (e.g. creation of accredited testing laboratories in line with EU or international standards). But the private sector also needs be made aware of the changes and consequences for their day-to-day operations, and companies may require training and assistance to make the necessary adjustments. In addition, the enforcement of the new rules and regulations needs to be developed. This is a timely and costly process and Georgia could benefit from technical assistance in all these areas.

Some sectors will lose as a result of the DCFTA, and this may have significantly negative economic, social or environmental consequences in the short run. For these sectors it may be good to phase in tariff reductions or to provide longer periods for the approximation process. For Georgia this latter is probably more important as tariff rates are already relatively low. This would allow time for adjustment, although the pros and cons should be assessed in parallel. Related to this is the process of structural adjustment that may be induced or reinforced by the DCFTA. It would be good to examine the possibility of funding or otherwise supporting structural adjustment efforts.

To reap the benefits of the DCFTA, it will also be important to have an attractive business and investment climate. This will lower the burden for existing companies and also induce new investments, including foreign investments, thereby contributing to economic development. Georgia has already significantly improved its business climate over the last years, and the country now ranks 16th in the IFC/World Bank 'ease of doing business' list of 183 countries, much higher than its neighbouring countries and even many EU countries. Nevertheless it is important to maintain a positive business environment, and there are always areas for further improvement, for example creating the right conditions for lower the costs of electricity.

Finally, there area large number of Small and Medium Enterprises (SMEs) that mainly produce for the domestic market. They are likely to face increased competition from imports as a result of the DCFTA and it is therefore important to improve their competitiveness. At the same time, the DCFTA will potentially create ample opportunities for business, and companies (particularly SMEs) should be encouraged to reap these benefits. Enhancing or mitigating measures may include business education, export promotion and support for innovation. It is also important to make SMEs (and business more general) aware of the consequences of the DCFTA for their daily business operations. Finally, attention could be paid to the links between SMEs and larger exporting companies: while not all SMEs will be able or willing to export themselves they could supply their products to larger exporting companies – provided they meet the export quality criteria set by these companies.

9.2.2 Policy recommendations related to the social pillar

Table 10.2 presents the social policy recommendations.

Table 9.2 Recommendations for the social pillar

Policy measure	Potential to address	
	Within DCFTA	Outside DCFTA
Support flexibility of labour market – easing the reallocation between sectors		√
Support training programmes to allow easier update and upgrade of human capital, promote life-long learning		√
Prevent risks of pressures to lower the labour standards due to rising international competition.	√	√
Allow for phasing in of trade barrier reductions and increases at sector level, especially for those sectors where the social impact may be high	√	
Consider creating mechanisms for monitoring of social (and environmental) impact of the DCFTA (and more broadly EU-Georgia relations in these areas)	√	
Provision of technical assistance and budget support to programmes upgrading human capital and improving institutional and regulatory environment in the social policy sphere	√	√

The need for labour reallocation between sectors is a key mechanism by which DCFTA gains can materialise. This is also a major challenge from the social policy perspective that is further complicated by the fact that people with low human capital, low skills and low incomes are particularly likely to face a challenge of finding new employment opportunities. This calls for two sets of policy measures. First, the policy environment should continue to make hiring and firing labour easy for employers. In this regard no major changes appear to be required in Georgia from the current policy stand. Second, there is scope for public policy measures supporting those seeking new employment and enhancing of competencies essential in labour mobility: ability to learn new things, openness to change, ability to cooperate in teams, basic IT skills, etc. as well as some specific skills and competencies that may be needed in particular sectors However, such policies or programmes should not be focused only on winning sectors and shortages of specific skills needed in these sectors. This is in practice almost impossible to predict. The programmes would need to recognise that the DCFTA is only one among several forces changing the demand for skills and competencies. Public policy programme should therefore focus on creating a culture of lifelong learning and infrastructure making it easy to learn at various stages of individual lifecycles. All these measures need to be addressed by Georgia outside the DCFTA process but may be supported by EU and other donors as an element of development cooperation.

It is in the interest of both Georgia and the EU to ensure that implementation of labour standards improves in Georgia and is not put at risk due to intensified international competitive pressures following the implementation of the DCFTA (the risk of the 'race to the bottom'). Policy initiatives in this sphere could include both specific commitments included in the DCFTA (and indeed relevant clauses can be expected to be included in the Agreement) and domestic measures (e.g. related to the promotion of high labour standards, supporting voluntary schemes in the business sector committing to high labour standards, strengthening control institutions (e.g. establishing of an efficient labour inspectorate), etc.. Again, these measures could benefit from support (transfer of know-how and funding) in development cooperation.

While import barriers to Georgia and in particular import tariffs are generally low at present, a gradual phase out of some of these remaining barriers could be considered to prevent potential deterioration of the situation of certain sectors. A similar argument applies to creating new barriers to imports (from non-EU countries) that will emerge e.g. due to adopting SPS measures approximated to the quite demanding EU regime. These cases would need to be analysed individually taking the pros and cons of delayed adjustments into account.

Given the scope for social and other sustainable development effects of the DCFTA for EU-Georgia relations more generally we recommend the establishment of a monitoring mechanisms that would help both sides in assessing policy implications of certain decisions and processes. This mechanism could also help in identifying development cooperation priorities. Very importantly, creation of any institutional structures with such monitoring tasks should be optimised taking into account a realistic assessment of Georgia's capacities in the sphere. Thus a relatively simple setup is important. The risk of establishing of costly and complicated institutional structures that would limit resources available for Georgia addressing higher priority issues (including social policy itself) should be avoided.

The costs of upgrading social policies, including in the sphere of human capital formation are substantial and would be difficult to take up by Georgia at its current stage of socio-economic and institutional development. This provides justification for involvement of EU and other international donors. It is essential that development cooperation programmes are well coordinated between donors, fully aligned with Georgian priorities and implemented effectively.

9.2.3 Policy recommendations related to the environmental pillar

Table 10.3 presents the environmental policy recommendations.

Table 9.3 Recommendations for the environmental pillar

Policy measure	Potential to address	
	Within DCFTA	Outside DCFTA
Create incentives for environmentally friendly production		√
Maintain incentives and encouragement to implement international environmental agreements	√	√
Consider creating mechanisms for monitoring of environmental (and social) impact of the DCFTA (and more broadly EU-Georgia relations)	√	
Provision of technical assistance, capacity building and budget support in environmental policy broadly defined		√

There is ample room for greening of economic growth in Georgia and – if successful – measures in this sphere could limit the environmental burden that is otherwise expected to rise with Georgia catching up in its economic development level with other European countries. In policy terms actions supporting green growth should consistently combine a range of instruments such as those related to shifts in government expenditure, education and training, resource and land rights, creating conditions for behaviour change and facilitating businesses to fully integrate sustainability and equity concerns, certification of sustainable production and trade, reform of payments for ecosystem services and others[95]. Some of these measures can be partly incorporated in the DCFTA process and many more would need to be implemented independently from the DCFTA process as part of Georgia's green growth framework. The needs for enhanced analytical and institutional capacity as well as financial resources to implement a policy framework along the lines sketched above justify significant involvement of EU and other partners in supporting Georgia's efforts in this area.

The natural environmental is not divided by national borders and several environmental challenges are global or regional in nature. Hence, there is scope for closer international cooperation in the

[95] The list comes from OECD, Green Growth and Developing Countries. A Summary for Policy Makers June 2012, http://www.oecd.org/dac/50526354.pdf. Accessed 14 August 2012. This document contains a more detailed exposition and discussion.

environmental sphere that in particular takes the form of international agreements or conventions. They serve both as commitment / pressure mechanisms and support mechanisms allowing for peer learning and pooling resources to achieve specific objectives. EU trade preferences for Georgia have until now been linked to progress in implementation of certain environmental conventions by Georgia. It appears justified to retain this link also in the DCFTA and indeed this is likely to happen. At the same time it is important to clearly identify costs associated with implementation of such conventions and sources to cover these costs. Again, given Georgia's level of development it is justified that some of these costs are at least in part covered by Georgia's development partners.

Given the scope for environmental and other sustainable development effects of the DCFTA for EU-Georgia relations more generally we recommend the establishment of a monitoring mechanisms that would help both sides in assessing policy implications of certain decisions and processes. This mechanism could also help in identifying development cooperation priorities. Very importantly, creation of any institutional structures with such monitoring tasks should be optimised taking into account realistic assessment of Georgia's capacities in the sphere. Thus a relatively simple setup is important. The risk of establishing costly and complicated institutional structures that would limit resources available for Georgia addressing higher priority issues (including domestic environmental policy) should be avoided.

The costs of upgrading environmental policies are very high and given the current development level of Georgia it is justified that the country receives significant international support in this sphere. It is essential that development cooperation programmes are well coordinated between donors, fully aligned with Georgian priorities and implemented effectively.

9.3 Sector-specific recommendations

In chapters 6 and 7 we looked in more detail at the DCFTA impact on the sectors 1) chemicals, rubber and plastics; 2) fruits, vegetables and nuts. The specific policy recommendation for these sectors, based on this analysis, are presented below.

9.3.1 Policy recommendations related to chemical, plastic and rubber sector

Policy measure	Potential to address	
	Within DCFTA	Outside DCFTA
Realistically assess ability to take up obligations related to upgrading standards in chemical sector so that regulations can be effectively implemented. Establish clear timeline and targets	√	√
Promote good environmental practices in the sector		√
Provide extensive information to stakeholders (including business sector) on forthcoming changes to help them prepare and adjust		√
Provide TA to support building the new regulatory framework in Georgia and develop enforcement capacities		√

Given the starting point of Georgian regulations pertaining to the chemical plastic and rubber sector the authorities need to be realistic in the assessment of the capacity operators in the sector to implement potentially sophisticated standards and control mechanisms. Gradual phasing in of obligations in line with a clearly defined and publicly announced plan may lead to better results than adopting ambitious commitments that would not be implemented.

The DCFTA could be seen as an opportunity to improve environmental performance and limit environmental burdens created by the sector. This opportunity should be utilised to the maximum extent practically possible. Extensive dialogue with sector and other stakeholders is important given that changes to the rules under which the sector will need to operate may be significant. Provision of clear information to stakeholders and agreeing on specific regulations in dialogue with them is essential for the successful adoption of the changes to come.

The complicated nature of regulatory schemes that will need to be established justifies providing technical assistance to support necessary reforms in Georgia.

9.3.2 Policy recommendations related to vegetables, fruits and nuts sector

Policy measure	Potential to address	
	Within DCFTA	Outside DCFTA
Build SPS institutional infrastructure that is not excessively costly for the sector to comply with SPS norms and standards	√	√
Promote good agricultural practice in the sector		√
Consider promoting organic farming in the sector		√
Support self-organisation of the sector, better linkages between small producers and investments in associated industries (storage and processing of vegetables, fruits and nuts)	√	√

While the methods of production and quality of final products of the majority of domestic producers likely meets standards that would be deemed safe from a health perspective, the process of receiving necessary certificates and other documents in the framework of the SPS system that is to be established, approximating EU regulations in the area may be costly. This has been included in the CGE modelling. The gains from the DCFTA would be more limited than without these costs adjustments (less chance for successful competition with third country imports) but effects are still positive though also negative effects result (e.g. social implications of higher food prices). This calls for a careful design of the SPS regime so that it can operate efficiently and at reasonably low costs to producers.

There is potential for improving agricultural practices in the sector, combining experience and human and other resources from the rich tradition of the sector's development with modern technologies and solutions. This process is well worth supporting by public policies as such measures can maximise DCFTA-related (and other) gains of the sector, contributing to improvement of social outcomes and limiting environmental burden from rising production. Given the current situation of the Georgian VFN sector's production and global demand trends in the sector, promotion of organic farming may also be an attractive option.

The performance of production of vegetables, fruits and nuts is closely intertwined with developments in associated sectors, especially storage and processing of vegetables and fruits. Promoting the development of these sectors (by creating favourable investment conditions, advisory services and support for self-organisation processes among producers of vegetables and fruits) can help in maximising benefits potentially stemming from the DCFTA.

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List of abbreviations

Abbreviation	Meaning
ANP	Animals
ATP	Adaptation to technical progress
ATP	Air transport
B_T	Beverages & tobacco
CAFÉ	Clean Air for Europe
CCA	Causal Chain Analysis
CDE	Constant Difference of Elasticities
CGE	Computable general equilibrium
CMN	Communication
CNS	Construction
CRP	Chemicals
CSD	Civil Society Dialogue
CSR	Corporate Social Responsibility
CU	Customs Union
DCFTA	Deep and Comprehensive Free Trade Area
DDT	Dichlorodiphenyltrichloroethane
DG	Department General
EA	Environmental agreements
EAERE	European association of Environmental and Resource Economists
EC	European Commission
EESC	European Economic and Social Committee
EGY	Energy
ELE	Electronic equipment
EMEP	European Monitoring and Evaluation Programme
ESF	European Social Fund
EU	European Union
FAO	Food and Agriculture Organisation
FIS	Financial services
FMN	Ferrous metals
FMP	Metal products
FRS	Forestry
FSH	Fishing
FTA	Free Trade Agreement
GDP	Gross Domestic Product
GRN	Grains
GSP+	General System of Preference
GTAP 8.0	Global Trade Analysis Project 8.0
HIV/AIDS	Human immunodeficiency virus /Acquired immune deficiency syndrome
HR	Human Rights
HS	Harmonized System
IA	Impact Assessment

Abbreviation	Meaning
ICT	Information and communications technology
IIASA	International Institute for Applied Systems Analysis
ILO	International Labour Organisation
IPA	Impact Pathway Approach
IPR	Intellectual property rights
ITUC	International Trade Union Confederation
LGBT	Lesbian, gay, bisexual, and transgender people
LUP	Wood & paper
MFN	Most Favoured Nation
MIL	Dairy products
MPN	Mineral products
MPT	Animal products
MSC	Marginal social cost
MT	Metric Tones
MVH	Motor vehicles
NACE	National Classification of Economic Activities
NAMA	Non-agricultural market access
NRF	Nomenclature for Reporting Format
NT	National Treatment
NTM	Non-tariff measures
OBS	Other business services
OCR	Sugar cane
OECD	Organisation for Economic Cooperation and Development
OFD	Rice
OMC	Open Method of Coordination
OME	Other machinery
OMF	Other manufactures
OMN	Minerals
OSC	Public services
OTN	Transport equipment
P_C	Petroleum & coal products
PM	Particulate matter
PPM	Parts per million
PRTP	Pure Rate of Time Preference
ROS	Recreation
ROW	Rest of the World
SC	Steering Committee
SGR	Sugar
SME	Small and Medium Enterprise
SPS	Sanitary and Phyto sanitary
SSC	Social cost of carbon
TBT	Technical Barriers to Trade
TCE	Tariff Costs Equivalents
TRD	Trade
TRQ	Tariff Rate Quota
TSIA	Trade Sustainability Impact Assessment

Abbreviation	Meaning
TSP	Road & rail transport
TSS	Total Suspended Solid
TWL	Textiles
UECBV	European Livestock And Meat Trading Union (l'Union Européenne du Commerce du Bétail et de la Viande)
UN	United Nations
UNCRC	The United Nations Convention on the Rights of the Child
UNECE	United Nations Economic Commission for Europe
UNICEF	United Nations International Children's Emergency Fund
US	United States
UTI	Utilities
V_F	Vegetables, fruits & nuts
VA	Value Added
VOL	Vegetable oils & fats
WHO	World Health Organisation
WITS	World Integrated Trade Solution
WTO	World Trade Organisation
WTP	Water transport

Executive summary

Background of the study

In the context of the European Neighbourhood Policy, the EU and Moldova are in the process of negotiating an Association Agreement (AA) to replace the current Partnership and Co-operation Agreement (PCA). A Deep and Comprehensive Free Trade Agreement (DCFTA), underpinned by regulatory approximation, will be part of this AA. This study supports the negotiation process by analysing how the trade and trade-related provisions of the DCFTA can affect economic, social and environmental developments in the EU and especially in Moldova.

Summary of methodology and approach

The main objective of this Trade Sustainability Impact Assessment (TSIA) is to assess the potential economic, social, environmental and human rights impacts of a Deep and Comprehensive Free Trade Agreement (DCFTA) to be negotiated between the EU and Moldova. This TSIA combines quantitative and qualitative research, in line with the general methodology designed for TSIAs by DG Trade. This methodology covers the following elements: screening and scoping analysis, scenario analysis and quantitative modelling, additional quantitative and qualitative social, human rights and environmental impact analysis, causal chain analysis, sectoral analysis, and partial equilibrium modelling.

In addition, throughout the study we engage extensively in stakeholder consultations. We employ five main consultation activities to gather inputs from key stakeholders: (1) electronic consultation and documentation (discussion forum, websites, feedback forms), (2) public meetings with civil society in the EU, (3) two TSIA workshops in Moldova (in Tiraspol and Chisinau), (4) visiting other relevant conferences and workshops, and (5) personal interviews with individual stakeholder representatives, and targeted surveys.

It is important to note that this study takes an incremental approach, i.e. the impact of the DCFTA is analysed by comparing a specified liberalisation/integration scenario encompassing the DCFTA, with a baseline scenario that assumes no DCFTA in place. The only difference between the two scenarios is thus the DCFTA. Specifically, and importantly for interpretation of all results presented in this report, no additional policy measures have been included in the scenarios. Nonetheless, such accompanying measures are likely to be taken, both on EU and Moldovan side, in order to maximise and enhance gains from trade integration and/or mitigate potential negative effects. Indeed, one of the objectives of this study is to highlight areas in which it is advisable to consider policy action.

Expected economic effects of the EU-Moldova DCFTA

Overall macro-economic effects

In the long run (i.e. after the time that is required for capital reallocation between economic sectors), the change in national income for Moldova is estimated to be around EUR 142 million. For the EU, the change in national income is expected to be EUR 240 million. In relative terms, for the EU these changes in national income are a negligible 0.0 percent change, while for Moldova, relative

changes are much more profound as the estimated GDP increase is 5.4 percent. Thus the DCFTA is expected to have a much more pronounced positive impact on Moldova's economy than on the EU.

Moldovan exports are estimated to increase by 16 percent, while imports increase by 8 percent. The relative increase in Moldovan exports as a result of this DCFTA is thus larger than the increase in imports. However, given that exports grow from a lower baseline than imports, the trade deficit may remain little affected in absolute terms.. The DCFTA-related effects on the EU trade are negligible. Wages in Moldova are projected to increase on average by 4.8 percent over the long run. Meanwhile, the overall consumer price index is expected to decrease by about 1.3 percent over the long run. This implies that – on average – purchasing power of Moldovan citizens increases because of the DCFTA. For the EU changes in wages and prices are negligible.

The DCFTA will contain a range of policy measures for liberalising trade in goods, i.e. lowering tariffs and reductions in non-tariff barriers, e.g. related to sanitary and phyto-sanitary measures (SPS), and technical barriers to trade (TBT) and for liberalising services trade. For both Moldova and the EU, the reduction of non-tariff measures (NTMs) are the single most important measure for reaping the benefits of the DCFTA.

Estimated third country effects

For the rest of the countries in the region, the EU-Moldova DCFTA is expected to have a limited effect, with only Russia and Ukraine benefiting to a small extent. The liberalisation of trade between the EU and Moldova is not expected to lead to any significant effect for the EU-Turkey Customs Union.

Sector-specific changes in output

As is typical for all trade liberalisation the impact of the DCFTA on economic sectors will differ. There will be both sectoral winners and sectoral losers. In assessing the impact in Moldova we consider two DCFTA scenarios: one with complete removal of tariff rate quotas (TRQs) for Moldovan sugar and the other one with some adjustment of the TRQ. If the TRQ is completely removed, the sugar sector emerges as the one with the largest positive output effect, a 87 percent increase. Other sectors that are expected to register output gains exceeding 10 percent are other crops, textiles and clothing, and air transport. Livestock and meat products, motor vehicles, electronics and computers and other manufacturing are all expected to see output contract by 8-22 percent. When we assume a TRQ for sugar, the effects for most sectors are comparable to the first experiment, except for the sugar sector itself and some related sectors. In this scenario, output in the sugar sector is expected to increase by only 9 percent (and the sector other crops also does not expand as much anymore, now only by 2 percent). Sectors with expected output increases of more than 10 percent include air transport, other machinery & equipment, textiles & clothing and primary metals. Livestock and meat products, beverages & tobacco and other manufacturing, motor vehicles and electronics & computers are still expected to contract, between 5 and 24 percent.

Expected social and human rights effects of the EU-Moldova DCFTA

Effects related to employment and wages are expected to be the main drivers of overall social impact of the DCFTA. The overall employment and wage levels are likely to increase in line with rising output. Since the computable general equilibrium (CGE) model used for quantification of effects assumes fixed employment, the predicted social effects are reflected in rising wages, which is an indication that in reality wages rise and/or employment goes up. This, combined with predicted fall in consumer price inflation is expected to support improvements in average living standards.

As any other trade liberalisation (or globalisation) process the DCFTA will require reallocation of resources – labour and capital between sectors: from less productive to more productive ones. Our analysis suggests that the DCFTA may require that around five percent of the Moldovan labour force will need to change sector of employment. This migration would be slightly higher for the less skilled workers compared to the more skilled workers (5 versus 4.5 percent). The ease of this labour transition in practice will be key for determining the timing and scale of expected gains from the DCFTA that may be delayed and/or limited if labour reallocation proves difficult and lengthy.

As already indicated above, the average disposable income is expected to rise, given the estimated increase in wages and decrease in consumer prices. However, the additional quantitative social analysis, based on an analysis of DCFTA-induced changes in relative prices and income, shows that poorer strata of the population appear to benefit less from DCFTA than those with above average incomes. This is mainly due to the fact that while overall consumer prices are expected to decrease, food prices increase slightly, and less affluent households spend a higher share of their total expenditures on food products. There is thus a risk of a rise in certain poverty indicators, especially for extreme poverty (i.e. for the 2-3 percent poorest people in Moldova). The DCFTA may also exacerbate inequality (and slightly worsen relevant indicators such as relative poverty, Gini coefficient or decile/quintile ratios), albeit to a very small degree, as changes in disposable income are generally limited.

As regards the DCFTA impact on labour rights –an important aspect also from the human rights perspective – our analysis shows that while the DCFTA may trigger various forces acting towards either improving or worsening the labour rights situations, on balance positive forces are likely to be somewhat stronger compared to the current situation. This assessment is based inter alia on an analysis of progress made in the process of implementing the earlier EC recommendations on preparations to the DCFTA negotiations.

The (indirect) favourable DCFTA impact on equality may come about if and when increasing living standards begin to support gradual changes in societal preferences on equality issues. Other mechanisms of positive influence may be related to international conventions supporting equality and condemning discrimination. On the negative side, sectoral employment re-allocations that will be required by the DCFTA may disproportionally affect the weakest workforce groups, those with low education and skill levels. This implies a risk of exacerbation of curently observed inequalities. The aggregate direction and strength of these forces is difficult to predict, although worsening of the situation relative to trends currently observed does not appear likely.

In terms of human rights, the expected increase in income could positively contribute to the human rights situation. Although no major negative effects are expected *à priori*, challenges remain, e.g. with respect to possible rising inequality and the risk of pressure for lowering labour standards as a means to reduce costs and face increased competition for some companies.

Expected environmental effects of the EU-Moldova DCFTA

Moldova faces several environmental problems related to air, water and soil pollution. Inadequate urban waste management, unsustainable agricultural practices and improper forest management induce significant land degradation and damage to biodiversity. Moldova's worsening social situation and high poverty have contributed to environmentally damaging activities such as illegal cutting of forests, use of obsolete technologies, poor energy efficiency and underinvestment in basic infrastructure such as water, sanitation, roads, and energy.

The estimated environmental effects of the DCFTA in terms of CO2 emissions and land use intensity in Moldova are very small based on the CGE results. CO2 emissions are expected to hardly increase (0.1 percent), while land use intensity would increase by 1.9 percent. The additional quantitative analysis shows that air emissions of other pollutants are expected to rise by less than 3 percent (ranging from 1.9 to 2.9 percent), translating into associated total external costs of DCFTA to the tune of EUR 15 million for Moldova, mainly through the negative impact on human health. This increase in associated costs represents an increase by 2.9% relative to the no-DCFTA baseline (i.e. the estimate of the external costs in the baseline situation). At the sectoral level we expect significant increases of released air emission for agriculture, ferrous metals, and land & other transport. Only the emissions from the sector mineral products are expected to decline significantly.

The DCFTA will bring a combination of positive and negative environmental effects on water, soil, biodiversity, etc.. The situation in agriculture, forestry, and the transport sectors may be the key for determining overall environmental effects. While higher economic growth due to the DCFTA will lead to higher environmental burden, the important question is to what extent DCFTA-induced economic growth in Moldova will become greener. One mechanism supporting this process can be effective implementation of international environmental conventions. With regard to this the DCFTA will not weaken currently existing incentives for implementation of such conventions. We therefore conclude that DCFTA is likely to have a weak but positive effect encouraging more effective implementation of international environmental agreements in Moldova that should – in a gradual manner – also contribute to solving some of the outstanding environmental challenges facing the country. This mechanism may prove important in greening economic growth in Moldova in general and limiting the environmental burden from a boost to economic development due to the DCFTA.

Policy recommendations and flanking measures

Our analysis has identified expected positive and negative sustainability effects of the DCFTA. Appropriate policies and flanking measures can enhance the positive effects and/or help mitigate or prevent the negative effects. We distinguish between recommendations that can be addressed within the DCFTA (i.e. directly related to provisions of the DCFTA) and those that could be addressed outside the DCFTA (i.e. non-trade related (accompanying or flanking) measures). Recommendation concerning measures outside the DCFTA could be addressed to the EC, national governments, the private sector or civil society.

The main recommendations are presented in the tables below. Although there is a separate table for each pillar of sustainability (economic, social, environmental), they should be read in conjunction as they are complementary and interrelated.

Table 0.1 Recommendations for the economic pillar

Policy measure	Potential to address	
	Within DCFTA	Outside DCFTA
Provision of technical assistance and capacity building in regulatory approximation process, especially in SPS, TBT, trade facilitation, and IPR	√	√
Allow for phasing in of tariff reductions or regulatory approximation at sector level , especially for those sectors where the economic, social and environmental impact will be high	√	
Stimulate on-going improvements in investment/business climate	√	√

Policy measure	Potential to address	
	Within DCFTA	Outside DCFTA
Support efforts facilitating structural adjustment across sectors resulting from implementation of the DCFTA	√	√
Stimulate entrepreneurship and competitiveness of SMEs		√

Table 0.2 Recommendations for the social pillar

Policy measure	Potential to address	
	Within DCFTA	Outside DCFTA
Support flexibility of labour market – easing the reallocation between sectors		√
Support training programmes to allow easier update and upgrade of human capital, especially competencies and skills required in expanding sectors		√
Prevent risks of pressures to lower the labour standards due to rising international competition.	√	√
Allow for phasing in of tariff reductions at sector level, especially for those sectors where the social impact will be high	√	
Consider creating mechanisms for monitoring of social (and environmental) impact of the DCFTA (and more broadly EU-Moldova relations)	√	
Provision of technical assistance and budget support programmes upgrading human capital and improving institutional and regulatory environment in the social policy sphere		√

Table 0.3 Recommendations for the environmental pillar

Policy measure	Potential to address	
	Within DCFTA	Outside DCFTA
Create incentives for environmentally friendly production		√
Maintain incentives and encouragement to implement international environmental agreements	√	√
Allow for phasing in of tariff reductions at sector level , especially for those sectors where the environmental impact can be high	√	
Consider creating mechanisms for monitoring of environmental (and social) impact of the DCFTA (and more broadly EU-Moldova relations)	√	
Provision of technical assistance, capacity building and budget support in environmental policy broadly defined		√

1 Overview methodology

This chapter summarises the methodology and conceptual framework that is being used for this study (for the more extended version we refer to the Inception Report). It pays specific attention to the quantitative methods applied in the overall analysis of Phase 1 of the study.

1.1 TSIA methodology and approach to this study

1.1.1 General approach: three phases

The main objective of this Trade Sustainability Impact Assessment (TSIA), is to assess the potential economic, social, environmental and human rights impacts of a Deep and Comprehensive Free Trade Agreement (DCFTA) to be negotiated between the EU and Moldova.

This TSIA has a quantitative and qualitative research angle, in line with the general methodology designed for TSIAs by DG Trade.[1] The main activities and analyses conducted in these phases consist of the following:

- **Phase 0:** Methodology finalisation and preliminary scoping of key issues;
- **Phase 1**: Assessment of overall economic, social and environmental impacts of the DCFTA, including:
  - Scenario analysis and Computational General Equilibrium Modelling (econometric simulation) on DCFTA impacts at macro-economic and sector level;
  - Additional quantitative modelling of social effects;
  - Additional quantitative modelling of environmental effects;
  - Additional analysis of human rights issues;
  - Stakeholder inputs on key impacts to be expected.
- **Phase 2:** In-depth analysis of two or three sectors or horizontal issues where we assess impacts of the DCFTA for Moldova and the EU. The selection of sectors or issues is based on the outcomes of Phase 1. The assessment is based on causal chain analysis as well as key stakeholder inputs.
- **Phase 3:** Based on the findings in the previous phases, policy recommendations are formulated. These can relate to both measures within the scope of the DCFTA, and broader issues.

The present final report presents the results of Phases 2 and 3.

1.1.2 Six main methodological pillars

The six fundamental pillars of the methodology used in the present study are the following:

1. screening and scoping analysis;
1. scenario analysis and CGE modelling;
2. additional quantitative and qualitative analysis;
3. sectoral analysis;
4. causal chain analysis (CCA);
5. dissemination of key findings to, and consultations with key stakeholders, including notably civil society.

[1] European Commission (2006) Handbook for Trade Sustainability Impact Assessment, March 2006.

Table 1.1 Use of pillars in different phases of the study

Phase	Pillar 1 Screening / scoping	Pillar 2 Scenario/ CGE	Pillar 3 Add. analysis	Pillar 4 Sectoral analysis	Pillar 5 CCA	Pillar 6 Consultation & Dissemination
0: Inception	X				X	X
1: Overall analysis	X	X	X		X	X
2: Sectoral analysis			X	X	X	X
3: Policy recommendations					X	X

Pillar 1: Screening and scoping analysis

The screening and scoping analysis is mostly used for the identification of sectors and issues that are crucial for the impacts of a DCFTA. A preliminary screening took place in the inception phase in order to focus the methodology. The screening process is done in more detail at the end of Phase 1, in order to select sectors or horizontal issues for in-depth analysis (Phase 2), based on the outcomes of the overall analysis conducted. The four criteria used for selection of most relevant sectors or horizontal issues are:

1. initial importance of a sector/issues for the economy;
2. impact as a result of DCFTA;
3. social/environmental/human rights importance of impact;
4. stakeholder issues of special importance.

Based on these criteria and in close consultation with the Steering Committee (SC) for the study, the final sector / horizontal issues selection is made.

Pillar 2: Scenario analysis and Computable General Equilibrium modelling

In consultation with the Steering Committee, a scenario for the EU-Moldova DCFTA has been developed, based on the assumptions regarding a likely outcome of the negotiations. This scenario forms the input for a Computable General Equilibrium (CGE) model. The CGE modelling exercise compares the outcomes of this DCFTA scenario to the outcomes of the baseline scenario (i.e. the likely future scenario if there would be no DCFTA). The CGE model used is dynamic and non-linear. It is based on data from the most recent GTAP 8.0 database, with a combination of 2010 data and projections made from the most recent available 2007 data to 2010 with regards to overall macroeconomic dynamics. The exact specifications used are described in the next section; more details on the CGE model are provided in Annex A1.

Pillar 3: Additional quantitative and qualitative analyses

To complement the CGE results especially regarding social and environmental impacts of the DCFTA, we perform additional quantitative analyses of these issues. For instance, the consumption effect and labour income effect that logically follow from the changes in trade patterns are assessed making use of household level data for the social aspects (see section 1.3). In addition the costs of airborne emissions and greenhouse gasses are examined as proxies for environmental burden resulting from the shifts in trade activities (see section 1.4).

Next to these quantitative assessments, we conduct a qualitative analysis with respect to social, environmental and fundamental human rights issues, examining the potential outcomes of the DCFTA in combination with the implementation of international agreements to which Moldova has signed up. For example, we look at possible changes in labour standards or adoption of certain environmental regulations, as well as the transformation of attitude to human rights. For this we use

all possible sources of qualitative information –available literature, the requirements of international conventions, continuous consultations with stakeholders, etc.

Pillar 4: Sectoral or horizontal issue analysis

This pillar covers the in-depth analysis of a sector or horizontal issue that is selected through the final screening and scoping analysis at the end of Phase 1. The in-depth analysis is carried out for up to a two sectors and one horizontal issue for Moldova. The analysis aims to provide a profound insight into the potential impact of the DCFTA for these selected sectors/horizontal issues, including economic effects (e.g. the impact on SMEs), social effects (e.g. employment, decent work issues), human rights (e.g. the right to food) and environmental effects (e.g. CO2 emissions or effects on biodiversity). The analysis starts from the results of the CGE modelling exercise and the additional quantitative and qualitative analyses, and is subsequently complemented by causal chain analysis, literature review, interviews, inputs from sector experts and – in some cases – a partial equilibrium (PE) analysis.

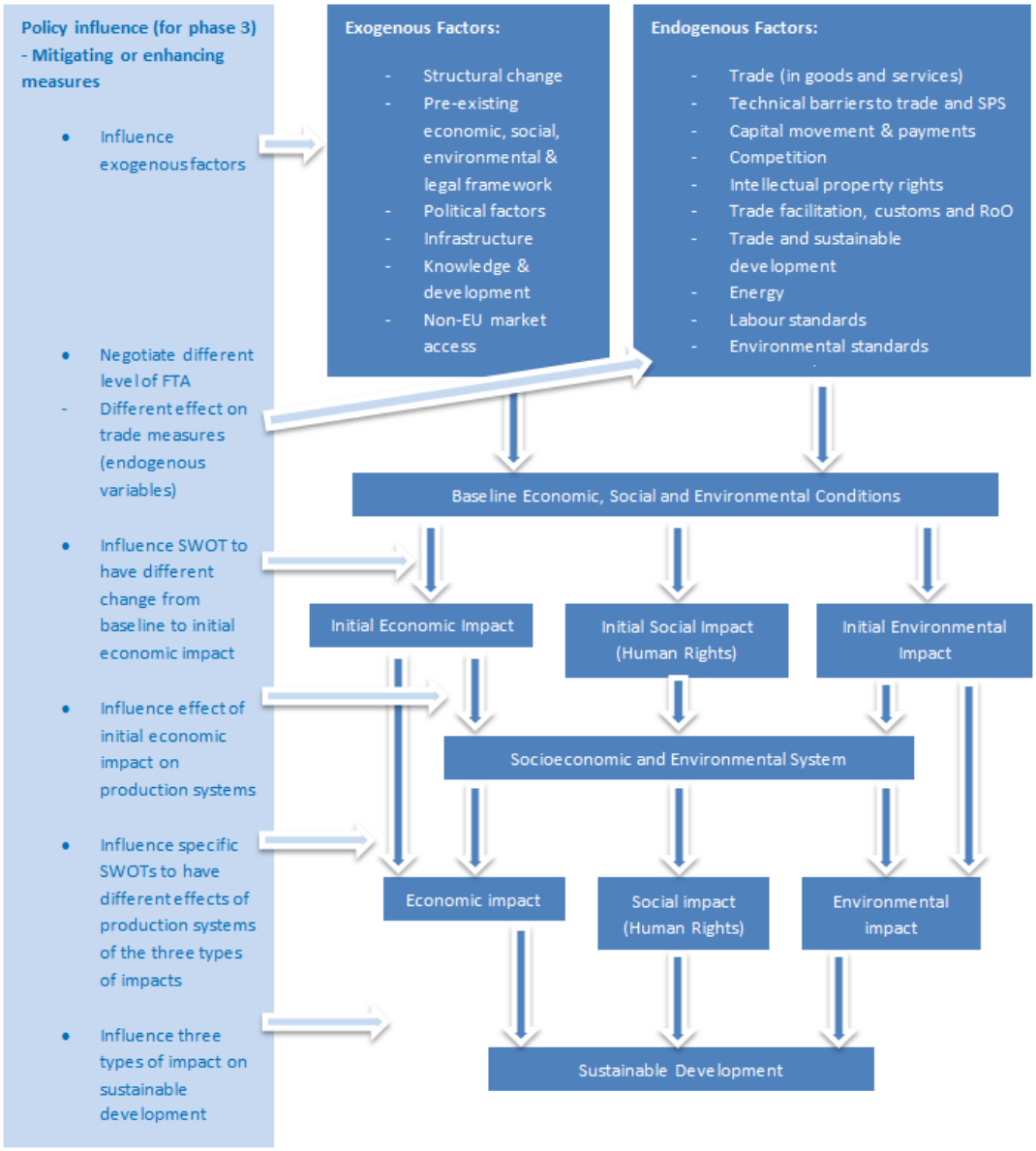
Pillar 5: Causal Chain Analysis (CCA)

Causal chain analysis (CCA) examines the significant cause-effect relations between the proposed trade measures and the social, economic and environmental impact that these will eventually cause. This conceptual tool traces the described links and inter-connections and tests their strength and likelihood. It provides a framework of analysis that is applied throughout the different Phases of the study, including the sectoral and cross-cutting analyses. This framework is illustrated in Figure 1.1.

Pillar 6: Dissemination and consultation

Consultations with a wide range of stakeholders groups represents a key element of the present study and are conducted throughout all Phases of the study. They are considered essential for the identification of DCFTA-related issues of specific importance. An overview of the consultation activities, as well as a summary of input received so far, is provided in Chapter 4.

Figure 1.1 Causal Chain analysis: from trade measures to impact on sustainable development

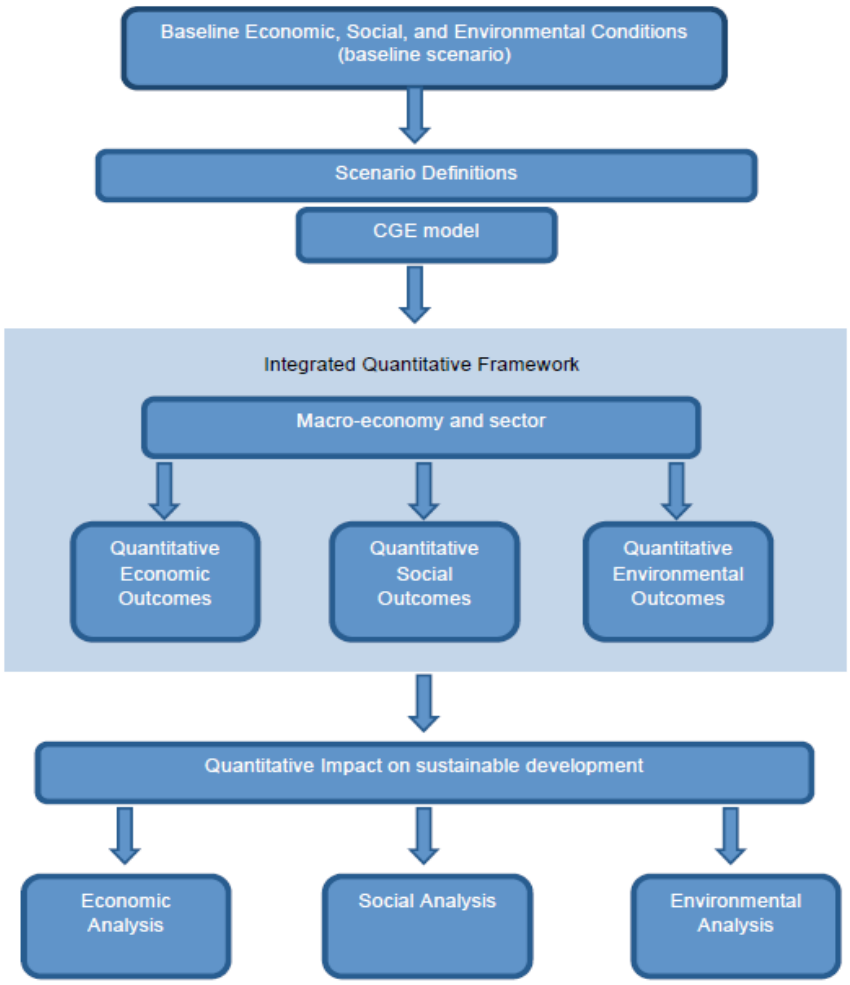


Source: Trade SIA Handbook, chart 3 (from Indufor, 2004)

1.2 Computable General Equilibrium modelling specifications

The CGE modelling approach has been discussed and agreed upon with the Steering Committee during the inception phase of the study. The CGE methodology is schematically depicted in Figure 1.2. The specifications of the model used are summarised in this section.

Figure 1.2 CGE methodology



1.2.1 Country specifications

In order to assess the impact of the liberalisation scenario for the EU-Moldova DCFTA , the following countries / regions are included separately in the CGE model. All countries not specifically mentioned are aggregated into Rest of World (ROW).

Table 1.2 Countries / regions included separately in the CGE model

EU27	Ukraine
Georgia	Azerbaijan
Moldova	Armenia
Russia	China
Turkey	Rest of World (ROW)

1.2.2 Base year

The base year used for the modelling is 2010. The original data used are from either the 2007 GTAP 8.0 dataset or from 2010 sources and used directly or further recalculated for 2010 with the use of adjusted actual projections based on IMF figures of trade and growth. This extrapolation to 2010 allows us to include the period of economic crisis and thus brings more accuracy to the modelling (i.e. in the baseline).

1.2.3 *Sector specifications*

The sector selection and level of aggregation are based on the available classification from the GTAP 8.0 dataset that is used. Some aggregations have been made in order to obtain a relevant list of sectors for this exercise.

Since the modelling is done in parallel for both the TSIA EU- Moldova and TSIA EU-Georgia, the sector selection applies to both. Obviously, the relative importance of some sectors will be higher for Moldova than for Georgia and vice versa in terms of share of GDP, exports and imports.

Table 1.3 lists the set of 37 sectors used for the modelling exercise in this TSIA (composed by aggregating some sectors from the original 58 sectors in GTAP). We have split the table into the three main economic sectors agriculture, manufacturing and services.

Table 1.3 Sector selection for this TSIA by main economic sectors

Agriculture	Manufacturing	Services
Grains - GRN	Energy – EGY	Utilities – UTI
Vegetables, fruits & nuts – V_F	Minerals – OMN	Construction – CNS
Sugar beet- OCR	Animal products – MPT	Trade – TRD
Animals – ANP	Vegetable oils & fats – VOL	Road & rail transport – TSP
Forestry – FRS	Dairy products – MIL	Water transport – WTP
Fishing - FSH	Sugar – SGR	Air transport – ATP
	Rice – OFD	Communication – CMN
	Beverages & tobacco – B_T	Financial services – FIS
	Textiles – TWL	Other business services – OBS
	Wood & paper – LUP	Recreation – ROS
	Petroleum & coal products – P_C	Public services – OSC
	Chemicals – CRP	
	Mineral products – MPN	
	Ferrous metals – FMN	
	Metal products – FMP	
	Motor vehicles – MVH	
	Transport equipment – OTN	
	Electronic equipment – ELE	
	Other machinery – OME	
	Other manufactures – OMF	

Source: GTAP 8.0

1.2.4 *Scenarios*

In the CGE modelling exercise, we compare the effects of a DCFTA (scenario) with a baseline scenario to derive estimated impacts. The scenarios for the EU Moldova DCFTA are not symmetrical in terms of imports and exports. In the simulation of the EU-Moldova DCFTA, we assume that the EU-Georgia DCFTA is in the baseline and vice versa (to simulate what the effect would be for Moldova and the EU in case the EU-Georgia DCFTA were in place also).

The baseline scenario discussed in this report assumes that there will be no Doha agreement (DDA) in the WTO. In addition, a baseline that does include DDA is modelled – the results of this exercise are provided in Annex B2, accompanied by a short note that explains the differences between the DDA and non-DDA simulations. In the main part of the report we only describe the scenario impacts compared to the baseline without DDA effects. The baseline does include all

FTAs until now, including the Georgia-Turkey and Georgia-Ukraine FTAs, as well as Russia's accession to the WTO (anticipated for the summer of 2012).

The scenario modelled contains three main elements of liberalisation:

- tariff measures;
- services non-tariff measures;
- other non-tariff measures (TBT and SPS).

These elements are modelled in the way summarised in Table 1.4 and briefly elaborated below.

Table 1.4 Scenario DCFTA modelled

Element	Liberalisation
Tariff liberalisation	• EU --> Moldova: 100% liberalisation; • Moldova --> EU: 100% liberalisation for all sectors; • Moldova --> EU: TRQs for some of the most important sensitive products.
Services NTMs	• EU --> Moldova: average liberalisation of 15% - specified per sector; • Moldova --> EU: overall liberalisation of 15% - specified per sector; • Moldova: addition 25 % NT/MFN spill-over effect to third countries.
Other NTMs	• EU --> Moldova: 4% / 6% point reduction in TCE; • Moldova --> EU: 6% / 10% point reduction in TCE; • Moldova: addition 25 % NT/MFN spill-over effect third countries.

1. Tariff liberalisation

The scenario modelled includes a tariff liberalisation of 100 percent in all sectors (so no tariffs remaining) for the EU exports to Moldova. For the mirror image, tariffs for Moldovan exports to the EU, a 100 percent liberalisation is also modelled for all sectors, except for sensitive sectors. For these sectors, Tariff Rate Quotas (TRQs) can be modelled in case they are assessed to be binding, based on the information available.

In addition, for the sector-level results, one additional experiment is run to filter out the effect of TRQs. For the sector-level results of Moldova we therefore distinguish two simulation experiments:

1. Sector results in case no Tariff Rate Quotas (TRQ) are modelled in any of the (sensitive) sectors, assuming that the TRQs in place before or after the DCFTA are not in fact binding; and
2. Sector results in case an assumed TRQ of 100 percent is modelled for the sugar sector, one of the most sensitive sectors.

Results of both experiments are described in this report.

2. Services non-tariff measures

Whereas tariff reductions mainly impact goods sectors, liberalisation in services sectors is modelled differently. The modelling scenario for services non-tariff measures (NTM) is based in part on the final negotiating text for the EU-Ukraine DCFTA, adapted for the specific case of EU –Moldova, especially with respect to binding existing commitments. Liberalisations are then modelled as National Treatment (NT) and Most Favoured Nation (MFN) liberalisation for all services sectors.

Services NTM reduction for the EU to Moldova and Moldova to the EU:

a. Broad national treatment (NT) and most favoured nation (MFN) liberalisation for all services sectors of 7%.
b. The following exceptions to those liberalisation levels (sub a) apply:
   - 95% preferential liberalisation for communication (telecommunication, postal & courier services) into EU and vice versa into Moldova.

This leads to an overall services NTM liberalisation of around 15% vis-à-vis the EU (un-weighted); – weighted values differ somewhat depending on sector shares.

For other trading partners of Moldova (exports and imports) – due to services NTM and other NTM alignment – we also model MFN spill-overs worth 25% of the liberalisation level with the EU. Rising standards in Moldova due to the regulatory approximation towards EU standards are likely to increase market access for Moldovan firms to third countries as well.

3. Other non-tariff measures

In addition to tariff and service sector liberalisation, additional NTM reductions are of special importance for all sectors in this DCFTA. Therefore overall NTM reductions for all sectors are modelled to account for impacts of regulatory approximation. In doing so, the following assumptions are made:

- the focus is mainly on SPS and TBT measures;
- approximation is not symmetric – Moldova will mostly approximate towards EU standards. Modelling is hence done asymmetrically (Moldova reductions double that of EU). Provided that regulatory approximation also means further access for EU firms, even if EU standards are higher from the outset, EU reductions are nonetheless larger than zero. It is the difference in standards that matter, not the level of standards per se.

Other NTM reductions from EU to Moldova:

- 4% point reduction in tariff costs equivalents (TCE) (based on literature) for those EU sectors affected heavily by SPS and TBT differences with Moldova;
- 2% point reduction in TCE (based on literature) for those EU sectors affected more moderately by SPS and TBT differences with Moldova;
- 2% point reduction in TCE for all agriculture & manufacturing sectors due to trade facilitation.

Other NTM reductions from Moldova to EU:

- 8% point reduction in TCE (based on literature) for those Moldovan sectors affected heavily by SPS and TBT – 50% is already taken off to compensate for higher production costs to meet the higher standard = de facto 8% point reduction;
- 4% point reduction in TCE (based on literature) for those Moldovan sectors affected more moderately by SPS and TBT – 50% is already taken off to compensate for higher production costs to meet the higher standard = de facto 4% point reduction;
- 2% point reduction in TCE for all agriculture & manufacturing sectors due to trade facilitation.

Other NTM reductions from spill-over effects:

Similarly as for the services NMTs (see above), an additional NT/MFN spill-over effect is modelled for general NTM reductions. We again assume that Moldovan barriers with other trading nations will be reduced by 25% of the assumed scenario liberalisations at sector level as presented above.

1.2.5 Short-run versus long run effects

In the CGE modelling exercise, we compare the short-run effects to the long-run effects. The short- and long-run does not refer to a specific time period, but to the time it takes for economic effects to adjust. In the short-run the capital stock is kept constant and fixed. In the long-run, we allow capital to move freely. This means that the static short-run effect – without a dynamic investment effect – is purely based on immediate cost and price effects the moment the FTA is signed. In the long run, capital (that is fixed in investment projects in the short-run) is allowed to reallocate, which implies that capital will move towards the more competitive sectors. These are the sectors that already gained in the short-run and as a result of the changes from the FTA will now experience improved

perspectives (e.g. exports and output increases). Capital will flow towards such sectors in the long run version of the model (as it will in the 'real' economy as a result of higher return on investment prospects) and will in turn make a sector even more competitive (and a declining sector where capital moves out – less competitive). The long-run effect is generally expected to take place over a period beyond 5-10 years from the moment of implementation of the DCFTA.

1.2.6 Outputs from the CGE model

The CGE model provides outputs for the variables listed in the table below. The outcomes and their interpretation are presented in the remainder of this report.

Table 1.5 Indicators generated by the CGE model

Theme	Indicator	Measurement
1. Aggregate results	a) Employment (skilled and unskilled) b) GDP c) Total exports d) Total imports e) National income f) Terms of trade	a) Percent change b) Percent change c) Percent change d) Percent change e) Billions of dollars f) Percent change
2. Sector results	a) Exports b) Output c) Value added d) Employment (skilled and unskilled)	a) Percent change b) Percent change c) Percent change d) Percent change
3. Environment variables	a) Emissions b) Agricultural c) Fisheries	a) Percentage change in CO2 emissions b) 1.Percentage change in output 2. Changes in land use c) Percentage change in fish catch (production)
4. Social variables	a) Unskilled wage changes b) Labour displacement c) Measure of inequality	a) Percent change in household income b) Percentage of workers required to move jobs c) Change in relative share of unskilled workers in total income.

1.2.7 Limitations

On a final note, we must mention that while CGE modelling is a powerful tool, it also has some limitations. These are the following:

Assumptions

- **Assumption 1:** It is impossible to make adjustments for the costs related to approximation – in terms of domestic cost levels. We have used very conservative NTM liberalisation effects (e.g. 8% instead of 15% for ambitious liberalisation; 4% instead of 7.5% for limited liberalisation) to take this cost increase effect into account to some extent.

- **Assumption 2:** The CGE model applies long run closure conditions that are based on economic theory, but clearly relate to the long run and may not reflect the short-run situation or even a long-run situation where other events have taken place (i.e. it assumes the ceteris paribus condition). These closure conditions are among others thing: the assumption that trade balance is in equilibrium, and the assumption of full employment. Any deviations from this long run situation may lead to (small) differences in results.

- **Assumption 3:** The CGE model employed here uses an average firm and therefore does not include the latest insights on firm heterogeneity (i.e. differences in productivity between domestic firms, exporters and multinationals). This is a challenging data and modelling issue.

Issues

- **Issue 1:** Tariff revenue changes affect the budget of the government in case tariff levels are reduced. The CGE model does not explicitly generate separate estimates on the potential losses in tariff revenues, but looks at the economy-wide picture: the effect of removing tariffs for national income. This effect includes the loss in tariff revenues for government, but also. the more indirect changes in national income due to economic adjustments as a result of tariff reductions (especially since the relative importance of tariff reductions will differ by sector).

- **Issue 2:** If trade flows at present are zero because of some regulatory barrier that is totally prohibitive, CGE cannot model anything because it does not have a base to start from – this will have to be added qualitatively (e.g. based on shares in similar markets) after the CGE exercise.

1.3 Social modelling specifications

Existing economic literature suggests that FTAs may not always be welfare enhancing[2]. FTAs can influence welfare and social situation of the population in different ways. A direct effect occurs via changes in prices as a result of the new trade regime. Broader effects can be expected due to changes in the macroeconomic situation triggered by an FTA, including faster economic growth, changes in sectoral composition of an economy, wages and employment changes. These effects are typically captured by CGE models, but they may translate differently to the social situation of various groups of the population, thus affecting poverty and the distribution of welfare among individuals and households. These social effects depend both on the aggregate macroeconomic effects (e.g. changes in relative prices) and the characteristics of the analysed economies, specifically the distribution of household income and expenditure shares among economic sectors and particular product groups, which are difficult to incorporate into the CGE model. Therefore, a closer look at social effects of FTA beyond the CGE framework is needed.

The key social effects that are typically analysed in the literature include the consumption effect and the labour income effect. The consumption effect arises as a result of changes in relative prices of the basket of goods and services purchased by households. For instance, higher food prices will – other things being equal – particularly negatively affect poorer strata of the population that tend to spend a higher proportion of their total income on food. As an illustration, in Moldova, the share of expenditures on food and non-alcoholic beverages exceeded 50% of household expenditures for the two lowest quintiles.

Income effects arise when relative wages and/or prices of goods sold by households (e.g. agricultural products) change.

The analysis carried out in this study follows the methodology presented in Chen and Ravallion (2003) that allows estimating changes in welfare caused by changes in relative prices.[3] This is a

[2] For a popular exposition see e.g. D. Rodrik, The Globalization Paradox: Democracy and the Future of the World Economy, W.W. Norton, New York and London, 2011

[3] Shaochua Chen, Martin Ravallion (2003). Household Welfare Impacts of China's Accession to the World Trade Organization, The World Bank Policy Research Working Paper 3040. For some comments on the methodology see Alain de Janvry, and Elisabeth Sadoulet (2008). Methodological Note: Estimating the Effects of the Food Price Surge on the Welfare of the Poor, mimeo, UC Berkeley.

two-step analysis. First, the relative price changes induced by the trade policy intervention (here, a DCFTA) are obtained from the CGE model (see Chapter 2). Then these results are incorporated into the household level data and changes in the households' welfare are simulated. Technical details of this process are presented in Annex A.2. This approach allows for a detailed analysis of distributional effects among various groups of the population, including vulnerable groups and, in particular, effects on occurrence and severity of poverty and inequality. Thus, this method significantly enriches the information obtained from the results of CGE model.

The modelling relies on the data provided within the household budget surveys. Specifically, we rely on the 2009 Household Budget Survey. The sample size is just below 10,000 households, representative for the whole country but not including the territory of Transnistria, comprising some 15% of the total population.

Modelling of welfare changes by households provides information to calculate indicators that cast light on changes in absolute and relative poverty, social inclusion, inequality and vulnerable groups composition caused by a new trade regime. More details on calculation of indicators is also provided in Annex A2.

1.4 Environmental modelling specifications

Regulation or any exogenous change might involve various kinds of environmental impacts that are associated either with changes in environmental state (e.g. in emission level) or pressures (e.g. airborne concentrations). Both changes, in environmental state or pressures result in changes in the environmental burden. We can identify four possible drivers of changes in the environmental burden. These drivers represent changes in i) the scale of the economy, ii) the output mix, iii) the input mix and iv) the state of technology. The total change in environmental burden can be decomposed into each of these effects (see e.g. de Bruin 1997; Stern 2002; or Ang 2004)[4]. Any regulation or policy change, including changes in trade policy as in this study, can activate each of these drivers.

The first driver of changes in environmental quality is change in the scale of production of the economy. Basically it means that an increase in the scale of production implies expanding production at a given factor, output mix and state of technology. Because there is no change in factors or technology, the change in the scale of production also changes burden proportionally; i.e. a one percent increase in production leads, *ceteris paribus*, to a one percent increase in the burden. This is called *the scale or the level effect*.

However, different industries have different pollution and resource intensities. If economic activity would reallocate from more pollution (resource) intensive industries to less intensive ones with lower emissions (resource used) per unit of production, the overall environmental burden would decline. This is referred to as *the composition or structure effect*.

The next two drivers of environmental change are related to changes in technology, which lead to changes in emission (resource) intensity. Environmental intensity of production might be affected either by changes in the input mix – when less environmentally damaging inputs substitute more

[4] As shown in relevant economic papers (e.g. de Bruin 1997, Stern 2002; or Brůha and Ščasný 2005) any change in environmental indicator might be then decomposed into the scale effect, the intensity effect, or composition effect. In the case of emission indicators, Torvanger (1991) or Ang (2004) introduce also other two effects measured by changes in emission coefficients and fuel share effect.

damaging inputs, for instance using low sulphur coal or natural gas instead of dirty lignite – or by changes in the state of technology when innovations in process or product result in less resource use or pollutant released per unit of production keeping the input mix constant. This used to be called *the intensity effect*. An analyse of *the intensity effect* state would require incorporating the environmental variables properly into, ideally, a dynamic-type model. One possible solution would be attributing emission intensities for each factor (i.e. fuel type) in each sector for each country in the model and then adequately extend the model. Such an exercise, however, would require environmental data at a very detailed level of disaggregation, which are not usually available in standard data sources, Moreover, the effect of induced technological change or innovation transfer would require using a very specific and dynamic type model. This type of modelling is beyond the scope of this project. Therefore we can assess any possible effects on the environment due to technology change and/or improvements in product quality only qualitatively.

Changes to the burden on the environment do not necessarily need to have an impact on utility or welfare of humans. However, if we attach an economic value to it, changes in the quality of environment will be reflected in welfare or utility. In principle, one can distinguish two ways of assessing the environmental effects. The first – ecologic perspective – considers any changes in environmental burden that are measured mostly in physical terms and that we have presented above. Although change in, for instance, certain pollutant is a useful proxy indicator of potential damage, it does not provide any information about welfare impact. The second – economic – one tries to link the changes in burden to the effects on welfare. While the former approach can provide a clear picture about changes in each measured state or pressure, it cannot be compared to other results measured in terms of income or utility. On the other hand, results from the latter approach might be linked and thus add up to the estimates from other approaches such as macro modelling, allowing in such a way to draw a more integrated picture. A detailed look at each element of the measured environmental state and pressures might be hidden in the final aggregate generated by the later approach. We consider the advantage of the latter approach in our study and thus use the approach that allows us to link the estimates from CGE modelling with environmental impact assessment.

This study therefore goes beyond a standard evaluation of environmental “impacts”, which usually assesses the effect on state or pressures on the environmental quality. Benefiting from the results from ExternE project series, namely from EU funded projects NEEEDS and CASES, we quantify impacts of changes in airborne pollution on welfare. This approach has several advantages: first, it allows considering several changes in state simultaneously by expressing damage in terms of money that reflects corresponding welfare changes. Secondly, expressing the impacts in monetary terms allows us to directly compare involved changes on the environment with other welfare changes coming from CGE modelling results of chapter 2.

Our quantitative environmental analysis thus complements the macro analyses preformed in the general equilibrium framework of the CGE model. Evaluation of environmental impacts is based on the results from the CGE model, which are exogenous to our exercise. On the other hand, the effects due to changes in environmental quality do not affect the endogenous variables in the CGE model. Technical details on the calculations are presented in detail in Annex A3.

Data

Base economic output values are taken from the GTAP database and results of CGE modelling (see Chapter 2). Emission of SOx, NOx and particulate matters for the European Union and Moldova are taken from UNECE/EMEP database in sectoral disaggregation according to NRF

classification.[5] Specifically, Moldovan emission data for 2008 are used. The CO2 emission are already included in the CGE model used in this study.

External costs per unit of pollutant for the EU and Moldova are taken from the database of default damage values created within the FP6 funded projects NEEDS and CASES. Annex A3 contains tables reporting the values of external costs related to release of one tonne of respective pollutant in both regions. Due to changes in background concentration and meteorology, transportation of substances in the atmosphere, and receptor density around the world, damages per country vary and it thus matters where the emission is released.

[5] NRF stands for Nomenclature for Reporting Format. The database is available at http://www.ceip.at/.

2 Quantitative results

In this chapter, we report the economic impacts of the EU-Moldova DCFTA using CGE simulation. First, the aggregate level results are presented. We then take a closer look at these results by examining the effects on a more disaggregated, sector-specific level. Next, we present and discuss the estimated effects on environmental variables and social indicators. Finally we offer some concluding comments on the modelling results.

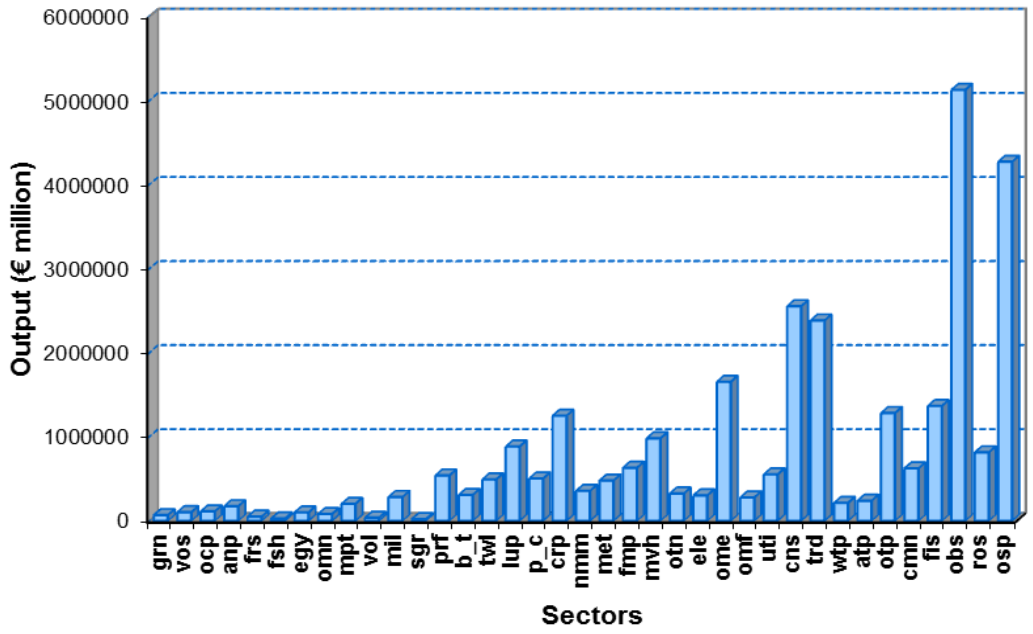
2.1 The EU-Moldova baseline

In this chapter, we report the expected macro-economic and sector-specific effects that stem from the DCFTA between the EU and Moldova. In order to place these results in the right context, especially with regard to percentage change figures, we need to be clear on the EU-Moldova baseline information, especially the sector-specific weights in each of the economies. The baseline matters because a small percentage change in a large export sector will have large export effects, while a similar percentage change for a small sector may be insignificant for total exports and the overall economy.

2.1.1 Sector-specific baseline figures: output

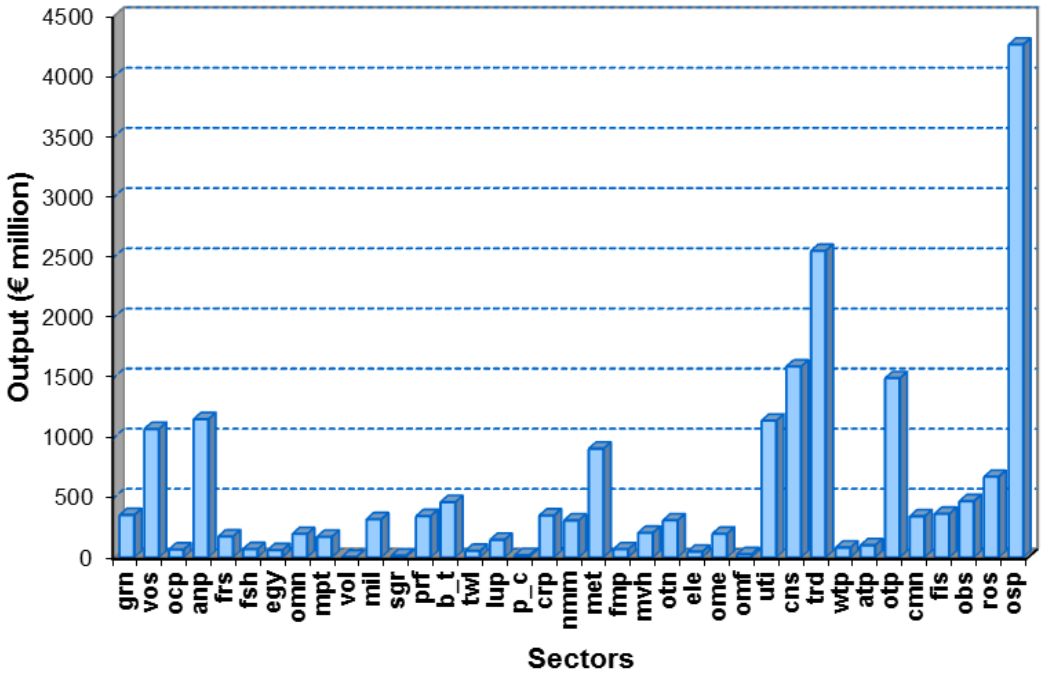
For the EU, by far the most important sectors in terms of output are other business services (obs), public services (obs), construction (cns), trade (trd), machinery and equipment (ome), chemicals, rubber and plastics (crp) and financial services (fis). The output values in EUR million are presented in Figure 2.1 below.

Figure 2.1 Output values at sector level for the EU (€ million)



For Moldova the main sectors in terms of output are public services (osp), trade (trd), construction (cns), rail and road transport (otp), animal products (anp), utilities (uti), vegetables, fruits & nuts (vos) and metals (met). See Figure 2.2 below for the Moldovan output shares in € million.

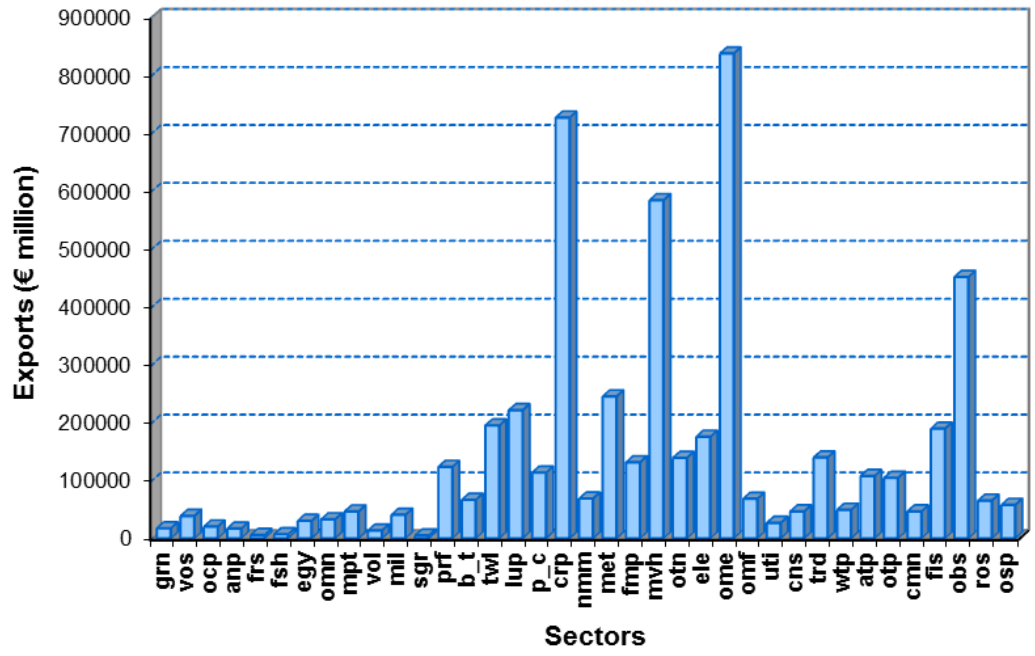
Figure 2.2 Output values at sector level for Moldova (€ million)



2.1.2 *Sector-specific baseline figures: exports*

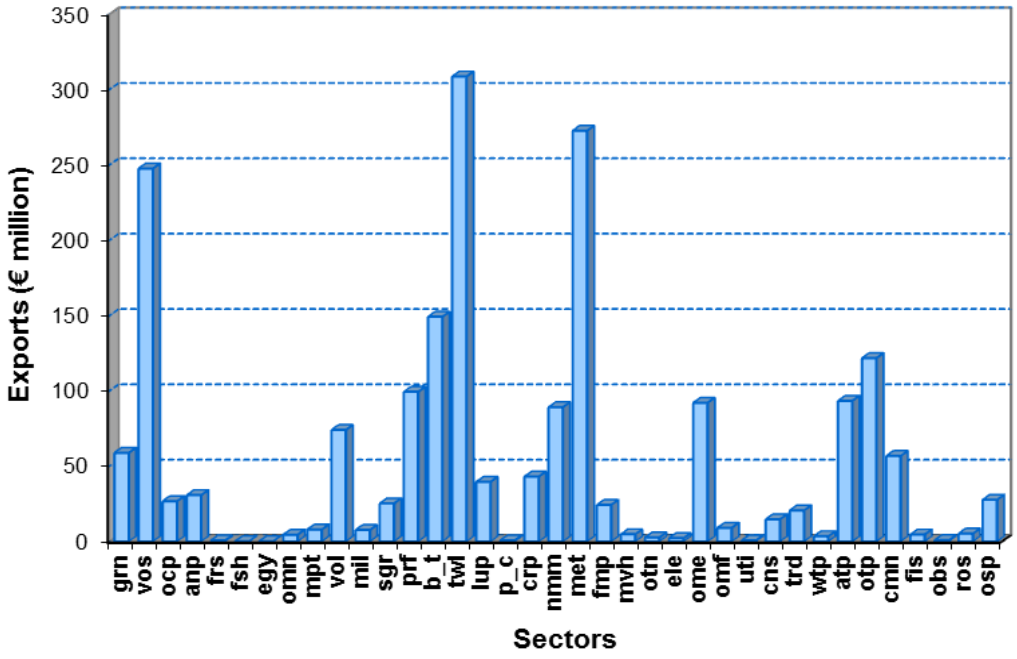
The sectors that constitute the bulk of EU exports are machinery and equipment (ome), chemicals, rubber and plastics (crp), motor vehicles (mvh) and other business services (obs) as Figure 2.3 below shows.

Figure 2.3 Export values at sector level for the EU (€ million)



For Moldova, the main export sectors are textiles and clothing (twl), metals (met), vegetables, fruits and nuts (vos), beverages and tobacco (b_t), and rail and road transport (otp), as Figure 2.4 below shows.

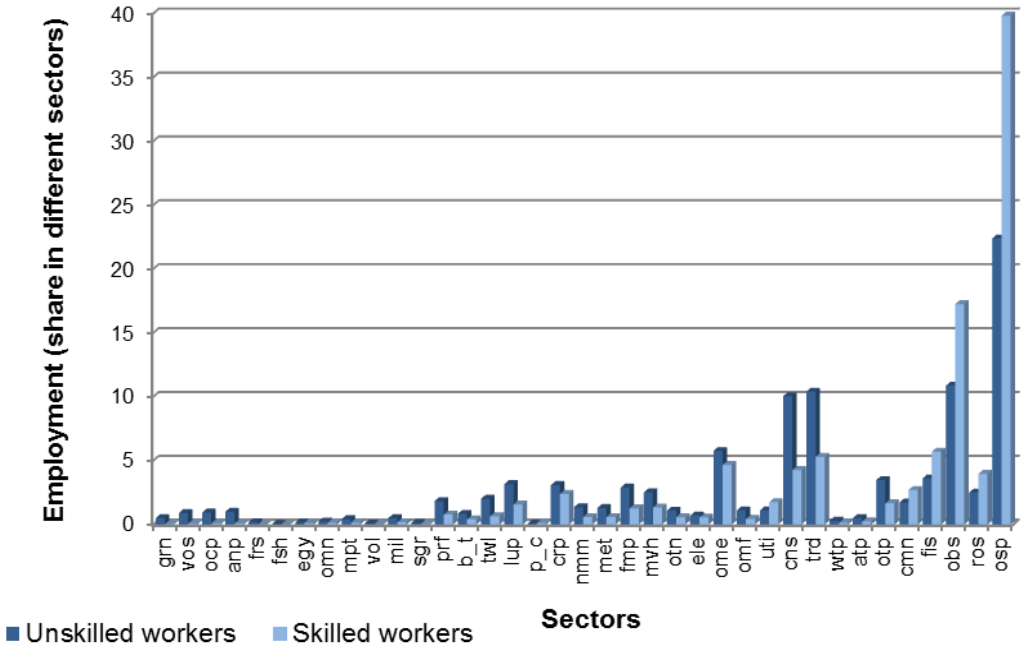
Figure 2.4 Export values at sector level for Moldova (€ million)



2.1.3 Sector-specific baseline figures: employment (high- and low-skilled)

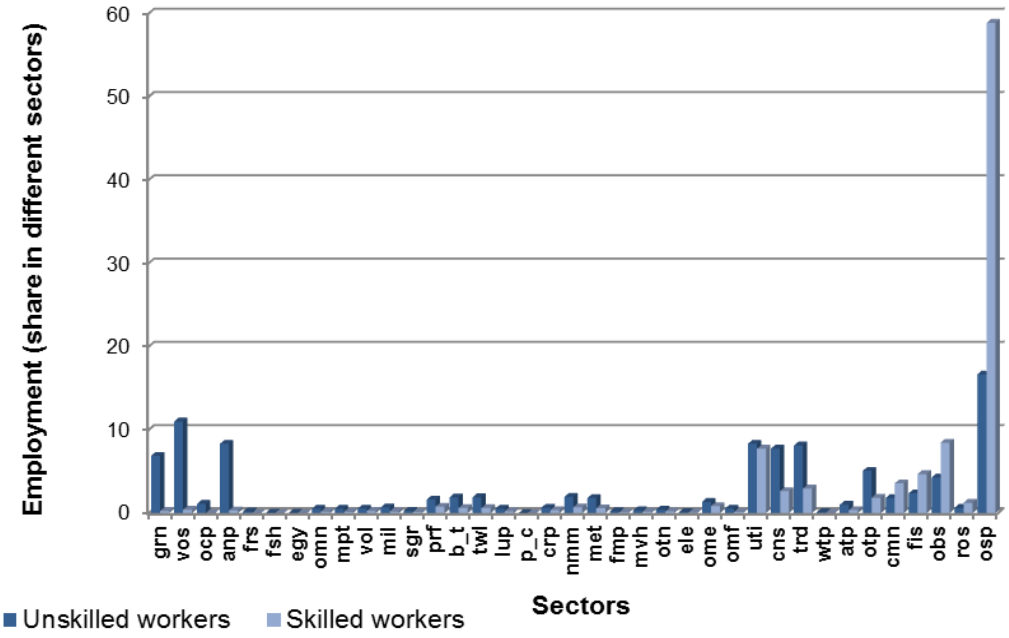
In terms of employment, we differentiate between high- and low-skilled workers. Figure 2.5 shows the high- and low-skilled employment shares for the EU and Figure 2.6 for Moldova. From these two figures the following becomes clear. For the EU the main sectors with low-skilled employment are public services (osp), other business services (obs), trade (trd) and construction (cns) followed by machinery and equipment (ome). High-skilled employment is highest in public services (osp), other business services (obs), trade (trd), financial services (fis), and machinery and equipment (ome).

Figure 2.5 Employment shares at sector level for the EU (percent)



For Moldova the main sectors for low-skilled employment are public services (osp), vegetables, fruits and nuts (vos), animal products (anp), utilities (uti), trade (trd), construction (cns), and grains (grn). High-skilled employment occurs most in public services (osp), other business services (obs), and utilities (uti).

Figure 2.6 Employment shares at sector level for Moldova (percent)



These values enter the model as baseline figures for 2010. The CGE model then continues to report changes (sometimes in EUR millions but more often in percentage changes) from this baseline.

2.2 Macro-economic effects of the EU-Moldova DCFTA

2.2.1 Overall effects

We start with the overall macroeconomic results for Moldova, the EU, and selected countries. These results are summarised in Table 2.1 below for the short and long run estimates.[6] In the short run, the DCFTA is expected to lead to an increase in national income of EUR 71 million for the EU and EUR 75 million for Moldova. In the longer run, the estimated change in national income for Moldova would be about double that figure, or EUR 142 million. For the EU, the long run effects will be more than three times larger, resulting in a EUR 240 million increase in national income. In relative terms, for the EU these changes in national income translate into a negligible 0 percent change in EU GDP. For Moldova, relative changes are much more profound as the increase in national income translates to an increase in GDP of 3.2 percent in the short run and 5.4 percent over the long run.

Thus the DCFTA is expected to have a much more pronounced impact on Moldova's economy than on the EU's. This reflects partly the relative importance of the EU and Moldova as trading partners for each other. For Moldova, the EU is a much more important trading partner than Moldova is for

[66] The difference between the short-run and the long-run lies in the way capital mobility is modelled. In the short-run capital is assumed fixed, while in the long run it is mobile. That implies that, capital in the long run will move to those sectors with the strongest comparative advantages, leading to highest capital returns. This reinforces comparative advantages in the economy and leads to stronger results. We call this the dynamic investment effect in the long run.

the EU. Furthermore, in terms of economic size, the EU is much larger. Thus a DCFTA between the two parties will have a much larger impact on Moldova than on the EU. Consequently the impact of the DCFTA on European consumer prices, wages and trade will be negligible.

Table 2.1 Macroeconomic results of an EU-Moldova DCFTA

Variable/ Country	EU	Moldova	Georgia	Russia	Turkey	Ukraine	Azerbaijan	Armenia	China	RoW
Short run										
National Income, mln €	71.2	75.5	0.0	9.3	-2.1	-1.9	0.7	0.0	16.4	23.8
GDP, % change	0.0	3.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consumer prices, % change	0.0	-1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wages, less skilled % change	0.0	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wages, more skilled % change	0.0	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Terms of Trade, % change	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Imports, % change	0.0	6.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Exports, % change	0.0	14.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Long run										
National Income, mln €	240.0	142.4	10.3	123.1	-11.1	47.4	3.8	10.8	8.7	-492.7
GDP, % change	0.0	5.4	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Consumer prices, % change	0.0	-1.3	-0.1	0.0	0.0	-0.1	-0.1	-0.2	0.0	0.0
Wages, less skilled % change	0.0	4.8	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Wages, more skilled % change	0.0	4.8	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Terms of Trade, % change	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Imports, % change	0.0	7.7	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0
Total Exports, % change	0.0	16.2	0.0	0.0	0.0	-0.1	0.0	-0.1	0.0	0.0

Source: IIDE CGE modelling calculations

For Moldova, the FTA would have a significant impact on the economy with somewhat more pronounced changes in the long run when dynamic investment effects kick in. Exports are estimated to increase by 15 and 16 percent in the short and long run respectively, with imports increasing by 6 and 8 percent respectively. This implies that the DCFTA is expected to relatively improve the trade balance for Moldova, while – looking at the EU trade figures in percentage change – the effect on the EU trade balance is negligible. Wages in Moldova are projected to increase by 3.1 and 4.8 percent over the short and long run respectively. Meanwhile, consumer prices are expected to decrease by about 1.0 and 1.3 percent over the short and long run

respectively, mainly due to increased competition of imports(not only for end-products but also intermediate products) and, economies of scale associated with increased market access brought about by the FTA. This implies that – on average – purchasing power of Moldovan citizens increases because of the DCFTA especially in the long run.

2.2.2 *Estimated third country effects*

For the rest of the countries in the region, liberalization of trade between the EU and Moldova is shown to have a limited effect . The only change worth mentioning would take place in Russia and Ukraine over the long run, where the EU-Moldova DCFTA leads to a EUR 123 million and EUR 47 million increase in their national income respectively. This is mainly due to more indirect access to the EU market and due to the fact that with higher Moldovan standards, cheaper Moldovan products may enter those markets more easily. Nevertheless these changes are all very small, translating into negligible changes in GDP.

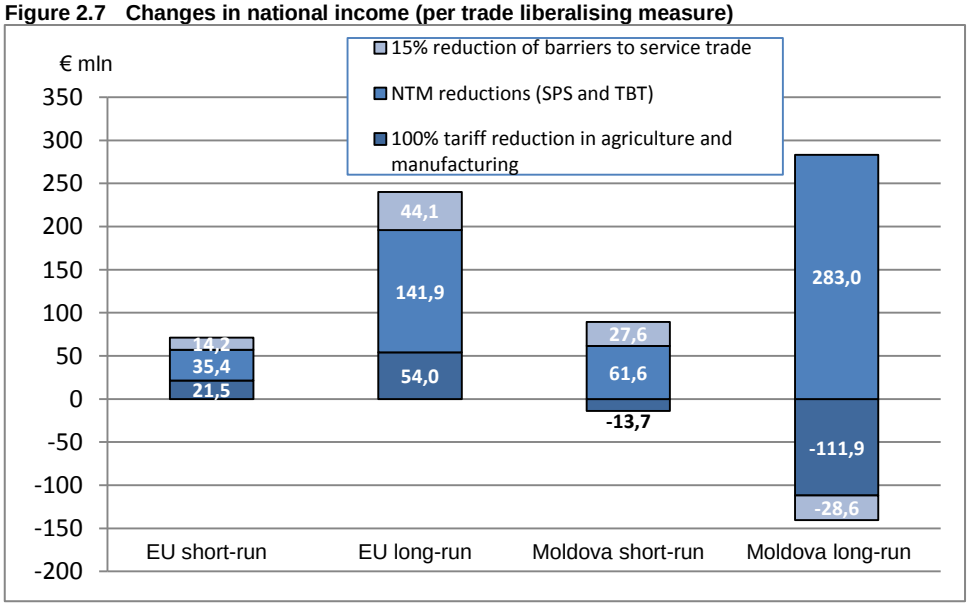
2.2.3 *Estimated effect of the EU-Moldova DCFTA for the EU-Turkey Customs Union*

Liberalising trade between the EU and Moldova is not expected to lead to any significant effect for the EU-Turkey CU. A close to zero diversion of trade from Turkey would take place resulting in a decrease in Turkish trade in the short run by 0.01 percent and in the long run by 0.02 percent as a result of the EU-Moldova DCFTA. This will translate into small decrease in national income (EUR 2.1 and EUR 11.1 million respectively) for Turkey. In relative terms, the effect as a percent of GDP is negligible.

2.2.4 *Decomposition of the impact by trade policy*

As previously discussed, the DCFTA contains different trade policy measures for liberalizing trade, i.e. lowering tariffs, NTMs and liberalising services trade. In Figure 2.7 below we present the changes in national income for Moldova and the EU, decomposed by the three main trade liberalizing measures, tariffs, service NTMs and other NTMs (SPS and TBT related).

Figure 2.7 Changes in national income (per trade liberalising measure)



Source: IIDE CGE modelling calculations

As pointed out in the presentation of Figure 2.7 above, national income in the EU and Moldova are estimated to increase by EUR 71 and EUR 75 million respectively in the short run. As can be seen from the figure, the majority of these increases are attributable to the lowering of SPS and TBT NTMs, they account for EUR 35 and EUR 62 million respectively for the EU and Moldova. The

expected gains are larger for Moldova since Moldova is expected to approximate EU standards, which will not only open the EU market *de facto* for Moldovan exports, but also lead to more market access of Moldovan products in third countries when Moldovan producers adhere to EU standards. The second most important contribution for Moldova in the short run originates from services trade liberalisation, amounting to 28 million euros, while tariff reductions would lead to a reduction in national income. In the case of the EU, reduction of tariffs would lead to higher national income effects than services trade liberalisation would. This result is mainly due to the fact that the EU-Moldova DCFTA is expected to merely bind already expressed commitments in services, implying a seven percent services liberalisation (with the exception of communication where liberalisation is expected to be significantly higher).

In the long run, for Moldova, the negative tariff impact on national income for Moldova increases substantially because these are intertwined with the other liberalisations, especially NTM reductions. The reduction of SPS and TBT types of NTMs are the single most important measure for reaping the benefits of liberalising trade, amounting to EUR 283 million. In the longer run, also reductions in barriers to services trade are shown to lead to negative national income effects in Moldova. This is due to more pronounced trade diversion taking place under these two scenarios and a pull effect of agricultural and manufacturing sectors as a consequence of regulatory approximation in SPS and TBT.

In the long run, for the EU, similarly to Moldova, the most important contribution to the increase in national income is due to reductions in NTMs. Of the EUR 240 million increase in the long run, EUR 142 million is attributable to SPS and TBT type NTM reductions. Tariff reductions and reductions in barriers to services trade also lead to further increases in the national income, although those effects are much smaller.

2.3 Sector-specific effects of the EU-Moldova DCFTA

In order to find out more about the underlying changes in production structures of the negotiating economies, we now focus on the underlying sector specific changes in value added, output, employment, exports and imports.

2.3.1 First experiment at sector-level: no binding TRQs

Table 2.2 below contains a summary of the effects in the most affected sectors in Moldova when no binding TRQs are assumed to be present (experiment 1), in the long run setting. For the EU also the sectoral effects are close to zero and therefore not separately presented here. The complete tables with sectoral effects are available in Annex B.

Table 2.2 Moldova: Shares of total VA and DCFTA effects by sector – experiment 1

	Share of Total VA In the baseline	Value Added, % change, long run	Output, % change, long run	Total Exports, % change, long run	Total Imports, % change, long run
Grains and Crops	3.8	6.8	7.7	36.7	33.0
Vegetables, fruits & nuts	5.5	-1.2	-0.4	1.8	25.6
Other crops*	0.5	16.7	18.5	-3.4	23.4
Livestock and Meat Products	0.3	-17.8	-17.7	21.5	45.2
Vegetable oils and fats	0.4	4.7	5.9	10.0	30.9

	Share of Total VA In the baseline	Value Added, % change, long run	Output, % change, long run	Total Exports, % change, long run	Total Imports, % change, long run
Sugar	0.2	173.4	187.1	487.4	59.1
Other processed food	1.1	6.9	12.1	23.7	8.5
Beverages and tobacco	1.2	-4.1	-14.5	-8.5	20.1
Textiles and Clothing	2.5	11.1	12.7	16.5	13.1
Primary metals	1.1	7.3	8.9	11.7	4.8
Motor vehicles	0.3	-7.9	-7.1	12.3	4.0
Electronics, computers	0.1	-8.4	-8.8	12.4	5.7
Other machinery and equipment**	1.1	6.5	9.3	33.5	5.9
Other manufacturing***	0.3	-22.5	-26.0	-17.3	30.7
Utilities	7.9	2.2	2.7	17.4	4.1
Construction	5.8	4.2	5.3	8.6	6.8
Trade	14.9	3.4	3.7	11.7	13.2
Air transport	1.0	13.4	14.2	20.5	6.1
Other transport****	6.9	3.7	4.2	6.3	14.8
Communication	5.9	3.5	6.0	8.8	2.2
Financial services	4.5	1.5	2.9	14.3	7.9
Other business services & ICT	6.4	0.8	1.7	14.9	4.6
Personal & recreational services	1.1	-2.4	-3.1	12.3	14.5
Public services	28.0	0.5	0.9	7.4	20.1

Note: Total exports and imports refer to Moldova's total exports to and imports from the world, not only the EU.
* Sugar cane, sugar beet and other plant fibres
** Machinery equipment (intermediate products)
*** Mainly aerospace
**** Rail and road transport.
Source: Shares GTAP, IIDE CGE modelling calculations

2.3.2 *Sector-specific changes in output and value added*

The modelling results show that output in all sectors in Moldova will be affected by liberalising trade with the EU. The biggest effect is the 187 percent increase in the output of sugar, which is due to the reduction of the high *a priori* tariffs in this sector. While this sector specific expansion is big in relative terms (percentage change), the fact that this sector accounts for only 0.2 percent of total value added in the economy, and the fact that the absolute level of change for that sector is small, means that the overall effect on the economy from this increase is very limited.

Other sectors, which are expected to increase more than 10 percent, are other crops, textiles and clothing, and air transport. For other crops, textiles and clothing, the most important liberalizing measure is the reduction of tariffs. On the other hand, for air transport it is reductions in barriers to services trade which influences this increase in output the most.

Livestock and meat products, motor vehicles, electronics and computers and other manufacturing are all expected to contract by 8-22 percent in terms of output. For motor vehicles, electronics and computers, this change is largely attributable to reduction of NTMs and tariffs combined, while for the other sectors the tariff reductions are the main contributing factor (like for livestock and meat products).

As previously noted, the DCFTA is estimated to have very limited effects on the EU. Looking at the sector specific percentage changes to output across the EU, the changes are 0.0 for all sectors, with the exception of the sugar sector, which is expected to contract by 0.5% due to increased competition from Moldova's sugar producers. All other changes are equal, or close to zero.

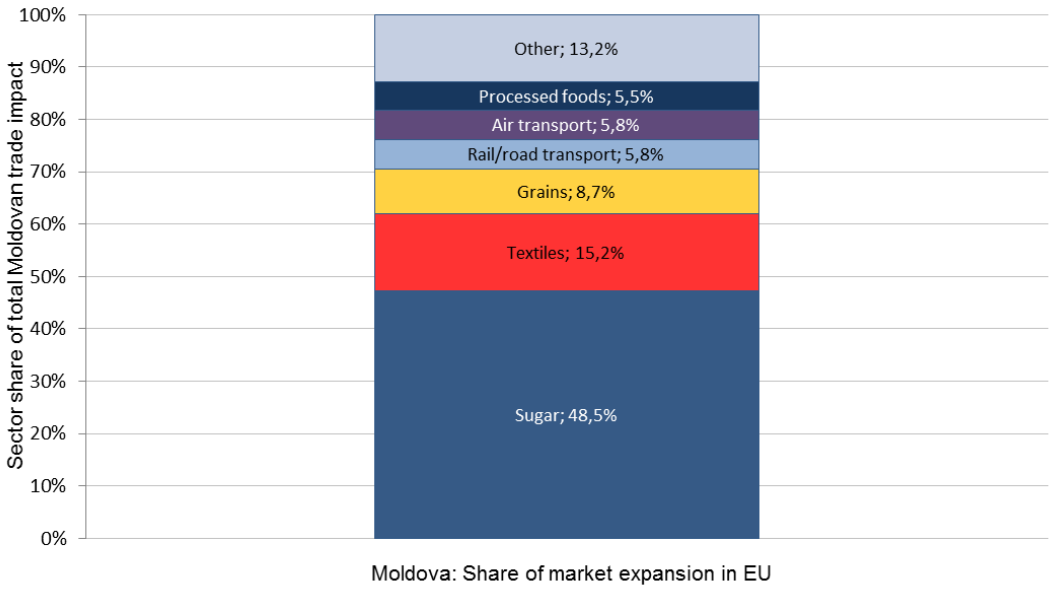
2.3.3 Sector-specific changes in trade

Sector-specific changes in trade for Moldova

When we look at changes in total exports and imports for Moldova, the following picture emerges. The most affected sectors in terms of expected changes in exports are sugar (+487.4 percent), grains (+36.7 percent), other machinery and equipment (+33.5 percent), other processed food (+23.7 percent) and other manufacturing (-17.3 percent). Imports change most, relatively, in the following sectors: sugar (+59.1 percent), livestock and meat products (+45.2 percent), grains and crops (+33.0 percent) and other manufacturing (+30.7 percent).

In the modelled scenario, Moldovan imports from the Rest of the World (all countries except for the EU) will expand by an estimated 7.2 percent (from EUR 6.4 billion to EUR 6.9 billion). Moldovan imports from the EU are expected to increase much more, from EUR 2.5 billion to EUR 3.1 billion, an increase of 22 percent. Total Moldovan exports to the world will increase by 16.2 percent, while Moldovan exports to the EU will increase by 32 percent. The sector-specific impact of the EU-Moldova DCFTA is best measured by looking at the total trade impact as the multiplication of change in market share for Moldova times change in EU market size. Using this definition of Copenhagen Economics (2007)[7], Figures 2.8a show what sectors are expected to contribute most to the increase in EU imports from Moldova and thus have also experienced the largest trade impacts.[8]

Figure 2.8a Sector share of total gain for Moldova (in import value shares)



Source: Ecorys and IIDE, own model simulations

[7] Copenhagen Economics and J.F.Francois (2007), 'Economic Impact of a Potential Free Trade Agreement (FTA) between the European Union and South Korea', March 2007.

[8] Please note that the percentages in this figure relate to the share of the sector in the total bilateral export increase, and are thus different from the figures in Table 2.2 since these are increase in total exports by sector.

From Figure 2.8a, we conclude that the largest trade impacts for Moldova are found in sugar (49 percent of the total increase in the value of EU imports from the EU), followed by textiles and clothing (16 percent), grains (9 percent), rail and road transport (6 percent), air transport (6 percent), and processed foods (6 percent).

Sector-specific gains for EU trade with Moldova

With respect to total exports and imports for the EU there will be no impact as a result of the DCFTA, but it will have an impact on bilateral trade with Moldova. While total EU imports from the Rest of the World are expected to go up by 0.05 percent, EU imports from Moldova are expected to rise by 32 percent. Figure 2.8b shows the share of important EU export sectors to Moldova in the expected total Moldovan import increase from the EU as a result of the DCFTA (similar to Figure 2.8a).

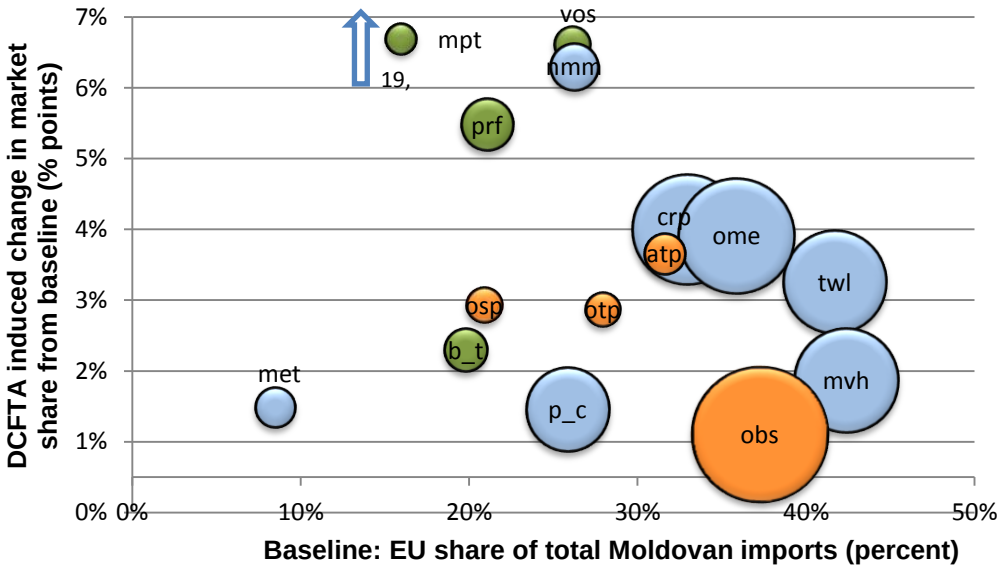
Figure 2.8a Sector share of total gain for EU (in import value shares)

Source: Ecorys and IIDE, own model simulations

For the EU (Figure 2.8b), machinery and equipment count for 12 percent of the total increase in Moldovan import value, followed by livestock and meat products (12 percent), textiles and clothing (12 percent), chemicals (11 percent), other business services (5 percent), and processed foods (4 percent).

Figure 2.9 shows the changes in market shares for key EU exports toMoldova induced by the DCFTA, relative to the EU market share in total Moldovan imports in the baseline, where the size of the bubble reflects the size of total Moldovan imports in the sector, and the colour of the bubble presents the main economic sector (green is agriculture, blue is manufacturing and orange is services).

Figure 2.9 Changes in market shares for key EU exports to Moldova following from the DCFTA



Note: With respect to the bubbles, they reflect the following sectors. Green is agriculture representing livestock and meat products(mpt), vegetables, fruits, nuts, oilseeds(vos), other processed food(prf), beverages and tobacco (b_t); blue is manufacturing sectors representing ceramics, cement, etc.(nmm), chemicals, rubber, plastics(crp), other machinery and equipment(ome), textiles and clothing(twl), motor vehicles(mvh), petrochemicals(p_c), primary metals(met); and orange is service sectors representing public and other services (osp), other transport(otp), air transport(atp), business and ICT(obs).. Source: Ecorys and IIDE, own model simulations

From Figure 2.9, we conclude that the DCFTA improves the market share of the EU in Moldovan imports across the board for all sectors (also for those sectors not reported). The combination of the size of the bubble with the upward potential in import shares from the DCFTA (vertical axis) provide the most interesting offensive interests from an EU perspective. These lie in the following sectors: textiles, machinery and equipment, motor vehicles, chemicals, rubbers & plastics.

Also the livestock and meat products sector is interesting, not because of the size of the Moldovan import market, but because of the potential increase in EU exports to Moldova in this sector (19.8 percent expected).

2.3.4 Second experiment at sector-level: TRQ on the sugar sector

For comparison, we now present the results when instead a binding TRQ is assumed in the sugar sector (like it applies to many non-EU countries in the world alike and hence is assumed to be more realistic). Table 2.3 below contains a summary of the effects in the most affected sectors in Moldova when no binding TRQs are assumed to be present, in the long run setting. Again for the EU the sectoral effects are close to zero and therefore not separately presented here. The complete tables are included in Annex B.

Table 2.3 Moldova: Shares of total VA, and DCFTA effects by sector – experiment 2

	Share of Total VA	Value Added (%change, long run)	Output (%change, long run)	Total exports (%change, long run)	Total Imports (%change, long run)
Grains and Crops	3.8	8.1	8.9	41.9	17.1
Vegetables, fruits & nuts	5.5	0.1	0.9	3.8	12.2
Other crops*	0.5	0.8	1.6	7.5	14.1

	Share of Total VA	Value Added (%change, long run)	Output (%change, long run)	Total exports (%change, long run)	Total Imports (%change, long run)
Livestock and Meat Products	0.3	-17.7	-17.8	26.9	39.2
Vegetable oils and fats	0.4	5.8	7.0	13.3	24.6
Sugar	0.2	7.9	9.0	36.6	34.5
Other processed food	1.1	4.4	7.9	22.1	6.8
Beverages and tobacco	1.2	-3.1	-10.7	-3.7	13.3
Textiles and Clothing	2.5	13.0	14.5	18.3	12.8
Primary metals	1.1	9.2	10.6	13.2	5.5
Motor vehicles	0.3	-7.4	-6.8	13.8	2.8
Electronics, computers	0.1	-5.1	-5.1	18.9	4.0
Other machinery and equipment**	1.1	11.1	14.7	41.6	3.6
Other manufacturing***	0.3	-20.3	-23.7	-12.7	26.8
Utilities	7.9	1.0	1.4	20.3	1.8
Construction	5.8	3.4	4.2	10.2	3.6
Trade	14.9	2.4	2.6	13.3	10.1
Air transport	1.0	14.7	15.4	21.6	4.7
Other transport****	6.9	3.8	4.3	6.8	12.4
Communication	5.9	3.3	5.7	10.0	0.0
Financial services	4.5	1.2	2.3	15.7	5.6
Other business services & ICT	6.4	0.5	1.2	16.0	2.7
Personal & recreational services	1.1	-2.9	-4.1	12.8	12.6
Public services	28.0	0.3	0.6	10.2	15.6

Note: Total exports and imports refer to Moldova's total exports to and imports from the world, not only the EU.
* Sugar cane, sugar beet and other plant fibres ** Machinery equipment (intermediate products); *** Mainly aerospace; **** Rail and road transport.
Source: Shares GTAP, IIDE CGE modelling calculations

2.3.5 *Sector-specific changes in output and value added*

The modelling results show that output in all sectors in Moldova will be affected by liberalising trade with the EU, also for this experiment that includes a TRQ on sugar. As is clear from the table, the sector-level effects from this experiment are comparable to the first experiment, except for the sugar sector itself and some closely related sectors. Because the sugar sector in this experiment does not pull so many resources towards its production in Moldova, the effects for the remaining sectors are slightly more pronounced. In this scenario, output in the sugar sector is expected to increase by only 9 percent (and other crops also does not expand as much anymore, now only by 2 percent). Sectors that are expected to increase their output by more than 10 percent are air transport, other machinery & equipment, textiles & clothing and primary metals. Livestock and meat products, beverages & tobacco and other manufacturing, motor vehicles and electronics & computers are still expected to contract, between 5-24 percent.

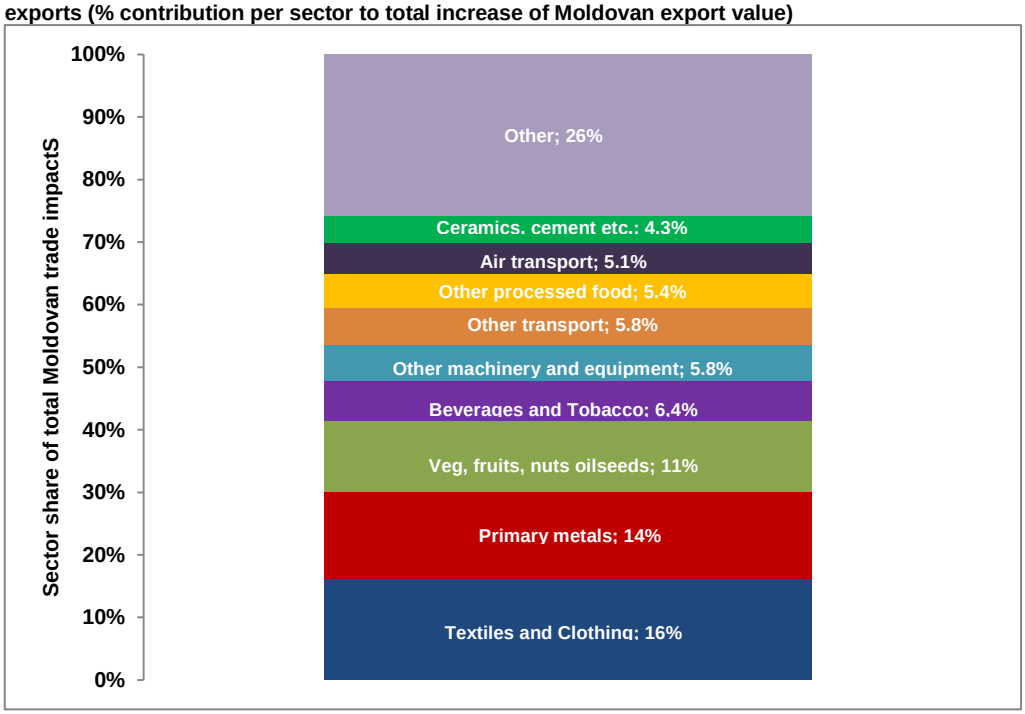
2.3.6 *Sector-specific changes in trade*

Considering the estimated DCFTA effects on total Moldovan exports, the sectors that are likely to experience the largest % increases are also similar in experiment 1 and 2. These include: grains &

crops, other machinery & equipment, livestock & meat products, sugar, other transport, chemicals and other processed food. The increase of export value (%) in these sectors ranges between 22-42 percent.

These numbers can be translated as well into the contribution of each sector to the total export expansion for Moldova, and the EU, respectively. Figure 2.10 depicts the sector share of total gains in export value for Moldova. Expansion of total Moldovan exports is now much more diversified than in experiment 1, but mainly attributable to the sectors textiles & clothing, primary metals, vegetable, fruits & nuts.

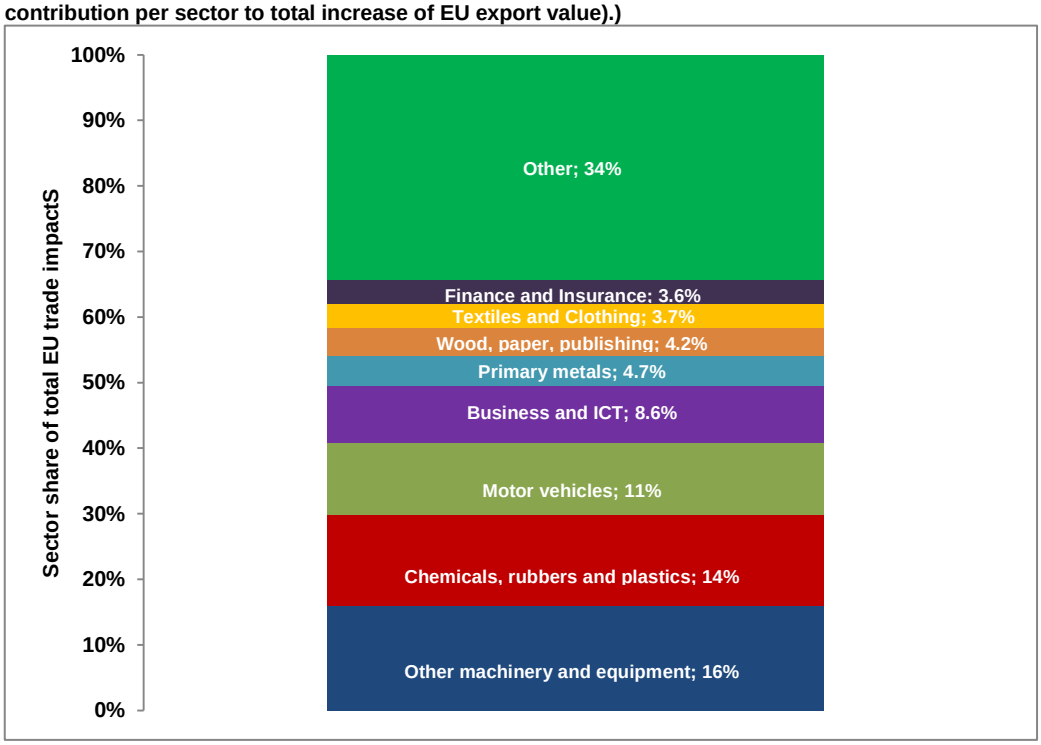
Figure 2.10a Sectoral decomposition of the estimated DCFTA-related expansion of total Moldovan exports (% contribution per sector to total increase of Moldovan export value)



Note: Total DCFTA-related expansion of Moldovan exports is 100%. The figure depicts the sectors that contribute most to this expansion.
Source: Ecorys and IIDE, own model simulations

Figure 2.10a depict the sector share of total gains in export value for the EU. As is clear from this graphs, the expansion of total EU exports is fairly diversified with several sectors showing expansion. This in particular applies to machinery, chemicals and motor vehicles.

Figure 2.10b Sectoral decomposition of the estimated DCFTA-related expansion of total EU exports (% contribution per sector to total increase of EU export value).)



Note: Total DCFTA-related expansion of EU exports is 100%. The figure depicts the sectors that contribute most to this expansion.
Source: Ecorys and IIDE, own model simulations

2.4 Social effects of the EU-Moldova DCFTA

2.4.1 Overall social effects

Some of the estimated variables from the CGE analysis will be used as basis for the impact analysis with regards to resulting social impact assessment. It should be kept in mind that the CGE model assumes fixed employment (the so-called closure rule explained in in section 1.2.7), as for modelling purposes it is not possible to let both wages and employment adjust. he model does therefore not predict changes in total employment, but does estimate the effects of a DCFTA on wages and labour displacement and thus gives a picture of distributional effects in employment. These are presented in Table 2.4 below.

Table 2.4 Social indicators modelled in the CGE exercise

	Wage change (%)	Labour displacement (% of labour force)	
	Identical for less and more skilled labour	Less skilled	More skilled
European Union	0.0	0.0	0.0
Moldova	4.8	5.0	4.5

Source: IIDE CGE modelling calculations

The first column shows the estimated changes in wages for skilled and less skilled labour. In Moldova, both skilled and less skilled labour on average are estimated to experience an increase in wages of 4.8 percent on average. This implies that on average salaries go up because of the EU-Moldova DCFTA. In section 3.1 we will dig deeper into these results at a more disaggregate level.

The last two columns illustrate how much labour movement (i.e. labour displacement) takes place between sectors for the EU and Moldova. This is measured as the share of the labour force that will relocate across sectors as a result of the DCFTA.[9] As could be expected, no labour relocation is estimated to take place in the EU. In Moldova approximately 5 percent of the labour force is expected to migrate between sectors as a result of changing trade patterns with the EU. This migration is slightly higher for the less skilled labour compared to the more skilled labour. It needs to be noted that the model assumes easy migration between sectors for workers. In reality this may be more difficult – as is also explained in more detail in section 3.1.

2.4.2 Sector-specific social effects: employment changes

The largest relative increases in employment in Moldova – that closely mirror the estimated changes in output as presented in Table 2.5 – can be found in the sugar, other crops, and grains sectors. Large relative employment decreases occur in other manufacturing, livestock and meat products, electronics and computers and motor vehicles sectors.

In absolute terms, changes in employment for unskilled workers will be generally more pronounced than for skilled workers. Most new jobs for unskilled workers will be created in the grain and crops, other crops, sugar and textiles and clothing sectors. Largest employment losses will likely occur in trade, business and ICT, livestock and meat products and other manufacturing sectors. For skilled workers substantial number of new jobs is projected in sugar, construction and other processed food sectors while losses are expected in business and ICT, and personal and recreational services.[10]

Table 2.5 Sectoral employment share s and estimated employment changes in Moldova for less & more skilled employment (% change, long run)

	Less skilled Employment		More skilled employment	
	Baseline (% share in total)	% change	Baseline (% share in total)	% change
Grains and Crops	6.9	6.7	0.3	7.1
Veg, fruits, nuts, oilseeds	11.0	-1.4	0.4	-1.0
Other crops	1.1	16.6	0.0	17.1
Animal products	8.3	-0.2	0.3	0.2
Livestock and Meat Products	0.5	-19.0	0.2	-18.0
Vegetables oils and fats	0.6	2.3	0.3	3.6
Dairy products	0.7	-1.5	0.2	-0.3
Sugar	0.3	159.1	0.1	162.4
Other processed food	1.6	4.4	0.8	5.7
Beverages and tobacco	1.9	-6.0	0.6	-4.8
Textiles and Clothing	1.9	6.1	0.6	7.6
Ceramics, cement, etc.	2.0	-4.8	0.7	-3.5
Primary metals	1.8	4.9	0.6	6.4

[9] This is based, technically, on the weighted "standard deviation" in employment shares.

[10] It should be remembered that these absolute and relative changes in employment predicted in the model only arise due to workers' reallocation between sectors given that total employment is fixed in the model.

	Less skilled Employment		More skilled employment	
	Baseline (% share in total)	% change	Baseline (% share in total)	% change
Other machinery and equipment	1.4	3.3	0.9	4.8
Other manufacturing	0.5	-23.1	0.1	-22.0
Utilities	8.3	-0.9	7.8	0.5
Construction	7.8	0.9	2.7	2.4
Trade	8.1	-2.8	3.0	-1.1
Air transport	1.0	6.7	0.4	8.6
Other transport	5.1	-1.7	1.8	0.0
Communications	1.8	-1.5	3.6	-0.1
Finance and insurance	2.4	-2.4	4.7	-1.0
Business and ICT	4.3	-3.4	8.5	-2.0
Personal and recreational services	0.6	-5.8	1.2	-4.5
Public and other services	16.7	-1.6	58.9	-0.2

Source: own CGE calculation

2.5 Environmental effects of the EU-Moldova DCFTA

Finally, we take a look the expected effects on environmental variables. In the CGE model it is possible to look at estimated effects on land use and at CO2 emissions.

The estimated effects on land use in Moldova and the EU, as well as the changes in CO2-emissions for Moldova, the EU and the world in the long run setting, are presented in Table 2.6 below.

The FTA will not have any implications on land use in the EU. In Moldova, land use intensity is expected to increase by 1.9 percent. For the EU – in terms of relative size – this result was expected. The 1.9 percent increase for Moldova reflects an average increase in land use intensity due to the growth in output and exports of some agricultural sectors (e.g. sugar) that create pressure to increase the intensity of land use.

Table 2.6 Environmental variables, long run setting, emissions measured in million MT CO2

	Change in CO2 emissions (MT)	Change in Land Use Intensity (%)
European Union	0.1	0.0
Moldova	0.0	1.9
World	0.3	-
World, %	0.0	-

Source: IIDE CGE modelling calculations

In terms of CO2 emissions no significant changes are expected to take place after the DCFTA. In relative terms, the increase is negligible globally; there will be no significant changes at world level in emissions or at the EU or Moldovan level. For more detailed environmental analysis derived from these CGE results, we refer to section 3.2.

2.6 Synthesis and implications of the quantitative analysis

The purpose of this chapter was to present and discuss the estimated effects of liberalising trade between the EU and Moldova, using a CGE model. We incorporated trade liberalisation assumptions with regards to tariffs, SPS and TBT type NTMs and barriers to services trade in the CGE model and analysed the estimated effects in a short and long run setting. Whereas in the short-run capital is assumed fixed, in the long run dynamic investment effects due to capital mobility further enhances comparative advantages, leading to more pronounced long-run outcomes.

Due to the asymmetry in size between the European and Moldovan economies, the DCFTA was expected to have negligible effects on the EU. This was confirmed by the data. For Moldova, there are potentially significant effects stemming from liberalising trade with the EU. Reducing SPS and TBT types of NTMs is the key to reaping the positive effects for Moldova, while tariff liberalisations have a negative national income effect in the long run and the limited reduction in services barriers have a limited effect only.

Third country effects are very small. For the EU-Turkey Customs Unions, the EU-Moldova DCFTA has very limited effects. Russia and Ukraine are the two countries benefiting most from the DCFTA in that Moldova provides an extra 'trade route' into the EU for these countries, and in that Moldova (if it ups its standards to EU-level with spill-over effects to Ukraine and Russia) will increase its exports (at low prices) to these economies also.

Looking at the effects at a more detailed sectoral level, the most pronounced change would take place in the Moldovan sugar sector, although, the importance of the sector for the economy as a whole is very small, thus the resulting changes will only have a very minor overall effect. Relative changes in output and exports due to the DCFTA are smaller in sectors like grains and textiles, but their economic base is much larger, leading to much larger impacts for the economy of Moldova as a whole.

Moldovan wages are expected to increase by about 4.8 percent in the long run, while consumer prices are estimated to decrease by 1.3 percent implying – on average – improved purchasing power of the population. A more detailed analysis is carried in Chapter 3.

The estimated environmental effects in terms of CO2 emissions and land use intensity in Moldova are expected to be very small. Further social, environmental and human rights analysis is needed to detail these findings further (see Chapter 3).

3 Additional analyses of social, environmental and human rights issues

From Chapter 2, we have obtained general results (bot macro-economic and sector-specific) for the EU and Moldova as potential DCFTA effects. These results, however, can be broken down further to see what the effects are for the population in Moldova specifically at a more disaggregated level, in terms of social, environmental and human rights impact.

3.1 Additional analyses of social issues

3.1.1 Quantitative analysis of poverty and inequality effects

As discussed in Section 2.4 by its construction (the choice of assumptions) the CGE model cannot predict overall employment changes in Moldova. When total employment is assumed constant and wages are allowed to vary the results indicate close to 5% increase in wages in the long run (and rising output). Our interpretation of these modelling results is that actual employment and wage effects of the DCFTA are likely to be positive, although the joint quantification of the two variables (disentangling the share of effects materialising in the form of higher employment and in the form of higher wages) is not possible. The results also suggest that around 5% of all employed will need to change employment sector. Another important CGE result is a projected fall in the overall consumer price level in Moldovan economy. This clearly implies rising average real income in the population.

Given that households differ with respect to their consumption baskets and sources of revenues, gains and losses from the DCFTA are not evenly distributed among the population. Apart from specific DCFTA provisions, social effects are determined by the composition of households, their consumption patterns and structure of income. In this section we report on the results of a quantitative assessment on poverty and inequality impacts of the EU-Moldova DCFTA based on the methodology outlined in section 1.3 and Annex A2. It allows for an estimation of the consumption effect and labour income effect arising from changes in prices and labour remuneration.

In Moldova these effects are modelled via five distinct channels:

1. Change in non-food consumption expenditures due to changed prices.
2. Change in food expenditures due to changed prices of food products.
3. Change in in-kind income from subsistence farming due to changed prices of food products.
4. Change in cash income from farming due to changed prices of food products.
5. Change in cash income due to changed wage levels in the economy.

Most of the channels are related to DCFTA-induced price changes (their estimates based on the CGE modelling exercise of the previous Chapter), and prices of food products in particular. Rising prices of most food products inevitably leads to welfare deterioration for (parts of) the population, as food products constitute a substantial share of household expenditures (44.8%). This problem is especially acute for households from the lowest quintile, that spend as much as 57.6% of their disposable income on food products.

This negative welfare effect is partly compensated for by a reduction of non-food prices. However, this is relatively more important for households from upper quintiles. Other channels of positive welfare effects due to price changes are through subsistence farming activities, and individual agricultural entrepreneurship. Higher food prices boost income from these kinds of activities.

According to 2009 Household Budget Survey data 82.8% of households enjoy this kind of income, and for households from lower quintile this share reaches 94.2%.[11] In-kind income constitutes 26% of welfare in the lowest quintile, well above the average for the whole population (13.6%). Nevertheless, the combined welfare effect from relative price changes (i.e. through the first three channels) is negative. Average and median disposable income is expected to be reduced by 1.2%. For the lowest quintile the negative effect is estimated to be a 1.7% reduction of disposable income, while the highest quintile is expected to suffer an income reduction of 0.9% as a result of the price changes[12].

However, negative price effects discussed above are more than offset by relative income growth stemming from wage changes in the economy. Higher wages are estimated to boost average disposable income by 1.3%, while median income rises somewhat less (0.9%), signalling a potential inequality-enhancing role of the income channel. This may be due to the low employment level in Moldova. Only 51.9% of households receive income in the form of employment remuneration and in the lowest quintile the share is even lower, 45.6%. Furthermore for the lowest quintile the share of employment remuneration in total disposable income is quite limited at 32.7%.

It is a combination of the price and wage effects discussed above that determines the overall welfare impact of the DCFTA. After combining all these effects we conclude that at the aggregate level the DCFTA is expected to be associated with small positive changes in the average welfare of the population as a whole, as price and wage effects cancel each other out, with positive wage effects slightly dominating negative price effects. Average disposable income grows by only 0.1% in the short-run. The long-run DCFTA welfare effect is higher with average disposable income growing by 1.2%. Median income changes are less pronounced (reduction by 0.1% in the short-run and long-run growth of 0.8%). The effects on less affluent households are, however, less optimistic and the lowest quintile sees its disposable income decline by 0.7% in the short run before materialisation of long-run gains to the tune of 0.6%. For the lowest quintile disposable income gains are expected to be around 0.6% while for the median income group disposable income change in the long run is expected to be 0.8%. This points to the DCFTA having a small increasing inequality effect.

Table 3.1 provides a snapshot of the results on poverty and inequality indicators in various decompositions.[13] The absolute poverty rate (i.e. the share of the population with income or expenditure levels below an official poverty line)increases minimally in the short run, to subsequently decline by 0.6% points in the long-run (down to 25.7%).[14] Both the absolute extreme poverty rate (i.e. a rate calculated against a low poverty line taking into account the monetary value of food that delivers certain daily calories intake) and relative poverty rate increase in the short run,

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11 This is a very high figure but not much different from estimates from e.g. Belarus. It may owe to the popularity of cottage houses and links with family living in rural areas.

12 This also suggests that using the consumption patterns from the 2009 household budget survey would render different overall consumer price inflation estimates than those emerging from Moldovan data in the GTAP 8.0 database. Such discrepancies are not unexpected, e.g. given the overall quality of Moldovan statistics. This also suggests that the simulation results should be treated with caution. It is advisable to focus on direction and magnitude of effects rather than any particular point estimates that are subject to substantial error margins.

13 Definitions of indicators discussed below are provided in Annex A2.

14 Absolute poverty line is set at MDL 945.9 a month (EUR 60.9), in line with a value officially published by the National Bureau of Statistics. Extreme poverty line is officially defined as MDL 511.5 (EUR 32.9) monthly. It is based on the monetary value of food items only, defined in terms of the minimum of daily calories intake, equal to 2282 Kcal per household member per day. Absolute poverty line is increased with a supplement for non-food items and services (see also IMF (2006): Republic of Moldova: Poverty reduction Strategy Annual Evaluation Report http://www.imf.org/external/pubs/ft/scr/2006/cr06185.pdf). Relative poverty line is set as 50% of median disposable income which corresponds to MDL 660.7 (EUR 42.5) per month.

although long run negative effects are small. An increase in relative poverty means that income of poor population strata grows slower than income of non-poor.[15]

While the poverty rate (headcount) is probably the most often used poverty indicator, one important drawback is that it is insensitive to distribution below the poverty line. For instance, the poverty rate will be unaffected when poor people become poorer without affecting the share of poor to non-poor. This deficiency is overcome by taking into account the poverty gap, an indicator which reflects the depths of poverty and can be thought of as measuring the average distance of disposable income of poor population from the poverty line. Based on our analysis we conclude that the poverty gap calculated against the absolute poverty line remains constant in the long run, but increases in the short-term, directly after implementation of the DCFTA. There is quite a significant increase in the poverty gap calculated for the extreme poverty line – an increase of 3% points in the long run. This suggests particularly unfavourable DCFTA consequences for the very poor people. This is confirmed by calculations for dispersion of poverty headcount around the absolute poverty line, confirming that the poverty increase in the short-run is mainly due to the growing share of those with income significantly below the poverty line (lower than 80% of the line). The share of the population with income slightly above the absolute poverty line does not change as a result of the DCFTA. Hence, on the positive side, the group at risk of becoming poorer due to the DCFTA is not expected to grow.

The DCFTA leads to a minimal increase of inequality as measured by decile and quintile ratios and Gini coefficient. The ratio between incomes of the richest and the poorest deciles (i.e. the decile ratio) goes from 6.5 up to 6.6. The Gini coefficient, calculated on the percentile basis, also grows from 0.296 to 0.298. While this is a very small increase, it still suggests that the DCFTA at least does not contribute to a reduction of inequality.

The above analysis also identifies the most vulnerable population groups in Moldova such as inhabitants of rural areas, including farmers, agricultural sector employees, people with low levels of education (primary and basic education), pensioners, and children. Most of these groups experience short-run losses from the DCFTA. There is some potential risk of increased poverty among farmers and people with primary and basic education (by 1.0 and 0.3 percentage points respectively). Nevertheless, long-run DCFTA effects for these groups are close to zero or positive. Poverty rates generally decline for these groups. From a geographical perspective the situation is the same. The poorest South and Centre regions seem to suffer marginally in the short-run, but in the long-run they also benefit from a DCFTA. So from this analysis, we cannot identify a specific group of vulnerable part of the population that we expect to be affected by the small rise in extreme poverty as a result of the DCFTA.

In summary, while the DCFTA is expected to boost average real incomes our simulations suggest a possibility for certain negative relative social outcomes of the DCFTA. Poorer strata of the population appear to benefit from DCFTA less than those with above average incomes. There is a risk of a rise in certain poverty indicators, especially for extreme poverty (i.e. for the 2-3% poorest people in Moldova). The DCFTA may also lead to an relative increase in inequality, albeit to a very small degree, as changes in disposable income are generally limited.[16]

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[15] The poor are defined as those below a respective poverty line (in this case below a relative poverty line set at 50% of median income), whereas non-poor are those with incomes above the poverty line.

[16] As with any other modelling approach the above results should be interpreted cautiously. In particular, the negative effects of DCFTA may be overestimated due to the model limitations and specifically its lack of accounting for elasticity of consumption and labour mobility. While these factors can arguably be ignored in the short-run (De Janvry and Sadoulet,

In interpreting these results it is important to recall that our analysis compares two hypothetical scenarios: the situation with and without a DCFTA. There is clearly a scope for policy action of Moldovan authorities in addition to the DCFTA mitigating any potential negative effects and promoting inclusive growth in general. Recommendations for specific policy measures are presented in Section 10.2.

Table 3.1 Estimates of DCFTA impact on poverty and inequality indicators

	Baseline	Short-run value	Long-run value
Poverty headcount			
absolute poverty line	26.3	26.4	25.7
extreme poverty line	2.1	2.4	2.2
relative poverty	8.7	8.9	9.0
Poverty gap			
absolute poverty line	38.2	38.6	38.2
extreme poverty line	27.3	28.5	30.3
relative poverty line	25.5	26.3	26.0
Inequality indicators			
Quintile dispersion ratio	4.52	4.57	4.58
Decile dispersion ratio	6.51	6.57	6.56
GINI	0.296	0.298	0.298
Dispersion of poverty headcount around poverty line			
120% of the absolute line	38.7	38.8	37.7
80% of the absolute line	13.6	13.9	13.4
120% of the relative line	16.2	16.4	16.2
80% of the relative line	2.8	3.0	2.9
Poverty headcount by sex			
Male	26.6	26.8	26.1
Female	26.0	26.0	25.4
Poverty headcount by age			
0-15	28.2	28.3	27.6
16-18	27.8	27.7	26.9
19-29	21.1	21.7	21.1
30-39	25.1	24.9	24.4
40-49	23.3	24.0	23.1
50-59	23.6	22.8	22.1
60+	33.6	33.7	33.0
Poverty headcount by education			
Higher	5.1	5.4	5.2

2008), in the long-run they are likely to play a more important role improving welfare especially of the poorest given the agricultural employment growth predicted by the CGE model.

	Baseline	Short-run value	Long-run value
Secondary and secondary specialized	21.6	21.7	21.0
Secondary basic and primary	38.8	39.1	38.2
Illiterate	29.4	28.9	28.3
Poverty headcount by place of residence			
City	12.6	12.0	11.8
Rural	36.3	36.9	35.9
Poverty headcount by geographical region			
North	29.2	29.0	28.3
Centre	32.8	33.3	32.4
South	37.3	37.6	36.6
Chisinau	4.8	4.9	4.7
Poverty headcount by sex of the household head			
Male	26.5	26.7	26.0
Female	25.9	25.7	25.0
Poverty headcount by employment status			
Farmer	47.0	48.0	46.7
Employed in agricultural sector	48.1	47.6	47.1
Employed in non-agricultural sector	12.3	12.0	11.6
Pensioner	35.6	35.7	34.9
Others	16.1	16.5	15.8

Source: own calculations

3.1.2 DCFTA and the ILO Decent Work agenda and other social issues

This section provides an additional qualitative analysis of social issues, in particular those covered by the ILO Decent Work agenda (job creation, labour rights, social protection, social dialogue and gender equality). It is based on the analysis of existing studies and other literature and consultations with stakeholders, including an on-line survey.

The current situation

The presence of labour-related issues in the Moldova – EU trade relations has a long tradition. In early 2000s Moldova was among the only two beneficiaries of the EU's Special incentive arrangement for the protection of labour rights, a predecessor of the GSP+ regime. Both these regimes were conditioned on ratification and effective implementation of the eight core ILO conventions. The core conventions refer to four areas: the freedom of association and the right to collective bargaining, the abolition of forced and child labour and the prohibition of discrimination in the field of employment and occupation.

Ratification of ILO conventions is voluntary and a decision whether to do it or not rests with authorities of a respective ILO Member State. Once a country ratifies a convention, it is obliged to report at regular intervals on its implementation and undergoes scrutiny of the ILO monitoring

mechanism. Still, these ILO monitoring mechanisms per se do not constitute a strong mechanisms that could mobilise a country to effective implementation. On the other hand unilateral GSP+ preferences provide such a layer of incentives given the possibility of preference withdrawal. This is not a purely theoretical possibility and a few countries have lost their GSP or GSP+ preferences this way (e.g. Burma, Sri Lanka and Belarus).

Since March 2008, Moldova has benefitted from autonomous trade preferences (ATP) by the EU and hence has been removed from the list of GSP beneficiaries. The Council Regulation on the ATP explicitly acknowledged the progress in labour-related agenda under the GSP+ and conditioned the new more generous preferences on maintenance of the previous achievements:

'to benefit from the additional tariff preferences under the GSP+ regime, Moldova has fulfilled the conditions of ratifying and effectively implementing core international conventions on human and labour rights, environmental protection and good governance. To ensure Moldova maintains the level of progress it has achieved, the granting of additional autonomous trade preferences will be subject to continued implementation of, and compliance with, the priorities and conditions set in the ENP Action Plan and the GSP+.'[17]

While the ILO monitoring schemes of the core labour rights conventions indicated certain areas of non-compliance or uncertain compliance and suggested improvements in certain fields, the overall assessment was broadly satisfactory.[18]

Clearly, several areas require improvement. This in particular relates to ILO convention no. 105 (Abolition of Forced Labour Convention) where a relevant ILO committee raised points related to the 2002 Law on the requisitioning of goods and services in the public interest.[19] On the other hand, the same ILO Committee noted progress in limiting the application of sanctions of imprisonment involving compulsory labour.

From the trade unions perspective the following issues are key with respect to implementation of the core ILO conventions in Moldova:

- The creation of new unions is claimed to remain difficult due to employers' resistance. Collective agreements are mainly signed at enterprise level having a long history of collective bargaining and conclusion of collective agreements.
- Enforcement of relevant laws remains weak. Neither labour inspectorates nor prosecutors' offices have been effective in monitoring and enforcing labour standards, especially the right to organise.[20]

Child labour remains a serious issue despite substantial government efforts and cooperation with the ILO.[21] A survey-based assessment carried in 2009-2010 and commissioned by the Government

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17 Council Regulation (EC) No 55/2008 of 21 January 2008 introducing autonomous trade preferences for the Republic of Moldova.

18 An overview of recommendations from conventions' monitoring bodies up till mid-2008 can be found in the Commission Staff Working Document Accompanying the GSP+ Report on the status of ratification and recommendations by monitoring bodies concerning conventions of annex III of the Council Regulation (EC) No 980/2005 of 27 June 2005 applying a scheme of generalised tariff preferences (the GSP regulation) in the countries that were granted the Special incentive arrangement for sustainable development and good governance (GSP+) by Commission Decision of 21 December 2005 {COM(2008) 656}.

19 International Labour Conference, 101st Session, 2012, Report of the Committee of Experts on the Application of Conventions and Recommendations, p. 272.

20 ITUC, Annual survey of violations of trade union rights, http://survey.ituc-csi.org/Moldova.html?lang=en#tabs-4 (accessed 5 April 2012)

21 Activities For Combating Child Labour And Trafficking In Children In Moldova, International Labour Organisation International Programme on the Elimination of Child Labour, ILO-IPEC, undated brochure.

of Moldova estimated that 109,000 children were engaged in child labour, mostly in small businesses and agricultural labour. Children continue to be involved in the worst forms of child labour in agriculture and on the streets. Although policies and programs to combat such child labour are being formulated, they have yet to be fully implemented.[22]

Various elements of the above assessments have also been confirmed by our stakeholder survey. For instance one third of respondents listed child labour among five most problematic issues in the field of human rights protection.[23]

Before proceeding to the analysis of the scope for DCFTA impact on social and in particular labour related issues it is important to note that despite the economic rebound in recent years, Moldova is still considered to be the poorest country in Europe. A number of negative developments have led to high poverty in rural areas, high unemployment, very significant outward migration, and weak capacity of the social protection system to respond to social challenges. All this has contributed to increasing magnitude of social exclusion experienced by a substantive number of Moldovan citizens.[24] Such a starting point may imply that certain stakeholders may perceive a trade-off between achieving economic development objectives and maintaining competitiveness on the one hand while fostering social inclusion, or more broadly promoting progress in the social area at the same time. The latter may be perceived as subordinate to the former. It is difficult to evaluate how widespread opinions are along such lines, but in any case these should be taken into account in the DCFTA process and related stakeholder consultation and social dialogue. Societal valuations of different elements of the socio-economic environment may differ between Moldova and the average for EU countries.

The scope for DCFTA role and potential impact on decent work and equality

Given the current ATP status of Moldova it is to be expected that the DCFTA will contain clauses that ensure that progress made so far is maintained and will possibly build on this progress towards a more ambitious decent work agenda. Indeed, these issues have already been addressed in the DCFTA process (before the start of the negotiations). The Moldovan Ministry of Economy in its quarterly monitoring of progress directly refers to these issues noting an important limitation in the form of weak institutional capacity (given the insufficient number of personnel) of the Labour Inspection to carry efficient control in areas relevant for the core conventions and decent work in general.[25]

It should be remembered that several elements of the decent work and equality agenda are likely to be covered by the Association Agreement (AA) and these may be more important than the DCFTA in affecting several issues discussed below.

We discuss the potential impact of the DCFTA on the decent work agenda following the ILO's approach that distinguishes four dimensions that crucially matter for the agenda as a whole with gender equality as a crosscutting objective:

1. Creating jobs.

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22 United States Department of Labor, 2009 Findings on the Worst Forms of Child Labor - Moldova, 15 December 2010, available at: http://www.unhcr.org/refworld/docid/4d4a680a1a.html [accessed 11 April 2012]

23 The on-line survey is still on-going and the number of responses so far has been low. Thus we treat it as an additional source of information only. A snapshot of results so far is presented in section 4.3

24 UNDP 2011, Republic of Moldova From Social Exclusion Towards Inclusive Human Development: National Human Development Report … / aut.: Dorin Vaculovschi, Maria Vremis, Viorica Craievschi-Toarta [et al.]. – Ch.: "Nova-Imprim" SRL, 2011.

25 Ministry of Economy, Quarterly Progress Report no.1 / 2011 on the Action Plan for implementing the Recommendations of the European Commission for the future negotiations of the Deep and Comprehensive Free Trade Area (DCFTA) between the Republic of Moldova and the European Union. Reporting period: 14 December 2010 – 15 March 2011.

2. Guaranteeing rights at work.
3. Extending social protection.
4. Promoting social dialogue.

With regard to job creation both the CGE modelling results (rising output and hence likely also higher total employment) and opinions of stakeholders suggest optimism on positive net employment effects. However, sectoral reallocations will be needed and this may be problematic for certain groups of workers, especially those with lower human capital endowment and those currently discriminated against in the labour market. This is an important issue that should be taken into account in the DCFTA negotiations and in planning other policy measures. The quantitative simulations discussed above confirm a potential for negative welfare impact on the weakest groups. For them, changing jobs or finding employment will be of primary importance, but at the same time this may be more difficult than for people with higher skills, a better employment record and more wealth.

The key question concerning the DCFTA effects on guaranteeing the rights at work is whether it will prove to be a more or less effective pressure and/or encouragement mechanism compared to ATP. Once in place DCFTA trade preferences may be more difficult to withdraw than unilateral ATP preferences. On the other hand, full implementation of the DCFTA will take time and much progress could be achieved during this period. Also, even with the ATP and earlier GSP+, the experience of other countries (e.g. Georgia) suggests that these preference schemes' influence on labour rights do not seem to work primarily through the threat of preference withdrawal. They rather act as a positive incentive. The attitudes of the general public also matter substantially for progress in labour rights as it can create pressure on decision makers to modify regulations and/or improve their implementation.

As discussed in more detail below in the section on human rights (also covering the rights related to employment) the expected positive overall economic effects of the DCFTA can gradually improve administrative capacity to implement labour rights. They may also increase public demand for stronger protection of rights as is typical when real wages and living standards are on the rise. On the other hand, increased economic competition may continue to exert pressure on limiting worker's rights that may be associated with higher labour costs, although the DCFTA will likely contain clauses preventing race to the bottom in labour standards.

Our conclusion is that, while the DCFTA may ignite several forces acting towards either improving or worsening the labour rights situations, on balance positive forces are likely to be somewhat stronger compared to the current situation.

The main channel of DCFTA impact on extending the coverage and effectiveness of social security schemes (pension, health insurance, etc.) is likely to be through higher economic growth. Two mechanisms may be at play here. First, higher average living standards and hence gradually increasing public demand for elements of a broader and more efficient social protection system. Second, some effects may be due to DCFTA-related changes in fiscal revenues (mainly the balance of tariff revenue losses due to tariff elimination and additional tax collection due to economic growth) and hence changes in available funds and administrative capacity to implement social security policies. These will be indirect impacts and unlikely to lead to strong effects in the short- to medium-term perspective. Such a view appears to be confirmed by preliminary results of a stakeholders survey that indicate very poor assessment of the current social protection system and quite limited expectations of improvement as a result of the DCFTA. At the same time it should be noted that possible unfavourable DCFTA impact on the poorest strata of the population strengthens

the case for adopting additional social security measures for the groups that are vulnerable to poverty risk and whose livelihood may be hampered by a new trade regime.

With regard to a specific area of protection of vulnerable groups such as workers in the informal economy, migrant workers and their families we lack evidence that would allow us to clearly identify channels of DCFTA impact and their strength.

Social dialogue i.e. a dialogue between employers and workers (with both groups together being referred to as social partners) or as a tripartite dialogue involving social partners and public authorities appears to be one area where progress has been made in recent years, although it is not easy to attribute the improvement to GSP+ and later ATP, and significant problems remain. Further progress will likely be gradual. Positive DCFTA contributions may be mostly related to its impact on higher economic growth, higher average living standards and hence gradually increasing interest of the society in stronger engagement of their representatives (social partners) in design of the employment and social policy, conduct of the overall reform process, consultation of legislative proposals, assessment of impacts resulting from the trade policy and dialogue about restructuring and flanking measures. The strength of these effects is likely to be small and social dialogue will continue to be mostly influenced by factors that are unrelated to the DCFTA process.

The situation with respect to equality, including gender and ethnic equality is considered problematic by international sources, as discussed in the human rights section below. This assessment may not be universally shared by Moldovan stakeholders, although preliminary results of our stakeholder survey indicate that the majority of respondents assesses the current situation in Moldova with respect to gender equality at work (equality of employment chances, professional career, salaries, etc.) as 'poor'.

CARIS (2010) has identified gender equality as one area where GSP+ conditionality appears to be having a visible positive effect on countries granted this form of preference.[26] The exact channels of this influence are however difficult to identify.

The DCFTA may promote equality by increasing living standards and contributing to gradually changing societal preferences on equality issues. Other mechanisms of positive influence may be related to international conventions supporting equality and condemning discrimination. On the negative side, sectoral employment re-allocations that will be required by the DCFTA may disproportionally affect weakest workforce groups, those with low human capital and hence groups currently subject to unequal treatment and chances. The aggregate direction and strength of these forces is difficult to predict, although worsening of the situation relative to trends currently observed does not appear likely.

3.2 Additional analysis on environmental issues

3.2.1 Environmental profile of Moldova

The country covers 33,800 sq km between the Dniester and the Prut rivers. The territory of Moldova is a hilly plain cut deeply by several rivers and streams. It spreads over four main geographic areas: the Northern Moldovan Plain, the Dniester Uplands, the semi-arid steppe of the Podolian Plateau in the south and the Codrii Hills, with Mount Balanesti, elevating 430 m above the sea level, as the highest point. The central part of Moldova is densely forested, while the north and the south are

[26] CARIS (2010), 'Mid-term Evaluation of the EU's Generalised System of Preferences', report for DG TRADE, http://trade.ec.europa.eu/doclib/docs/2010/may/tradoc_146196.pdf.

mainly covered by farmlands. The climate is continental, influenced by the Black Sea from the south. It is characterised by warm summers with an average temperature of 24 degrees Celsius. Winters are mild with January daily temperatures averaging between -5 and -3 degrees Celsius. The rainfall is feeble and irregular. Droughts are frequent, especially in the south due to weak precipitation (350 mm per year). The precipitation may exceed 600 mm in the more elevated regions of the country.[27]

The country faces several environmental problems related to air, water and soil pollution. Inadequate urban waste management, unsustainable agricultural practices and improper forest management induce significance land degradation and damages of biodiversity. Illegal waste dumping and agricultural run-off contribute to the pollution of rivers and drinking water wells in rural areas. Difficult economic conditions during the 1990s and early 2000s with industrial closures and cut-downs of agricultural subsidies have reduced pollution emissions to water, soil and air. The worsening social situation and high poverty have contributed to environmentally damaging activities such as illegal cutting of forests, use of obsolete technologies, poor energy efficiency and underinvestment in basic infrastructure such as water, roads, and energy.[28]

One proxy measure assessing the performance of a country in terms of the environmental situation and environmental policies (2012 Environmental Performance Index) ranks Moldova as no. 108 out of 132 classified countries.[29] Based on this measure the country performs relatively well in areas such as ecosystem effects of air pollution, regulation pertaining to the agricultural sector, and climate change, while problematic areas include risks to biodiversity and habitat, and effects of water pollution on human health.

Air pollution

Air pollution is primarily caused by mobile pollution sources such as cars, buses, and trucks and mostly affects urban areas. An old vehicle fleet is an important factor contributing to the problem and data of the Ministry of Transport suggest that more than 90 percent of the vehicles in Moldova is older than 10 years, although there are substantial discrepancies in different sources on the number of vehicles as such.[30] Imports of cars above 10 years old is prohibited (the threshold was increased from 7 years). Euro 2 and Euro 3 standards on emissions from motor vehicles and their specific replacement parts do not apply in Moldova, while for the EU Euro 4 and Euro 5 standards are minimum requirements.[31]

The burden due to industrial sources of air pollution have decreased somewhat in line with the energy sector replacing the solid (coal) and liquid fuels (oil) with natural gas especially in large combustion units. There is no data on emissions from the Transnistria region which is home to the largest power station in the country (located in Dnestrovsk).

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27 Fedor, H. (1995). Moldova: A Country Study. Washington: GPO for the Library of Congress.

28 Olof Drakenberg (2006), Environmental policy brief Moldova, School of Economics and Commercial Law, Göteborg University.

29 See http://epi.yale.edu/epi2012/rankings

30 Willems S. and Busuioc, C. 2011. Analysis for European Neighbourhood Policy (ENP) Countries and the Russian Federation of social and economic benefits of enhanced environmental protection – Moldova Country Report.

31 Willems S. and Busuioc, C. 2011. Analysis for European Neighbourhood Policy (ENP) Countries and the Russian Federation of social and economic benefits of enhanced environmental protection – Moldova Country Report. European emission standards (Euro 1 to Euro 6) define the acceptable limits for exhaust emissions of new vehicles sold in EU member states. The standards have been defined in a series of directives progressively introducing increasingly stringent limits on emissions. Some other former Soviet Union countries (Armenia, Georgia, Kazakhstan, Russia) have switched to EU Euro-X standards to control vehicle emissions (Ketevan Samadashvili, Regional Overview – Eastern Europe, Caucasus and Central Asia, presentation delivered on 28 April 2009, Szentendre, Hungary, available at http://www.unep.org/transport/pcfv/PDF/7GPMRegionalOverviews_Keti.pdf (accessed 11 April 2012)).

Air pollution problems mainly affect large cities that are close to industrial areas, such as Chisinau and Balti. Precise analysis of the extent of the problem is difficult given that air quality monitoring is carried on a limited scale only.

Trans-boundary pollution issues in Moldova are mostly related to the country being a net importer of ammonium nitrogen, sulphur and nitrogen oxides, according to the European Monitoring and Evaluation Programme. The imported shares of the pollutants' loads are: 96 percent for nitrogen, 84 percent for sulphur (mostly coming from Romania and Ukraine) and 45 percent for ammonium nitrogen (mostly from Ukraine and Poland).

Water pollution

Low water quality and the poor access to clean water are mainly due to the scanty water supply and treatment infrastructure in the country. This issue clearly belongs to the major environmental and socio-economic challenges for Moldova.[32]

Small rivers and lakes are polluted, mainly due to domestic waste water discharges, lack of proper waste water treatment, agricultural run-off and waste dumping, washout of chemicals from dumps and stored agro-chemicals (including DDT) and agricultural activity in water protection areas.[33] According to the rivers' national classification system (on a use class scale from I to V where the use class I denotes high status, corresponding to a practically undisturbed, natural aquatic system and the use class V denotes a situation where water can be used for purposes where the quality does not matter, e.g. for cooling in power plants) about 72 percent of the total rivers' length (1350 km) are classified between categories II and III and the rest lies between IV and V. The quality of the water in lakes corresponds to the use class III, meaning that it can be used for industrial purposes. Additionally, the groundwater quality is also poor, especially in rural areas. This is primarily the result of unsustainable domestic organic waste management and to a lesser extent also of the unrestricted use of fertilizers in agriculture.

The water supply-withdrawal balance has been adequate at the country level, but water scarcity has been an issue in some regions (especially in the south of the country).

Access to drinkable water is poorly developed especially in villages (no piped water supply) where people use water from shallow ground wells, for free. 40 percent of the population has access to the centralized water supply in the country (the Ministry of Health of Moldova data suggested a higher figure of 55 percent in 2011), but only 13 percent in rural areas (Table 3.2). Microbiological pollution of water supplies is common owing to disrepair of water supply systems. Thus, large amounts of chlorine must be added to water to make it microbiologically acceptable.

Another substantial problem is the lack of access to sanitation. Only 30 percent of the population has toilets connected to a sewage network system (in practice only in urban areas), about 50 percent have access to other improved sewage facilities and more than 20 percent are stuck with unimproved sanitation.[34] Collection and treatment systems of waste water is non-existent in the countryside and the systems in urban areas are underdeveloped.

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[32] Opopol, N. (2006). Water management in Republic of Moldova. Principal threats. NATO Security through Science Series, pp. 167-176.

[33] Olof Drakenberg (2006), Environmental policy brief Moldova, School of Economics and Commercial Law, Göteborg University. Unless indicated otherwise the remaining part of this section draws from Willems S. and Busuioc, C. 2011. Analysis for European Neighbourhood Policy (ENP) Countries and the Russian Federation of social and economic benefits of enhanced environmental protection – Moldova Country Report

[34] Improved sanitation refers to flush/pour-flush toilets to sewage networks, septic tanks or pits; ventilated improved pit toilets and pit toilets with slab. Unimproved sanitation refers to pit toilets without slab; hanging toilets over water; bucket toilets;

Table 3.2 Household access to drinking water and sanitation facilities, percent of population (2008)

Drinking water	Urban	Rural	Total
Piped water on premises	79%	13%	40%
Other improved water sources	17%	72%	50%
Unimproved water sources	4%	15%	10%
Sanitation			
Toilet connected to sewage network	63%	3%	28%
Other improved sanitation	22%	71%	51%
Unimproved sanitation including toilet facilities shared by households	15%	26%	21%
of which: Open defecation	0%	0%	0%

Source: Source: WHO/UNICEF quoted in Willems and Busuioc 2011.

Waste

The environment of Moldova is negatively influenced by improper und insufficient waste collection and management. Only around 40 percent of waste from the whole country is collected, almost exclusively in urban areas. There is very little waste segregation and it is sent to landfills. Additionally, places where waste is dumped do not have any controlled impervious layer that would separate it from the natural environment blocking, for instance, the methane permeation. Official dumping grounds are overloaded and a significant share of waste is dumped illegally in unauthorized locations. Some of the litter is burnt. There is a centralised system of waste collection in rural areas leading to waste collection in random locations with ensuing water and soil pollution.

Biodiversity, deforestation and land degradation

The ecosystem in Moldova mainly consists of agricultural ecosystems, representing 75 percent of the national territory. The natural and semi-natural ecosystems (forests, hayfields, pastures, wetlands, and water bodies) account for only 17 percent of the territory. The three main bio-geographical subdivisions, the Central-European leafy forests, the Mediterranean forest steppe, and the Euro-Asiatic steppe, provide conditions for high-level biodiversity. The steppe zone biodiversity has been more affected by human activities than the forest zone biodiversity located in the central and northern parts, leading to a non-uniform distribution of biodiversity. There are 484 rare plant and animal species protected by the State, 242 of which have been included in the Red List.[35] The main threats to biodiversity include poaching, overgrazing and plant collection. Invasive species (animals and plants) and improper agricultural and forest cultivation and management also constitute a drag on biodiversity.

A relatively small forested territory in Moldova (386,000 ha, making 12 percent of the land area[36]) consists mostly of 1,000 'forest islands', meaning that the forest area is very fragmented. This implies that there is not enough space for animals to find places that would be secure from poachers. FAO analysis indicates a risk of deforestation in Moldova, and several cases of illegal logging can be attributed to poverty. The majority of mature forests lack the genetic and species composition of healthy forest ecosystems.[37]

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and open defecation (no access to a toilet facility) or a situation when a household share toilets with other households regardless of type of toilet.

35 The IUCN Red List of Threatened Species classifies species according to their risk of extinction. See also http://bsapm.moldnet.md/BDcr/cr2.html. Convention on Biological Diversity, Country Profile - Republic of Moldova, http://www.cbd.int/countries/profile.shtml?country=md#status (accessed 5 April 2012).

36 FAO (2011). State of the world's forests, Food and Agriculture Organization.

37 Ala Rotaru, Moldova's experience with positive incentive measures, Ministry of Ecology and Natural Resources, mimeo (undated).

Soil degradation affects about 40 percent of the lands in Moldova. While the process of land degradation is partly caused by natural drivers (e.g. rains and natural mineralization), inappropriate agricultural practices play a major role in particular in soil demineralisation. The situation is further complicated by past policies on land ownership, where the privatization process after the collapse of the Soviet Union has led to dividing large land parcels into small ones. This has led to erosions on slopes. The fact that individual farmers do not have access to modern technologies of farming, and that their farmlands are often subject to overgrazing is another reason for soil erosion. The surface of protected areas has considerably increased recently up to 1.96% of the country territory.[38] The country is committed to extend the natural protected areas to 2,36% of the territory by 2015.

Climate change

Key climate change related factors that may affect future human development in Moldova include: water insecurity and droughts, increased exposure to extreme weather accidents like floods, environmental deterioration and loss of natural resources and degradation of ecosystems.[39] This may have a substantial impact on the agricultural sector (especially problems with access to water and risk of draughts) that plays a very important socio-economic role in the country.

3.2.2 Environmental impact: air emissions and associated costs

Table 3.3 presents the estimated effects of the DCFTA in terms of released air emissions of classical pollutants at the country level for Moldova and the EU. In the short run the change of Moldova's emission is below one percent in case of all pollutants. In the long run, the effect is larger (between 1.9 percent and 2.8 percent). As could be expected the DCFTA has only a very limited impact on the environment in the EU. The magnitude of changes in pollutant emissions are low when expressed in tonnes, while in percentage terms they are negligible (typically below 0.001 percent). The CO2 emission change is already simulated in the CGE model (see chapter 2). For Moldova, the DCFTA impact on CO2 emissions is negligible in both the short run and the long run.

Table 3.3 DCFTA-induced change of classical pollutant emission compared to baseline (tonnes & %)

	SOx	Nox	PM10	PM2.5
Moldova short run (t)	-63	73	56	21
%	-0.8%	0.2%	0.6%	0.3%
Moldova long run (t)	213	788	189	121
%	2.8%	2.4%	1.9%	1.9%
EU short run (t)	5	30	14	5
%	0.00%	0.00%	0.00%	0.00%
EU long run (t)	130	165	24	13
%	0.00%	0.00%	0.00%	0.00%

Source: own calculations

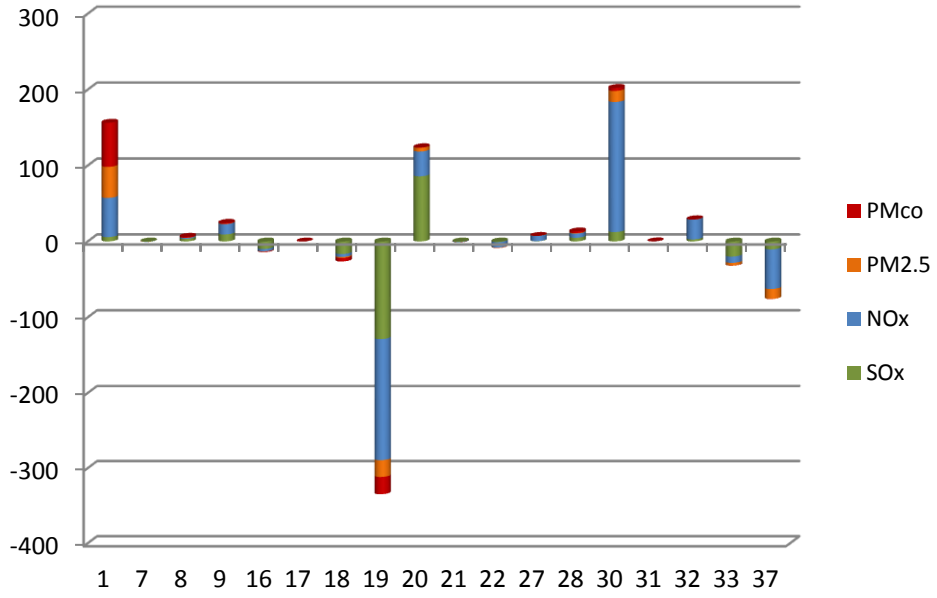
Figures 3.1 and 3.2 show the emission changes disaggregated by sectors and pollution type in Moldova. Significant increase of released emission can be observed for the following sectors: agriculture (1), ferrous metals (20), and land & other transport (30). Only one sectors sees its

[38] Republic of Moldova, Biodiversity Conservation National Strategy and Action Plan, http://bsapm.moldnet.md/Text/Pagina%20web%20Strategia/Englez/Cuprinstotal.html (accessed 12 April 2012)

[39] UNDP (2009). *Climate Change in Moldova: Socio-Economic Impact and Policy Options for Adaptation 2009/2011,* United Nations Development Programme.

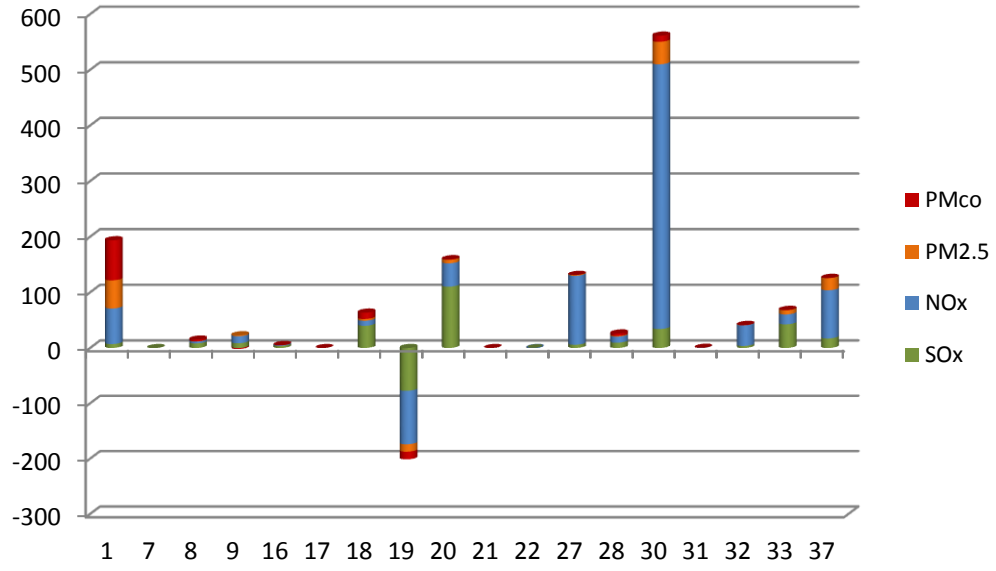
emissions decline significantly: the mineral products (19). Broadly speaking, short and long run patterns of changes are similar, with long run effects being typically more pronounced.

Figure 3.1 Short run emission changes in Moldova - decomposition by sector and pollutant (tonnes)



Note: See Annex A3 for sector codes.
Source: own calculations

Figure 3.2 Long run emission changes in Moldova - decomposition by sector and pollutant (tonnes)



Source: own calculations

Externalities and welfare assessment

In this subsection we quantify the damage due to airborne pollution reported above by an application of the ExternE method (see Annex A3 for an exposition). Tables 3.4 and 3.5 report the benchmark external cost (i.e. costs associated with currently observed pollution levels) caused by classical air pollutants according the impact categories and according the pollutant, respectively. We can see, that the highest external costs are implicated by human health impacts. Among the pollutants, the NOx is the most harmful at the current emission levels, both for Moldova and the EU.

Table 3.4 Benchmark externality values by impacts categories (EUR million)

	Moldova	EU
Human Health	498	267477
Loss of Biodiversity	11	5214
Crops	4	1559
Materials	5	3518
North Hemispheric	10	6834

Note: The values reported in the table are estimates of costs associated with currently observed airborne pollution levels in both regions. For definitions of impact categories see EC. (2003). External costs, Research results on socio-environmental damages due to electricity and transport. ISBN 92-894-3353-1. http://www.externe.info/externpr.pdf
Source: Own calculations.

Table 3.5 Benchmark externality values by pollutant (EUR million)

	Moldova	EU
Nox	287	146767
PPMco	6	1249
PPM25	171	48368
SO2	65	88096

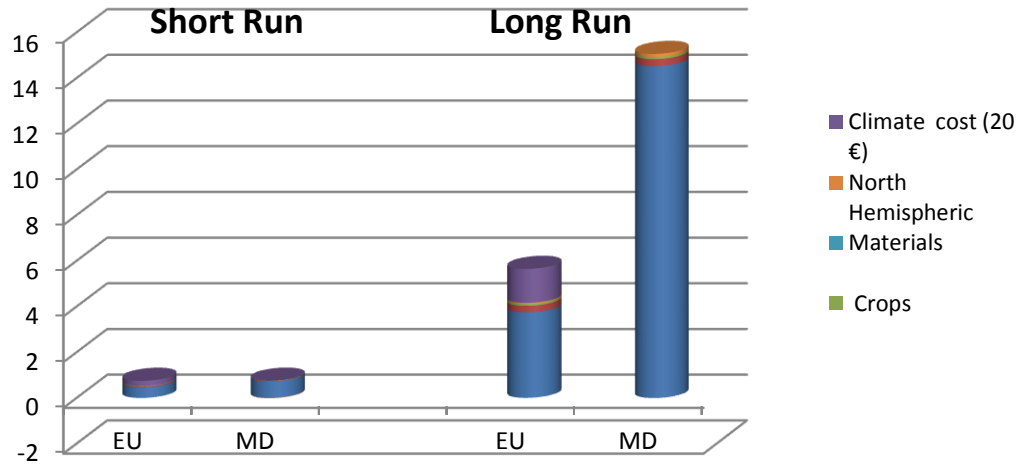
Source: own calculations

Given the estimates of emission change, we can quantify the changes of external cost likely to ensue due to the DCFTA. Our assessment also incorporates the CO2 emission change as calculated by the CGE model. For the evaluation of climate cost we use a central value of EUR 20 per tonne of CO2.[40]

The DCFTA is found to have larger effect on Moldova than on the EU also in terms of environmental damage (through the airborne emissions channel). In the long run, the total external costs of DCFTA are estimated at EUR 15 million for Moldova and EUR 5.6 million for the EU (Figure 3.3 and 3.4). The short run changes of the environmental damage are small both for Moldova and the EU (EUR 0.7 in both cases). By far the largest impacts are those related to human health. Changes in NOx emissions are responsible for the largest part of total cost changes. The CO2 emission changes only matter for the EU. At the assumed cost of EUR 20 per tonne of CO2, it accounts for around EUR 1.5 million additional cost. For Moldova the effects associated with changes in CO2 emissions are around zero. Putting it differently, for Moldova the DCFTA is not found to lead to climate change effects.

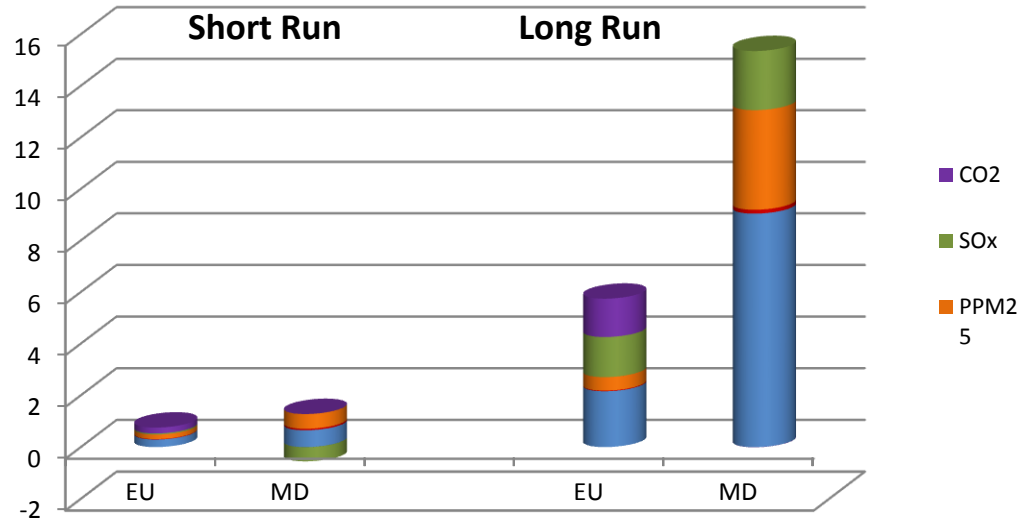
[40] The sensitivity analysis for the EU was also carried with 1 tonne CO2 costs ranging from EUR 5 to EUR 30. The results are not reported here but available upon request.

Figure 3.3 External cost change – by impact categories (million €)



Source: own calculations

Figure 3.4 External air pollutant – by impact categories (million €)



Source: own calculations

Apart from reporting absolute changes in external costs resulting from the DCFTA emerging through the channel of airborne emissions we also provide results in percentage changes. In the EU, compared with the benchmark, the DCFTA increases external costs by 0.0002% and 0.0015% in the short and long run, respectively. In Moldova, compared with the benchmark, the external costs are go up by 0.1% and 2.9 %, respectively in the short and the long run.

3.2.3 Additional qualitative results

In this subsection we go beyond air emissions and discuss potential DCFTA effects in such spheres as waste management, water, air and land pollution, maintaining biodiversity, etc. As discussed above, Moldova faces crucial environmental challenges related to the situation in these areas. Also, the DCFTA has a potential to affect the situation in these areas in significant ways, although it should be remembered that the environmental chapter of the Association Agreement will contain elements with respect to enhanced environmental cooperation and to improve the regulatory policy in this area. The separation of the potential environmental effects of these two instruments can in practice be quite difficult.

The crucial difficulty of the analysis and the limitation of the following discussion and ensuing recommendations is that the DCFTA effects in these crucial areas are very difficult to predict with a useful degree of precision. One complication is related to limited information base concerning the baseline situation in Moldova as some environmental parameters (e.g. quality of air) are not sufficiently monitored. Second, the effects may depend on specific policy decisions concerning certain sectors (e.g. on the use of fertilisers in agriculture), or individual cities (e.g. building waste water treatment facilities) or regulatory decisions by the Moldovan authorities (e.g. on enforcing technical standards for personal vehicles). The analysis of likelihood of such changes occurring would need to explore very detailed information and goes beyond the scope of this TSIA.

Furthermore there is also an issue of separating environmental effects related to higher level of economic activity and the evolution of environmental burden in Moldova per dollar of GDP. While higher economic growth due to the DCFTA will lead to higher environmental burden the more important question is to what extent DCFTA-induced economic growth in Moldova will become greener. Assessing the latter is not an easy task.

Keeping the above limitations in mind we proceed to presentation of preliminary results based on analysis of secondary sources, a stakeholders' on-line survey, communication with stakeholders through other channels, and interpretation of CGE modelling results. We focus on two dimensions or channels of propagation of DCFTA effects, namely ratification and effective implementation of multilateral environmental agreements and sectoral effects.

Multilateral environmental agreements

Moldova has ratified a number of international environmental conventions and protocols. In particular it has ratified all international environmental agreements (EA) that are among necessary conditions for maintaining the EU's GSP+ tariff preferences (as indicated earlier in this report). These include:

- Montreal Protocol on Substances that Deplete the Ozone Layer;
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal;
- Stockholm Convention on Persistent Organic Pollutants;
- Convention on International Trade in Endangered Species (CITES);
- Convention on Biological Diversity;
- Cartagena Protocol on Biosafety; and
- Kyoto Protocol to the UN Framework Convention on Climate Change.

Moldova was a beneficiary of this incentive scheme for respecting labour, human (see next section), environmental and good governance rights and rules until 2008 when it was granted autonomous trade preferences.

Moldova has ratified all the above conventions before it was granted GSP+ status in 2005 and thus it is not possible to ascribe the fact of their ratification to trade relations with the EU.

It is important to realise that ratification of a convention per se does not guarantee any progress in environmental performance. This will be achieved only if a country effectively implements key elements of EAs. Indeed, GSP+ is conditioned not only on ratification but also on effective implementation of conventions and this feature was also translated to the ATP regulation.[41]

[41] The relevant fragment of the 2008 Regulation granting Moldova ATP is as follows: 'To ensure Moldova maintains the level of progress it has achieved, the granting of additional autonomous trade preferences will be subject to continued

From the perspective of the TSIA the key question is therefore whether and under what conditions the DCFTA may create more conducive environment to effectively implementing already ratified EAs and/or promote ratification and implementation of additional EAs not yet ratified by Moldova relative to the current situation. One aspect of this question is on costs of implementing conventions and the extent to which the EU will be willing to support implementation by bearing some of these costs as part of the DCFTA/AA process or the extent to which Moldovan authorities will be willing to use general budget support from donors to this end. EU funding in this sphere is more likely to be related to the Association Agreement process than specifically the DCFTA.

While the EC regularly publishes monitoring reports on effective implementation of conventions by GSP+ beneficiaries (as required by the GSP+ Regulation) there is no such formal mechanism for the ATP beneficiaries and Moldova in particular. In any case the monitoring primarily relies on reporting and monitoring schemes foreseen within individual EAs. We have reviewed these sources, updating the most recent available – but outdated – EC monitoring.[42] Our analysis suggests a continuation of positive trends in conventions' implementation and does not highlight any significant problems. It should be remembered, however, that this evidence may provide only a partial picture. This is because conventions differ in their mechanisms for monitoring progress made and typically the primary focus is on supporting countries in implementation efforts and not highlighting non-compliance cases.

Based on the above, we do not identify any evidence that could suggest that moving from the GSP+ status to ATP has reduced the effectiveness of EAs implementation in Moldova.

Effective implementation of environmental conventions can be a costly and lengthy process requiring building institutional capacity, raising public awareness of certain issues, etc. As such EAs offer no easy solution to environmental challenges. Rather, they provide an opportunity to gradually upgrade environmental management and policies, also thanks to peer learning and support available within EAs. There is some indirect evidence (e.g. in comments received through the on-line stakeholders survey) suggesting that in the case of Moldova international commitment and external pressure, e.g. in the form of EAs and possibly other elements that may be incorporated in the DCFTA play an important role in developing environmental protection policies and building capacity of relevant domestic institutions. On the other hand, ultimately it is up to Moldovan authorities, businesses and civil society institutions to make Moldovan development greener. Such things can be encouraged or supported by external actors but cannot be forced or implemented from outside the country.

Overall, we conclude that DCFTA is likely to have a weak but positive effect encouraging more effective implementation of EAs in Moldova that should – in a gradual manner – also contribute to solving some of the outstanding environmental challenges facing Moldova. This mechanism may prove important in greening economic growth in Moldova in general and limiting the environmental burden from faster economic development due to a DCFTA.

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implementation of, and compliance with, the priorities and conditions set in the ENP Action Plan and the GSP+.' (Council Regulation (EC) No 55/2008 of 21 January 2008)

[42] Commission Staff Working Document Accompanying the GSP+ Report on the status of ratification and recommendations by monitoring bodies concerning conventions of annex III of the Council Regulation (EC) No 980/2005 of 27 June 2005 applying a scheme of generalised tariff preferences (the GSP regulation) in the countries that were granted the Special incentive arrangement for sustainable development and good governance (GSP+) by Commission Decision of 21 December 2005 {COM(2008) 656}. This document covers the period up till mid-2008.

Sectoral channels of transmission of environmental effects

Sectors differ in their environmental effect. The following sectors are considered as exerting large effects on environment and where DCFTA may lead to significant changes: agriculture, forestry, and transport. The DCFTA environmental effects through changes in these sectors will be a combination of effects on sectors' growth, and technological and other transformations influencing environmental burdens. Below we briefly discuss the sectoral channels of DCFTA environmental influences.

The CGE modelling exercise predicts an increase in output of most agricultural subsectors with the exception of livestock and meat products and forestry products. In this context it is important to recall that a substantial part of reduced environmental burden from the agricultural sector in the last two decades can be explained by less intensive farming. At the same time, however, progress in agricultural practices has been limited and unsustainable practices are among the key factors leading to severe land degradation and losses of biodiversity. Also, agricultural yields are much lower than could be achieved if we factor in Moldova's fertile soil.[43] A boost to agricultural output from the DCFTA may provide incentives for more intensive farming and heavier use of fertilisers and other chemicals. The parallel application of standards and/or good agricultural practice in their use will largely determine the resulting size and direction of the environmental impact.
In the forestry sector where output is expected somewhat to decline the key environmental challenge relates to preventing illegal (and excessive) forest exploitation, mainly in the form of illegal logging. To the extent that the DCFTA process may support efforts in Moldova to broaden the size of protected areas (including forests) it may have some positive net environmental effects.

The transport sector is bound to expand strongly following the DCFTA. The trend of a rising number of motor vehicles per capita is likely to accelerate somewhat given overall positive DCFTA effects on household purchasing power and still relatively low number of cars per capita. This will increase environmental burden. This increase can be mitigated if the DCFTA promotes development of cleaner vehicle fleet. For instance, some improvement could be achieved gradually moving to enforcement of environment-related technical standards of cars. Promotion of water and rail transport and public passenger transport in general could be part of the flanking measures.

The CGE model predicts some increase in energy imports and a minimal decline in domestic energy production in Moldova.[44] Environmental effects of energy sector operation may be largely determined by the decision on the fuels used for electricity and heat generation. These are difficult to predict and will likely depend on a range of factors unrelated to the DCFTA. There is a room for substantial energy efficiency improvements at all stages from energy generation till energy consumption. Should the DCFTA be able to better mobilise energy efficiency efforts, its environmental effects transmitted through the energy sector could even become positive.

The DCFTA is expected to have a diverse impact on a range of industrial sectors that may be associated with substantial environmental burden (e.g. decline in output in cement, ceramics, and an increase in chemicals, rubber, plastic and a large increase in primary metals). While it is possible to approximate expected changes in air emissions resulting from such changes (see the quantitative analysis in this section), the impact on water and land pollution, on waste production, biodiversity and other key aspect of environmental performance of Moldova would require a careful case-by-case approach. For instance, while expansion of most sectors will likely lead to higher

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[43] Willems S. and Busuioc, C. 2011. Analysis for European Neighbourhood Policy (ENP) Countries and the Russian Federation of social and economic benefits of enhanced environmental protection – Moldova Country Report.

[44] Some caution is justified in interpretation of these results in particular due to the exclusion of Transnistria from the analysis (owing to lack of data).

demand for water (and intensification of problems with supply-withdrawal balance), technological changes in certain industries may minimise this problem. It is thus not possible to assess the direction of environmental effects stemming from DCFTA and channelled through changes in industrial sectors. A general point to make here is that among factors that matter for these effects one can mention:

- The degree to which the DCFTA will encourage technological change limiting environmental burden.
- The degree to which DCFTA will lead to effective implementation of higher standards concerning various forms of pollution.
- The degree to which DCFTA will prevent relocation of particularly polluting businesses from other countries (EU and non-EU) to Moldova.
- The pace of changes in social preferences towards greener growth as the living standards improve thanks to the DCFTA and associated changes in business practices in certain sectors (towards higher corporate social responsibility) as well as changes in public policies (e.g. in supporting green investments in some sectors).

3.3 Human rights issues

Introduction

In carrying out the Human Rights (HR) impact assessment of the DCFTA with Moldova, we base ourselves on our experience in conducting other sustainability pillars of FTAs in previous studies, the HRIA approach developed methodologically by Walker (2009), and experience in the analysis of Human Rights studies. Our HRIA approach consists of three steps that are closely aligned with the TSIA approach of the DG Trade Handbook (2006). First, we describe the current overall and DCFTA related status of Human Rights in Moldova (i.e. the human rights baseline). Second, we screen for main (overall) potential HR impacts that could occur when this DCFTA would come into effect. Third, we look at the importance of these effects.

In this section we look at the HR effects at the macro-economic level, sectoral effects are addressed in the sectoral chapters (Chapters 6, 7 and 8). In interpreting the analysis of this section, it should be noted that many of the issues relating to the HR situation in Moldova are related to domestic policy and direct impacts from the DCFTA on the situation at large are expected to be limited only. The effects described in this chapter should be interpreted in this context.

The Human Rights landscape in Moldova – the baseline

Moldova borders directly on the European Union (Romania) and has a population of 3.6 million people living in the territory of the country controlled by the recognised government while approximately 600,000 people live in the 'Transdniester Moldovan Republic' (Transnistria) on the Eastern border with Ukraine (see Figure 3.5 below). Transnistria was and is governed through parallel administrative structures.

Moldova has complied with ratification of almost all of the core UN Human Rights Treaties and its Optional Protocols, except the International Convention on the Rights of All Migrant Workers and Members of their Families.[45] Moldova did sign the International Convention on the Rights of Persons with Disabilities but not its Optional Protocol, and also not the Optional Protocol to the International Covenant on Economic, Social and Cultural Rights, which is particularly important in light of the DCFTA discussions. Relevant for the DCFTA discussion, Moldova has also ratified

[45] See full list of ratifications to all the human rights treaties at: http://treaties.un.org/Pages/Treaties.aspx?id=4&subid=A&lang=en Accessed on 26 March 2012.

many of the ILO Conventions concerning human rights (in particular, Conventions 87 and 98 on freedom of association and collective bargaining, Conventions 29 and 105 on elimination of forced and compulsory labour, Conventions 100 and 111 on elimination of discrimination in respect of employment and occupation, Conventions 138 and 182 on abolition of child labour).[46] Among the regional human rights treaties, the Republic of Moldova has ratified the European Convention on the Rights and Fundamental Freedoms and a number of its Protocols, as well as the European Convention for the Prevention of Torture and inhuman or Degrading Treatment or Punishment and two of its Protocols.

There are various on-going partnership projects between the EU and the Republic of Moldova that aim to strengthen protection of human rights in Moldova, like The Eastern Partnership Civil Society Forum (started in June 2009), strengthening legal protection from and raising awareness of discriminatory ill-treatment in the Republic of Moldova, including Transnistria (started in March 2010), rehabilitation of torture victims from Moldova (started also in March 2010), and many others.[47] According to the EU report for the Republic of Moldova on the implementation of the European Neighbourhood Policy in 2010 (2011), there is improvement in the human rights situation in the country. But even though national legislation has been adopted and some national measures taken, further harmonisation with the national law as well as its effective implementation still proves to be challenging. [48]

Human rights challenges are present in Moldova, including Transnistria. The Mobility of citizens is restricted, and arbitrary arrests and unlawful detentions have been reported.[49] One of the most recent mass human rights violations took place in April 2009 following the parliamentary elections. In that period, there were reports of police beatings, arbitrary detention by police and corruption among police and judiciary proved endemic.[50] Since the April 2009 election violence and associated human rights violations, the country has shown improvements but human rights violations are still reported in Moldova. Among most the widespread human rights violations reported recently are torture and other ill-treatment in police detention.[51] Other violations include violation of the right to freedom of expression, lesbian, gay, bisexual and transgender (LGBT) rights,[52] human trafficking,[53], discrimination of the Roma minority, restrictions on the freedom of religion, discrimination in general,[54] child abuse and specific forms of abuse such as forced begging, women rights, violation of the rights of persons with disabilities, workers' rights violations and some others. [55]

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46 See official information on the web-site of the International Labour Organisation, available at: http://www.ilo.org/ilolex/english/docs/declworld.htm Accessed 4 April 2012.

47 More information on various EC projects in the Republic of Moldova are available at: http://eeas.europa.eu/delegations/moldova/projects/overview/index_en.htm Accessed on 4 April 2012.

48 EC Joint Staff Working Paper, Implementation of the European Neighbourhood Policy in 2010. Country report: Republic of Moldova, COM(2011) 303, available at: http://ec.europa.eu/world/enp/pdf/progress2011/sec_11_643_en.pdf Accessed on 29 March 2012.

49 US Department of State (2010) '2010 Human Rights Report: Moldova', Bureau of Democracy, Human Rights and Labor, April 8, 2010, available at: http://www.state.gov/documents/organization/160457.pdf Accessed on 27 March 2012.

50 US Department of State (2011) '2010 Human Rights Report: Moldova', Bureau of Democracy, Human Rights and Labor, April 8, 2011, available at: http://www.state.gov/documents/organization/160457.pdf Accessed on 27 March 2012.

51 Amnesty International Annual Country Report on Moldova, 2011, available at: http://www.amnesty.org/en/region/moldova/report-2011 Accessed on 28 March 2012.

52 Amnesty International, Moldova: Banning LGBTI demonstrations created a dangerous climate, 2 Match 2012, available at: http://www.unhcr.org/refworld/docid/4f55f8802.html Accessed on 29 March 2012.

53 United States Department of State, 2011 Trafficking in Persons Report –Moldova, 27 June 2011, available at: http://www.unhcr.org/refworld/docid/4e12ee5e3c.html Accessed on 28 March 2012.

54 UN News Service, Moldova must work harder to end discrimination, says UN rights chief, 4 November 2011, available at: http://www.unhcr.org/refworld/docid/4eb923142.html Accessed on 28 March 2012.

55 US Department of State (2010) '2010 Human Rights Report: Moldova', Bureau of Democracy, Human Rights and Labor, April 8, 2010, available at: http://www.state.gov/documents/organization/160457.pdf Accessed on 27 March 2012.

Figure 3.5 Moldova, including Transnistria (the purple section along the Ukrainian border)

Source: European Commission (2010)

Table 3.6 below shows an overview of the HR situation in Moldova at present, with specific view on the current situation in the human rights issues that show limited or no development.

Table 3.6 Human rights situation in Moldova

Human Rights issue	Status Moldova (2009-2010)
Discrimination	Comprehensive legislation has yet to be adopted. Roma people are still facing discriminatory treatment. Inadequate resources hamper the National Action Plan to support the Roma. Also HIV/AIDS is stigmatised and people are discriminated against. No progress made in ratifying the European Charter for Regional or Minority Languages.
Freedom of religion	No progress reported on dealing with restrictions on Freedom of religion. Some Muslim religious communities were prevented from being registered, an Orthodox community was dismantled, etc.
Trafficking of human beings and forced labour	The National Referral System for Assistance and Protection to Victims and Potential Victims of Trafficking was extended in 2009 and is now active in 29 districts including the country's two largest cities. The problem is still very acute however, and not much progress has been noted so far since the extension.
Ill-treatment	Ill-treatment by policy and state of police detention and prison facilities remain an area for concern. Centre for Human Rights needs to be significantly strengthened. Area of penal reform shows positive developments.
Protection of personal data	Additional protocol to the 1981 CoE Convention on Protection of Individuals w.r.t. Automatic Processing of Personal Data still has to be ratified; further legal alignment of existing laws necessary.
Freedom of expression and media pluralism	Very bad in the first half of 2009, but towards the end of 2009, the Audiovisual Code was amended, but issues here remain (e.g. problems for opposition party TV channel)
Civil society	Inclusion of civil society in decision making process and dialogue with civil society increased but not yet sufficient to ensure proper protection of the population.
Gender equality	Though progress is made in theory, women continue to face discrimination in practice (unemployment, stereotypes) – the protective infrastructure for victims of

Human Rights issue	Status Moldova (2009-2010)
	domestic violence remained insufficient (according to the UN).
Children's rights	Although some progress has been made following UNCRC recommendations on corporal punishment, access of vulnerable groups to key services, abuse and neglect of children, child labour, and treatment of children with disabilities, many problems remain with discrimination of the Roma children, their right to access health system, their right to adequate living, the right to water.
Trade union's rights and core labour standards	Amendments to Labour Code are still under review; the country continues to implement the 'Decent Work' country programme 2008-2011 (ILO) leading to better labour statistics and functioning of the national commission for collective consultations and bargaining.

Sources: US Department of State (2010) and European Commission (2010) – own distillation of main issues.

Various of the issues stipulated here, defining the HR landscape, have been noted and put forward by the EU in its Neighbourhood or Eastern Partnership programmes and remain areas for further discussion and development. Since 2010, the EU is negotiating with Moldova also about an Association Agreement in a broader sense. Insofar the mentioned HR issues are not covered within the DCFTA, they may be covered in these broader negotiations.

Screening for main HR impacts from the EU-Moldova DCFTA

Screening for the main potential HR effects of the EU-Moldova DCFTA implies comparing the current HR situation before signing the DCFTA (see previous section) to the likely situation afterwards based on predicted DCFTA impacts. The information sources we use for this screening are the following:

- Information provided above in the HR landscape for Moldova – HR treaties that Moldova has or has not signed, status of implementation, and specific HR issues relevant for Moldova.
- The outcomes of the Computable General Equilibrium (CGE) model that provide information on the main macro-economic changes that stem from the EU-Moldova DCFTA and the results from the social analysis. The predicted changes serve as the basis for potential HR effects.
- An online survey conducted among key stakeholders. Key stakeholders were asked to comment on the current HR situation in Moldova (main challenges), and expected effects for HR in Moldova from the DCFTA.
- Discussions with local HR experts and HR-related NGOs in Moldova on specific issues.

The main HR impacts found to stem from trade agreements are summarised by Walker (2009). [56] These impacts are used and adapted in Table 3.7 below to give an overall assessment of the potential HR impact of the EU-Moldova DCFTA. Table 3.7 combines the information from the above sources with the impacts and specifies the expected significance, expressed in terms of:

- The extent of HR effects (i.e. HR stress) for each of these expected impacts.
- The direction of changes compared to the baseline of each of these expected impacts.
- The nature, magnitude, geographic extent, duration and reversibility of changes per impact.

Analysis of the results

The overall HR effects of the DCFTA has positive and negative elements. Clearly, the expected positive effects on HR occur through the fact that the DCFTA is expected to raise national income in Moldova (3.4 percent), exports (16.2 percent) and has a positive effect on wages (4.8 percent) which in turn may increase government capacity to ensure HR. Moreover, wages are expected to

[56] Walker S., (2009), '*The Future of Human Rights Impact Assessments of Trade Agreements',* Intersentia, Antwerp, Oxford, Portland 2009, pp. 61-86.

go up by 4.8 percent on average, implying that – with dropping overall price levels – disposable incomes to Moldovan citizens increase, which is a positive HR impact. A challenge here is that also income inequality is expected to increase and that the poorest parts of the population may see a loss in disposable income. Positive is the EU-Moldova approach to make the FTA an encompassing DCFTA (promoting broader HR values also), and the fact that market access to third countries also increases with positive economic impacts on people's livelihoods in Moldova.

A potential HR risk could be related to a race-to-the-bottom regarding labour standards in the face of increased competitive pressure following signing of the DCFTA. Nonetheless, this will most likely be partly prevented by specific DCFTA clauses not allowing competition by lowering social standards. Moreover, this risk could be mitigated by Moldovan policies, e.g. depending on the degree to which Moldova has ratified the core HR treaties. In the latter respect, more could be done, especially in the field of ratifying and implementing the Optional Protocols on the International Convention on the Rights of Persons with Disabilities and the Optional Protocol to the International Covenant on Economic, Social and Cultural Rights. If no flanking measures are implemented parallel to this DCFTA, labour standards could come under pressure. The issue of Transnistria is an important one from the HR perspective. The internal barriers may prevent: the projected gains of a DCFTA to also accrue to the citizens living in Transnistria.

Table 3.7 Screening of overall EU-Moldova DCFTA Human Rights effects

Categories of impact of DCFTA on HR overall	Potential Human Rights effects	Significance: HR stress, Direction of change compared to baseline, Nature, magnitude, geographical extent, duration and reversibility of changes
Trade law complements HR law • ***Effect: positive*** • ***Size effect: small***	The EU does approach FTAs as part of a constitutional framework to support democracy, political stability and respect for HR, hence the name ***DC***FTA. This implies that human rights are in a broader sense also looked at, alongside the pure trade-related FTA. We expect therefore a positive effect of the DCFTA on human rights.	A small positive effect of the 'DC' element of the FTA is expected because of the constitutional framework the EC employs in these negotiations. The geographical extent may fall short of Transnistria where *de facto* the governance situation is different and the DCFTA may penetrate less easily. The chance for reversibility of this change is low as it will be enshrined in the DCFTA as well as – in part – in national law in Moldova.
DCFTA promotes growth and resources for realization of HR • ***Effect: positive*** • ***Size effect: medium – strong***	The CGE model predicts growth in national income for Moldova (€ 142 mln in the long run), and growth in Moldovan exports (16.2 percent). Especially the reduction of barriers to food exports (SPS) and to a lesser extent manufactured products (TBT) contribute to these effects. This implies that the DCFTA may lead to more (efficient) production, which is good for firms, government tax revenues, and those living in poverty. Also wages are expected to rise by 4.8 percent while overall price levels are foreseen to drop by 1.3 percent. The DCFTA has the effect of improving living standards of those living in poverty (the human right to an adequate standard of living, the right to adequate food). However, there is a risk of increased inequality associated with relatively less benefits for the poor as compared to the more affluent people in society. Extreme poverty may slightly increase, while overall absolute poverty is likely to slightly decline.	This may be a medium to strong positive effect of the DCFTA due to the strength of the macro-economic income and export growth effects. The separate governance structure of Transnistria may limit the DCFTA effect in this region. The effects are predicted to be long-run effects so duration is long-term and reversibility is low.
Increased competitive pressure as a result of the DCFTA in some sectors can undermine implementation of HR in practice • ***Effect: negative*** • ***Size effect: small***	More openness following the DCFTA is expected to lead to more competition, also for those domestic sectors unable to compete. Prices are predicted to go down because of the DCFTA. . The DCFTA is thus likely to include a clause to prevent a lowering of labour standards. The combined competition-price effect is not conclusive as it depends on what effect is stronger. IPR aspects have not been explicitly modelled, however, and could create un upward pressure on prices. We will have to investigate the effects of the market approach in practice through engaging with civil society and key stakeholders. Commercial and industrial interests are allowed to become more powerful due to the	This may be an issue, depending on how the DCFTA is flanked by mitigating policy measures. For example, vulnerable groups may need protection from competition and cultural heritage needs to be protected. Prices seem to reduce HR stress overall, but sector-specific deviations are possible. The geographical extent of this measure is very broad. Competition may touch upon all sectors in society and affect both internationally oriented and domestic ones.

Categories of impact of DCFTA on HR overall	Potential Human Rights effects	Significance: HR stress, Direction of change compared to baseline, Nature, magnitude, geographical extent, duration and reversibility of changes
	DCFTA as investments are liberalized. This may have a divisive effect for some sectors (e.g. health care). The CGE model shows that wages on average are going up in Moldova by 4.8 percent. This implies that workers leave sectors for better wages in other sectors. This implies that declining sectors contract because workers choose to leave that sector – this – in turn – implies that HR of those workers are not violated. This is also the case for Moldova in the short run. One caveat here is that the CGE model assumes labour mobility between sectors, which may in reality be much harder than the model suggests, especially for the lower educated and poor, thus putting more pressure on the human right to work.	Market forces introduce efficiency, not only in private but also in (semi-) public sectors. The pull-effect on average dominates as is shown by rising wages, which implies that workers move away from declining sectors to growing sectors because they can earn higher wages – at least according to the model. Labour mobility is a strong assumption however, potentially giving rise to HR violations.
DCFTA can lead to 'race-to-the-bottom' in HR protection to remain competitive • ***Effect: negative*** • ***Size effect: small-medium***	The DC-part in the FTA emphasizes the social and HR impacts of the FTA – ensuring labour standards are adhered to and even improved as part of the DCFTA. Moldova has not ratified the Optional Protocol to the International Covenant on Economic, Social and Cultural Rights which would have provided a stronger legal environment to combat this potential race-to-the-bottom. Implementation remains in any case a challenge.	Changes compared to the baseline are small and seem to indicate wages are going up – this however does not state how labour conditions are affected. The geographical coverage is nation-wide, but especially strong in geographical areas where competitive pressures on sectors are larger.
DCFTA affects the use of trade measures to improve enjoyment of HR abroad • ***Effect: positive*** • ***Size effect: small***	Moldova has enjoyed ATP so far. The DCFTA is therefore not expected to affect Moldova in the way that the EU can use the DCFTA to push Moldova for improving its HR situation. From the CGE model it becomes clear that for example compared to and at the expense of Turkey – a country that has enjoyed a strong preference through a Customs Union with the EU – Moldova gains. The CGE model includes another effect here: the MFN spill-over effect – allowing Moldovan exporters access to other countries as well when standards are upped to EU-level. This gives another positive boost to incomes and employment possibilities in Moldova, improving the right to an adequate standard of living.	Small effect in a positive way due to the fact that the DCFTA is used to a small extent to put pressure on Moldova to adhere to HR standards. Catching up a relative lag with countries that get better market access to the EU market and due to getting higher market access to third markets as well, which leads to faster growth, income gains and employment possibilities.
Enforcement of DCFTA stronger than enforcement of HR law – DCFTA a higher	The DCFTA approach seems to – overall – support HR law (especially through the '***DC***' addition) and thus enforcement of DCFTA helps enforcing HR law. There are some possible exceptions that are addressed in this study, like the sectoral HR effects when economic efficiency is pursued (i.e. some	This impact may be small since DCFTA and HR law seem to work in the same direction. The difference comes when some workers or citizens lose from the DCFTA while the large majority gains.

Categories of impact of DCFTA on HR overall	Potential Human Rights effects	Significance: HR stress, Direction of change compared to baseline, Nature, magnitude, geographical extent, duration and reversibility of changes
priority • ***Effect: positive*** • ***Size effect: small***	sectors and workers in those sectors lose) or the effects of the liberalisation of investment climate that could lead to lower prices but also to more corruption.	
Lack of respect for the right to take part in conduct of public affairs in the processes regarding negotiation and implementation of the DCFTA in Moldova • ***Effect: undetermined*** • ***Size effect: medium***	In several processes surrounding FTA negotiation and implementation, problems in engaging civil society into the process have been observed.. That is a risk also here, especially since in Moldova the civil society landscape is not very strong (see inception report). The DCFTA is likely to emphasise and promote inclusion of civil society in policy choices. Yet on the other hand, with the DCFTA leading to more efficiency – this being one of the goals of the DCFTA – other considerations might play 2nd fiddle – which might in particular affect those less vocal like minorities, small-scale domestic producers of produce, or women in employment. Attention is paid by the DCFTA negotiators to be as inclusive as possible, and this TSIA study takes special precautions to ensure participation. Nonetheless participation is a crucial fundamental right that cannot be taken for granted.	Medium potential negative impact if the process that started since 27 February is not properly monitored and inclusion pushed – if they are the expected impact is positive. Caution is needed here as especially the vulnerable groups (e.g. minorities, small-scale domestic producers, women) may suffer if not properly engaged and listened to. This effect would apply to the whole country, also in Transnistria. The effects may be temporary and thus reversible on other issues.

4 Overview of consultations

4.1 Stakeholder consultation activities

At the start of the study we developed a stakeholder consultation plan for involving relevant stakeholders; this plan has been successfully implemented throughout the study. The main inputs received from stakeholders in the process are summarised in the next section. Here we summarise the implementation of the five main activities included in our stakeholder consultation plan.

1) Electronic consultation and documentation

The electronic interaction with stakeholders constitutes an important base for communication and has been built around a dedicated TSIA website for Moldova and an email address. The website allows for both dissemination of information on the study and for collection of feedback from stakeholders located anywhere. Some vital functions of the website include:

- a discussion forum;
- feedback forms;
- links to websites of main stakeholders in the study;
- a collection of relevant documents on the background of the study and other relevant information and documentation.

Through the website, the Ecorys-CASE consortium receives feedback in order to validate results, obtain the right focus and place results in a proper perspective. In addition, other ways of electronic consultation are used, such as the dissemination of an online newsletter, and a web-based survey. As of 16 August 2012, the number of hits on the website amounted to 2715.

The website for the TSIA of Moldova can be found at: http://tsia.ecorys.com/moldova.
The dedicated email address is: tsiamoldova@ecorys.com.

2) Public meetings

In order to engage in interactive discussions and obtain input from civil society in the EU, we organise two public meetings in Brussels. The public meetings are used to present the methodology, (interim and final) results of the study, and recommendations.
The first public meeting was held on 16 February 2012 for a presentation and discussion of the draft Inception report. The second public meeting was held on14 September 2012, for a presentation and discussion of the draft final report.

3) Workshops in Moldova

In addition to encouraging Moldovan stakeholders to make use of the TSIA website, two local workshops we organised in Moldova – one in Chisinau (7th of June) and one in Tiraspol (5th of June). At these workshops the interim technical report was presented and discussed, as well as issues relevant for the final report. Some 25 to 40 stakeholders participated in each workshop.

4) Other relevant conferences and workshops

Linking up to other conferences and workshops relevant to the study is another important ingredient of the stakeholder consultation plan. We attended a meeting of the European Economic and Social Committee (EESC) in Moldova on 22 March 2012, and one in Brussels on 4 July 2012.

5) Personal interviews with individual representatives and/or targeted surveys

A last crucial consultation activity concerns in-depth face-to-face interviews on specific topics of the study with key stakeholders or independent experts. These interviews were mainly held in the margins of the TSIA workshop and in the second phase of the study for the sectoral analyses. At the start of the study we also set up a small web-based survey to collect information (opinions, background material, relevant organisations) on the potential sustainability impact of the DCFTA, although the response rate was low when it was closed in July 2012 (less than 10 percent).

4.2 Implementation of stakeholder consultation plan – inputs from civil society

In this section we present a short overview of the main comments received from stakeholders and our response to them. A complete overview of all comments received can be found in the audit trails in Annex C.

Main points raised	Incorporations of comments in thee report(s)
Statistics only capture the formal economy, while there is also a large informal economy in both countries	The reports are careful in interpretation of the statistics and there is additional qualitative analysis. The analysis through bottom-up household surveys will capture part of the issue on the informal economy.
The additional quantitative analysis should have a broader focus, rather than only air pollution (environmental) and income (social) aspects. A suggestion was made to cover a broader range of aspects in the analysis.	The quantitative effect on environment indeed focuses on air pollution, but in the qualitative analysis other effects are taken into account as well.
Regarding the role of SPS issues: ability of Moldova to meet standards, especially in relation 1) food safety and 2) illegal imports (re-exports via these “new” entrances at EU external borders, i.e. substandard products entering through the ‘backdoor’ of Europe)?	This has been addressed in the in-depth analysis on SPS.
The involvement of and cooperation with the European Economic and Social Committee has been encouraged	We have been in touch and attended some of their events the results of which are reflected in the report.
The importance of conducting face-to-face interviews and providing translated texts for local stakeholders was emphasised.	This has been done and the results are reflected in the report.
What is the distinction between short-term and long term effects?	The short-run are the immediate effect, while in the long run capital is not assumed fixed. This has been better explained in the methodological chapter.
Does the study take into account expected changes in the CAP and other policies?	The study takes an incremental approach, i.e. it looks at the situation with or without the DCFTA, without taken into account changes in other policy areas. This has been better explained in the executive summary and methodological chapter.
Difference between economic structures in Transnistria and rest of Moldova	A separate analysis for Transnistria is beyond the scope of this project, but where possible we have integrated relevant information into our results .
The model shows relocation between sectors. This	There is indeed relocation between sectors, which is

Main points raised	Incorporations of comments in thee report(s)
can be especially an issue in agriculture.	taken into account in the social analysis and also policy recommendations have been made in this context.
The report mentions that the DCFTA may have some positively effect on the implementation of international conventions related to environment. This is rather unlikely and one should be sceptical on real progress in implementation.	The formulation in the report makes it clear that ratification of conventions per se does not guarantee any real progress. Implementation is a lengthy and costly process. By maintaining the incentives for Moldova to be active in the area of environmental conventions DCFTA stands chances to help building domestic capacity, know-how etc. to gradually make progress in the area.
Fiscal revenues from customs tariffs will decrease significantly	from a fiscal perspective its mostly the overall revenues that matter not incomes from any given source, e.g. although tariff revenues could decrease income tax revenues may increase. This is included in the human rights analysis.

5 Screening and scoping

5.1 Screening criteria and indicators

The sectors or horizontal cross cutting issues that are expected to experience a significant change as a result of the DCFTA are studied in detail in the next chapters, so as to uncover the dynamics of this change and understand the impacts and wider implications of potential outcomes (of the DCFTA) in the sectors concerned.

The selection of sectors and horizontal issues for in-depth study was done through the screening and scoping exercise which is described in detail in the Interim Technical Report. The following four main criteria were used in doing so:

1. initial importance for the economy;
2. expected economic impact of the DCFTA;
3. expected social, environmental and human rights impact;
4. stakeholder issues of special importance.

5.2 Sector and issues selection

For Moldova, in total two sectors were selected on the basis of the four screening criteria (see Table 5.1) and in consultation with the Steering Committee: 1) **grains and crops** and 2) **textiles and clothing**. In addition, one horizontal issue was selected for the in-depth analysis: **sanitary and phytosanitary measures**.

Table 5.1 Screening and selection of sectors

Sectors	Cr 1: Initial importance	Cr 2: Econo-mic impact	Cr 3: Social/ Environmental	Cr 4: Civil Society
Animal products	✓			
Dairy products				
Grains and Crops	✓	✓	✓	
Livestock and Meat Products		✓	✓	✓
Other crops		✓	✓	
Other processed food	✓	✓		✓
Sugar		✓		
Veg, fruits, nuts, oilseeds	✓		✓	
Vegetables oils and fats				
Energy			✓	
Fish products				
Forestry products			✓	
Other minerals				
Primary metals		✓	✓	
Beverages and tobacco	✓	✓		
Ceramics, cement, etc.	✓		✓	
Chemicals, rubber, plastics				✓
Electronics, computers		✓		
Fabricated metals				
Motor vehicles		✓		

Sectors	Cr 1: Initial importance	Cr 2: Econo-mic impact	Cr 3: Social/ Environmental	Cr 4: Civil Society
other machinery and equipment		✓		
Other manufacturing		✓	✓	
Petrochemicals				
Textiles and Clothing	✓	✓	✓	
Wood, paper, publishing				
Air transport		✓		
Business and ICT	✓			
Communications	✓			
Construction	✓			
Finance	✓			
Other transport	✓			
Personal and recreational services				
Public and other services	✓			
Trade	✓			
Utilities	✓		✓	
Water transport				

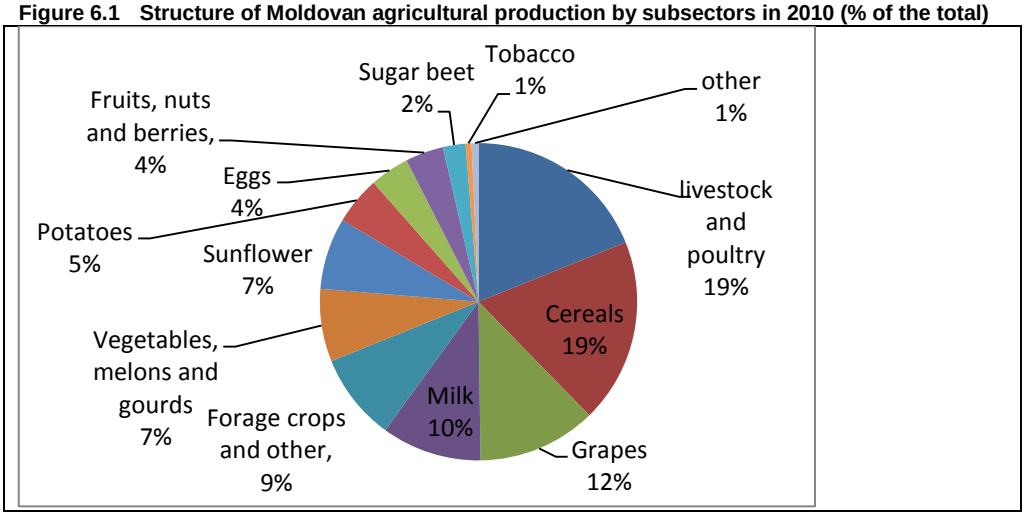
In the following chapters we will take a closer look at expected changes in these two sectors and the issue of SPS measures in the context of the DCFTA negotiations and implementation.

6 Detailed analysis: grains and crops

6.1 The grains and crops sector in Moldova

The grains and crops (or cereals) sector comprises of a few major agricultural commodities including rice, wheat, rye, barley, oats, maize, buckwheat, millet and some other cereals. Cereals production accounts for just below 20% of total agricultural output in Moldova on the par with animal production. Figure 6.1 provides an overview of all agricultural output by sub-sector[57]. GTAP data indicate that the sector has around 2.4% share in economy-wide output, 3.2% share in total value added, and 6.9% and 0.3% shares in, respectively unskilled and skilled employment.

Figure 6.1 Structure of Moldovan agricultural production by subsectors in 2010 (% of the total)



Source: National Bureau of Statistics, Moldova.

Dominant crops within the cereals sector are wheat, maize and barley (Table 6.1). Between 2005-2010, wheat and maize together accounted for more than half of total sown area in Moldova (23% and 30% respectively)[58]. Production levels have fluctuated substantially from year to year, mainly reflecting changing weather conditions.

Table 6.1 Production of Cereals crops in Moldova, 2005-2010, (thousand tonnes)

	2005	2006	2007	2008	2009	2010	2011	*2012F*
Grain maize	1,492	1,322	363	1,479	1,141	1,420	1,468	*1,551*
Wheat	1,057	691	406	1286	737	744	787	*684*
Barley	212	200	115	353	261	208	n.a.	n.a.
Oats	6	6	1	4	1	3	n.a.	n.a.
Buckwheat	1	1	0	0	0	0	n.a.	n.a.
Other cereals	6	3	2	10	8	10	n.a.	n.a.

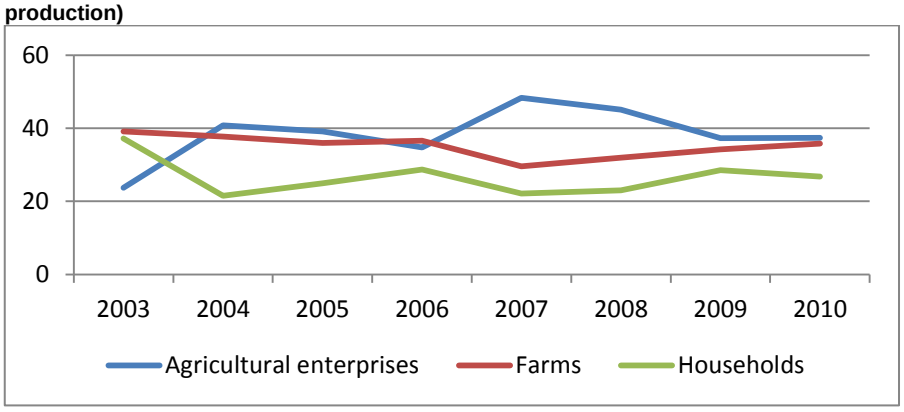
Source : Source: National Bureau of Statistics, Moldova (till 2010), MAFI – 2011 and forecast for 2012

[57] When BNS data are provided, they include "cereals and leguminous crops" which includes: wheat, barley, oats, buckwheat, leguminous crops, grain maize, and other cereals.

[58] In Transnistria cereal crops also dominate in the total sown area. However, total Transnistrian output in this sector is very small compared to Moldova.

One can distinguish three main categories of cereals producers in Moldova: Agricultural enterprises, individual farms and households[59]. Approximately 40% of the sector's output (on average) is produced by agricultural enterprises, 34% is produced by farms and about 26% by households (Figure 6.2 and Table 6.2). Looking at the shares of different types of producers at the crop level one can observe that maize is predominantly produced by individual farms and households. Yields are very similar across the three categories of producers. It should be noted that the large number of individual producers are subsistence farmers with little or no link to the market.

Figure 6.2 Structure of Cereals and Leguminous Production, in all categories of producers (% of total production)



Source: National Bureau of Statistics, Moldova

Table 6.2 Cereals Sown Area , by type of producers, thousand hectares, 2010

	Agricultural enterprises	Individual farms and households
Moldova excl. Transnistria		
- wheat (winter and spring)	232	96
- barley (winter and spring)	87	45
- grain maize	72	344
Transnistria (all cereals and leguminous crops combined)	70	n/a

Source: National Bureau of Statistics, Moldova. Transnistrian data are from 2011: Yearly Statistical Book of Transnistrian region.

In 2010, about 3,623 enterprises and farms were involved in agricultural production using about 1 million hectares of land. About half of them were involved in cereals production: 1,950 agricultural enterprises and farms were producing wheat, and just below 1,600 were producing maize and barley.

There are only a small number of large traders and especially exporters of these crops. Available data for 2012 suggest that only 9 companies are involved in exports of cereals in 2012 (including two from the Transnistrian region)[60].

[59] The classification comes from the National Bureau of Statistics and respective definitions are as follows: agricultural enterprises category includes all enterprises, organizations, associations producing agricultural products and enterprises serving agriculture, and also enterprises with the agriculture as the secondary activity. Households include individual auxiliary households, horticultural associations and privatized horticultural plots. Farms refer to agricultural activity of the persons who were given land parcels in the counterpart of shares of equivalent land.

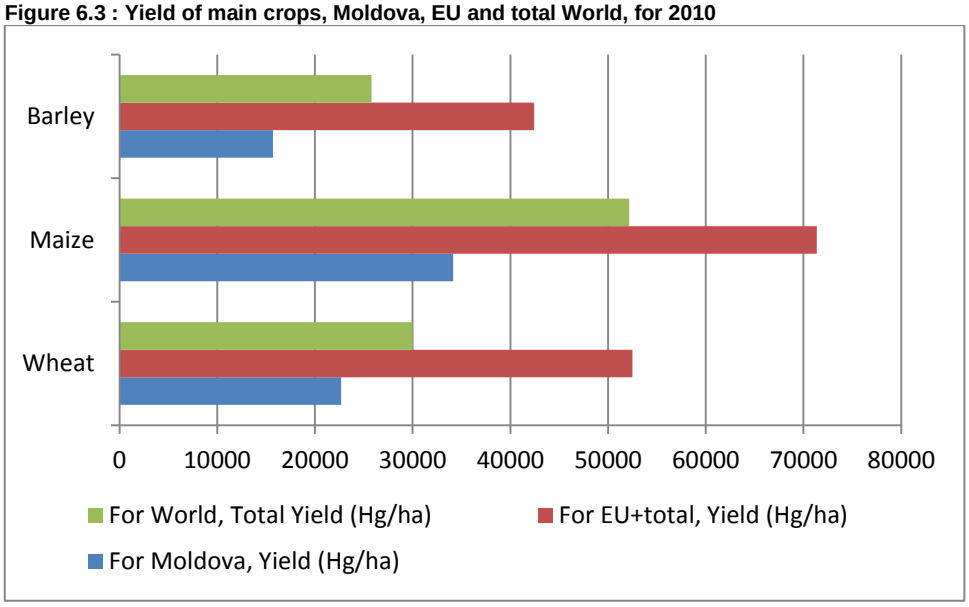
[60] Data are available at the Chamber of Licence website (www.licentiere.gov.md).

Cereal production is spread across the whole territory of Moldova, but especially concentrated in the northern and southern parts of the country.

There are no official data on investments in the sector. Similarly, there are no data concerning employment in cereal production. The only available employment data are for the entire agriculture sector (together with forestry and fishery). Employment in the agricultural sector as a whole has been declining in the last decade. In particular, employment in agricultural enterprises, declaring agriculture as their main activity, dropped from around 140,000 in 2003 to around 60,000 in 2010. Foreign labour migration was an important mode of labour reallocation outside the agricultural sector, i.e. rather than moving to urban areas and/or industry, many young rural inhabitants moved abroad for work.

Productivity in the sector continues to be low. This is mainly due to employment overhang, land fragmentation (an average farm in Moldova is 2.2 ha; average size of land cultivated by agricultural enterprises is 248 ha), and limited use of agricultural chemicals (in average 22 kg/sown hectare). Yields are below half of the EU average (Figure 6.3).

Figure 6.3 : Yield of main crops, Moldova, EU and total World, for 2010



Source: FAOSTAT.

In 2010, total Moldovan exports of grains and crops reached USD 68 million or 7.3% of total exports[61]. Top exports are wheat (other than durum), maize and barley. Other products are exported in minimal quantities or not exported at all. There is substantial variation in export patterns from year to year, reflecting weather-induced substantial variation in production levels and volatile global markets in these agricultural commodities. For instance exports of wheat (number one export product in 2010) decreased by half between 2010 and 2011 while maize (other than seed) exports increased threefold making it the top export product in 2011.

The EU accounts for more than half of total Moldovan exports in the sector or USD 37 million in 2010, rising to USD 48 million in 2011 or 66% of the total. In general the last few years saw a particularly dynamic growth of Moldovan exports to the EU with maize becoming an increasingly important product. EU import data are broadly consistent with the above picture with levels somewhat lower than reported by the Moldovan side but confirming the increase of EU cereals

[61] The data come from Comtrade database setting Moldova as a reporting country. Sector definition according to GTAP.

imports from Moldova (rising from below USD 4 million in 2005 to USD 12 million in 2007, USD 23 million in 2010 and USD 44 million in 2011).

Total Moldovan 2010 imports of products in this sector were minimal at USD 1.5 million consisting mainly of maize (corn), seed and rice (in 2011 also buckwheat). The EU was a relatively important source of these limited Moldovan imports.

6.2 Market access issues

6.2.1 The situation in Moldova

Traditional grain-crops (wheat, maize, barley, ray and oats) have always covered the greatest part of Moldova plough-land. The cereals production serves as a key input for animal production and thus plays an important role, both directly and indirectly in the agricultural sector as a whole and in turn the Moldovan economy at large.

An example of the importance of the sector is related to the linkage of wheat prices and the retail bread price that matters for the overall inflation rate and especially affects the poorest households. With more volatility of global wheat prices in recent years this has become a serious issue. In February 2011 Moldova introduced an export ban on wheat in an attempt to limit a surge in bread prices in the domestic market leading to what the prime minister at the time described as a 'panic' that had taken hold of the population[62]. The ban was lifted in May 2011, following inter alia pressure from IMF.

Sanitary and phytosanitary measures are important for the sector, particularly as it relates to exports to the EU. The cereals sector is subject to several authorisation and certification procedures for the placement of the goods both on domestic and export markets. SPS measures are discussed in more detail in chapter 8. Currently, SPS measures are not found to be among major barriers to export to the EU.

Access to the Moldovan market for EU grains and crops appears to be fairly easy at present. Following sector wide reforms introduced to streamline and simplify export and import procedures, several earlier restrictions were eliminated including e.g. the abolition of import licensing. Remaining non-tariff restrictions pertain to the imports of agricultural chemicals, i.e. an important input for cereals production.

The DCFTA will likely bring an end to Moldovan customs tariff for products in this sector. In 2011 applied tariffs ranged between 0% for durum wheat, rice and rye; 10% for other wheat, barley and oats and 15% for buckwheat and other cereals (Table 6.3).

Table 6.3 Applied Moldovan tariff rates for cereal crops (2011), %

HS code	Description	Applied import tariff
100110	Durum wheat	0.0
100190	Other	10.0
100200	Rye	0.0
100300	Barley	10.0
100400	Oats	10.0

[62] See http://www.rferl.org/content/article/2295792.html, accessed 4 August 2012.

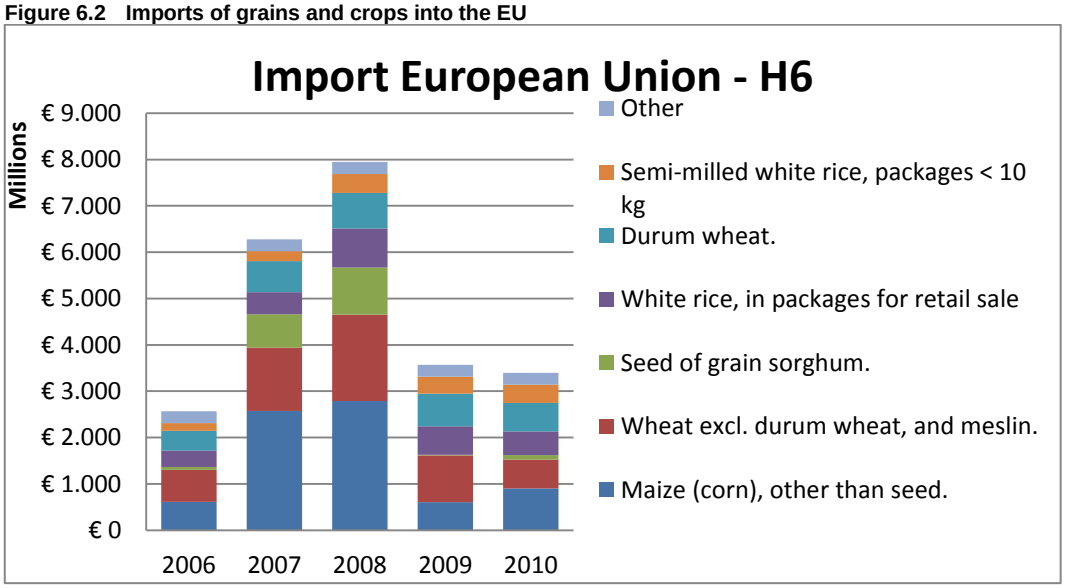
HS code	Description	Applied import tariff
100510	Seed corn (maize)	10.0
100610	Rice in the husk (paddy or rough)	0.0
100620	Husked (brown) rice	0.0
100700	Grain sorghum	5.0
100810	Buckwheat	15.0
100820	Millet	15.0
100830	Canary seed	15.0
100890	Other cereals	15.0

Source: WTO, Integrated Database (IDB) notifications.

6.2.2 EU market access

In 2010 the European Union imported USD 3.470 billion worth of grains and crops, with wheat and maize accounting for a little over 60% of total grain imports. Most of the EU's maize originates from South America, Brazil and Argentina traditionally being the biggest exporters. The United States and Canada are responsible for the bulk of wheat imports and are followed by CIS members. The import share of Moldova has shown a growing trend.

Figure 6.2 Imports of grains and crops into the EU



Source: own calculations with Comtrade data

Sanitary & Phytosanitary Standards for non-animal food items

The Sanitary and Phytosanitary standards set by the EU cover the entire process "from farm to fork"[63] and are described in Directives on the following topics: General Food Law; [64]Food hygiene; [65]Official Inspections and Controls.[66]

Individual countries might have additional rules.

Efforts are being made to harmonise health claims with regard to substances and chemicals in food products within the EU. Until this process is complete however, separate approval for imports by Member State is necessary for products containing substances not yet harmonised at the EU level.

[63] EU Sanitary and Phytosanitary Standards - Ella STRICKLAND, 30 November 2010
[64] Regulation (EC) No 178/2002
[65] Regulation (EC) No 852/2004 for all food and feed
[66] Regulation (EC) No 882/2004

For foods of non-animal origin, the importer is liable and the obligations are shared between the "Food business operators (FBO), importers and the competent Authorities in EU Member States and Third Countries" [67] Importing companies need to meet the administrative pre-requisites in order to obtain an import license[68], before entering into the import procedure (different for non-animal/animal). The import procedure consists of three health requirements[69]:

1. Public Health Requirements: Food safety standards, general hygiene provisions, application of HACCP principles, product-specific requirements.
2. Plant Health Requirements: Compliance/equivalence with EU phytosanitary requirements all plants and some plant products[70] like seeds, need phytosanitary certification.
3. Other Health Requirements: Contaminants/residues for pesticides, additives, novel foods.

Imports need to enter the EU via a Designated Point of Entry (DPE), but unlike products of animal origin, there is no need for the products to be on a list of approved countries or to pre-notify the authorities upon arrival. Some plant products (i.e. seeds) will undergo identity, documentary and physical checks. Depending on the risk level of the goods shipped, further official controls can be imposed.

While detailed information is not available we have not identified EU SPS measures as an important obstacle for Moldovan cereal exports at present.

Other trade measures applicable to cereal crops

Standards have also been set for packaging and packaging waste[71] and specifically for the use of wood as a packaging material.[72] Most of cereal products are subject to tariffs and quotas[73] Under the ATP regime wheat, barley and maize are among a few products for which tariff rate quotas apply. The quotas have been a binding constraint at some points in recent years. The DCFTA will likely bring an end to the TRQ system. Recently, the 2011 ATP Regulation has increased the size of TRQs so that by 2015 (current time horizon of the Regulation) they will more than double compared to the 2010 level[74].

Companies that export goods from outside the European Union may require a CAP import licence in order to manage the quota levels. [75]

6.3 Impact assessment grains and crops sector Moldova

This section presents a detailed impact assessment of the DCFTA, starting with the baseline for the grains and crops sector, combined with quantitative model outputs, and based on further literature review, causal chain analysis and interviews.

[67] EU Sanitary and Phytosanitary Standards - Ella STRICKLAND, 30 November 2010
[68] EU Sanitary and Phytosanitary Standards - Ella STRICKLAND, 30 November 2010
[69] EU Sanitary and Phytosanitary Standards - Ella STRICKLAND, 30 November 2010
[70] Definition of plants & plant products: http://ec.europa.eu/food/plant/organisms/index_en.htm
[71] Directive (EC) 94-62
[72] Directive (EC) 2000-29
[73] Integrated Tariff of the European Communities (TARIC)
[74] Regulation (EU) No 581/2011 of The European Parliament And of The Council of 8 June 2011 amending Council Regulation (EC) No 55/2008 introducing autonomous trade preferences for the Republic of Moldova
[75] http://www.businesslink.gov.uk/bdotg/action/detail?itemId=1078112824&type=RESOURCES 14/08/2011

6.3.1 *Summarised results obtained in the overall analysis for grains and crops*

The CGE model simulations of the DCFTA scenario predict quite significant increases in output of the grains and crops sector with associated employment gains (Table 6.3). This represents an important effect from the perspective of the whole economy given the large initial (baseline) size of the sector in terms of value added and (less skilled) employment.

Foreign trade in the sector is expected to see a very strong boost, with exports rising by around 37% and imports by about 33%. This would further increase Moldova's trade surplus in this sector. Furthermore, this sector is expected to see one of the largest gains in absolute number of new jobs for unskilled workers. These results to a substantial degree materialise already in the short run although long run effects (i.e. after the adjustment of capital in the sector) are still slightly stronger (Table 6.4).

An analysis of forces driving these results reveals that they mostly relate to reduction of tariffs, while non-tariff measures (mainly differences in phytosanitary standards) have an impact close to zero (even a weak negative influence on sectors' output in the long run) (Table 6.5). Specifically, given the current regime of autonomous trade preferences granted by the EU to Moldova that has tariff rate quotas for wheat, barley and maize the projected effects are mostly related to abolishing of these quotas.

Table 6.4 Summary of CGE modelling results for the grains and crops sector

Share of total value added baseline value	Value added % change (LR)	Output % change (LR)	Exports % change (LR)	Imports % change (LR)
3.8	7	8	37	33
Less skilled employment		**More skilled employment**		
Baseline (% of total employment)	**% change (LR)**	**Baseline (% of total employment)**	**% change (LR)**	
6.9	6.7	**0.3**	7.1	

Note: The reported figures pertain to the experiment without binding TRQs.

Table 6.5 Decomposition of overall modelled changes in output into effects of reduction of tariffs, NTMs and services liberalisation for the grains and crops sector (% change relative to the baseline)

Short run				Long run			
Tariffs	NTMs	Services NTMs	**Total**	Tariffs	NTMs	Services NTMs	**Total**
6.9	0.2	0.0	7.1	7.9	-0.8	0.6	7.7

6.3.2 *Economic impacts*

Tariff rate quotas applied by the EU for key Moldovan export in the sector (wheat, maize, barley) have been a binding constraint (directly, i.e. through using the whole quota) for some years in the recent past. While these quota have not always been fully utilised – a natural consequence of significant volatility of domestic Moldovan production of these cereals and of global prices – indirectly they have likely constituted a barrier for sector development (e.g. investments in the sector by larger agricultural enterprises) given uncertain future market access to the EU. This is related to the fact that the ATP regime is a unilateral preference scheme.

It can therefore be expected that abolishing of these quotas as well as abolishing of (rather low) tariffs for Moldova imports of foreign grains and crops will lead to significant expansion of output and value added in the sector. The CGE model indeed predicts such increases as a consequence of the DCFTA, estimating them at 7-8% in the long run. However, the increase of the TRQ levels in the 2011 ATP Regulation (that was not incorporated in the CGE model 2010 baseline) implies that the model likely overestimates DCFTA effects relatively to the current ATP regime. It does so under the assumption that there will be no deterioration of EU market access for Moldovan cereal grains after 2015. Putting it differently, part of the effects ascribed by the model to the DCFTA can be instead attributed to a more generous ATP regime.

The volatility of global grain prices may continue in the future and the DCFTA will have no impact on this. Also, weather conditions are likely to lead to large swings in domestic production of key crops in the future. No direct DCFTA impact is expected in these areas. There may be very weak indirect impact of improved export perspectives of the sector to the EU market and on-going modernisation of the whole agricultural sector, encouraged in part by such perspectives and possibly other elements of the DCTA, may somewhat improve resilience of cereal production to adverse weather conditions. This may materialise e.g. due to improvements in irrigation systems limiting the incidence and severity of floods and limiting the impact of draughts.

As a side remark it is worth noting that current projections on climate change and its impact on Moldova suggest increased temperatures and lower precipitation during summer months. In the very long term perspective (2-3 decades and more) this may have a negative impact (and a significant one according to some simulations) on the yields of wheat, maize and barley[76]. If these predictions prove correct the sector as a whole may see a decline with different agricultural sectors and products becoming a more attractive option. These trends are unrelated to the DCFTA as its contribution to climate change processes is marginal – as was discussed in our assessment of environmental impacts at the national level (see chapter 3).

Capital relocations are expected to gradually increase investments and the overall capital-intensity in the Moldovan grains and crops sector. The scale of these effects is difficult to predict but is unlikely to be particularly strong. There are likely to be very different reactions from large producers and from small farmers mainly engaged in subsistence farming.

There are likely to be several interactions between the DCFTA and employment trends in the sector. The CGE model predicts significant employment gains (almost 7%), roughly equal to expected output increases. This result should be considered with caution and at least interpreted in the context of underlying trends – not related to DCFTA – in the sector. Employment generally is declining as the sector (or at least the part of it that produces for the market and is not engaging in subsistence farming) improves its productivity. Continuation of this long term declining trend of employment is largely unavoidable in Moldova. There are significant economies of scale in the sector and the natural path of expansion is through increasing size of land plots, mechanisation and use of better fertilizers and other agricultural chemicals.

The CGE model-based prediction of foreign trade effects suggest a very strong boost, with exports rising by around 37% and imports by about 33%. This would further increase Moldovan trade surplus in this sector. Given the issue of changing baseline in line with the new ATP Regulation actual trade effects that can be attributed to the DCFTA may prove smaller.

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[76] See discussion in Shyam Singh Yadav, Robert Redden, Jerry L. Hatfield, Hermann Lotze-Campen, Anthony J. W. Hall , Crop Adaptation to Climate Change, Wiley-Blackwell 2011.

6.3.3 *Social impacts*

The developments in the sector are found to be particularly important from the perspective of overall social effects of the DCFTA. This owes to the fact that the sector accounts for close to 7% of less skilled employment. Hence, any ensuing changes in employment opportunities, and also potentially in labour standards could have significant social implications.

Employment gains in the sector are the main identified channel of positive social impacts. As discussed above the exact scale of these gains is difficult to quantify. Further productivity gains, while fairly certain and largely unavoidable will create challenges in the social sphere as redundant workers will need to find alternative employment options. There is much uncertainty concerning the DCFTA impact on very small farms producing cereal grains.

With respect to labour standards weak positive effects of the DCFTA in the sector are the most plausible outcome.

6.3.4 *Environmental impacts*

The environmental effects related to developments in the grains a crops sector will be primarily determined by a combination of possible slight increase in land use, increased usage of agricultural chemicals and increased phytosanitary and health standards applied to domestic production that may lead to changing agricultural practices in wheat, barley and maize farming.

CGE model results on overall land use intensity (1.6% in the short run and 1.9% in the long run) combined with the dominant role of the analysed sector in total land usage and expectations of significant increase in output of the grains and crops sector suggest expected increase in land used for cultivation of key crops, such as wheat, maize and barley relative to the baseline (non-DCFTA) scenario. It is worth remembering that this does not necessarily imply an increase of land use for cereal crops relative to the present level. Indeed, comments received from the Ministry of Agriculture and Food Industry suggest that due to low productivity and low value added of cereal and other crops are more likely to receive public support and expand. In any case DCFTA-related changes in area sown with cereal crops are unlikely to add pressure on forests or other wild areas as substantial areas of agricultural land are currently not cultivated in Moldova and any expansion of agricultural production is more likely to be concentrated on these unused areas. Hence, we do not expect any significant impact on biodiversity.

Expected increases in intensity of cereal farming implies in particular projected rise in the use of fertilisers and agricultural chemicals. This may increase environmental pressures. On the other hand, requirements of new SPS standards to be adopted by Moldova may force producers to upgrade their agricultural practices, use better quality / safer chemicals, etc. The combined effect of these two opposite forces in the grains and crops sector is difficult to predict. Apart from affecting the natural environment may, they also have an impact on health of the population.
With respect to water resources some pressure may come from increased grain production and increased irrigation. More intensive use of fertilisers and other chemicals might lead to more water pollution but there is also scope for improved agricultural practices (e.g. fertilisers management and agrochemical storage practices as well as manure management) so that negative impact on water resources is reduced. The overall effects are difficult to predict.

Simulation results for air emissions of CO2 and other pollutants (SOx, NOx and particulate matters) are only available at the more aggregated level, i.e. for agricultural sector as a whole. Taking into account also increased demand for transportation services due to higher production and foreign

trade in grains and crops these results suggest a small increase in air emissions in particular of CO2, NOx and particulate matters.

6.4 Conclusions

In conclusion, our analysis confirms a positive and significant DCFTA impact on output and value added in the grains and crops sector that in the case of Moldova are mainly represented by wheat, maize and barley. Our best estimate of the potential DCFTA contribution to sector growth is up to 7%. Exact attribution of effects between DCFTA and increased TRQs in the autonomous trade preferences is difficult.

Both exports and imports of wheat, maize, barley and other cereal crops are projected to increase considerably – by around 30% – as a result of the DCFTA (less if part of this increase is attributed to changes in the ATP). The EU is likely to remain the main partner of Moldova in this trade. The driving forces of foreign trade effects will be the abolishment of the tariff quota for wheat, maize and barley on the side of EU imports from Moldova and abolishment of Moldovan import tariffs for several other commodities in the sector.

The DCFTA is seen as having positive, although difficult to quantify impact on employment in the sector. This impact, however, should be placed in the context of expected continued long-term employment decline in the sector from current relatively high levels. This employment effect is seen as the main driving force of favourable social impacts of the DCFTA.

There is much uncertainty concerning aggregate environmental impacts as several forces are at play. While negative effects appear somewhat more likely, overall impact may be close to zero.

7 Detailed analysis: textiles and clothing

7.1 The textiles & clothing sector in Moldova

The textile and clothing sector comprises two important subsectors that are often analysed separately due to their different structures and dynamics:

- treatment of raw materials – the preparation or production of various textiles fibres (both natural and synthetic), and/or the manufacture of yarns and the production of knitted and woven fabrics as well as finishing activities for fabrics (e.g. bleaching, printing, impregnating, etc.)
- transformation of fabrics into products such as clothes, carpets and other textile floor covering; home textiles (such as bed linen or table linen, etc.) and technical or 'industrial' textiles[77].

The two subsectors are closely related, but given very significant geographical dispersion of production chains and other factors growth potential, business models, and constraints can differ between the two. Moldova mostly imports yarns and fabrics and specialises in production of clothes. More specifically, Moldovan companies typically specialise in cut and make (CM) services as subcontractor for foreign partners (manufacturers), i.e. the sector is very much export oriented with the EU being the key market.

The sector plays a relatively important role in the whole economy accounting for around 2% of Moldovan GDP[78]. Its share in industrial output increased from around 4% in the early 2000s to above 6% in 2007 to subsequently decline to around 5% in 2010 (Table 7.1). GTAP data indicate that the sector has around 3.3% share in economy-wide output, 2.2% share in total value added, and 1.9% and 0.6% shares in, respectively unskilled and skilled employment. The global crisis of 2008-2009 has taken its toll on textiles and clothing that saw a deeper 2008-2009 contraction than industry as a whole (Figure 7.1). However, in 2011 the sector also expanded more strongly than the whole industry.

Table 7.1 The textiles & clothing share in Moldovan industrial production, 2003-2010 (% of total industrial output)

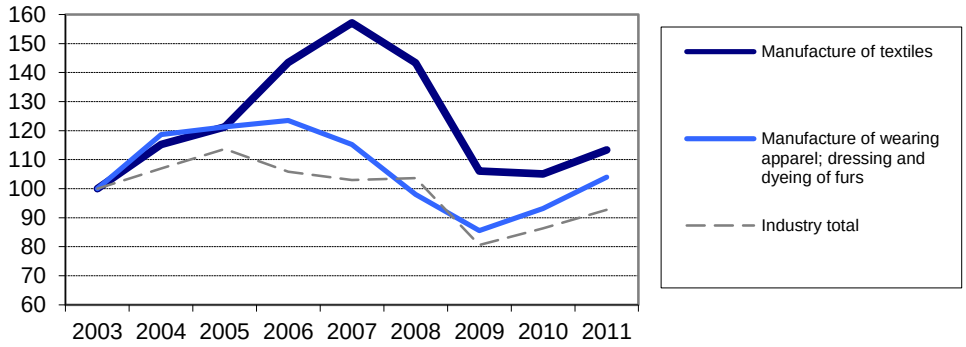
	2003	2004	2005	2006	2007	2008	2009	2010
Manufacture of textiles	1.4	1.4	1.8	2.7	2.7	2.2	2.2	1.9
Manufacture of wearing apparel; dressing and dyeing of furs	2.4	2.9	2.9	3.4	3.6	3.2	3.5	3.3
Manufacture of leather, leather products and manufacture of footwear	1.0	0.9	1.0	1.2	1.0	1.1	1.0	1.2

Source : *National Bureau of Statistics database* http://www.statistica.md/category.php?l=en&idc=127&

[77] For a more detailed presentation see http://ec.europa.eu/enterprise/sectors/textiles/single-market/eu27/. The whole sector as defined in the CGE model used in this TSIA analysis also contains leather products, including footwear. However, given differences in characteristics between these subsectors the discussion in this chapter focuses on textiles and clothing sector in its usual definition. The detailed analysis of the Moldovan footwear sector can be found in the USAID report Competitiveness Enhancement and Enterprise Development (CEED), Moldova Economic Sector Analysis: final report, March 2010, http://pdf.usaid.gov/pdf_docs/PNADU233.pdf, accessed 11 August 2012

[78] http://www.miepo.md/public/files/Clothing___Textiles.pdf. Accessed 11 August 2012.

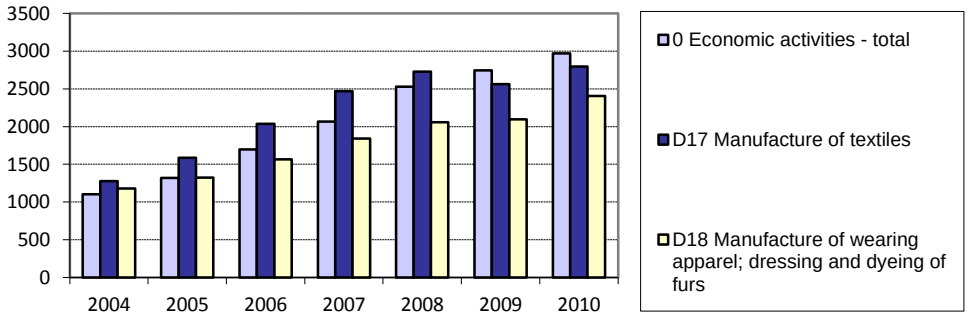
Figure 7.1 Dynamics of textile & clothing output, 2004-2012 (index, 2003 level = 100)



Source: National Bureau of Statistics of the Republic of Moldova, Databank.

The textile and clothing industry as a whole is labour intensive owing to labour intensity of the clothing and other subsectors. In 2010, the sector accounted for more than 17 percent of all industrial employment (Table 7.2). The industry is geographically spread throughout Moldova with several companies also located in Transnistria. Females account for a large share of total employment. The geographical dispersion implies that the sector provides employment opportunities also in areas with little alternative options and in particular can provide an alternative to agricultural employment, including subsistence farming. Sectoral wages stayed above national average (across sectors) until 2008 to subsequently register a significant decline in nominal terms and remain below economy-wide average during 2009-2010 (Figure 7.2). This can be an indication of the strength of global competitive pressures in the sector and the fact that it was seemingly harder hit by the 2008/2009 economic crisis than other sectors..

Figure 7.2 Average monthly earnings per employee in the textile and clothing industry, 2004-2010, MDL per employee, monthly



Note: Indicators where computed using data collected from all public institutions and enterprises with more than 19 employees..
Source: National Bureau of Statistics of the Republic of Moldova, Databank.

The global crisis has also taken its toll on employment, which between 2007-2010 declined from around 20.4 thousand to 17.3 thousand employees. The share of unregistered employment in the sector is difficult to estimate, but likely to be in the area of 10 percent[79].

[79] The survey from 2003 estimated unregistered employment in the industrial sector as around 10% of total employment in the officially registered enterprises (ILO, Employment in the informal economy in the Republic of Moldova, Working Paper No. 41. ILO Bureau of Statistics in collaboration with the Department for Statistics and Sociology of the Republic of Moldova, Geneva 2004). No data for the textile and clothing sector are available.

Table 7.2 Employment in textiles and clothing industry in Moldova 2006-2010 (average annual number of staff employed, thousand)

	2006	2007	2008	2009	2010
Manufacture of textiles	3.3	3.1	2.5	2.7	2.4
Manufacture of wearing apparel; dressing and dyeing of furs	17.1	19.0	17.8	14.7	14.9

Source: National Bureau of Statistics of the Republic of Moldova, Databank.

The number of companies active in the sector has been growing fast for the last several years increasing from only 54 companies in 2000 to over 329 companies in 2010 (Table 7.3)[80]. Approximately three-quarters of companies focus on sewing clothes from fabrics, mostly sent for inward processing in Moldova by foreign partners. There are only a few larger companies while the majority is small or medium sized. The assessment from 2008 suggests that above half of all companies was employing below 50 persons and almost 40% had employment in the range 50-250 persons[81].

Table 7.3 Number of companies in the sector, 2005-2010

	2006	2007	2008	2009	2010
Manufacture of textiles	75	77	77	95	91
Manufacture of wearing apparel; dressing and dyeing of furs	178	203	208	228	238

Source : National Bureau of Statistics database.

The global clothing industry has developed several specific modes of fragmenting the production chain and spreading the production process geographically. This explains significant differences in the mode of operation, market focus and competitive position of prospects between Moldovan companies in the sector. The following categorisation can be useful in this respect[82]:

- *Clothing companies providing cut and make (CM) services to foreign partners.* This is the dominant mode of operation for the majority of Moldovan businesses in the sector (some 90% of all companies can be classified in this category). Under this type of arrangement all materials are owned by the foreign partner – usually an apparel manufacturer – and shipped to Moldova for processing, after which they are returned to the foreign partner. The value added at the CM stage is low (it can be around 8% of the price of the final product). The key advantages of Moldovan companies are low labour costs, small size of companies (and hence flexibility to adjust to orders and to accept small orders) and proximity to EU markets (where most foreign partners are based) allowing shorter lead times (from order to delivery) compared to Asian competitors that have the dominant position in the global market.
- *Clothing companies that work based on own label scheme*. In this setup the manufacturer designs own collections (or can subcontract these services) and sells them under its own brand. In this way the elements of the production chain with the highest value added are retained with a company. The key challenge is in building own brands. Only about 20 Moldovan companies

80 The assessment of the size of the sector in 2000 is taken from the USAID report Competitiveness Enhancement and Enterprise Development (CEED), Moldova Economic Sector Analysis: final report, March 2010, http://pdf.usaid.gov/pdf_docs/PNADU233.pdf, accessed 11 August 2012.

81 USAID report Competitiveness Enhancement and Enterprise Development (CEED), Moldova Economic Sector Analysis: final report, March 2010, http://pdf.usaid.gov/pdf_docs/PNADU233.pdf, accessed 11 August 2012.

82 This exposition draws from the USAID report Competitiveness Enhancement and Enterprise Development (CEED), Moldova Economic Sector Analysis: final report, March 2010, http://pdf.usaid.gov/pdf_docs/PNADU233.pdf, accessed 11 August 2012.

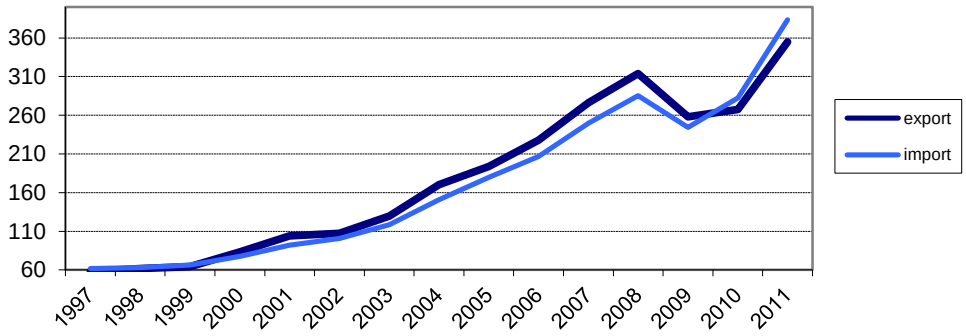
currently operate under own label[83]. They typically focus on domestic markets and there have been some attempt to expand to the Russian market.

- *Carpet producers.* There are two dominant rug producers (Moldabella and Floare Carpet) in Moldova. The first one is part of the group that also owns a company producing raw materials for carpet manufacturing, such as wool, heat-set and frise threads. The majority of the output is exported, mainly to non-EU markets.
- *Manufactures of fabrics.* The largest player is Tirotex, located in Transnistria, focusing on producing cotton fabrics (spinning, weaving, finishing) and also producing a diverse range of ready-made products for local market and for exports to CIS, EU and other markets. According to company data its employment level was around 3,500 as of 2008.

Creation and promotion of own brands has been inhibited by lack of necessary skills and know-how, and lack of domestic distribution chains that could provide Own Label clothing companies the ability to manage their distribution channels. The last few years have seen slow development of some support industries, e.g. embroidery services, distributors of accessories, equipment and spare parts. There were also some changes in access to training for the sector's labour force[84].

Given its export orientation and focus on processing and re-exports it is not surprising that the sector's growth has been largely fuelled by external activity and international trade flows have shown remarkable growth since the late 1990s (Figure 7.3). Following a decline in 2009-2010 textiles and clothing trade rebounded and by 2011 had surpassed its 2007 peak. The sector's share in total exports surpassed 10% in late 1990s to peak at above 20% in 2006-2007 and subsequently decline to 16% in 2011.

Figure 7.3 Dynamics of total textile & clothing exports and imports in Moldova, 1997-2011 (USD million)



Note: The sector comprises goods classified in HS chapters 50-63[85].
Source: National Bureau of Statistics of the Republic of Moldova, Databank.

Exports are fairly diversified with several hundred different products being exported by Moldova (at HS 6 digit disaggregation level). Key exports are articles of apparel and clothing accessories, not knitted or crocheted (HS62) – accounting for 44% of Moldovan 2011 textile and clothing exports to the world followed by articles of apparel and clothing accessories, knitted or crocheted (HS61) – 33% share and carpets and other textile floor coverings (HS57) – 8%. At the more disaggregated (6

[83] Ministry of Economy, Register of Light Industry Enterprises, 2011

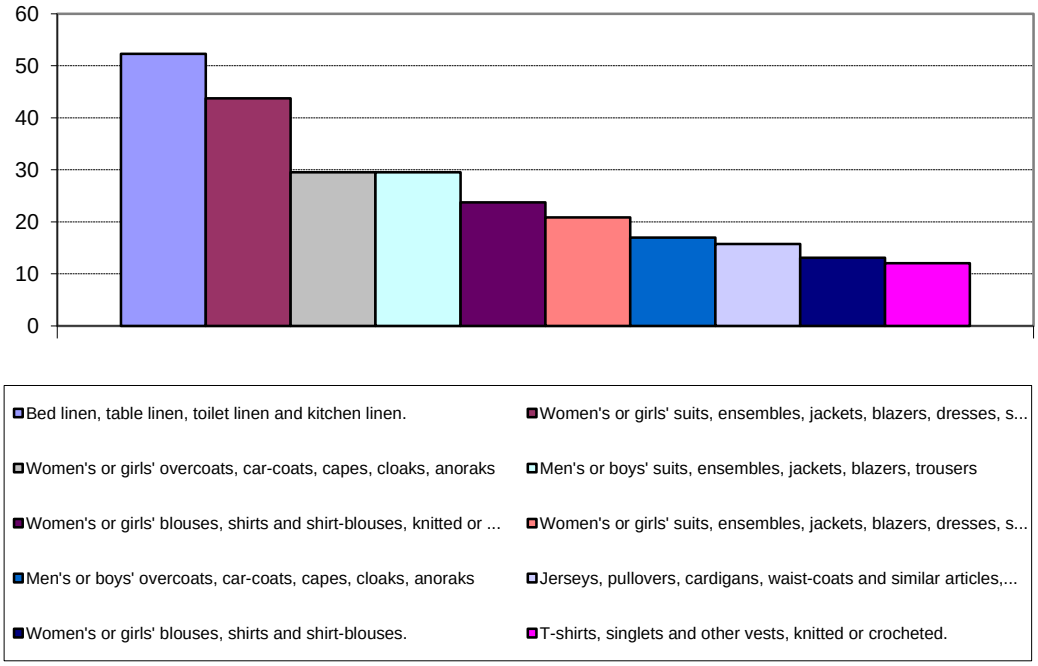
[84] USAID report Competitiveness Enhancement and Enterprise Development (CEED), Moldova Economic Sector Analysis: final report, March 2010, http://pdf.usaid.gov/pdf_docs/PNADU233.pdf, accessed 11 August 2012.

[85] Trade data provided by the statistical office differ significantly from those found in the Comtrade database setting Moldova as a reporting country. For this reasons subsequent analysis uses data directly sourced from the Moldovan statistical office or EU-reported data on EU trade with Moldova obtained via Comtrade.

digit) level top export products are women's/girl's blouses of man-made fibres (HS610620), carpets and other textile floor covering made of man-made textiles (HS5702042), cotton t-shirts (HS 610910). The EU is the dominant market accounting for close to 70% of total exports in this sector in 2011.

EU textiles and clothing imports from Moldova are dominated by apparel and clothing (HS chapters 61 and 62) and some other product groups (Figure 7.4). Carpets are not among top EU imports from Moldova. To put this trade in the wider EU context it is useful to note that Moldova accounts for around 0.2% of total EU textiles and clothing imports from the world as of 2011.

Figure 7.4 Top 10 EU imports from Moldova in 2011 in the textile and clothing sector (based on EU data)



Note: EU as a data reporter. Product groups defined at HS 4 digit level.
Source: Comtrade data sourced via WITS and analysed using Tradesift.

Total Moldovan imports of products in this sector are quite significant at USD 282 million in 2010 and USD 383 million in 2011, or above 7% of total imports. These imports are diversified, but mostly concern inputs for the clothing industry. Most important products are various fabrics, parts of garments and other textile articles. More than half of these imports came from the EU (USD 148 million in 2010 and USD 196 million in 2011).

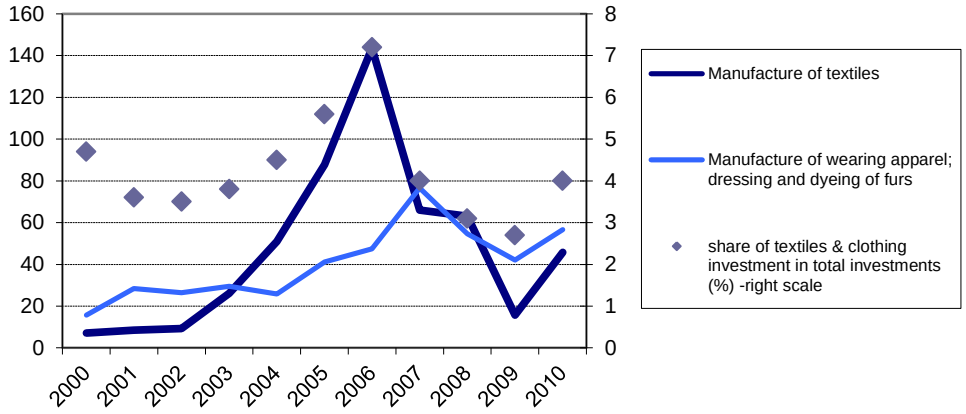
The share of textile and clothing sector in total fixed capital investment was on the rise during 2002-2006 to subsequently see a slump to below 3% during 2008-2009. 2010 brought some revival in relative terms (i.e. relative to other sectors in the economy), but in monetary terms investment activity was still very weak likely reflecting uncertain prospects of the sector due to difficult global economic environment (Figure 7.5).

Foreign investments have played a significant role in the textiles and clothing industry. Textile manufacturing had a share of around 10% in total FDI inward stock in Moldova as of end 2008 and foreign capital accounted for some 8% of total capital in this sector[86]. The analysis of evolution of

[86] Valeriu Prohniţchi et al, Impact of Foreign Direct Investments on the Moldovan economy, Expert group, Chisinau 2010. 2010

foreign capital involvement over time in the textile and apparel industries indicates substantial shifts in trends with foreign capital focusing on specific market segments. Examples of larger investments include the Moldovan-Belgian joint-venture «MOLDABELA» LTD, founded on the basis of a Moldovan carpet production company JSC «Covoare-Ungheni»; Moldovan-Italian enterprise «STEAUA– REDS» founded on basis of the knitting factory «Steaua», and a large producer of knitted and woven articles JSC "Tricon" which involves Austrian capital.

Figure 7.5 Fixed capital investments in the textile & clothing in Moldova, 2000-2010 (million lei – nominal values & share in total industrial investments - % of the total (y-axis)



Source: National Bureau of Statistics databank.

As evident from the discussion above, the Moldovan textile and clothing sector depends heavily on international demand and more specifically a large part of the sector depends on demand for specific type of relatively simple and low value added services (CM). There is a very strong global competition in this market segment. China as well as other Asian countries are the dominant players. Closer to Europe Turkey is an important player. Given the recent economic crisis affecting advanced economies major European and US clothing companies are exploring new sourcing strategies that could improve their performance[87]. This implies further intensification of competitive pressure on companies in countries such as Moldova. It thus becomes apparent that the medium- to longer-term outlook for the sector in Moldova remains somewhat uncertain in this segment. Domestic producers would need to move to higher value added segments of the production chain, and optimally develop other competitive advantages, e.g. related to geographical proximity to EU clients (major clothing companies). These trends are unrelated to the DCFTA but they are important in understanding the context of the sector's operation.

7.2 Market access issues

7.2.1 The situation in Moldova

The DCFTA is likely to remove Moldovan customs tariff for imports from the EU. As of 2011 applied tariffs ranged from 0 to 20% depending on the product. Table 7.4 provides information on tariffs in HS chapters (2 digit level). The highest tariffs apply to certain products in the carpets and other floor coverings industry, certain types of articles of apparel and clothing and other textile articles.

[87] For a discussion see e.g. McKinsey & Company, Bangladesh's ready-made garments landscape: The challenge of growth, November 2011.

Table 7.4 Moldovan applied ad valorem (AV) tariff in textiles and clothing, 2011 (%)

HS code	Description	Average of AV duties	Minimum AV duty	Maximum AV duty	Duty free tariff lines (%)
50	Silk	5.0	5	5	0.0
51	Wool, fine or coarse animal hair	0.9	0	5	78.9
52	Cotton	0.0	0	0	100.0
53	Other vegetable textile fibres; paper yarn	3.2	0	8	30.4
54	Man-made filaments; strip and the like	3.6	0	5	18.6
55	Man-made staple fibres	3.7	0	5	17.8
56	Wadding, felt and nonwovens; special yarns	1.3	0	8	83.9
57	Carpets and other textile floor coverings	13.4	12	20	0.0
58	Special woven fabrics; tufted textile fabrics	9.5	0	12	13.8
59	Impregnated, coated, covered or laminated textile fabrics	3.3	0	8	39.6
60	Knitted or crocheted fabrics	0.0	0	0	100.0
61	Articles of apparel and clothing accessories, knitted or crocheted	12.0	5	15	0.0
62	Articles of apparel and clothing accessories, not knitted or crocheted	11.8	5	12	0.0
63	Other made up textile articles	12.8	12	15	0.0

Source: WTO, Integrated Database (IDB) notifications.

Among non-tariff measures, some requirement related to origin and quality of the goods are considered cumbersome by some companies. In particular, certificates of origin within preferential agreements are issued by the Customs Service of the Republic of Moldova but should be accompanies by a report prepared by the Chamber of Commerce for each batch. Conformity certifications are also required for every consignment of goods.

Differences between EU and Moldovan industrial standards appear to create problems at least for some companies. For instance, textile manufacturers complain that importing factory equipment and spare parts is associated with substantial additional costs due to a range of Moldovan requirement and fees to be paid for customs clearance procedures and certification of conformity[88]. This acts as a drag on companies' access to advanced foreign technology that could spur productivity. The DCFTA can be expected to limit similar barriers.

Large part of sectors' operation in Moldova – specifically the CM segment – can be classified as inward processing (IPR). Several countries set rules allowing companies engaged in inward processing to claim relief from import duties and VAT. One method is IPR drawback where customs duties and import VAT are paid when the goods are imported for inward processing, but can be claimed back after exporting. In Moldova drawback applies only to VAT[89]. This particular aspect may not necessarily be affected by the DCFTA. More generally, still somewhat complicated customs procedures and slow repayment of VAT may act as an impediment to upgrading of sector's mode of operation from CM to higher value added activities such as CMT ('cut, make and

[88] Information for the interview with a representative of the Association of Light Industry Producers, 12.07.2012.

[89] Government Decision no. 1024 of 01.11.2011.

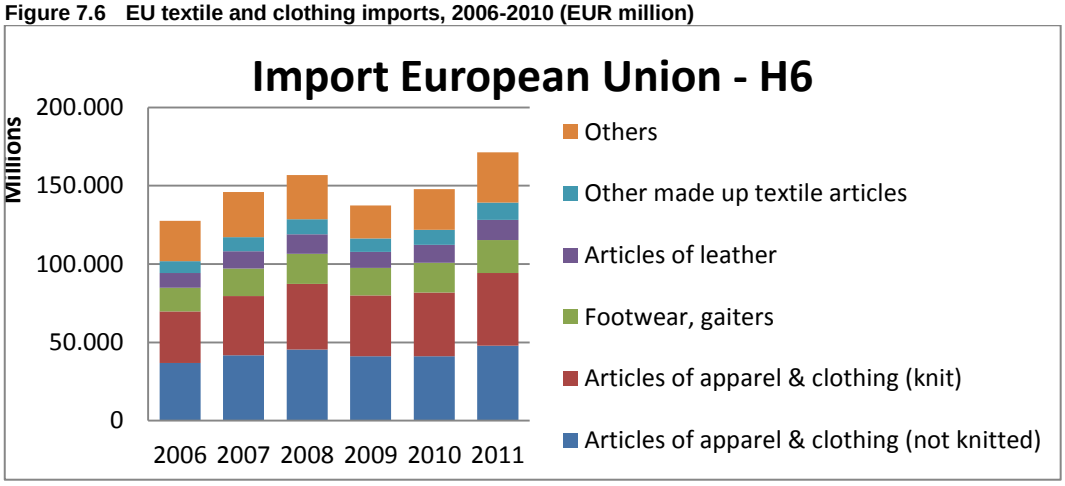
trim' where a manufacturer apart from CM services also buys some accessories like sewing thread or buttons that are used in the process), full package (where a manufacturer buys all inputs to produce a final product according to a customer's specifications) or private label (where manufacturer is also involved in design of collections that are produced and sold under customer's brand), as this would increase costs of customs procedures and costs of financing[90]. The DCFTA is likely to indirectly improve customs procedures and hence lower these barriers to the sector's development.

Moldova signed some international agreements on intellectual property rights, such as the International Convention Establishing the World Intellectual Property Organization. However, in practice copyright infringements are rarely prosecuted. Local and foreign producers in the clothing sector can register the industrial designs and trade marks for 25 years. There is no information on infringements of these rights. Nevertheless, imported counterfeited products could be found on the internal market[91].

7.2.2 EU market access

The European Union is the world's biggest importer of textile, clothing and leather goods. In 2010 the EU imported € 147.9 billion worth of textiles and footwear. [92] Most of these exports are apparel & clothing, footwear and other textile articles, which account for close to 75% of total imports in the sectors (Figure 7.6). China is by far the biggest exporter to the EU, accounting for 44.2% of all EU imports. China is followed by Turkey and India, who are responsible for 10.3% and 7.9% respectively. A large of the remaining imports come from South East Asia.[93]

Figure 7.6 EU textile and clothing imports, 2006-2010 (EUR million)



Source: own calculation sing Comtrade data

Barriers

The EU has a large market for textiles and consists of a varied range of products. As such, regulations and guidelines for these products also widely vary from product to product and some Member States have additional regulations. These regulations can be divided into legislative requirements and non-legislative requirements.

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90 USAID report Competitiveness Enhancement and Enterprise Development (CEED), Moldova Economic Sector Analysis: final report, March 2010, http://pdf.usaid.gov/pdf_docs/PNADU233.pdf, accessed 11 August 2012.

91 USAID report Competitiveness Enhancement and Enterprise Development (CEED), Moldova Economic Sector Analysis: final report, March 2010, http://pdf.usaid.gov/pdf_docs/PNADU233.pdf, accessed 11 August 2012.

92 http://ec.europa.eu/trade/creating-opportunities/economic-sectors/industrial-goods/textiles-and-footwear/

93 Comtrade Database

Horizontal Community legislation

Most legislative requirements are measures to minimise the risk to EU consumers' health and safety. Additional legislation concerning the environment have also been adopted. These measures can be divided into three categories, measures regarding:

1. General requirements;
2. Product requirements;
3. Packaging and transportation requirements.

The European Union has detailed product safety requirements[94] to protect the EU consumers. Although the liability for defective products[95] lies with the importing companies, they often pass claims onto the exporting company.

To make sure that products are safe for consumers and the environment, the EU has put forth additional regulations specifying the use of certain materials: It has restricted and regulated the use of various chemicals used in pigments and filaments, as specified under REACH.[96] A number of Member States have put up additional restriction for their domestic markets. Besides chemicals the EU has also prohibited the use of materials coming from endangered species, e.g. recently seal products were banned.[97]

Leather and textile products are also subject to mandatory labelling requirements,[98] detailing the composition of materials using prescribed fibre names. However, the EU is preparing to implement a possible origin labelling scheme as of 2013. Some countries also have additional requirements, for example Italy requires washing instructions to be detailed on the label. It should be noted that some goods, such as furnished textiles and safety wear require the CE marking before they can be sold on the European market.[99]

Standards have also been set for packaging and packaging waste[100] and specifically for the use of wood as a packaging material[101] Consumers goods might have extra restrictions. For example the EU has prohibited the use of DMF, a chemical used for mould inhibition, on products destined for EU market.[102]

To enforce the regulations set by the European Union and its members, the EU may conduct anti-fraud[103] investigations and other actions to protect its consumers.

Non-Legal requirements

The legislative requirements put forth by the European Union and its member states apply horizontally to all sectors. To make up for the lack of product specific regulations, most industries have published requirements and quality standards for products. For example, the European Clothing Association (ECLA) has published a list of minimum requirements[104] concerning fabrics, that are testable against International Standards (ISO). These recommendations concern various

[94] Directive (EC) 2001-95
[95] Directive (EC) 85-374
[96] Regulations (EC) 2006-1907 - Registration, Evaluation, Authorisation and Restriction of Chemical substances
[97] Regulations (EC) 1997-338 - CITES
[98] Directive (EC) 2008-121
[99] Decision (EC) 768-2008
[100] Directive (EC) 94-62
[101] Directive (EC) 2000-29
[102] Decision (EC) 2001-95
[103] Intellectual Property rights
[104] The woven outerwear market in the EU – November 2009

characteristics such as the composition, physical properties and colour fastness of fabrics and are adopted by many of the associated national umbrella organisations.

Non-legal requirements often go beyond these standards and are agreed upon between the exporting and importing company and will be focussed on making sure the exporting company meets and will meet the high level of quality and service demanded by the consumers in the EU.

Furthermore, many sectors have adopted best practices with regards to Corporate Social Responsibility, ranging from environmental issues to social labour requirements. Companies lacking labels and certificates in these areas could experience difficulties finding trade partners, especially since the media have in the past came down hard on certain sportswear producers found using e.g. child labour or otherwise violating ILO and / or HR conventions.

7.3 Impact assessment textiles sector Moldova

This section presents a detailed impact assessment of the DCFTA, starting with the baseline for the textiles and clothing sector, combined with quantitative model outputs, and based on further literature review, causal chain analysis and interviews.

7.3.1 Summarised results obtained in the overall analysis for textiles & clothing

The CGE model of the DCFTA predicts quite significant increase in output of the textiles and clothing sector with associated employment gains (Table 7.5). Foreign trade in the sector is expected to see an even stronger expansion, from an already large base. Exports are projected to rise by more than 16% and imports by about 13%. The export boost in this sector is expected to account for a substantial share of DCFTA-induced expansion of total Moldovan exports to the EU. The sector is also expected to see substantial gains in absolute number of new jobs for unskilled workers. Significant results materialise already in the short run, while long run effects (i.e. after the adjustment of capital in the sector) are even stronger (Table 7.5).

An analysis of forces driving these results reveals that they mostly relate to reduction of tariffs (especially in the short run), and reduction in technical barriers (especially in the long run), although non-tariff measures related to the services sector also play some role for the long run effects. (Table 7.6).

Table 7.5 Summary of CGE modelling results for the textiles and clothing sector

Share of total value added baseline value	Value added % change (LR)	Output % change (LR)	Exports % change (LR)	Imports % change (LR)
2.5	**11**	13	16	13
Less skilled employment		**More skilled employment**		
Baseline (% of total employment)	**% change (LR)**	**Baseline (% of total employment)**	**% change (LR)**	
1.9	6.1	0.6	7.6	

Note: The reported figures pertain to the experiment without binding TRQs.

Table 7.6 Decomposition of overall modelled changes in output into effects of reduction of tariffs, NTMs and services liberalisation for the textiles and clothing sector (% change relative to the baseline)

Short run				Long run			
Tariffs	NTMs	Services NTMs	**Total**	Tariffs	NTMs	Services NTMs	**Total**
5.3	2.4	0.2	7.9	6.6	4.8	1.3	12.7

7.3.2 Economic impacts

Overall economic impact of the DCFTA is expected to be positive with significant gains in sectoral output, value added and employment. The CGE model simulations suggest a scope of effects in terms of output and value added exceeding 10%. Associated employment gains are expected to the tune of 6-7%. These effects materialise as a result of a combination of tariff reductions (especially on the side of Moldova) and reduction in a range of non-tariff barriers that can be related to customs procedures and differences in relevant standards and their implementation between the EU and Moldova. It thus assumes that such barriers will be adequately addressed in the context of the DCFTA negotiations and subsequently implemented. These effects are expected to materialise gradually with significant positive impacts visible already soon after DCFTA implementation and then strengthening over time as capital reallocates between sectors to make optimal use of the new economic realities with the DCFTA in place.

The currently dominant mode of operation of the sector, i.e. focus on low value added processing of fabrics sent by foreign partners and sending back final products (cut and make services) may come under gradually increasing pressure in the future due to global processes in the textile and clothing industry that are unrelated to the DCFTA. To improve the prospects of the sector Moldovan producers will need to upgrade to higher value added activities and/or find other market niches that are less exposed to global demand shifts. The DCFTA may to a some extent support such changes by making it easier to move inputs, semi-finished, and finished products across borders. The outcome of the interactions between these processes and the impacts from the DCFTA is difficult to predict and probably impossible to quantify.

We also see scope for positive indirect interactions. For instance, rising living standards of the Moldovan population and higher exposure of domestic sector to international competition after lowering of tariffs and other barriers could lead to a more competitive domestic market for final products that could provide additional stimulus to building own brands by local producers. Lessons from establishing and promoting own brands in Moldova could then help in entering other markets, including in the EU countries.

On the other hand, rising real wages in Moldova (another expected impact of the DCFTA) may add to gradually eroding Moldova's competitiveness vis-à-vis Asian and other competitors. It thus becomes all the more important that Moldova build on its competitive advantage of proximity and preferential access to the EU with the DCFTA in place.

While overall investment risks in the sector will likely remain high owing to strong international competition, the DCFTA – by limiting the barriers to the EU-Moldova trade in textiles and clothing – may increase sectors attractiveness for investors, both domestic and foreign. DCFTA-related expected improvements in the sphere of intellectual property rights may also help in this respect . In particular they may encourage some EU investors to acquire or expand production facilities in Moldova that would play some specific role in the production chain (e.g. small scale deliveries with short lead times). This can gradually lead to rising capital intensity of the sector and technological sophistication. The scale of these effects is difficult to predict.

Transportation time and costs are important for the textiles and clothing sector competitiveness. In this respect we do not see direct DCFTA impact. A very weak indirect impact may materialise as faster economic growth gradually increases demand for better quality transport infrastructure and stimulates public investments in this area.

Given the role of Moldovan companies in the whole global production chain of clothing it should be expected that foreign trade effects of the DCFTA will be much more pronounced than impact on output or employment. The CGE model predicts a boost in exports to the tune of around 16% with imports rising slightly less. This implies that changes in EU-Moldova bilateral trade in textiles and clothing will account for a significant part of total DCFTA impact on bilateral trade flows.

7.3.3 Social impacts

Significantly positive employment effects are probably the most important driver of overall social impacts related to the textiles and clothing sector. The DCFTA-related job creation for less skilled workers will be significant. Importantly, given the geographic dispersion of the sector and the fact that it is believed to employ to a significant extent people coming from rural areas, employment gains in textiles and clothing may act as a buffer easing the process of labour reallocations from agricultural sectors. This should have positive implications for poverty and equality.

There is also a gender dimension to this given the dominance of female employees. A positive (albeit small) impact on labour market participation of women is possible and employment gains could limit the economy-wide average gender wage gap given that the sectoral wages remain close to the economy-wide average.

The expected expansion of the sector may also be associated with changes in prevailing labour standards. Here, on the one hand overall DCFTA focus on social standards and human rights, progress in Moldova's economic and social development as well as rising demand for labour in the sector may act towards improving applied labour standards. At the same time intensifying international competition in the sector may have the opposite effect. In a negative scenario this could have some (limited) health repercussion as certain segments of the sector deal with dangerous substances and processes: e.g. dust in the process of cotton yarn and wool spinning and dyestuffs and other chemicals used in the production of fabrics. However, given that global competition trends in textile and clothing are largely unrelated to the DCFTA we see higher probability of positive DCFTA effects on social standards in the sector.

7.3.4 Environmental impacts

Environmental impact of the textile and clothing industry globally is related to transportation in the production process (global trade in textiles and clothing is significant due to fragmentation and geographical dispersion of the production process), rising production due to lower prices and the relatively short lifetime of clothes (changing fashion trends), the use of energy and water in production (including for cotton growing) and for production processes, use of dangerous chemicals in agriculture (e.g. cotton) and in many manufacturing stages such as pre-treatment, dyeing and printing[105].

[105] For a discussion see e.g. http://www.unep.org/climateneutral/Topics/Textilesandclothing/tabid/149/Default.aspx. Accessed 13 August 2012.

The DCFTA is not expected to lead to any changes in the global textile and clothing markets, hence no environmental impact at this level is expected. Rising living standards in Moldova may add to demand for textiles and clothing with ensuing negative environmental outcomes. This, however, is likely to be a very weak impact.

DCFTA-induced increases in EU-Moldova trade in textiles and clothing will be associated with negative environmental effects (e.g. CO2 emissions in transport), but these increased trade flows will likely replace other hypothetical trade flows between EU apparel companies and producers elsewhere in the world. Consequently, the impact of the DCFTA on greenhouse gas emissions from transportation of textile and clothing products is uncertain and may even be negative (i.e. a decline in GHG emissions) if following the DCFTA Moldova replaces alternative producers located far away from the EU.

The alignment of industry standards with the EU ones could lead to some improvement in environmental burdens form the textile and clothing production processes (e.g. due to better management of chemical, etc.). However, the realisation of these effects is uncertain due to strong global competition including from countries of low environmental standards.

Increased production in Moldova may add pressure on domestic water resources. Also, water pollution may increase somewhat, depending on the balance of effects from increased output and potentially improved practices in handling dangerous substances. Some insignificant direct impact on resource use is expected due to increased energy consumption.

No changes are expected in the land use and soil quality.

Increased road transport will likely exert limited but negative impact on ecosystems, but not to the extent endangering biodiversity.

7.4 Conclusions

Summing up, our analysis identifies positive and significant overall economic impact of the DCFTA in the sector. Output, value added, and employment are all expected to see significant gains. The effects on trade flows are much stronger reflecting the characteristics of production chains in the apparel industry where Moldovan producers typically account for a small part of total value added being engaged in cut and make services. The reduction of tariff barriers (on the side of Moldova) and non-tariff barriers related to differences in regulatory regimes relevant for the sector may stimulate both domestic and foreign investments in the sector.

The positive contribution of the DCFTA to the sector's outlook should be seen in the context of overall uncertainties concerning global trends in the clothing industry. These global forces may change the situation of Moldova's textile and clothing industry quite significantly in the medium- and long-term.

As regards social impacts we remain optimistic expecting positive contribution of the DCFTA to job creation, equality (including gender equality), and labour standards. A combination of positive and negative environmental outcomes is likely and their balance is difficult to predict, although we see somewhat higher probability of positive effects and the chance for greening of the sectors' growth in accordance with EU practices.

8 Detailed analysis: SPS

8.1 SPS in international trade and the EU SPS system

The term sanitary and phytosanitary measures as defined by the WTO refers to a set of laws, decrees, regulations, requirements and procedures aimed at protecting the health and lives of humans, animals and plants from risks associated with disease, pests, and contamination of foodstuffs. They are put in place to ensure that food is safe for consumption. Sanitary measures relate to human or animal health, whereas phytosanitary measures relate to plant health.

The Sanitary and Phytosanitary Measures (or SPS) Agreement is a stand-alone WTO agreement on food safety and animal and plant health standards setting out the basic rules.[106]

Health and safety regulations are the domain of national policies and they differ between countries reflecting differences in societal preferences, variable nature of risks (e.g. due to differences in climate) and institutional capacity to implement any policies in this sphere. This heterogeneity of approaches to SPS issues between countries can act as a significant barrier to trade, given that a producer in a country A that is fulfilling domestic (country A) SPS rules will need to additionally fulfil requirements of a country B SPS regime in order to access country B market. This calls for international cooperation and coordination in the area of SPS to ensure that consumers in each country are being supplied with food that is safe – where the definition of "safety" differs between countries reflecting standards that each country consider appropriate – and at the same time, to limit the ensuing barriers to trade. This is the rationale behind the WTO SPS Agreement.

The key requirements emerging from the SPS Agreement for national-level SPS systems include:

- Transparency of SPS measures, implying specifically that all measures are published, changes are notified, and an enquiry point is established responsible for answering questions from other countries about SPS measures and related issues;
- Scientific justification for SPS measures, as such measures are to be applied only to the extent that they are necessary to protect human, animal or plant life or health;
- No discrimination, i.e. ensuring that application is not arbitrarily discriminatory between countries.

The 'safety first' approach is allowed, which implies that precautionary measures can be temporarily introduced in case of scientific uncertainty.

With different standards and inspection methods applied in various countries an exporter from country A willing to sell in country B would normally need to demonstrate that the measures applied to country A exports achieve the same level of health protection as in country B. If this condition is fulfilled country B is expected to accept country A's standards and methods.

The EU and Moldovan SPS rules differ quite substantially. The EU has one of the most sophisticated SPS system in the world. As regards third countries food exports to the EU the strictest rules apply to food of animal origin. For these, following inspections, lists of eligible

[106] For the WTO SPS Agreement, see http://www.wto.org/english/docs_e/legal_e/15-sps.pdf. Appendix B outlines the agreement's key components. The following exposition also draws from WTO materials provided at http://www.wto.org/english/thewto_e/whatis_e/tif_e/agrm4_e.htm and http://www.wto.org/english/tratop_e/sps_e/sps_handbook_cbt_e/intro1_e.htm Accessed 8 August 2012.

countries and businesses are drawn up to determine suitable candidates to import from. The Hazard Analysis and Critical Control Points (HACCP) system is of utmost importance and aims to limit the risk through identification, thorough assessment and continuous control of key food safety hazards at every production stage. In addition, this extensive hygiene obligation extends to the establishment of a traceability system within the process. This can be seen e.g. in the milk industry as the European Community standards for milk and milk products require inspection and monitoring at the level of primary production i.e. in the stable [107].

For foods of non-animal origin there is no country listing, but the importer is liable and the obligations are shared between the "Food Business Operators", importers and the competent authorities in EU member states. Thus, third countries' imports need to meet the administrative pre-requisites, before entering into the import procedure which is different for animal/non-animal products. In the case of many developing countries, the control of contaminants and pesticides is of importance. Furthermore, for certain fruits and vegetables a phytosanitary certification[108] issued by the national plant protection organisation of the exporting country needs to be obtained, based on the phytosanitary requirements of the EU.

Generally speaking, many developing and transition countries (such as Moldova) face difficulties in meeting international SPS standards, and especially the EU requirements in this area, the latter having some of the most sophisticated SPS standards in the world. The reason for this difficulty with complying lies chiefly in the small scale of most developing countries' export operations, their greater vulnerability to disease outbreaks and pest infestations, and inadequate public health and veterinary services.

The DCFTA is considered as an opportunity to align the SPS legislation and standards of Moldova with the EU ones. The key advantages of this could be that food safety for Moldovan citizens will improve (as the EU SPS rules are considered more stringent) and that barriers to trade in agricultural and food products will decrease between Moldova and the EU. This reduction of trade barriers clearly does not imply simply abolishing of certain requirements for products to be exported or imported. On the contrary, from Moldovan perspective this implies taking up different or new sets of obligations (in terms of standards, procedures, certificates, etc.). This process of alignment brings with it several benefits, but also costs. This is discussed in more detail in section 8.3 below. First we consider the existing (i.e. the baseline) SPS landscape in Moldova.

8.2 Moldova and its SPS policies

8.2.1 Moldova's SPS system

Moldova is a party of the WTO SPS Agreement. However, limited domestic resources, administrative capacity and knowledge has led to a situation where in practice Moldova has had difficulties complying with some SPS requirements. It has often proved difficult even to comply with the basic transparency obligations under the SPS Agreement.

The prospects of the DCFTA with the EU have already been a driving force for changes in the Moldovan SPS system for several years now. The process of gradual adjustment to the EU SPS system was initiated well before negotiations started. Indeed, during preparation for launching the DCFTA negotiations, the EU competent authorities undertook several assessment missions focusing in the SPS area and presented a set of key recommendations to be considered before the

[107] http://www.acp-eu-trade.org/library/files/Morten_EN_010109_DIIS_European_Food_Safety_Regulation_web.pdf
[108] http://www.cbi.eu/marketinfo/cbi/docs/eu_legislation_phytosanitary_certificate_and_related_issues_case

negotiations could be started. Thus Moldova's relations with the EU have been a driving force for reforms of the domestic SPS system. Below we discuss the main elements of this system.

SPS institutions

At present, a number of institutions deal with issues of food safety policy, regulation and implementation. These include:

- Ministry of Health / SANEPID (National Centre for Public Health);
- Sanitary-Veterinary and Animal Origin Food Safety Agency
- Veterinary and Phytosanitary Policy Departments of the Ministry of Agriculture and Food Industry;
- General Inspectorate of Phytosanitary Surveillance and Seeds Control, responsible for implementation of policies related to phytosanitary quarantine, plant protection, seed control, quality of cereals and its derivatives, and tobacco production and marketing.
- CPA - Consumer Protection Agency (created in January 2012) acting as an independent body and responsible for market surveillance.

Coordination of actions between these various institutions has been rather weak, leading to lack of consistent food safety strategy and fragmented control systems with separate administrative structures responsible for monitoring the different stages of the food and feed chain. Partial overlap of responsibilities of several institutions dealing with SPS issues not only implies inefficiencies on the side of public services and less food security for consumers, but also creates unnecessary burdens to producers who need to go through excessive controls and checks, and have to acquire several permits or authorisations from different bodies. Examples of documents needed for placement of products in the domestic market and for international trade transactions include a Phytosanitary Certificate, Certificate of Conformity, Hygienic Certificate, Sanitary Permits and Sanitary and Veterinary Certificate. Several of these documents are required for every single transaction creating a burden for food producers and processing companies.

Legal and regulatory framework

Serious gaps remain in SPS related legislation and its implementation in Moldova. While the framework for food safety legislation is in place with all relevant laws and regulations as well as 18 decrees aligning to different EC directives and regulations adopted[109] and in spite of the progress made by Moldovan authorities, there remain legislative gaps in several SPS areas. Many acts have been introduced selectively, and there is duplication and overlapping of responsibilities and checks. As such Moldova is still in the process of approximating its SPS system with the EU one.

This process is being supported by technical assistance from EU and other sources. For example in mid-2012 there was an on-going project on the "Implementation of Animal Disease Control System in the Republic of Moldova according to the Requirements of Directive 64/432/EEC" with Lithuanian institutions sharing experiences with the State Food and Veterinary Service as well as an FAO pilot project (in Hincesti district) on animal identification and traceability.

Moldova is working on the introduction of the EU Veterinary Medical Products' legislation, but at present the old national measures are still in force. The rules related to application of drugs for animals are quite liberal in Moldova, e.g. the provision of antibiotics for food animals does not require a veterinarian's approval. There is a system in place for the authorisation and registration of

[109] Specifically Law no. 78 on Food Products, March 2004 - partially harmonized with the Regulation 178/2002; Law no.221 on sanitary - veterinary activity, October 2007; Law of state public health surveillance of February 2009 and the Law no.228 on Plant protection and Phytosanitary quarantine of September, 2010.

medicinal products for veterinary use which is being brought in line with EU requirements. However, it cannot yet offer equivalent guarantees to those provided for by the EU legislation.

SPS infrastructure

Moldova currently lacks adequate laboratory facilities and infrastructure as none of the Animal Health & Plant Health laboratories of Moldova is regionally or internationally accredited, although some applications to international associations have been filled and the situation may change in the near future. The Food Safety Strategy for the Republic of Moldova was approved by the government in August 2011. An essential part of the institutional reorganisation is the rationalisation of the system of laboratories working in the field of health of animals and plants. The strategy for doing this is currently being prepared by the Ministry of Agriculture and Food Industry (MAFI).

8.2.2 Relevant sectors

SPS standards are especially relevant for the agricultural sector. However, sectors that produce or process agricultural products like vegetable oils, animal fats, fish, and livestock are also subject to SPS regulations. One could therefore assume that sectors most affected by SPS measures are those from chapters 1-24 of the HS nomenclature. These sector together account for around 70% of Moldovan exports to the world (as of 2011) and 64% of Moldovan exports to the EU. The difference between the two shares can be (cautiously) interpreted as some indication of restrictiveness of EU SPS measures affecting Moldovan exports relative to SPS measures prevailing in other countries. Hence, at this aggregate level there is some indication of potential barriers related to SPS issues affecting Moldovan exports to the EU. It should be noted though that the difference in export shares (6 percentage points) is small.

Figure 8.1 compares shares of Moldovan exports to the world and to the EU for sectors for which SPS issues are most relevant. A few interesting observations can be made. In value terms five sectors (defined at HS 2 digit level) dominate in Moldovan agricultural and processed food exports: oilseeds and oleaginous fruits (HS12), beverages and spirits (HS22), fruits and nuts (HS8), cereals (HS10) and preparations of vegetables, fruits and nuts (HS20). In three out of these five product groups the share of Moldovan exports to the EU is higher than the share of exports to the world. This in particular applies to cereals that are analysed in more detail in chapter 6 of this report. This could indicate that the EU market access barriers related to the SPS regime are already not excessively difficult to overcome for Moldovan exporters.

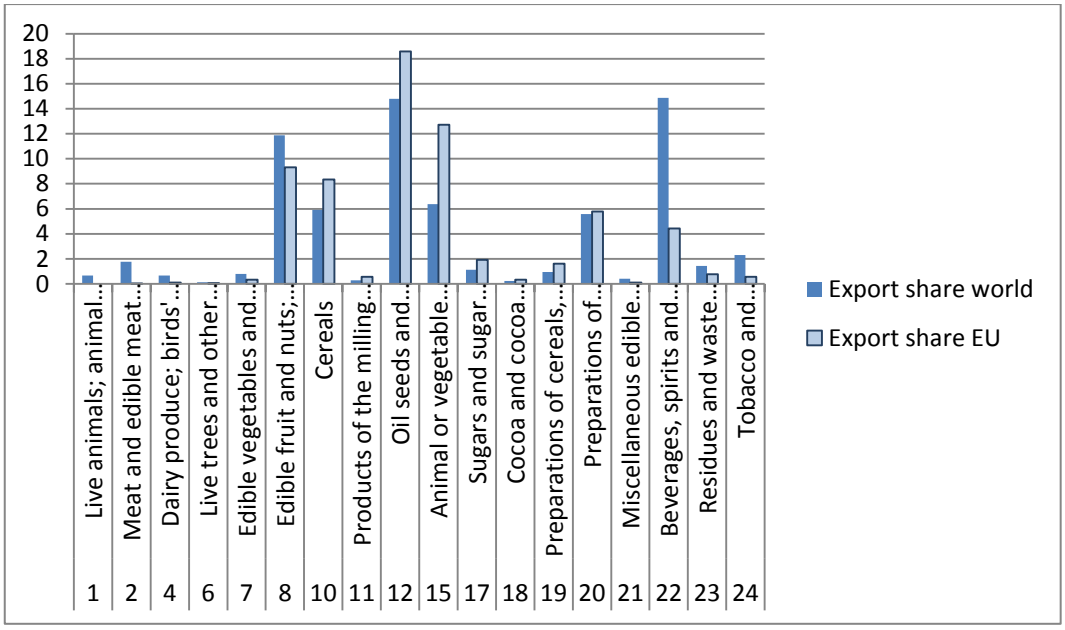
For edible fruits and nuts (key Moldovan export) the difference between export shares to the world and to the EU is not very high. A more disaggregated analysis (at HS 6 digit level, i.e. distinguishing a few thousand products) reveals that the picture may be somewhat more nuanced. The key product in this sector is walnuts (mostly shelled, but also in shells – exports worth USD 64 million in 2011) and the EU is the major destination for its exports (USD 50 million). The situation is very different with fresh apples where large Moldovan exports (USD 56 million in 2011) are almost entirely directed to non EU markets (exports to the EU are just USD 0.5 million). Trends for other fresh fruits (mainly grapes, plums, cherries, and peaches) is similar – EU accounts for a very small fraction of total Moldovan exports of these products.

Still, this lack of success of Moldovan fresh fruits sector in the EU market does not appear to be primarily driven by SPS issues. Instead this likely mainly owes to a combination of other factors: high sophistication of EU fruit market that relies on complex logistics, specific requirements on

product packaging, and application of the minimum entry price system.[110] The latter has been found as significant barrier to Moldovan apples in some EU markets (Romania and Baltic countries).[111]

Clearly this does not imply that SPS are irrelevant for nuts and fruits sector. There are 49 cases of SPS problems with imports from Moldova reported in the Rapid Alert System for Food and Feed (RASFF) for the period of the last 10 years.[112] They mostly refer to the product category nuts, nut products and seeds and the most common issue concerned presence of living and dead mites in rape seed from Moldova (several cases especially in 2011). Six cases referred to fruits and vegetables but most of them were from mid-2000s.

Figure 8.1 Moldovan export shares (%) to the world and the EU for sectors most affected by SPS issues



Note: Export shares are percentages of total Moldovan exports to respectively the world and EU27. The numbers next to sector description are HS nomenclature 2 digit codes. Sectors for which Moldovan exports to the world are negligible (around 0.01% or less share in total exports) have been excluded from the figure for improved readability.
Source: COMTRADE database. Reporter Moldova, data for 2011. Calculations done in Tradesift.

The key product in the beverages and spirits (HS22) product group is wine. Moldovan wine exports to CIS markets remain much more important than to the EU. The wine sector mini case study is included in the text box below. Also in this case, SPS does not appear to be a major barrier for entry to the EU market. Out of the 49 cases of SPS problems with imports from Moldova reported in the RASFF only two (likely related to a single shipping in 2006) referred to wines having too high content of sulphite.

Moldovan wine sector and DCFTA

Winemaking has been a very important element of Moldovan economy for many years. Currently, vineries cover around 145 thousand hectares, mostly being privately owned. Winemaking accounted to around 20% of total industrial output during 2003-2006, to fall dramatically from 2006 onwards following an import embargo introduced by Russia, a key export market. During 2008-2010 the share in industrial output

[110] The analysis of effects of the entry price system can be found e.g. in Goetz, Linde & Grethe, Harald, 2009. "The EU entry price system for fresh fruits and vegetables - Paper tiger or powerful market barrier?," Food Policy, Elsevier, vol. 34(1), pages 81-93.

[111] Viorel Leahu, Fresh fruit sector in Moldova Comprehensive baseline study, 2012. Mimeo.

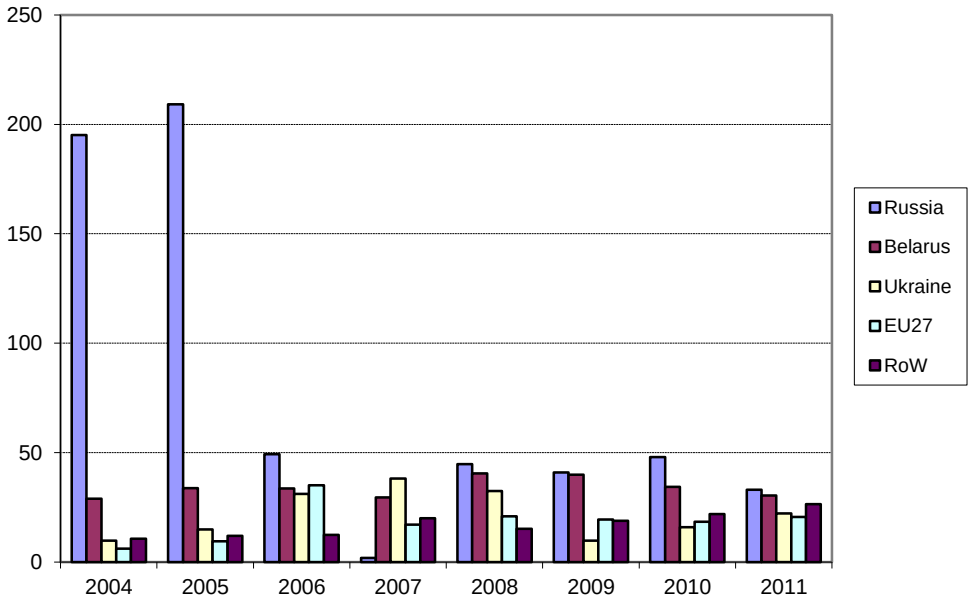
[112] For comparison there are 40 cases for Georgia, 37 cases for Serbia, and 156 notifications for Slovakia (EU member country).

stabilised at just above 7%. The sector is very much export oriented and wine is the key export product of Moldova. The share of wine in total Moldova exports was as high as 25% in 2004 and 35% in 2005 to subsequently fall to13% in 2007 and 11% in 2011.

Historically Russia was the key market for Moldovan wine accounting for around 75% of total exports (Figure 8.2). This explains the strength of the effects of the import embargo from 2006. Moldovan wines have never managed to re-establish their position in the Russian market with current export values at a quarter of pre-2006 levels. Still, Russia remains number one export destination for Moldova wines, ahead of Belarus and Ukraine.

EU imports of Moldovan wine were negligible until 2005. After a one-off jump in 2006 they subsequently stabilised at around USD 20 million. Growth in volume terms was more dynamic in recent years. Wine remains one of a few products subject to tariff rate quotas under the ATP regime[113]. Moldova was typically using its quotas in full. In fact Moldovan during exports during 2008-2010 exceeded the quota quite significantly – with exports at close to 11 million litres each year, while quotas were rising from 6 to 8 million litres. A substantial increase in quota introduced by the new ATP regulation in 2011 (by 50% to 15 million litres) stimulated a significant increase in the volume of Moldovan exports (up to 13 million litres) although quota was not used in full. Moldova also exports to the EU types of wine that are not subject to quotas (e.g. sparkling wine), although in small quantities only. Wines exported to EU markets are generally of somewhat higher quality (more expensive - as evidence of higher unit costs in foreign trade data) than those targeting CIS markets.

Figure 8.2 Direction of Moldovan wine exports, 2004-2011 (USD million)



Many enterprises are active in the sector. Data from 2010 suggested that the sector consisted of around 170 enterprises (mostly limited partnerships) processing grapes, while above 60 enterprises had their own bottling lines[114]. The sector has attracted foreign capital inflows, but precise data are not available.

[113] The tarifff free quotas apply to Wine of fresh grapes, of an actual alcoholic strength by volume not exceeding 15 % vol, other than sparkling wine (HS 220421 and HS 220429).

[114] MIEPO Wine Sectorial Factsheet, June 2010.

The current legislative and administrative framework applicable to Moldovan wine producers is considered burdensome creating barriers to sector's development. The number of legal acts related to certification and certification documents is considered excessive and costly in implementation. For instance, given the export-orientation of Moldovan wine production certification of wines for export (even if not required y importing countries) is considered superfluous.

The Moldovan wine sector has until 2006 relied on exporting low-quality, semi-sweet and cheap wine to Russia. Better quality wines matching the tastes of EU consumers (and increasing number of consumers in Russia and other CIS markets as well) constituted a small share of the sector in Moldova. The Russian ban import and its consequences forced changes in the domestic market. The problems for Moldovan wine in reaching EU markets are not related to meeting specific SPS regulations, but more to the trade barriers in the form of tariffs, limited efforts to promote Moldovan wines more widely in selected EU markets in the context of low market shares held by Moldova and very tight competition from other regions (EU and non-EU) and still limited supply of Moldovan wines meeting the 'modern taste'.

The 2011 ATP regulation has already significantly increased tariff rate quotas for Moldovan wines – their level is to rise to 24 million litres during 2013-2015, i.e. almost twice the volume of Moldovan exports from 2011. Assuming that the DCFTA would result in complete abolishing of tariff barriers for wine, its main impact could be in providing long-term confidence in access rule to the EU market. This is important given that e.g. any investments in vineyards can only bring results in a few years perspective.

The effects of lowering EU tariffs on Moldovan wines has been calculated using partial equilibrium modelling. The analysis focusses on effects vis-à-vis the EU 27, Russia, and Ukraine.

GSIM

The GSIM model was developed by Francois and Hall (2003) and is a log-linearised partial equilibrium model developed for trade policy analysis at industry level. National product differentiation is a basic assumption of the model, meaning that imports are assumed to be imperfect substitutes for each other. The elasticity of substitution is held to be equal and is constant in one specific country across products from different sources. The elasticity of demand in aggregate is also constant. In other words, the model uses a CES (Armington) import demand function. Import supply is similarly characterized by constant (supply) elasticities. The model requires data for trade and trade protection measures (also domestic production support could be included, but these have not been used this time). The results provide the changes in national output, consumer surplus, producer surplus, tariff revenues and in total net welfare. A more detailed description of the model is provided in Francois and Hall (2003).

Specifications

The model was run with a base year of 2011. A tariff value of 0.5 Euro/l was obtained from the DG Trade tariff database. This tariff was converted into tariff revenue via the imported quantity of the EU 27 from Moldova in 2011. The relationship of tariff revenue to total imported value gave the initial tariff rate. Out of this, four scenarios were created:

- 25% tariff reduction
- 50% tariff reduction
- 75% tariff reduction
- 100% tariff reduction

The analysis is incremental in nature, meaning that other possible tariff measures between the included trading partners are not considered. Trade data on quantities and values has been retrieved from the UN COMTRADE database via the WITS platform. Generally, the reported trade data from the importer's side has been taken. If data was not available mirroring was used to complete bilateral trade flows. Countries or regions included in the analysis are Moldova, EU 27, Russia, Ukraine, and rest of the world.

Product group characteristics

All traded values fall within the HS4 nominated 2204 product category ("Wine of fresh grapes, (incl. fortified wines)/ other grape must"). Import demand and export supply elasticities have been obtained from a World Bank dataset updated in 2012. The dataset contains elasticities on the HS6 product level for 85 countries. Countries have been grouped in accordance with previously described aggregation. Furthermore, HS6 product codes were mapped to the HS4 level. Here, as well as for the country/region specific elasticities averages were taken. In addition, the World Bank dataset is not entirely complete and some specific elasticity values are missing. Thus, the assumption was made that averages still apply. Table 1 summarizes the applied elasticities. Here, it can be seen that Moldovan import demand is relatively inelastic with only slight differences to Ukraine and Russia. Furthermore, EU 27 and rest of the world are comparably elastic. Export supply elasticity is significantly more inelastic for Moldova, Russia, and Ukraine. In contrast, EU 27 and rest of the world are on the elastic side. Finally, import substitution elasticity is the same as the beverages and tobacco sector in the GTAP database.

Table 2: Applied elasticities (based on World Bank)

Elasticity	Moldova	EU 27	Russia	Ukraine	ROW
Composite Demand	-0.96029	-3.79995	-1.05188	-1.02492	-2.50287
Industry Supply	0.111096	2.54043	0.117962	0.269482	1.757364
Substitution	1.1	1.1	1.1	1.1	1.1

Modelling results

Table 2 shows the results for the partial equilibrium model. Variables included in the results are changes in output, producer and consumer surplus, tariff revenue, and net welfare effect. Here, the net welfare is calculated as the sum of changes in producer and consumer surplus, and tariff revenue changes.

In all scenarios Moldova, EU 27, Ukraine, and rest of the world benefit in terms of output changes. These outputs increase in accordance with the simulated tariff reduction. Thus, depending on the tariff cut Moldova's output changes vary between 0.13% and 0.55%, EU 27's between 0.001% and 0.002%, Ukraine's between 0.0002% and 0.001%, and rest of the world's between 0.0003% and 0.001%. It becomes clear that changes are biggest for Moldova, which is benefitting from a now cheaper access to the EU 27 market. In contrast, output changes for Russia are negative and vary between -0.0006% and -0.002%. Reasons for this are found in the inelastic supply of exports compared to other regions. Whereas Moldova benefits directly from the tariff reduction, Russian exports are relatively inflexible to adjust for changing world prices. Nevertheless, output changes are relatively small for all regions.

Additionally, Tables 2 shows that in those regions where output grows producers gain surplus value. This surplus value grows with the extent of the tariff cut. Furthermore, only EU 27 consumers benefit from the tariff reduction, as increased supply from Moldova puts price pressure on the EU 27 market. Consumers in Moldova face a decline in surplus since Moldovan producers now have the option to export to better prices, which also increases prices in Moldova. Other regions' consumers face a decline in surplus value because Moldova is redirecting exports to the EU 27 market. This reduces total regional supply of wine and drives up prices. For the EU 27 the tariff cut results first in an increasing net welfare effect. However, full trade liberalisation compared to a 75% tariff reduction entails a decreasing welfare effect due to decreasing tariff revenues.

Table 3: Partial equilibrium modeling results

Change in	Moldova	EU 27	Russia	Ukraine	ROW
25 % tariff cut					
Output, %	0.1318%	0.0006%	-0.0006%	0.0002%	0.0003%
Producer surplus, mil $	1440.595	1160.81	-0.04758	1.418069	222.3664

Change in	Moldova	EU 27	Russia	Ukraine	ROW
Consumer surplus, mil $	-0.12349	1229.915	-457.527	-270.574	-1196.85
Tariff revenue, mil $	0	-1669.76	0	0	0
Net welfare effect, mil $	1440.471	720.9629	-457.575	-269.156	-974.48
50% tariff cut					
Output, %	0.2668%	0.0012%	-0.0012%	0.0005%	0.0006%
Producer surplus, mil $	2917.756	2349.596	-0.09631	2.870206	450.0842
Consumer surplus, mil $	-0.24996	2489.8	-926.26	-548.253	-2422.68
Tariff revenue, mil $	0	-3682.21	0	0	0
Net welfare effect, mil $	2917.506	1157.183	-926.356	-545.382	-1972.59
75 % tariff cut					
Output, %	0.4051%	0.0018%	-0.0018%	0.0007%	0.0009%
Producer surplus, mil $	4432.891	3567.382	-0.14622	4.357652	683.349
Consumer surplus, mil $	-0.3795	3780.763	-1406.61	-833.315	-3678.56
Tariff revenue, mil $	0	-6061.02	0	0	0
Net welfare effect, mil $	4432.511	1287.128	-1406.76	-828.958	-2995.21
100% tariff cut					
Output, %	0.547%	0.002%	-0.002%	0.001%	0.001%
Producer surplus, mil $	5987.477	4815.242	-0.19735	5.881712	922.3658
Consumer surplus, mil $	-0.51224	5103.967	-1899.03	-1126.06	-4965.62
Tariff revenue, mil $	0	-8831.56	0	0	0
Net welfare effect, mil $	5986.965	1087.653	-1899.23	-1120.18	-4043.25

Sensitivity analysis

The first sensitivity analysis is carried out in the light of the correct estimation of Armington substitution elasticities. This is an important aspect considering that the originally used GTAP elasticity is for an aggregated sector and might not be appropriate for an analysis at product level. Consequently, multiple optimizations have been carried out with changing values of the substitution elasticity, varying between 0 and 5, and corresponding output changes have been recorded. This analysis shows that Moldovan output is particularly sensitive to elasticity changes between 0 and 1.5. Here, Moldovan output varies between ca. 0% and 0.55%. Other regions' output variation is limited due to the small import shares and corresponding effect of Moldovan exports.

The second sensitivity analysis simulates a Moldovan wine sector, which is becoming more elastic over time. This might be of particular relevance if the trade liberalisation has an effect on the structure and technological capabilities of the Moldovan wine sector. The sensitivity analysis shows that output changes significantly (between approximately 0% and 4.2%) as supply becomes more elastic. This signals more agility and flexibility with respect to changing prices and making more extensive use of the trade liberalisation. Again, due to the relatively small role Moldova plays on the European wine market output changes in other regions are small.

There are certain product groups that are not of major importance in terms of total export shares of Moldova but where the data indicate a high likelihood of barriers preventing access to the EU market. This applies in particular to meat and live animals, where there are no Moldovan exports to the EU at all, dairy products (mainly cheese and butter) and eggs for which reported Moldovan exports to the EU are also very close to zero, in contrast to non-negligible Moldovan exports to non-EU markets. Looking at products of animal origin as a whole only honey is exported from Moldova to the EU.

Indeed, EU SPS rules concerning products of animal origin are quite strict and at present Moldovan producers cannot enter the market (with the exception of honey). There are several requirements for Moldova to be placed by the EC on a list of third countries from which imports of products of animal origin are permitted. These requirements are related to meat industry and certification of final products. The current system operational in Moldova cannot satisfy the EU market requirements in this area and before Moldova needs to approximate at least the key Directives and Regulations in this sector.[115]

SPS-related trade barriers may also be relevant for EU exports to Moldova. The magnitude of these barriers and their sectoral distribution are difficult to assess. There are no entries on Moldova in the SPS market access database, a tool established by the European Commission, DG Trade to provide information on the market access barriers and issues facing EU exporters to third countries and to support EC efforts to resolve these issues.[116]

8.3 Impact assessment of adopting new SPS standards in Moldova as a consequence of the DCFTA

8.3.1 Introduction

With Moldova adopting SPS standards aligned with the EU ones as envisaged under the DCFTA, a range of potential economic, social and environmental effects can be identified for the country – involving both benefits and costs.

Key potential benefits include the following:

- To the extent that EU SPS standards are more advanced and modern than Moldovan standards they can lead to an improvement in the Moldovan food safety systems and contribute to improved health outcomes in the country with all associated social and economic benefits.
- To the extent that EU SPS standards are more advanced and modern than Moldovan standards they can lead to improvements in agricultural practices and in food processing affecting environmental burdens related to food production.
- For sectors and products where approximation will take place, access to the EU market for those products can be created. It will facilitate the export of Moldovan products to the EU as producers will have only one set of standards to comply with. The extent to which this opportunity materialises, however, depends on the costs to comply with the new standards and how they affect international competitiveness of Moldovan products: while costs increase, there may be productivity improvements too.
- Once Moldovan producers comply with higher standards, it might be easier for them to also access other markets with high standards, such as the US or Russia.
- For sectors and products where harmonisation will take place it may be easier to import EU product into Moldova as EU producers will have only one set of standards to comply with. The importance of barriers for EU exports related to differences in SPS standards is difficult to assess, hence the magnitude of gains from approximation is also uncertain. This import effect can also materialise for other countries that have their SPS standards aligned with the EU ones.
- For sectors and products where approximation will take place all Moldovan producers (including those that are not exporting) will need to meet the new SPS requirements. Depending on the new system in place this may decrease costs compared to the current situation (however, cost

[115] Specifically Directives: 2006/130/CE; 2001/82/CE; 2009/9/CE; 91/412/CEE; 2004/10/CE; 2004/9/CE; 98/8/CE and Regulations 1084/2003/CE, 1234/2008/CE and 1451/2007.

[116] The database is publicly available at http://madb.europa.eu/madb_barriers/indexPubli_sps.htm

increases are also possible – see below). The longer term effects may be more positive and in particular efficiency improvements are likely.

The most important (compliance) costs include:

- For sectors and products where approximation will take place all Moldovan producers (including those that are not exporting) will need to make investments related to changes in production processes. These investments to comply with new SPS system will add to costs in the short run and may drive some businesses out of business
- For sectors and products where approximation will take place all Moldovan producers (including those that are not exporting) will face on-going (operational) compliance costs to meet the new SPS requirements (e.g. laboratory testing, etc.) – although these could possibly be compensated by productivity increases as indicated above. Depending on the new system in place this may increase overall costs for producers compared to the current situation. However, as indicated above for some producers or in some sectors costs may actually decline.[117]
- The need to upgrade public infrastructure for the new SPS regime involve fiscal costs to be borne by all Moldovan taxpayers.
- For some small producers the new SPS requirements may turn out to be prohibitive in terms of necessary investments or operational costs of compliance (significant scale economy effects are likely here). This may force some of them out of the market and force them into subsistence farming (or abandoning farming altogether). Such processes, if they happen on a larger scale could result in certain social costs and deterioration of poverty indices..

Potentially, experiences of other countries could provide some indication on the significance of some of these costs and benefits described above and their balance. However, comparison to findings from other countries also has its drawbacks. First of all because there are only a limited number of such studies,[118] but also because the starting points (existing alignment of standards and quality of infrastructure) vary widely between countries, production and export structures differ across countries (standards and requirements are less strict for certain products and sectors than for others) and the distribution of companies by size may also vary (compliance costs are likely to be higher for smaller firms that are less able to make use of economies of scale). Hence in practice the relevance of lessons from other countries may be limited for assessing the effects for Moldova.

8.3.2 Impact assessment for Moldova

The key direct economic impact of SPS reforms in Moldova aligning the country's SPS system with the EU one will be easier access to EU markets for agricultural and food products. This in particular implies that the whole sector of food products of animal origin that currently cannot export to the EU will have the opportunity to try to enter EU markets.

Lower costs of market entry should also be visible in non-EU markets that have aligned (or are in the process of doing so) their SPS system with the EU one. At the same time it will become easier for EU products (and products from other countries with similar SPS regimes) to enter Moldova. This can increase competition in the domestic market driving down consumer prices and / or leading to quality gains, while putting pressure on domestic enterprises to improve their

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117 This assessment draws from the discussion in C. Cosgrove and M. Hellyer, Sanitary and Phytosanitary Measures. EU-Ukraine Free Trade Agreement Negotiations. Stakeholder Briefing Note 5, May 2008. http://www.ctaeconomic.com/5-SPS.pdf accessed 4 July 2012.

118 One such study was commissioned by the Forum for Agricultural Research in Africa (FARA): Day R, Tambi E and Odularu G, 2012. An analysis of compliance with selected sanitary and phytosanitary measures in eastern and southern Africa. Forum for Agricultural Research in Africa (FARA),Accra, Ghana.

competitiveness. The CGE model predicts heterogeneous impact of these forces on output in relevant sectors (see Table 8.1 below).

Indirect impacts that may be relevant from an economic, social and environmental perspective could materialise due to institutional changes necessitated by the need to upgrade the SPS regime. This could have positive spill overs to the public and private sector institutions and could be seen as an element of the on-going modernisation process in Moldova.

Given that the new SPS regime will likely change the competitive position of companies active in the agricultural production and food processing sectors there may be some employment effects. The results of the CGE modelling indicate that approximation of the SPS regime is likely to lead to negative employment effects, while overall impact on output and value added are close to zero (Table 8.1). Putting it differently, the CGE model results suggest that Moldovan enterprises will face difficulties in the new competitive international environment after aligning the SPS regime with the EU one.

Table 8.1 Effects of NTMs reduction on sectoral output and employment for agricultural and food processing sectors (% change relative to the baseline in a given sector)

	Output		Employment (more skilled)		Employment (less skilled)	
	Short run	Long run	Short run	Long run	Short run	Long run
Grains and Crops	0.2	-0.8	-0.1	-2.2	-0.2	-1.8
Veg, fruits, nuts, oilseeds	0.8	-0.5	0.4	-2.1	0.3	-1.7
Other crops	2.0	0.2	1.4	-1.5	1.4	-1.1
Animal products	0.4	1.4	0.1	-0.1	0.1	0.3
Forestry products	-2.1	-1.6	-2.5	-3.1	-2.5	-2.7
Fish products	0.2	1.8	-0.1	0.6	-0.1	1.0
Livestock and meat products	-6.1	-5.4	-6.2	-9.1	-6.3	-7.9
Vegetables oils and fats	3.3	2.8	2.5	-2.0	2.3	-0.7
Dairy products	-0.4	1.9	-0.9	-2.7	-1.0	-1.4
Sugar	4.5	4.9	3.4	-1.3	3.2	0.3
Other processed food	-0.7	1.9	-1.2	-3.3	-1.3	-2.0
Beverages and tobacco	0.7	-6.1	0.2	-5.7	0.0	-4.4

Note: in case of the sectors listed reduction of NTMs is likely closely related to SPS measures. Combined effects of the DCFTA in most of these sectors are positive, mainly on the back of tariff reductions.

There is scope for positive and potentially significant health effects from improved quality and safety of food products, although any attempt to quantify these would be a major undertaking. Overall social effects of the DCFTA (taking into account employment, health and institutional changes) related to changes in the sphere of SPS standards are therefore difficult to predict.

In the environmental sphere we assess that the positive effects are likely to dominate due to improved agricultural practices, better control on the use of agricultural chemicals, and general institutional improvements.

The key categories of costs related to the DCFTA-induced changes in the SPS sphere are:

- the fiscal costs of building or reforming existing institutions, developing new quality infrastructure and then maintaining it;
- costs to be borne by companies in the food chain to comply with the new SPS regime; and

- costs to be borne by consumers, related to higher food prices.

This is an essential issue for the DCFTA negotiations and its subsequent implementation as the scope of approximation and timing of taking up certain obligations matters quite substantially for the costs to be borne. Unfortunately, quantification of such costs is an extremely complex undertaking as indicated above. For instance one difficulty is that SPS measures are closely intertwined with normal production, processing, handling, quality management and distribution costs.[119] Besides, at a societal level, monetary valuation of several costs and benefits (e.g. changes in health or morbidity) is very difficult and would require a full economic cost-benefit analysis. In any case, quantification of these costs lies outside the scope of this study.

One factor limiting potential gains from SPS approximation in terms of better market access to the EU market is the popularity of private food certifications standards, such as Globalgap. These are very popular among EU supermarkets chains and their suppliers. Globalgap, the most popular private farm management practice standard for food of non-animal origin, focuses on good agricultural practices, i.e. how the product is produced and/or processed. This is a very different approach than equivalence of risk outcomes in the WTO SPS Agreement. Some evidence suggests that private SPS standards such as Globalgap constitute an important trade barriers for developing countries trying to enter EU markets.[120] We do not attempt an analysis of its relevance for Moldovan producers. We note, however, that the DCFTA is unlikely to change much in the ease or costs of obtaining such private certificates for Moldovan producers. Hence, we see the role played by such standards merely as limiting potential gains for Moldovan producers in EU market access that could arise from approximation of SPSas a consequence of the DCFTA.

8.4 Conclusions

Our analysis indicates that economic effects of approximating EU SPS regime are likely to be slightly negative for Moldova in the short- to medium-term. This can be mostly attributed to substantial costs of the approximation process – to be borne by tax-payers (public finances), enterprises in the food production chains and consumers. On a more positive note, over time, more positive effects could materialise in the economic sphere related to modernisation of institutional infrastructure for the agricultural and food processing sectors, and a better competitive position of Moldova in global food markets. It is worth remembering that this study focuses on the assessment of the impact of the DCFTA relative to the baseline that in the case of the SPS regime is related to the situation in 2010. However, SPS standards are likely to gradually become more sophisticated globally and hence an upgrade of old regimes (such as the one that Moldova inherited from the Soviet period) could at some point in the future become necessary irrespective of DCFTA prospects.

The social effects are ambiguous. We expect a negative contribution from economic outcomes (e.g. in terms of employment), but these contrast with potentially significant gains in terms of public health outcomes as food quality improves and the risks of food-related diseases declines. In addition one can expect positive spill-overs in the social sphere from institutional upgrades.

We expect positive environmental effects from improved agricultural and food processing practices including better control of dangerous substances.

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[119] FAO, Strengthening National Food Control Systems: Guidelines to Assess Capacity Building Needs, Rome 2006.

[120] For a discussion see e.g. Grace Chia-Hui Lee, Private Food Standards and Their Impact on Developing Countries, mimeo, http://trade.ec.europa.eu/doclib/docs/2006/november/tradoc_127969.pdf. Accessed 13 August 2012.

9 Conclusions on the sustainability impact of the DCFTA

9.1 Economic impact

If we look at the economic results, we see that the DCFTA is beneficial for both Moldova and the EU in terms of national income growth. In the long run, the estimated change in national income is expected to be EUR 142 million for Moldova and EUR 240 million for the EU. In relative terms, for the EU these changes in national income translate into a negligible 0.0 percent change, while for Moldova, relative changes are much more profound as the increase in national income translates to an increase in GDP of 5.4 percent. Thus the DCFTA is expected to have a more pronounced impact on Moldova's economy than on the EU's. For Moldova, the reduction of NTMs are the single most important measure for reaping the benefits of liberalising trade with the EU.

Moldova is also expected to experience other positive changes at the macro level. Exports are estimated to increase by 16 percent in the long run, while imports are estimated to increase by 8 percent. In addition, wages are expected to increase by 4.8 percent, In combination with the expected decrease in consumer prices (-1.3 percent) this means that disposable income would go up. For the EU, the effect on other macroeconomic indicators is negligible. The DCFTA has virtually no impact on third countries, as the percentage change in GDP for these countries is close to zero.

At sector level, we considered the DCFTA effects with or without a TRQ for sugar. Without the TRQ, the biggest effect is the 187 percent increase in the output of sugar. Other sectors, which are expected to increase more than 10 percent, are other crops, textiles and clothing, and air transport. Livestock and meat products, motor vehicles, electronics and computers and other manufacturing are all expected to contract by 8-22 percent in terms of output. When the TRQ is included, the effects for most sectors are comparable to the first experiment, except for the sugar sector itself and some related sectors. In this scenario, output in the sugar sector is expected to increase by only 9 percent (and the sector other crops also does not expand as much anymore, now only by 2 percent). Sectors that are expected to increase their output by more than 10 percent are air transport, other machinery & equipment, textiles & clothing and primary metals. Livestock and meat products, beverages & tobacco and other manufacturing, motor vehicles and electronics & computers are still expected to contract, between 5-24 percent.

The DCFTA will also bring about a reform agenda in the country, through the regulatory approximation that is part of the agreement. This will induce changes in areas such as SPS, TBT, IPR, competition and customs. This will not only have benefits in terms of increased market access to the EU and other countries, but can also bring other positive changes for Moldova, e.g. improved SPS will contribute to better food safety, better protection of IPRs may induce innovation, and improved competition policy and implementation will prevent abuse of market power and may therefore decrease prices.

9.2 Social and human rights impact

Effects related to employment and wages are expected to be the main drivers of overall social impact of the DCFTA. The overall employment and wage levels are likely to increase in line with rising output. Since the computable general equilibrium (CGE) model used for quantification of

effects assumes fixed employment, the predicted social effects are reflected in rising wages, which is an indication that in reality wages rise and/or employment goes up. This, combined with predicted fall in consumer price inflation is expected to support improvements in average living standards.

As any other trade liberalisation (or globalisation) process the DCFTA will require reallocation of resources – labour and capital between sectors: from less productive to more productive ones. Our analysis suggests that the DCFTA may lead to approximately five percent of the Moldovan labour force needing to change sector of employment. This reallocation would be slightly higher for the less skilled workers compared to the more skilled workers (5 versus 4.5 percent). Whether people that lose their job due to a contraction of the sector can in practice indeed easily find employment in a sector that expands will be key for determining the timing and scale of expected gains from the DCFTA that may be delayed and/or limited if labour reallocation proves difficult and lengthy.

The additional quantitative social analysis shows that poorer strata of the population appear to benefit less from DCFTA than those with above average incomes. There is a risk of a rise in certain poverty indicators, especially for extreme poverty (i.e. for the 2-3% poorest people in Moldova). The DCFTA may also exacerbate inequality (and slightly worsen relevant indicators such as relative poverty, Gini coefficient or decile and quintile ratios), albeit to a very small degree, as changes in disposable income are generally limited.

As regards the DCFTA impact on labour rights – which is also an important aspect from the human rights perspective – our conclusion is that while the DCFTA may ignite several forces acting towards either improving or worsening the labour rights situations, on balance positive forces are likely to be somewhat stronger compared to the current situation. This assessment is underpinned inter alia by the analysis of progress made in the process of implementing the earlier EC recommendations on preparations to the DCFTA negotiations.

The (indirect) favourable DCFTA impact on equality may come about if and when increasing living standards begin to support gradual changes in societal preferences on equality issues. Other mechanisms of positive influence may be related to international conventions supporting equality and condemning discrimination. On the negative side, sectoral employment re-allocations that will be required by the DCFTA may disproportionally affect the weakest workforce groups, those with low education and skill levels, hence groups currently already subject to unequal treatment and chances. The aggregate direction and strength of these forces is difficult to predict, although worsening of the situation relative to trends currently observed does not appear likely.

In terms of human rights, the expected increase in income could positively contribute to the human rights situation. Although no major negative effects are expected *à priori*, challenges remain, e.g. with respect to possible rising inequality and the risk of pressure for lowering labour standards as a means to reduce costs in the environment of increased international competition.

9.3 Environmental impact

The estimated environmental effects in terms of CO2 emissions and land use intensity in Moldova are very small based on the CGE results. CO2 emissions are expected to hardly increase (0.1 percent), while land use intensity would increase by 1.9 percent. The additional quantitative analysis shows that different kinds of air pollution are expected to rise by less than 3 percent (ranging from 1.9 to 2.9 percent), translating into associated total external costs of DCFTA to the

tune of EUR 15 million for Moldova, mainly through the negative impact on human health. This increase in associated costs represents an increase by 2.9 percent relative to the estimate of the external costs in the baseline situation). At the sectoral level we expect significant increases of released air emission for agriculture, ferrous metals, and land & other transport. Only the emissions from the sector mineral products are expected to decline significantly.

We see a role of external pressure or encouragement in moving the environment higher on the agenda of Moldovan policy makers and other stakeholders. Our assessment suggests that he DCFTA should be at least as effective as the current ATP regime in supporting Moldovan efforts in this field.

We conclude that DCFTA is likely to have a weak but positive effect encouraging more effective implementation of international environmental agreements in Moldova that should – in a gradual manner – also contribute to solving some of the outstanding environmental challenges facing the country. This mechanism may prove important in greening economic growth in Moldova in general and limiting the environmental burden from a boost to economic development due to a DCFTA.

10 Policy recommendations and flanking measures

The quantitative and qualitative analyses in the previous chapters have identified the potential positive and negative effects of a DCFTA in terms of its economic, social and environmental impact. Based on these findings, this chapter presents policy recommendations and flanking measures that can help enhance positive effects and prevent or mitigate negative effects.

We distinguish between recommendations that can be addressed within the DCFTA (i.e. directly related to provisions to be included in the DCFTA) and those that could be addressed outside the DCFTA (i.e. non-trade related (accompanying) measures). The recommendations in this Chapter are provided by the Ecorys-CASE research team and do not reflect any commitment from the European Commission or the Government of the Republic of Moldova.

10.1 Policy context and approach

10.1.1 Context

There are a number of issues to keep in mind before presenting the policy recommendations and flanking measures.

Modelling assumptions

The impacts identified in this TSIA are partly based on the CGE and other modelling techniques, implying that they are influenced by the assumptions underlying these techniques. Some of these assumptions directly relate to the policies measures of the parties involved, implying that it may seem as if a policy measure is already in place even though it is a model assumption that has specific impacts *if* agreed and implemented.

An important example in this context is that the outcomes of the CGE model are based on Moldova's approximation to the EU, especially in the field of SPS, TBT, IPR, etc. These results thus crucially hinge on the DCFTA negotiations and actual implementation of policies related to approximation in these fields.

Policy and socio-economic context

While negotiating and subsequently implementing the DCFTA – including preventative, mitigation and enhancement measures – both the EU and Moldova need to be aware of the socio-economic and policy context in which they are being implemented. The DCFTA and its mitigating and enhancing measures have a socio-cultural context in which they are implemented. Context factors (including political pressure, silent resistance, geographical distribution effects, etc.) may lead to different outcomes than expected. It is therefore considered crucial to:

- involve relevant stakeholders (with varying interests being adequately represented) in the process in order to achieve implementation of effective preventing/mitigating and enhancing measures for sustainable development.
- put adequate monitoring and evaluation mechanisms in place, making sure the effect of policy measures are monitored, reviewed and if necessary amended.

On-going structural transformation processes

The impacts assessed in this TSIA for the DCFTA between the EU and Moldova should be seen in the context of on-going structural transformation processes within Moldova, the EU and at a global level. In line with this, some of the impacts expected in the DCFTA can be seen as a reinforcement or acceleration of already on-going structural adjustments, while other impacts of the DCFTA may (temporarily) ease this adjustment process (e.g. increased employment opportunities in some agricultural sector, while the long-term trends is a decrease in employment in the sector due to improved technologies). Likewise, policy recommendations should take these processes and the ensuing policies into account.

10.1.2 Approach

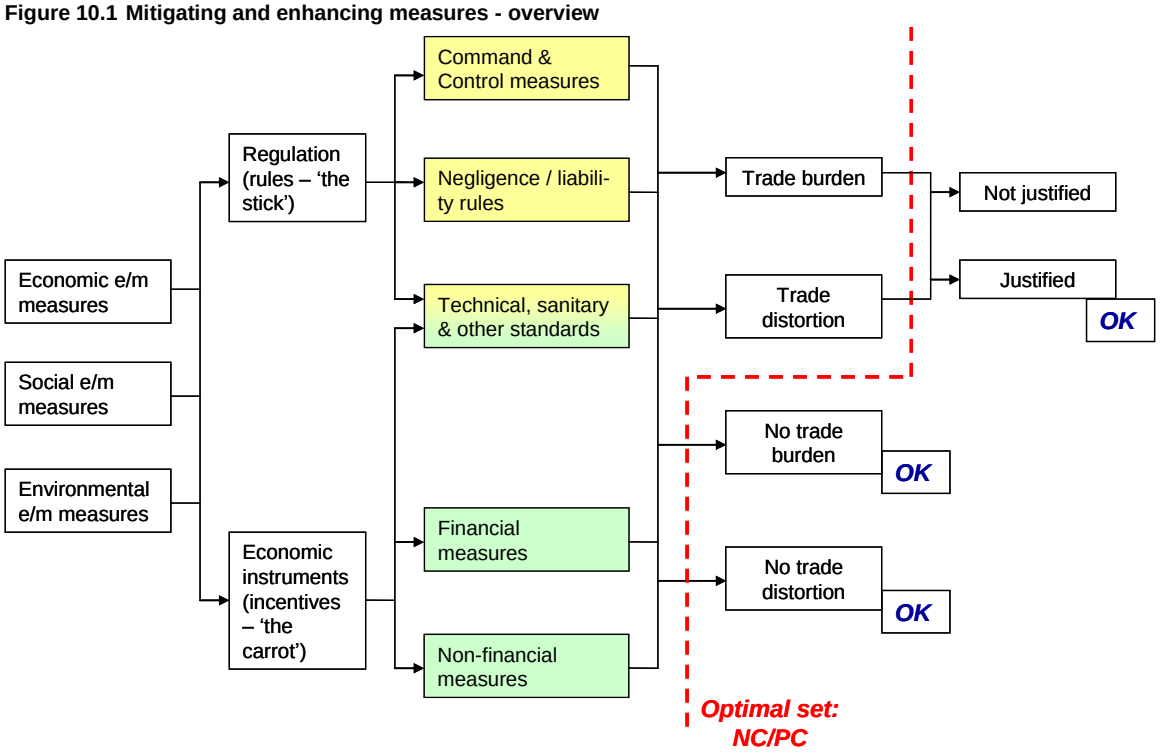
Taking into account the above-mentioned issues, a mix of a large number of instruments can be employed in order to generate the desired outcomes. There are two main approaches to preventing/mitigating and enhancing measures: the legal approach through regulation ('stick') and the economic approach through economic instruments ('carrot'). A schematic overview of choosing the optimal set of mitigating and enhancing measures policy measures is presented in Figure 10.1. Schematically, we need to:

- Identify measures to be employed (from Command & Control[121] to Non financial measures);
- Assess whether these measures create trade burdens or distortions;
- Assess whether they meet the normative and positive criteria for an optimal policy mix (the dotted line);
- If the measures create a trade burden or distortion, assess whether these are justified;
- Subsequently determine the preventative, mitigation and enhancement measures to be imposed: those that do not create trade burdens and/or distortions and those that do but are nonetheless deemed justified.

Thus, several preventative, mitigation and enhancement measures which do not create trade burdens or distortions may then be implemented. Several environmental and/or social regulations and economic instruments that may create trade distortions or burdens can also be implemented if they fit in the ex ante agreed decision making framework as 'justified'.

[121] The OECD defines Command & Control (CAC) policy as: "policy that relies on regulation (permission, prohibition, standard setting and enforcement as opposed to financial incentives, that is, economic instruments of cost internalisation." This approach has e.g. been used widely with respect to environmental damage brought about by economic activities.

Figure 10.1 Mitigating and enhancing measures - overview



This DCFTA is clearly part of a more general process of enhanced cooperation and dialogue between the EU and Moldova in the context of the EU's Neighbourhood Policy and will form an integral part of the Association Agreement. The DCFTA should build on the positive experiences, initiatives and relations built up over the past decades and maintain the policy and technical dialogue and co-operation that has been established through these means. The mainstreaming of trade into the overall assistance programmes and cooperation agreements will enhance policy coherence and encourage further economic integration between Moldova and the EU and sustainable development.

10.2 Overall recommendations

This section presents the recommendations help enhance positive effects and prevent or mitigate negative effects of the DCFTA. They are presented separately for each of the three pillars of sustainable development: economic, social (including human rights) and environmental.

10.2.1 Policy recommendations related to the economic pillar

Although the DCFTA is expected to enhance economic growth as presented in the previous chapters, it is clear that some sectors will gain while other will lose, thereby inducing or reinforcing a process of structural transformation. Table 10.1 summarises the economic policy recommendations in the context of the DCFTA, which are subsequently explained in more detail.

Table 10.1 Recommendations for the economic pillar

Policy measure	Potential to address	
	Within DCFTA	Outside DCFTA
Provision of technical assistance and capacity building in regulatory approximation process, especially in SPS, TBT, trade facilitation, and IPR	√	√

Policy measure	Potential to address	
	Within DCFTA	Outside DCFTA
Allow for phasing in of tariff reductions or regulatory approximation at sector level , especially for those sectors where the economic, social and environmental impact will be high	√	
Stimulate on-going improvements in investment/business climate	√	√
Support efforts facilitating structural adjustment across sectors resulting from implementation of the DCFTA	√	√
Stimulate entrepreneurship and competitiveness of SMEs		√

As noted in the first section of the chapter, the estimated impact of the DCFTA is based on Moldova's approximation to the EU in areas like SPS, TBT, IPR, etc., which will be part of the DCFTA. Without this approximation, many of the benefits may not materialise. Substantial investments are needed for the approximation process. It requires amendments in Moldova's laws and regulations and also the appropriate infrastructure needs to be further developed (e.g. creation of accredited testing laboratories in line with EU or international standards). But also the private sector needs be made aware of the changes and consequences for their day-to-day operations, and companies may require training and assistance to make the necessary adjustments. Furthermore the enforcement of the new rules and regulations needs to be developed. This is a timely and costly process and Moldova could benefit from technical assistance in all these areas.

Some sectors will lose as a result of the DCFTA, and this may have significantly negative economic, social or environmental consequences in the short run. For these sectors it may be good to phase in tariff reductions or to provide longer periods for the approximation process. This would allow time for adjustment, although the pros and cons should be assessed in parallel. Related to this is the process of structural adjustment that may be induced or reinforced by the DCFTA. It would be good to examine the possibility of funding structural adjustment efforts.

To reap the benefits of the DCFTA, it will also be important to have an attractive business and investment climate. This will lower the burden for existing companies and also induce new investments, including foreign investments, thereby contributing to economic development. Foreign investors can play an important role in the development of some sectors, looking for example at the Romania experience in the car sector upon its EU accession. Although Moldova has already improved its business climate over the last years, remaining barriers (e.g. facilitating the acquisition of agricultural land by foreign investors) should be re-assessed in relation to the potential for foreign investments. In a number of sectors, there is also scope for more competition, like telecommunications, electricity permission and airport operation. But also more 'practical' improvements in the business climate (reducing red tape, investment incentives, etc.) could help to improve the business climate.

Finally, there are large number of Small and Medium Enterprises (SMEs) that mainly produce for the home market. They will face increased competition from imports as a result of the DCFTA and it is therefore important to improve their competitiveness. At the same time, the DCFTA will create a lot of opportunities for business, and companies should be encouraged to reap these benefits. Enhancing or mitigating measures may include business education, export promotion and support for innovation. It is also important to make SMEs (and business more general) aware of the consequences of the DCFTA for their daily business operations. Finally, attention could be paid to the links between SMEs and larger exporting companies: while not all SMEs will be able or willing to export themselves they could supply their products to larger exporting companies.

10.2.2 Policy recommendations related to the social pillar

Table 10.2 presents the social policy recommendations.

Table 10.2 Recommendations for the social pillar

Policy measure	Potential to address	
	Within DCFTA	Outside DCFTA
Support flexibility of labour market – easing the reallocation between sectors		√
Support training programmes to allow easier update and upgrade of human capital, especially competencies and skills required in expanding sectors		√
Prevent risks of pressures to lower the labour standards due to rising international competition	√	√
Allow for phasing in of tariff reductions at sector level, especially for those sectors where the social impact will be high	√	
Consider creating mechanisms for monitoring of social (and environmental) impact of the DCFTA (and more broadly EU-Moldova relations)	√	
Provision of technical assistance and budget support programmes upgrading human capital and improving institutional and regulatory environment in the social policy sphere		√

The need for labour reallocation between sectors is a key mechanism by which DCFTA gains can materialise. This is also a major challenge from the social policy perspective, further complicated by the fact that people with low human capital and low skills are particularly likely to face a challenge of finding new employment opportunities. This calls for two sets of policy measures. First, policy environment should make it easier for companies to fire and hire labour so that sectoral adjustments are easier and less costly to business and to employees. Second, there is scope for public policy measures supporting enhancing of competencies essential in labour mobility: ability to learn new things, openness to change, ability to cooperate in teams, basic IT skills, etc. as well as some specific skills and competencies that may be needed in particular sectors. However, such policies or programmes should not attempt to identify winning sectors and shortages of specific skills needed in these sectors. This is in practice almost impossible to predict. Although the CGE model indicates which sectors are likely to gain or lose of the DCFTA, it needs to be taken into account that the DCFTA is only one among several forces changing the demand for skills and competencies. Public policy programme should therefore focus on creating a culture of lifelong learning and infrastructure making it easy to learn at various stages of individual lifecycles. All these measures need to be addressed by Moldova outside the DCFTA process but (as suggested in the last recommendation above) may be supported by EU and other donors as part an element of development cooperation.

It is in the interest of both Moldova and the EU to ensure that implementation of labour standards gradually improves in Moldova and is not put at risk due to intensified competitive pressures following the DCFTA (the risk of the 'race to the bottom'). Policy initiatives in this sphere could include both specific commitments included in the DCFTA (and indeed relevant clauses can be expected to be included in the Agreement) and domestic measures (e.g. related to the promotion of high labour standards, supporting voluntary schemes in the business sector committing to high labour standards, strengthening control institutions (e.g. labour inspectorate), etc.). Again, these measures could benefit from support (transfer of know-how and funding) in development cooperation. The monitoring mechanism discussed under the social policy recommendations could also help to identify areas where economic policy measures are needed.

In some sectors where entry to the Moldovan market is currently limited by tariffs (or possibly also some specific non-tariff measures) and where reduction of these barriers could lead to rapid deterioration in the situation of the domestic sector it may be advisable to agree on gradual and extended in time period of reducing tariff (and possibly other) barriers. These cases would need to be analysed individually taking the pros and cons of delayed adjustments into account. Our sectoral analysis identifies one candidate for delaying Moldovan tariff reductions, i.e. cereal crops sector (see below), although also in this case specific solution to be worked out would require more analysis.

Given the scope for social and other sustainable development effects of the DCFTA or EU-Moldova relations more generally it could be justified to establish some monitoring mechanisms that would help both sides in assessing policy implications of certain decisions and processes. An important role of this mechanism could be also support in identifying development cooperation priorities. Very importantly, creation of any institutional structures with such monitoring tasks should be optimised taking into account realistic assessment of Moldova's limited capacities in this sphere. Thus a relatively simple setup is important. The risk of establishing of costly and complicated institutional structures that would limit Moldova's resources available for higher priority issues (including social policy itself) should be avoided.

The costs of upgrading social policies, including in the sphere of human capital formation are substantial and for Moldova, at its current stage of development, could be difficult to take up. This provides justification for involvement of EU and other international donors. It is essential that development cooperation programmes are well coordinated between donors, fully aligned with Moldovan priorities and implemented effectively.

10.2.3 Policy recommendations related to the environmental pillar

Table 10.3 presents the environmental policy recommendations.

Table 10.3 Recommendations for the environmental pillar

Policy measure	Potential to address	
	Within DCFTA	Outside DCFTA
Create incentives for environmentally friendly production		√
Maintain incentives and encouragement to implement international environmental agreements	√	√
Allow for phasing in of tariff reductions at sector level , especially for those sectors where the environmental impact can be high	√	
Consider creating mechanisms for monitoring of environmental (and social) impact of the DCFTA (and more broadly EU-Moldova relations)	√	
Provision of technical assistance, capacity building and budget support in environmental policy broadly defined		√

There is ample room for greening of economic growth in Moldova and if successful measures in this sphere could limit the environmental burden that is otherwise expected to rise with Moldova catching up in its economic development level with other European countries. In policy terms actions supporting green growth should consistently combine a range of instruments such as those related to shifts in government expenditure, education and training, resource and land rights, creating conditions for behavioural change and facilitating businesses to fully integrate sustainability and equity concerns, certification of sustainable production and trade, reform of subsidy schemes,

and of payments for ecosystem services and others[122]. Some of these measures can be partly incorporated in the DCFTA process and many more would need to be taken independently from the DCFTA process as part of Moldova's green growth framework. The needs for enhanced analytical and institutional capacity as well as financial resources to implement this policy framework along the lines sketched above justify significant involvement of EU and other partners in supporting Moldova's efforts.

The natural environment is not divided by national borders and several environmental challenges are global or regional in nature. Hence there is scope for close international cooperation in the environmental sphere that in particular takes the form of international agreements or conventions. They serve both as commitment / pressure mechanisms and support mechanisms allowing for peer learning and pooling resources to achieve specific objectives. EU trade preferences for Moldova have until now been linked to Moldova's implementation of certain environmental conventions. It appears justified to retain this link also in the DCFTA and indeed this is likely to happen. At the same time it is important to clearly identify costs associated with implementation of such conventions and sources to cover these costs. Again, given Moldova's level of development it is justified that some of these costs are covered by the country's development partners.

It may be the case that in certain sectors delaying reduction of Moldovan tariff (and possibly also other) barriers could help prevent some unfavourable environmental impacts, similar to the economic and social recommendation. Our analysis has not clearly identified examples of such cases, but they can emerge when negotiating specific solutions at the sectoral level. If this happens such cases would need to be analysed individually taking into account the pros and cons of delayed opening of the Moldovan market.

Given the scope for environmental and other sustainable development effects of the DCFTA or EU-Moldova relations more generally it could be justified to establish some monitoring mechanisms similar as described under the social policy recommendation.

The costs of upgrading environmental policies are very high and given the current development level of Moldova it is justified that the country received significant international support in this sphere. It is essential that development cooperation programmes are well coordinated between donors, fully aligned with Moldovan priorities and implemented effectively.

10.3 Sector-specific recommendations

In chapters 6 to 9 we looked in more detail at the DCFTA impact on the sectors 1) grains and crops; 2) textiles and clothing; and we considered in more detail the horizontal issue of SPS. The specific policy recommendation for these sectors, based on this analysis, are presented below.

[122] The list comes from OECD, Green Growth and Developing Countries. A Summary for Policy Makers June 2012, http://www.oecd.org/dac/50526354.pdf. Accessed 14 August 2012. This document contains a more detailed exposition and discussion.

Grains and crops sector

Table 10.4 Policy recommendations related to grains and crops sector

Policy measure	Potential to address	
	Within DCFTA	Outside DCFTA
Comprehensive support for those employed in the sector to help them look for alternative employment opportunities		√
Promote good agricultural practice in the sector both in terms of technology, labour conditions,and environmental performance.		√
Consider allowing for phasing in of tariff reductions by Moldova	√	
Better analyse the potential DCFTA effects on subsistence farming (not only in the grains and crops sector) to inform design of DCFTA and flanking policies	√	√

While DCFTA employment effects are likely to be positive employment in the sector will probably continue to decline. This being a largely unavoidable (and indeed necessary) adjustment, there is a need for policies supporting those employed in the sector in movement to other sectors so that labour migration abroad does not remain the only feasible adaptation option. While the DCFTA may, other things being equal, slightly limit the speed of this employment decline it should not be taken as an excuse for delaying policy initiatives in this area (and other agricultural sectors).

The DCFTA could be seen as an opportunity to improve environmental performance and limit environmental burdens created by the sector. This chance should be utilised as much as possible but policy measures should carefully avoid creating unnecessary distortions.

The current level of import tariffs may provide some cushion to parts of the sector and it may be justified to allow gradual tariff reductions as part of DCFTA commitments. Importantly, this should not limit the incentives to adjustment but make it easier to adjust over a longer horizon.

Agricultural land fragmentation and the scale of subsistence farming constitute important long-term challenges for the agricultural sector and Moldova as a whole. It would be justified to carefully consider potential impact on small farmers from all changes resulting from the DCFTA. This analysis should not be limited to a single sector such as cereal crops.

Textiles and clothing sector

Table 10.5 Policy recommendations related to textile and clothing sector

Policy measure	Potential to address	
	Within DCFTA	Outside DCFTA
Promote sector's transformation to higher value added segments		√
Promote good environmental practices in the sector		√

While DCFTA-related employment effects are likely to be positive, the sector's future hinges on global trends and ability of Moldova to adjust to these. Moving towards higher value added segments of the apparel industry, building and promoting own brands appear to be necessary elements of any strategy aiming at limiting the risks of a rapid demise of the sector if international environment changes unfavourable for Moldova. This suggests that positive effects of the DCFTA should not provide complacency with the current situation but should rather encourage intensification of efforts to modernise the sector.

DCFTA could be seen as an opportunity to improve environmental performance and limit environmental burdens created by the sector. This can also be important from the perspective of future prospects of Moldovan brands given rising environmental consciousness of consumers, especially in the EU.

SPS measures

Table 10.6 Policy recommendations related to SPS measures

Policy measure	Potential to address	
	Within DCFTA	Outside DCFTA
Carry out a more in-depth analysis of costs and benefits of alternative solutions in the sphere of SPS measures – in areas where the outcome (i.e. depth, coverage and timing of approximation with EU regime) has not yet been decided	√	√
Provide for an effective engagement of stakeholders interested in SPS regime		√
Consider gradual opening of Moldovan agricultural and food markets to EU imports so that producers have time to adjust	√	
Provide TA to help Moldova in improving its SPS infrastructure and create awareness and training for producers		√

Our study provides some insights and observations that should help negotiation parties and interested stakeholders in understanding the potential implications of the DCFTA-related process of approximation of Moldova's SPS regime with the EU one. However, it also becomes clear that in certain specific cases a more detailed in-depth analysis might be needed to help achieve optimal negotiation outcome – in terms of depth, coverage and timing of approximation of specific SPS provisions. The only way to gather resources and information for this analysis is through active engagement of all stakeholders and in particular the business sector and various institutions tasked with dealing with SPS measures. Encouraging such active engagement of stakeholders is a challenging, but in our view crucial task..

The potential of negative economic impact of approximating EU SPS measures in Moldova provides a rationale for considering gradual opening of Moldovan agricultural and food markets to EU competition. This would create more time for businesses to adjust to increased competitive pressure from the EU. Importantly, if such gradual phasing in of liberalisation is agreed upon public policy should actively encourage enterprises that this extra time is used for adjustment and improving competitiveness and is not wasted.

Highs costs of SPS-related reforms with limited capacities in Moldova provide a rationale for (on-going) technical assistance and financial support in this area.

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