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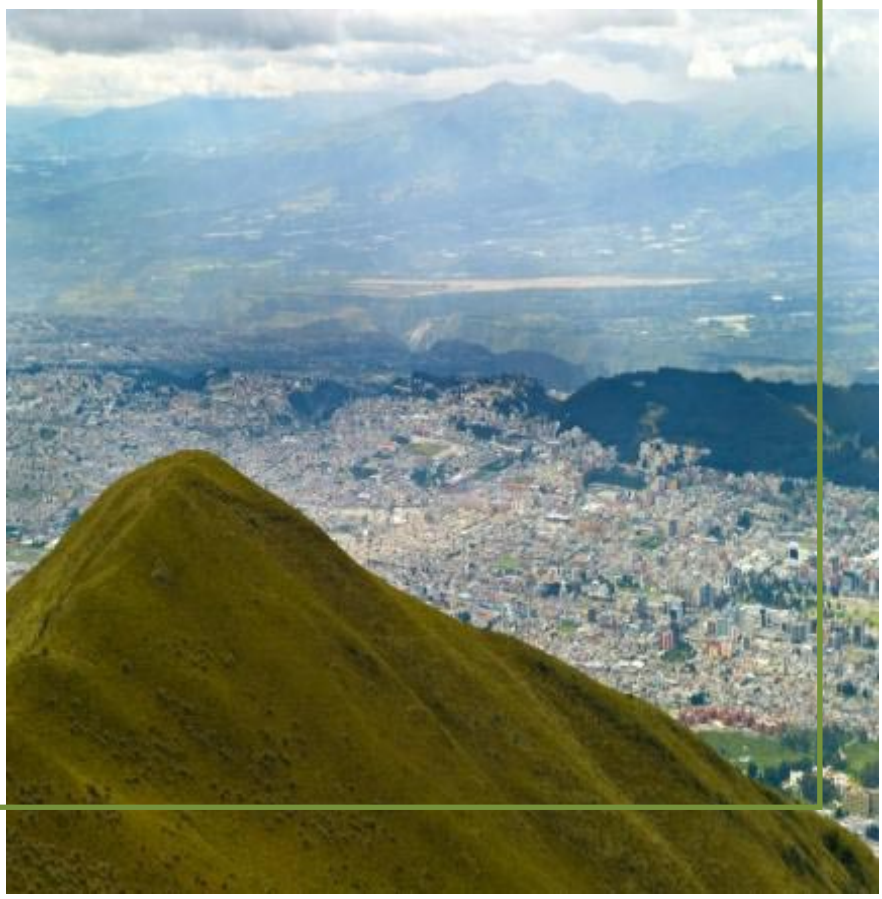
European Commission
DG Trade

EU-Andean Trade Sustainability Impact Assessment



Final Report

October 2009

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Abbreviations

AIDESP	Asociacion Interetnica De Desarrollo De La Selva Peruvana (Interethnic Association for Development of Peruvian Indigenous Peoples)
BIODAMAZ	Biological Diversity in the Peruvian Amazonian Region
CAAM	Andean Committee of Environmental Authorities
CAATEL	Andean Committee of Telecommunication Authorities
CAFOD	Catholic Agency for Overseas Development
CAN	Andean Community
CAR	Regional Autonomous Corporation (Colombia)
CDE	Constant Difference of Elasticities
CENICAÑA	Sugar Cane Research Centre (Colombia)
CEPR	Centre for Economic Policy Research
CGE	Computable General Equilibrium
CGN	Controloria General de la Nacion (Peru)
CIA	Central Intelligence Agency
CIF	Cost, Insurance and Freight
CONAM	National Council of the Environment (Peru)
CPE	Constitucion Politica de Boliva (Bolivian Constitution)
CSR	Corporate Social Responsibility
DDA	Doha Development Agenda
DFID	Department for International Development (UK)
EC	European Commission
ECLAC	Economic Commission for Latin America and the Caribbean
EEA	European Environment Agency
EIA	Energy Information Administration (US)
ELN	National Liberation Army
EPI	Environmental Performance Indicator
EU	European Union
FAO	Food and Agriculture Organization
FARC	Revolutionary Armed Forces of Columbia
FDI	Foreign Direct Investment
FLEGT	Forest Law Enforcement, Governance and Trade
FOB	Free On Board
FTA	Free Trade Agreement
FTAA	Free Trade Agreement of the Americas
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
GEMPACK	General Equilibrium Modelling Package
GHG	Greenhouse Gas
GMM	Generalised Method of Moments

GPA	Agreement on Government Procurement
GSP	Generalised System of Preference
GTAP	Global Trade Analysis Project
IADB	Inter-American Development Bank
ICE	IIDE Computable Equilibrium
ICMM	International Council on Mining & Metals
IFPRI	International Food Policy Research Institute
IIDE	Independent and Identically-Distributed Random Estimates
ILO	International Labour Organisation
IMF	International Monetary Fund
INDERENA	National Institute of Renewable Natural Resources (Colombia)
INEI	National Institute of Statistics and Information (Peru)
INRA	Institute of Agrarian Reform
IPCC	Intergovernmental Panel on Climate Change
IPR	Intellectual Property Rights
ISIC	International Standard Industrial Classification
IUCN	International Union for Conservation of Nature
KWH	Kilowatt Hours
LASO	Latin American Social and Economic Research
LDC	Lesser Developed Country
MEM	Ministry of Energy and Mines (Peru)
MFN	Most Favoured Nation
NAMA	All Products Not Covered in the WTO Agreement on Agriculture
NDP	National Development Plan
NGO	Non-Governmental Organisation
NTBs	Non-tariff Barriers
NTM	Non-tariff Measure
ODI	Overseas Development Institute
OECD	Organisation for Economic Cooperation and Development
OUSTR	Office of the United States Trade Representative
PPP	Purchasing Power Parity
R&D	Research and Development
RECALCA	Colombian Action Network on Free Trade
REDD	Reducing Emissions from Deforestation and Forest Degradation in Developing Countries
ROW	Rest of World
RTA	Regional Trade Agreement
SCM	Stakeholder Consultation Meeting
(T)SIA	(Trade) Sustainability Impact Assessment
SIC	Standard Industrial Classification
SME	Small- and Medium-sized Enterprises
SOP	Standard Operating Procedures

TOR	Terms of Reference
TRIPS	Trade Related Intellectual Property Rights
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNICEF	United Nations Children's Fund
UPOV	International Union for the Protection of New Varieties of Plants
USDA	United States Department of Agriculture
USGS	United States Geological Survey
WHO	World Health Organisation
WIPO	World Intellectual Property Organisation
WITS	World Integrated Trade Solution
WTO	World Trade Organization

EXECUTIVE SUMMARY

The EU-Andean Sustainability Impact Assessment has been prepared by external consultants selected on the basis of an open call for tender by the European Commission Directorate General for Trade. The implementing consortium is DEVELOPMENT Solutions, the Centre for Economic Policy Research (CEPR) and the Institute for Development Policy and Management in the School of Environment and Development at the University of Manchester. The Foundation for Latin American Social and Economic Research (LASO) supported the consortium. This report reflects *The Handbook for Trade Sustainability Impact Assessment* (2006) to provide an independent assessment of the likely **economic**, **social and environmental impacts of a potential multi-party trade agreement** between the European Union, and its Member States, and the Andean countries of Colombia, Ecuador and Peru through use of contemporary quantitative and qualitative assessment tools.

These three dimensions of sustainable trade are assessed in the report according to nine core sustainability indicators: real income, fixed capital formation, employment, biodiversity, environmental quality, natural resource stocks, poverty, equity and health and education. Predicted changes in these indicators form the basis of the assessment of sustainability impacts. This Final Report also proposes a number of policy recommendations designed to guide EU trade policy makers on how identified positive and negative sustainability impacts can be enhanced, mitigated or reduced accordingly.

The research and analysis of the project is presented in six sections in this report. Section one provides an **introduction** to the EU-Andean SIA and an overview of the **study methodology**.

Section two analyses the **baseline conditions** in the Andean Countries. The baseline scenario serves to describe the likely economic, social and environmental situation in the absence of a bilateral trade agreement between the EU and its respective partners, and identifies the major economic and social implications (including poverty, gender impacts, potential changes in wage and unemployment, and adjustment costs) as well as environmental effects. The baseline scenario takes into account existing WTO commitments of each country or region under consideration.

Section three explains the **economic modelling method** and **trade liberalisation scenarios** used in the SIA research, including predicted macroeconomic and sectoral changes. This research employs a global, multi-regional, multi-sectoral computable general equilibrium model to measure macroeconomic and sectoral output changes of trade liberalisation from the following two liberalisation scenarios:

'**Modest liberalisation'**	-	90% reduction of tariffs
	-	50% liberalisation of services
	-	1% reduction of producer costs through trade facilitation measures
'Ambitious liberalisation'	-	97% reduction of tariffs
	-	75% liberalisation of services
	-	3% reduction of producer costs through trade facilitation measures

Significant preferences from the EU, including GSP Plus, were assumed in the baseline modelling assumptions as Andean countries currently enjoy these preferences. The modelling also assumed implementation of Doha Development Agenda (DDA) tariff modalities on sensitive products by the EU.[1]

The modelling analysis shows modest **income gains for all economies** in all settings and scenarios, with the biggest absolute gains occurring in the EU and Colombia, where real incomes are projected to increase by up to €4 billion and €2,8 billion respectively. In relative terms, the expected income gains are estimated to be highest for Bolivia and Ecuador, where real income is expected to increase by between 0.5 and 2 percent of GDP. The impact in the EU is only marginal, at less than 0.1 percent of GDP. On an aggregate level, real income across all Andean countries will increase by €5 billion under the ambitious scenario.

A potential EU-Andean trade agreement will have **no significant effect on the EU's trade flows**; while for the Andean countries, imports and exports are expected to increase by between 3 to 10 percent. Effect on overall employment and wages for both skilled and unskilled labour are predicted to be minor. There are no significant changes in sectoral output for the EU. The vegetables, fruits and nuts sub- sectors are expected to increase by about 10 percent in Colombia and Ecuador.

Foreign direct investment in Andean countries is expected to increase as a result of an investment agreement with the EU, particularly in the service sector, supported by associated growth in domestic investment and social benefits. An increase of up to 1.5 percent of gross output is attributed directly to augmented foreign investment.

[1] Bolivia and Peru, current EU applied rates are substantially below MFN rates. However, as these are given at the discretion of the EU they are not guaranteed. An FTA would both provide duty-free treatment (rather than reduced GSP rates) that is guaranteed by treaty. For further information on this, including a table of the tariffs used, see the "Economic modelling and output" section.

Section three of the report also identifies the **economic, social and environmental sustainability impacts** arising from the economic modelling projections. Assessment of social and environmental impacts of several sectors located in rural areas are treated together in order to account for linkages and overlaps between sectors, and provide an integrative assessment of their impact. Potentially significant impacts in the EU and Andean countries arising from a trade agreement include:

- Expansion of labour intensive agriculture, food processing and light industrial product manufacturing sectors
- Deforestation and reduced biodiversity as a result of predicted expansion of agriculture and timber industries
- Increased industrial, agricultural and mining discharges as a result of increased output in these sectors
- Social conflict from expansion of mining, hydrocarbon extraction and logging activities in rural areas

Section four of the report proposes **trade, cooperation and domestic policy recommendations** to enhance beneficial impacts or mitigate negative impacts. These policy recommendations include:

- Phased tariff reduction in individual sectors where significant adjustment costs are expected in certain countries, such as grains, processed foods and paper products.
- Monitoring and reporting on European companies' compliance with corporate social responsibility in the mining, oil and gas sectors.
- Education and technical assistance in the fields of sustainable forestry management, environmental protection, industrial restructuring and sanitary and phytosanitary controls.
- Cooperation and support in enhancing environmental, public utility and financial sector regulation, including specialised assistance in the field of Regulatory Impact Assessment.

Section five of this report outlines project consultation activities with the network of SIA stakeholders from civil society, including past and future consultations with civil society, email correspondence, the SIA website and newsletters. Section six contains references used and section seven contains technical appendixes containing the full economic modelling results and a technical explanation of the model.

1. INTRODUCTION

Negotiations between the EU and the Andean Community for a region-to-region association agreement, including political dialogue, cooperation and trade were launched in June 2007, but were suspended in June 2008 after disagreement between Andean countries on approaches to a number of key trade issues. New negotiations for a multiparty trade agreement were launched in January 2009 between the EU and Colombia, Ecuador and Peru. This trade agreement will provide for progressive and reciprocal liberalisation of goods and services by means of a free trade area compliant with the rules and obligations of the WTO, and establish common disciplines in all trade related areas.

The EU is committed to supporting regional integration in the Andean Community through its trade related technical assistance in the region, including institutional support to the Secretariat of the Community of Andean Nations (CAN) and capacity building for the development of common policies. The EC's current Regional Strategy Paper for the Andean Community, covering the period 2007-2013, identifies three focal sectors for cooperation activities at CAN sub-regional level: to assist the Andean Community to strengthen its economic integration, thereby giving it a stronger position in the world economy; to support initiatives to enhance social and economic cohesion within the Andean Community; and to assist the Andean countries in their difficult fight against illicit drugs, in line with the principle of shared responsibility that governs EU-Andean relations in this area.[2]

The European Commission has been engaged in conducting trade SIAs as part of its trade policy-making process since 1999. The purpose of the Trade SIA programme is to inform trade negotiators and other interested parties on the potential economic, social and environmental impacts of the EU's trade negotiations, in both the EU and among Europe's trading partners. The SIA programme is also intended to make proposals on preventing, enhancing and mitigation measures to maximise positive effects arising from a trade agreement and minimise negative ones.

The European Commission has defined the objective of its SIA studies (European Commission, 2002) as a means of integrating sustainability into European trade policy:

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

[2] EC, 2007

The Trade SIA programme applies a standard approach in conducting the assessment. This framework has two complementary elements:

- Trade sustainability impact assessment, comprising a balanced and integrated assessment of potential economic, social and environmental impacts.
- Consultation process, whereby consultation with, and dissemination of results to partners and key stakeholders is an integral part of the assessment process. Consultation and transparency are essential processes for ensuring the credibility and legitimacy of the Trade SIA.

The objective of the EU-Andean SIA programme is to assess what impact a multi-party trade agreement could have on sustainable development in the EU and the Andean countries. Several key environmental and social issues are assessed in the SIA. Geographical, climatic and other environmental characteristics in rural and urban areas in Andean countries are reviewed, including issues related to biodiversity value, pressure on natural habitats, water resources and pollution levels. The social analysis covers the themes of poverty, equity, health and education. The findings of the SIA economic modelling team in these areas have been used as a basis of the impact assessment alongside qualitative analysis of other aspects of the trade agreement.

Sustainability impacts are also assessed across key sectors, including market access for agriculture and processed agricultural products, industrial products and services liberalisation. In addition to market access in goods and services, the analysis covers measures for deeper integration related to overall investment, public procurement, competition, intellectual property rights and trade facilitation.

The SIA was conducted in stages. The first stage of the project involved the preparation of the Inception Report, available on the project website, which outlines how the research and consultation of the Trade SIA was carried out; a civil society meeting to review the report was held in Brussels on 30 January 2009. The Draft Interim Technical Report, released publically in May 2009, presented the project's mid-term research and consultations, including the interim quantitative and qualitative impact assessment findings; these findings were reviewed at a local workshop in Lima, Peru on 26 May 2009. The Draft Final Report built upon the Interim Report, and proposed measures for avoiding, preventing or mitigating adverse impacts of a trade agreement and enhancing beneficial ones; the report was reviewed at a civil society meeting held in Brussels on 16 July 2009. Feedback from this meeting and additional stakeholder feedback received via the website and other mechanisms were incorporated into this Final Report.

2. BASELINE CONDITIONS

2. 1 Baseline Economic and Trade Conditions

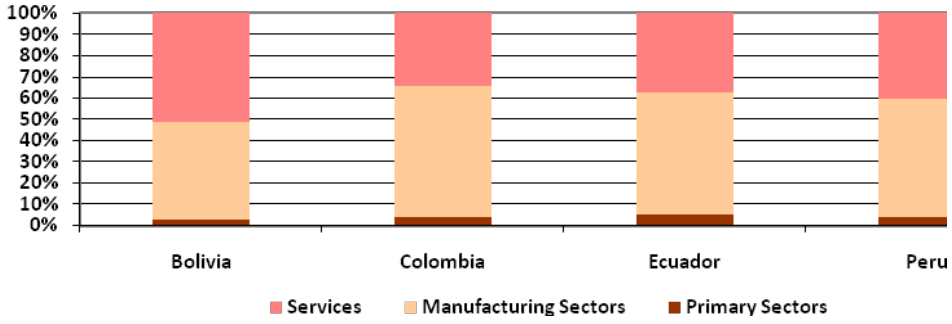
2.1.1 Trade and protection

Patterns of trade between the EU and Andean countries reveal significant growth during the past decade. Bilateral trade flows have increased from €9.1 billion in 2000 to €15.8 billion in 2007, representing an average annual growth rate of 8.25 percent. The EU is the second most important trade partner for Andean countries behind the United States, accounting for 14.2 percent of total trade in 2007. In contrast, trade with the Andean countries accounts for 0.6% of EU total trade, or approximately €10 billion of Extra EU trade.

Fifty percent of total trade between the EU and the Andean countries is conducted between the EU and Colombia. Peru accounts for 27 percent, Ecuador for 19 percent and Bolivia for 5 percent. The shares of trade closely follow each country's share of Andean GDP, which implies similar shares of European trade per GDP across the Andean countries.

A high share of bilateral trade between the EU and the Andean states is in services. However, rather than implicating that services trade is an important constituent in bilateral trade, these shares indicate the overall low levels of trade in goods taking place. For example, a large share of Andean exports of services is in the form of tourism from the EU.

Figure 1: Share of EU exports to the Andean countries by sector



Source: GTAP database, version 7

On the other hand, Andean goods and services imports from the EU are largely concentrated in four sectors, namely chemicals, rubber and plastic (17% of imports), machinery (18%), business services (11%) and air transport (7%).

Table 1 shows the share and composition of EU exports to Andean countries. Manufactured products dominate Europe's exports to Andean countries, accounting for three quarters of all exports.

Table 1: EU goods exports to Andean countries 2003 - 2007						
STIC Rev.3	**2003**	**%**	**2005**	**%**	**2007**	**%**
TOTAL	3,891	100	4,612	100	5.786	100
Primary Products	299	7.7	356	7.7	453	7.8
of which:						
Agricultural Products	246	6,3	263	5.7	299	5.2
Energy	9	0.2	12	0.3	42	0.7
Manufactured Products	3,453	88.7	4,079	88.4	4,347	75.1
of which						
Machinery	1,217	31.3	1,769	38.4	1,654	28.6
Transport equipment	505	13.0	339	7.4	425	7.3
of which:						
Automotive Products	162	4.2	239	5.2	320	5.5
Chemicals	845	21.7	906	19.6	990	17.1
Textiles and clothing	80	2.1	79	1.7	92	1.6

Source: GTAP database, version 7

European export sectors that have maintained or increased their market share are traditionally composed of high value added industrial goods, such as machinery, electrical machinery or high tech equipment. The EU's high value added chemicals sub-sector of pharmaceutical products has notably experienced growth in its export share while organic chemicals have declined, highlighting that increasing fuel costs, and thus the cost of shipping relatively heavy commodity liquids, has increased.

Table 2: EU goods exports to Andean countries by commodity group, 2007		
Products (SITIC sections) by order of importance	**Mio Euro**	**%**
Total	**5,786**	**100.0**
Machinery and transport equipment	2,091	36.1
Chemicals and related products, n.e.s.	990	17.1
Manufactured goods	842	14.6
Miscellaneous manufactured articles	456	7.9
Food and live animals	166	2.9
Crude materials inedible, except fuels	105	1.8
Beverages and tobacco	92	1.6
Commodities and transactions n.e.c.	80	1.4
Mineral fuels, lubricants and related materials	42	0.7
Animal and vegetable oils, fats and waxes	15	0.3

Source: GTAP database, version 7

The level and structure of import protection for European goods differs across the Andean countries.

Table 3: Andean tariff protection on imports from EU27, percent levels per Sector, 2004.[3]				
	Bolivia	**Colombia**	**Ecuador**	**Peru**
Agriculture and Processed Foods				
Grains	9.8	69.6	0.5	11.0
Vegetables, fruit, nuts	4.7	12.5	11.6	10.8
Other primary foods	3.8	5.5	5.0	9.9
Other agriculture	9.2	8.8	2.6	11.3
Forestry	7.9	4.9	5.2	4.4
Primary fishing	1.1	6.3	4.6	5.6
Primary mining	9.7	5.0	5.0	10.0
Processed foods, beverages and tobacco	9.6	18.4	18.2	13.9
Manufacturing				
Textiles	9.5	16.8	12.2	12.7
Wearing apparel	7.7	19.7	19.2	18.7
Leather products	8.0	16.0	14.7	16.8
Wood products	9.4	13.9	16.5	11.1
Paper products	7.6	12.9	7.6	10.8
Petroleum, coal products	9.5	9.3	5.7	9.4
Chemicals	10.0	8.4	6.4	7.9
Mineral products	9.9	13.7	12.9	8.4
Ferrous metals	9.4	8.1	7.6	6.6
Metals nec.	10.0	10.1	7.3	7.6

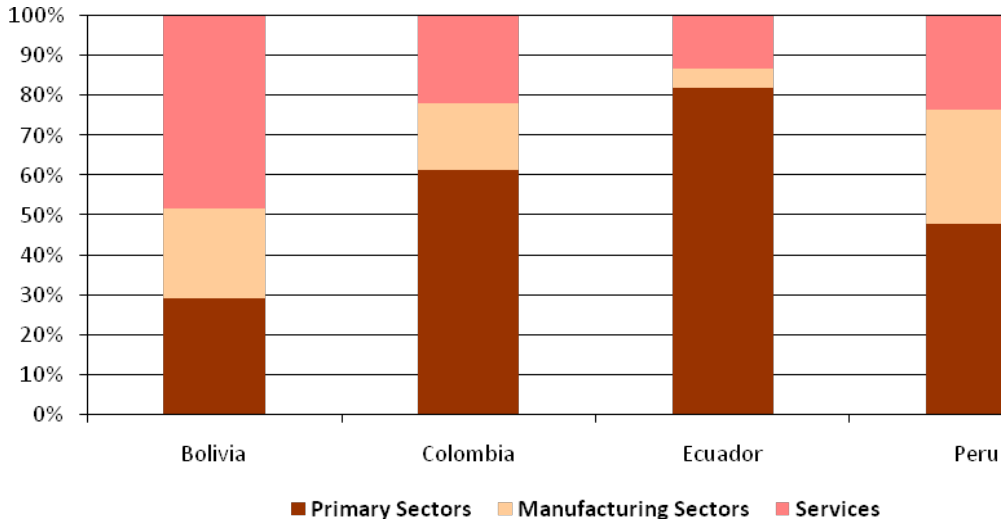
[3] NOTE: Tariffs in this table are trade weighted. Simple average tariffs are different.

Metal products	9.7	14.0	13.5	9.1
Motor vehicles	7.5	23.4	12.4	9.3
Other transport equipment	3.1	3.6	7.1	7.4
Electronic equipment	9.8	6.2	6.5	7.3
Machinery and equipment	5.5	8.6	7.1	7.0
Manufactures nec.	9.7	16.1	17.5	11.5

Source: Tariffs for merchandise: GTAP database, version 7.

Tariff protection is quite evenly distributed across the primary and manufacturing sectors. Across the Andean countries, the highest level of protection is applied to imports from Colombia, where the average applied tariff for agriculture and processed agriculture goods is 16 percent and as much as 70 percent for grains. The Andean-wide average is 11 percent.

Figure 2: Share of EU imports from Andean countries by sector (2004)



Source: GTAP database, version 7.

EU imports of goods from the Andean countries are largely concentrated in goods originating in the primary sectors. Across all countries, 19 percent of imports consist of vegetables, fruit and nuts. The sector accounts for close to 50 percent of imports from Ecuador. Mining accounts for 18 percent of goods imported from Andean countries, with 25 percent of imports from Colombia coming from this sector.

Table 4 shows the composition and share of EU imports from the Andean countries. Primary products account for 85 percent of all imports.

Table 4: EU goods imports from Andean countries 2003 - 2007						
STIC Rev.3 Product Groups	**2003**	**%**	**2005**	**%**	**2007**	**%**
TOTAL	6,094	100	7.41	100	10,255	100
Primary Products	4,452	73	6,643	89.6	8,783	85.6
of which:						
Agricultural Products	3,074	50.4	3,973	53.1	4,328	42.2
Energy	782	12.8	1.3	17.5	1,675	16.3
Manufactured Products	751	12.3	742	10.0	1,048	10.2
of which:						
Machinery	87	1.4	47	0.6	34	0.3
Transport equipment	92	1.5	17	0.2	5	0.1
of which:						
Automotive Products	1	0.0	1	0.0	1	0.0
Chemicals	89	1.5	94	1.3	155	1.5
Textiles and clothing	133	2.2	155	2.1	165	1.6

Source: DG Trade website

Table 5: EU goods imports from Andean countries, by commodity group.		
Products (SITIC Sections) by order of importance	**Mio euro**	**%**
TOTAL	**10,255**	**100.0**
Food and live animals	4,017	39.2
Crude materials inedible, except fuels	1,764	17.2
Manufactured goods	1,747	17.0
Mineral Fuels, lubricants and related materials	1,675	16.3
Animal and vegetable oils, fats and waxes	226	2.2
Misc. manufactured articles	182	1.8
Chemicals and related products, n.e.s.	155	1.5
Machinery and transport equipment	40	0.4
Beverages and tobacco	25	0.2
Commodities and transactions n.e.c.	15	0.1

Source: DG Trade website

Tables 2 And 5 reveal the product groupings that are most important to the EU and Andean countries' trading relationship; Natural resources, including mineral fuels, ores, slag and ash and copper, have maintained a strong proportion of Andean exports over this period. Other traditionally strong sectors, such as fruit, coffee, pearls and precious metals, have seen their relative share of trade decline, in some cases significantly.

Generally speaking, the level of protection on goods imported to the EU from the Andean countries is low, and practically non-existent for manufactured goods. Trade weighted average tariffs by categories are presented in Table 6 below.

Table 6: EU tariff protection on imports from Andean countries, % levels per Sector, 2004.[4]

	Bolivia	Colombia	Ecuador	Peru
Agriculture and Processed Foods				
Grains	11.7	12.6	52.9	24.2
Vegetables, fruit, nuts	0.0	82.4	75.7	8.4
Other primary foods	0.0	0.0	0.0	0.1
Other agriculture	0.0	1.4	0.0	0.0
Forestry	0.0	0.9	0.0	0.0
Primary fishing	0.0	0.0	0.0	0.0
Primary mining	0.0	0.0	0.0	0.0
Processed foods, beverages and tobacco	1.2	3.1	1.9	0.9
Manufacturing				
Textiles	0.7	0.0	0.1	0.5
Wearing apparel	0.0	0.0	0.0	0.0
Leather products	0.2	0.1	0.2	0.3
Wood products	0.0	0.0	0.0	0.0
Paper products	0.0	0.0	0.0	0.0
Petroleum, coal products	0.0	0.0	0.0	0.0
Chemicals	0.0	0.1	0.0	0.1
Mineral products	0.0	0.0	0.1	0.0
Ferrous metals	0.0	0.0	0.0	0.0
Metals nec.	0.3	0.1	0.2	0.2
Metal products	0.0	0.0	0.0	0.0
Motor vehicles	0.0	0.0	0.0	0.0
Other transport equipment	0.0	0.0	0.0	0.0
Electronic equipment	0.0	0.0	0.0	0.0
Machinery and equipment	0.0	0.0	0.0	0.0
Manufactures nec.	0.0	0.0	0.1	0.0

Source: Tariffs for merchandise: GTAP database, version 7.

As can be seen from Table 6, EU import protection is concentrated in three sectors: processed foods, beverages and tobacco; grains and vegetables; and fruit and nuts. The high levels of import protection applied to grains are MFN tariffs not specific to the Andean countries.

Vegetables, fruit and nuts are, by far, the most protected sector, especially for Colombia and Ecuador, for which applied tariffs in 2004 were around 80%.

[4] NOTE: Tariffs in this table are trade-weighted

The countries in the region benefit from EU preferences (including GSP Plus). The table below provides a comparison of actual applied rates (in a post-Doha situation as discussed later in the report), and the rates for MFN-based trade. The fact that with both Bolivia and Peru, EU applied rates are substantially below MFN rates is important when examining the impact of a potential FTA. However, these are given at the discretion of the EU and so are not guaranteed.[5]

Table 7: EU applied and MFN tariffs for goods -- post-Doha[6]

		Applied Rates			
	MFN rates trade weighted	Bolivia	Columbia	Ecuador	Peru
primary commodities	*2.0*	*0.3*	*5.8*	*17.0*	*0.6*
Grains	26.5	5.9	5.8	20.8	20.9
vegetables, fruit, nuts	1.9	0.0	22.3	20.4	2.5
other primary food	0.4	0.0	0.0	0.0	0.0
other agriculture	10.8	0.0	1.2	0.0	0.0
forestry	0.1	0.0	0.6	0.0	0.0
primary fishing	4.2	0.0	0.0	0.0	0.0
primary mining	0.0	0.0	0.0	0.0	0.0
manufactured goods	*1.6*	*0.2*	*0.6*	*1.4*	*0.3*
processed foods, bevs, tobacco	16.7	0.6	1.9	1.6	0.4
Textiles	3.1	0.6	0.0	0.1	0.3
wearing apparel	3.1	0.0	0.0	0.0	0.0
leather products	2.5	0.2	0.1	0.2	0.3
wood products	1.5	0.0	0.0	0.0	0.0
paper products, publishing	0.0	0.0	0.0	0.0	0.0
petroleum, coal products	0.0	0.0	0.0	0.0	0.0
chemicals,rubber,plastic prods	0.7	0.0	0.0	0.0	0.1
mineral products nec	0.9	0.0	0.0	0.1	0.0
ferrous metals	0.1	0.0	0.0	0.0	0.0
metals nec	2.6	0.2	0.1	0.2	0.2

[5] In addition, almost all imports of goods from Peru enter the EU using trade preferences, and tariffs are higher than 0 only for 5% of this imports. This explains why, when we turn to estimates of the impact of an FTA, under a modest liberalisation scenario (putting bigger stress on reduction of tariffs) Peru gains only 0.5% of GDP as a result of an FTA. The statistics on the utilisation of preferences can be downloaded from the Comext database, under "EU extra imports by tariff regime": http://epp.eurostat.ec.europa.eu/newxtweb/ http://epp.eurostat.ec.europa.eu/newxtweb/ The "User Guide" is also available online..: http://epp.eurostat.ec.europa.eu/newxtweb/assets/User_guide_Easy_Comext_20090513.pdf

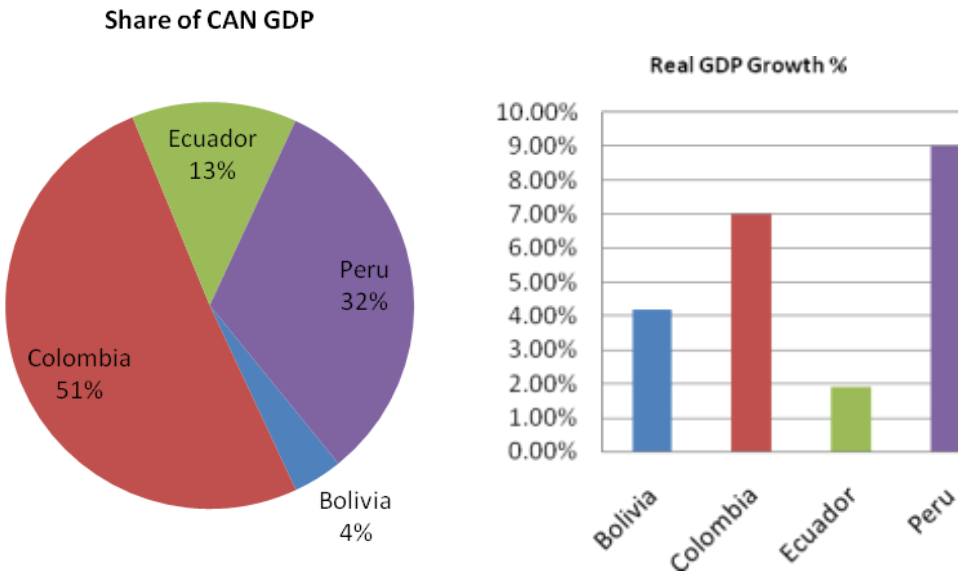
metal products	0.2	0.0	0.0	0.0	0.0
motor vehicles and parts	0.6	0.0	0.0	0.0	0.0
transport equipment nec	0.1	0.0	0.0	0.0	0.0
electronic equipment	0.6	0.0	0.0	0.0	0.0
machinery and equipment nec	0.1	0.0	0.0	0.0	0.0
manufactures nec	0.1	0.0	0.0	0.0	0.0
TOTAL	1.9	0.3	4.2	11.6	0.4

2.1.2 Real Income

After a period of economic crisis and decline beginning at the end of the 1990s, the economies of the Andean countries have begun to recover in 2004, recording growth rates in GDP between 4.9 percent and 6.8 percent[7], and demonstrating progress in practically all principal economic indicators: Investment, domestic savings, employment, trade balance, inflation and external debt.

In 2007, the Andean countries' combined GDP totalled approximately €222 billion. Divergence between the aggregate GDP levels of the individual countries is considerable, with Colombia accounting for the majority of total output, as revealed in Figure 3.

Figure 3: 2007 Andean countries GDP Share and Real Growth Rate by Member

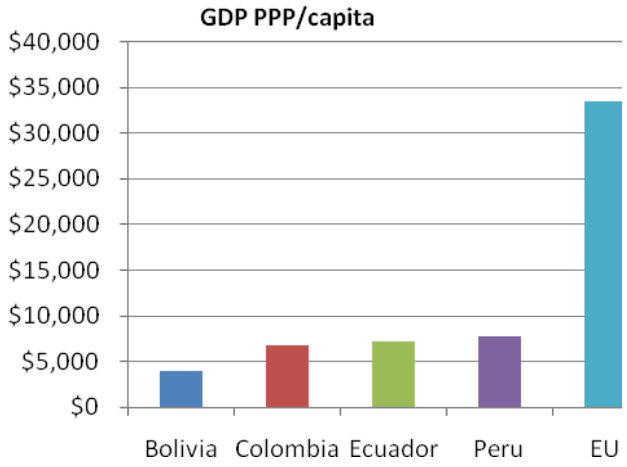


Bolivia has the most marginal economic impact of the group, despite having a labour force roughly equal to that of Peru in size (4.38 million versus 4.51 million in 2007). Bolivia's position as the least developed of the group is at least partially explained by its landlocked status.

[7] EU Trade with the Andean Community, European Commission DG Trade, 1 August 2008

GDP per capita figures provide a further means of identifying characteristics of the regional economic picture. As revealed in Figure 4, Peruvians enjoy the highest relative living standards, while Bolivians are the poorest, even when the purchasing power parity method is applied.

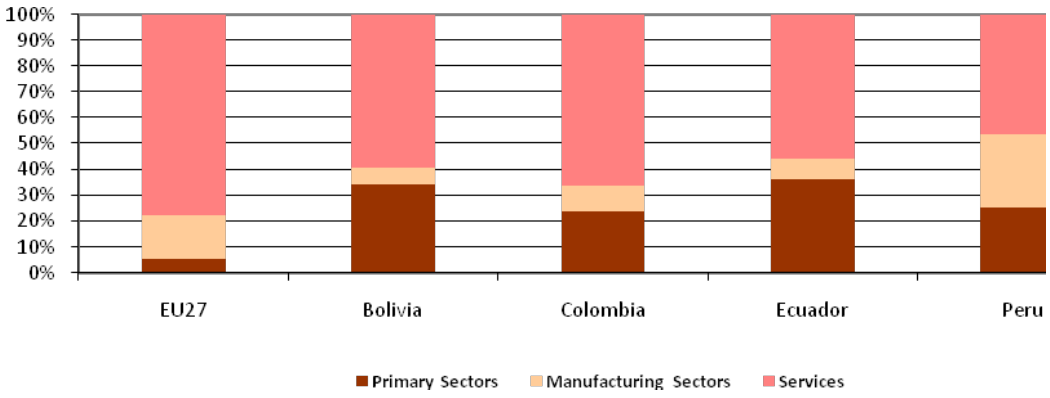
Figure 4: Andean countries – Per Capita GDP (PPP, 2007)



Source: World Development Indicators

The aggregate production structure for the Andean countries and the EU is summarised in Figure 5 below. As can be seen from the chart, roughly three quarters of the EU's value added is attributable to the service sectors and less than 20 percent to manufacturing. Production in the primary sector accounts for about 5 percent of total European production.

Figure 5: Share of production in the Andean countries and EU27 by sector (2004)



Source: GTAP database, version 7.

For the Andean countries, the share of production attributable to services is significantly smaller, with between one third and one fourth of overall production attributable to the primary sectors.

2.1.3 Fixed Capital Formation

With the exception of Bolivia, the share of fixed capital formation in GDP has risen since 2000 in Andean countries (Table 8). This increase in investment has allowed capital formation to make a stronger contribution to growth during the most recent growth period.

Table 8: Share of Gross Capital Formation in GDP (%)

	2000	2005	2007
Bolivia	18	14	15
Colombia	16	22	24
Ecuador	20	24	24
Peru	20	18	23

Source: World Development Indicators

There are significant differences in the total volume of Foreign Direct Investment (FDI) inflows to Andean countries, in part reflecting their differences in GDP. Table 9 shows the countries' annual inflows of FDI over the period 2005-07.

Table 9: Foreign Direct Investment Inflows, 2005-07 (US $ million)

	2005	2006	2007
Bolivia	-288	281	204
Colombia	10,240	6,464	9,028
Ecuador	493	271	178
Peru	2579	3467	5343
South America	44,305	43,102	71,699

Source: UNCTAD, 2008

Table 10 demonstrates similar cross country variation in the contribution of FDI to total gross fixed capital formation.

Table 10: Inward FDI as share of Gross Fixed Capital Formation (%)

	2005	2006	2007
Bolivia	23.2	17.2	9.6
Colombia	41.8	21.5	22.9
Ecuador	6.0	3.0	1.8
Peru	17.7	19.4	22.8
South America	16.0	13.1	15.4

Source: UNCTAD 2008

The differences in the contribution and volume of FDI which can be observed in tables 9 and 10 reflect in part the differences in policies towards FDI in each of the Andean countries. After a decade of liberalisation and market opening for FDI in the 1990s, the present decade has seen divergent policies adopted towards FDI and integration with the global economy. These differences are particularly evident in the hydrocarbon sector.

In Ecuador, oil and natural gas exports are an important source of foreign exchange, accounting for more than 40% of export earnings and approximately half of public sector proceeds.[8] A new hydrocarbon law in 2006 increased the share of revenue accruing to the government from oil and gas projects, prompting a series of contract renegotiations and disputes.

In Bolivia, natural gas provided an average of 34 percent of current revenue during the past decade.[9] In contrast to the liberalisation era of the 1990s, Bolivia introduced new restrictions on foreign ownership in 2006. Discussions relating to ownership and fiscal arrangements in the oil and gas industry were resolved by the signing of new service contracts which substantially raised the government's revenues from production, and returned ownership of all reserves to the main state oil company.[10]

In Peru, income tax revenue from the mining industry has increased dramatically in recent years in line with metal price increases. Between 2000 and 2006, the annual income tax revenue from mining companies rose from 10 percent to 42 percent of total government revenue. During the same period the annual income tax revenue from the oil and gas industry rose from US$ 35 million to US$ 296 million, corresponding to 5-7 percent of total government revenue. The mining industry employed over 100,000 people in 2006, accounting for less than 1 percent of the total working population of the country.[11]

Colombia possesses substantial mineral reserves, including one of the world's largest deposits of oil discovered in recent years found in Cusiana fields, one of the world's largest open coal mines, and significant deposits of emeralds, nickel and natural gas. In 2007, Colombia's extractive industries attracted more than half its total FDI inflows. FDI in oil and gas increased by 90 percent, totalling US$ 3.4 billion. In contrast to other Andean countries, Colombia has legislation for greater foreign participation in the oil and gas industry, and in 2007 announced a plan to sell 20 percent of the shares on its state oil company, Ecopetrol.[12]

[8] Stanley 2008

[9] Stanley, 2008

[10] UNCTAD 2007

[11] UNCTAD 2007

[12] UNCTAD 2008

2.1.4 Employment and Decent Work

The European Commissions' strategy "Global Europe: Competing in the World" sets out how trade policy can contribute to creating growth and jobs in the EU and beyond.[13] The Global Europe strategy emphasises that "as we pursue social justice and cohesion at home, we should also seek to promote our values, including social and environmental standards and cultural diversity, around the world".

Consequently, the EU has put its commercial weight behind efforts to promote social standards and decent work through its trade policy,[14] not least in the context of negotiation of free trade agreements with third countries, in line with the 2006 Communication on decent work.[15] In this context, decent work issues are taken up systematically in all ongoing trade negotiations with a view to including chapters on trade and sustainable development in all agreements. In particular, the EU aims to incorporate shared commitments to trade and sustainable development objectives, together with a strong monitoring mechanism and transparency provisions, while taking into account different levels of development, internal policy priorities and political sensitivities of negotiating partners.

In parallel, the international policy debate has indicated the importance of anticipating the possible impacts of trade liberalisation on the quality and quantity of employment opportunities. There is recognition of an urgent need to identify – if not prevent – shortcomings often reported (e.g., an increase in demand for low quality jobs, predatory behaviour of investors, skills mismatch) and thus to mobilise all public and private actors for the development and implementation of appropriate measures and clauses to ensure that trade is conducive to decent work and sustainable development.[16]

Different sectors employ different amounts of the population in the Andean countries. Matching its status as the poorest of the Andean member countries, Bolivia's economic dependence on agricultural is the highest, accounting for 14 percent of output and 40 percent of its employment. In the rest of the region, agriculture contributes to 10 percent of employment on average, with the share of total employment in the sector ranging from 8 to 22 percent.

Peru has the largest level of employment in the services sector. A large segment of the urban

[13] Global Europe Communication (COM (2007) 183) and the EU trade relations and policies, including their social dimensions, can be found at: http://ec.europa.eu/trade/issues/sectoral/mk_access/global_europe_fr.htm

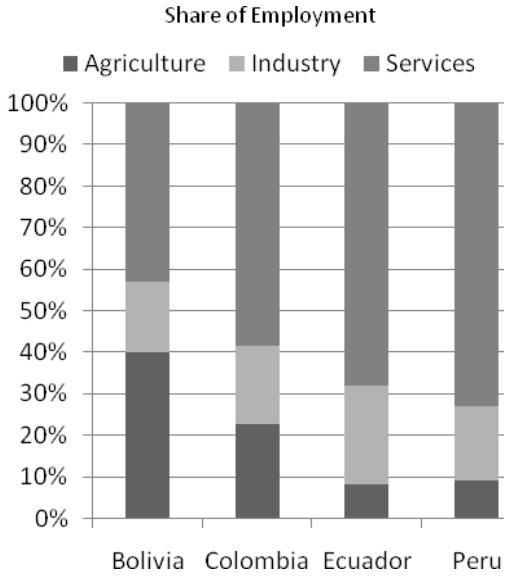
[14] Following the ILO, decent work is defined as consisting of four areas covering productive and freely chosen work, rights at work, social protection, the social dialogue and the promotion of gender equality as horizontal objective. In the implementation of its initiatives towards decent work, the Commission cooperates with the ILO.

[15] COM (2006) 249 final, accompanied by SEC (2006) 643

[16] A recent study by Université Paris-Dauphine examines the relative merits of different types of clauses dealing with employment, social policy and sustainable development in bilateral and regional trade agreements. See: http://ec.europa.eu/social/main.jsp?langId=en&catId=324&newsId=480&furtherNews=yes ,

population employed in this sector work at SMEs in the restaurant and other tourism-related businesses, or transport and commerce.[17] A large part of the services sector absorbs the rural migrant population, thus defining patterns of informal sector entrepreneurship, but also underemployment and hidden unemployment.[18]

Figure 6: Labour Employment by Economic Sector



Source: ILO data

Employment in Andean countries increased on average at a rate close to 9 percent from 2000 to 2006. Except for Peru, a common feature of the other three Andean countries is the changing sectoral structure of the employed population. This dynamic is primarily due to the reduced importance of the agriculture sector, and increasing employment in both Bolivia's and Colombia's industrial industries (Table 11).

[17] The Tourism sector, as defined for statistical purposes of production and employment accounts, includes all units oriented to produce services for national and international visitors.

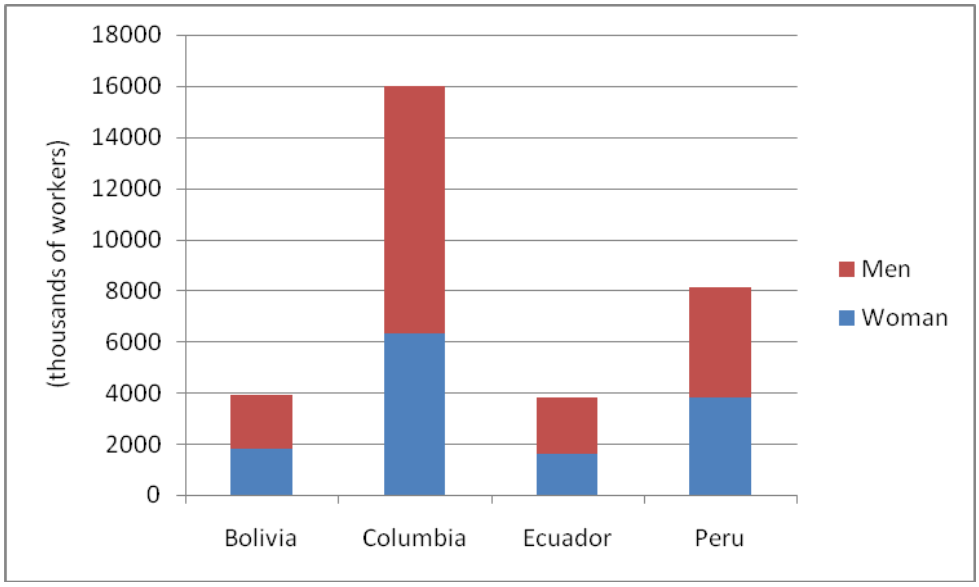
[18] See Schaedel (1982).

Table 11: Change in the structure of the total employed population, by sector of economic activity[19](Percentage of total employed population[20])								
	Bolivia		Colombia[21]/		Ecuador		Peru	
Sectors[22]	2000	2006	2000	2006	2000	2006	2000	2006
Agriculture	36.8	32.3	22.0	20.9	28.5	29.6	32.0	37.5
Industry	19.5	21.6	19.0	19.8	20.1	18.6	14.0	13.4
Services	43.7	46.0	59.0	59.4	51.4	51.8	54.0	49.1
Total	100.0	99.9	100.0	100.1	100.0	100.0	100.0	100.0

Source: Based on ECLAC (Economic Development Division) data

With regards to the distribution of employment by gender, access to employment has been more favourable for men than women, with differences of about 10 percent in access to labour markets. On average, from 2000 to 2007, men represented between 55.7 to 60.4 percent of the employed workforce in the Andean countries (Figure 7).

Figure 7: General level of employment in Andean countries by gender



Source: Based on ECLAC data

Despite the relatively low rates of unemployment recorded in all Andean countries (see Table 12), underemployment is widespread. Although the workings of the informal sector are vague, some estimates suggest the share of unemployment hidden in the informal parts of all economic sectors may be high.[23] Yet the informal sector remains a significant source of employment.

[19] Refers to employed population aged 15 years and over.

[20] In accordance with the International Standard Industrial Classification of All Economic Activities (ISIC), Rev. 2. Data refers to the year nearest to the one heading the column.

[21] Municipality capitals for 2006

[22] In accordance with the International Standard Industrial Classification of All Economic Activities (ISIC), Rev. 2. Data refers to the year nearest to the one heading the column.

[23] Maajid 2001

Table 12. Urban unemployment rate (ECLAC) (Average annual rate)								
Country		2000	2001	2002	2003	2004	2005	2006
Bolivia[24]		7.5	8.5	8.7	9.2	6.2	8.1	8
Colombia[25]		17.3	18.2	17.6	16.6	15.3	13.9	12.9
Ecuador[26]		9	10.4	8.6	9.8	9.7	8.5	8.1
Peru		8.5	9.3	9.4	9.4	9.4	9.6	8.5

Source: Our elaboration based on ECLAC data.

The high rates of informal employment observed for Andean countries leads to express concerns about labour standards. Particularly critical is the situation of young people and women, for whom unemployment and low labour standards are particularly acute. Unemployment among young people is much higher than average unemployment overall (approximately twice of the overall unemployment rate and three times the rate for adults). Young people account for about 50 percent of all unemployed workers in nearly every Andean country.

More highly-educated young people have a better employment outlook in terms of wage and working conditions. For example, while young professionals in urban areas are more often integrated into labour markets in favourable conditions, there are a large number of young people in urban and rural areas who hold insecure, low-level jobs. This segmentation is also observed by gender (with lower wages paid to women than men with the same level of education and skills).

Unemployment and underemployment in rural areas have also led to practices of lowering work conditions in large companies in the mining and agribusiness sectors. Although wages in such sectors are higher than the average agricultural wage for unskilled labourers, they are lower than what they could be if stronger regulation existed to protect workers from exploitation. A current lack of social insurance and extensive labour hours are related issues of concern.[27] To address some of these problems the government of Colombia, trade unions and other civil society organizations have implemented a broad agreement to protect workers' rights, prevent child labour and produce better conditions for the protection of the labour force.

Diversified livelihoods in rural areas also result in the use of low or unpaid labour from household members. Although compensation mechanisms follow family and community norms, this situation also opens space for unfair contracting practices and even exploitation. Small scale mining in Bolivia, small agriculture in all countries, and other small scale commerce and artisanal work are the main sectors where these practices have been observed. This particularly critical situation affects women (popularly 'palliris') who collect mine residuals in the Bolivian high plateau,[28] young miners in the Peruvian gold panning areas, and that of children in poor small-farm households.

[24] Note: Covers urban areas

[25] Note: Includes hidden unemployment and covers thirteen metropolitan areas

[26] Note: Covers urban areas and includes hidden unemployment

[27] See, for instance, the labour conflicts in the Sinchi Wayra mine in Bolivia and in the Colombian and Ecuadorian flower industries.

[28] CISEP (2005).

2.2 Baseline Social Conditions

2.2.1 Poverty

Although poverty and indigence rates have decreased in the Latin American region in the last decade, poverty indicators are still considerably high in Andean countries.[29] As a result of the current world economic crisis, conditions are expected to deteriorate further, particularly in the informal sector.[30] It is also expected that women will be among the more vulnerable to the labour market downturn.

Table 13: Poverty incidence in ANDEAN countries

Country[31]	National	Urban	Rural
Bolivia (2007)	54.0	42.4	75.8
Colombia (2005)[32]	46.8	45.4	50.5
Ecuador (2007)	42.6	38.8	50.0
Peru (2007)	39.3	31.2	69.3

Source: Based on ECLAC (Statistics and Economic Projections Division, Social Statistics Unit, special tabulations of the respective country's household survey data). Peru based on INEI Peru.

Poverty is also a segmented phenomenon. Poverty among women and children are recurrent problems across the Andean countries. As shown in Figure 8, from the early 1990s until the beginning of the current decade, child poverty has increased more than 2 percent in Ecuador and Bolivia, while decreasing in Peru. By 2000, it was estimated that 45 percent of children in Colombia live in poverty.[33] High income inequality and demographic transitions are among the most significant factors that help to explain this pattern.[34]

[29] ECLAC, 2008

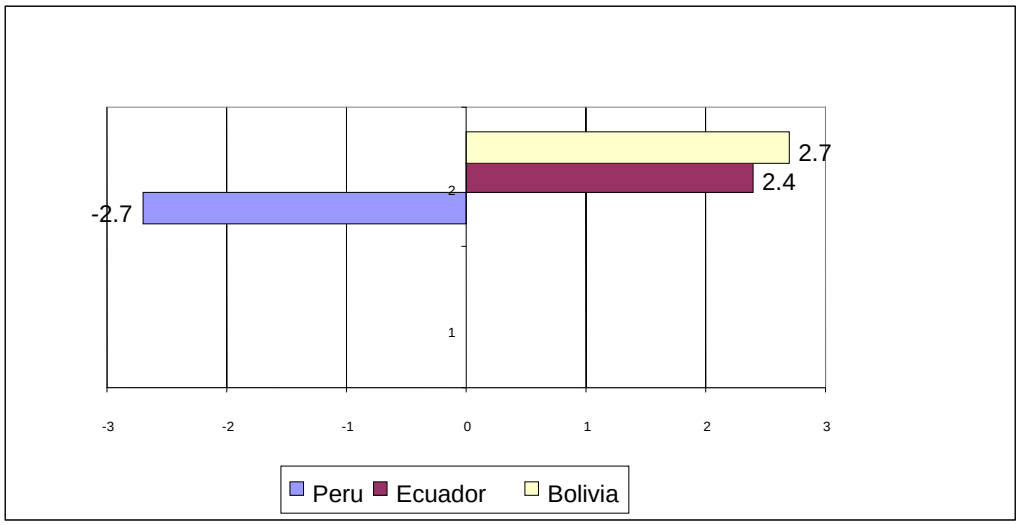
[31] MERPD figures for national, urban and rural poverty incidence in the first quarter of 2006 were 45.1%, 39.1% and 62.1, respectively.

[32] Stakeholder feedback from Salguero, S. P. 2009, August 18

[33] Narvaez (2001)

[34] UNICEF, 2005. Reduction in relative child poverty did not imply absolute child poverty reduction.

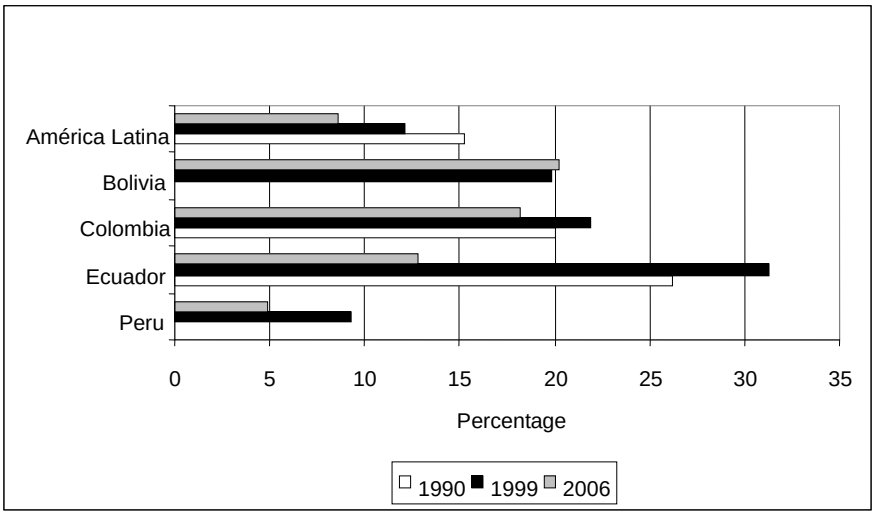
Figure 8: Changes in the incidence of relative child poverty, 1990-2002 (% change)



Source: Based on UNICEF data. *No information available for Colombia.

Extreme poverty tends to be concentrated in rural areas and with indigenous groups. As shown in Figure 9 and 10, the incidence of extreme poverty is significantly higher in rural areas, especially in areas with a concentration of indigenous groups.

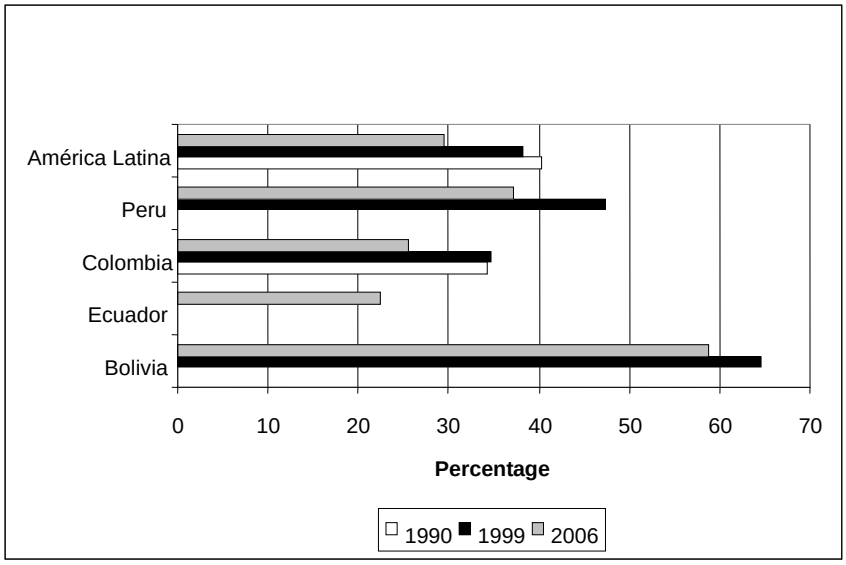
Figure 9: Evolution of urban indigence in Andean countries



Source: Based on ECLAC data.[35]

[35] Colombia's MERDP reported 12%, 8.7% and 21% of national, urban and rural indigence for the first semester of 2006. (Source: Stakeholder feedback from Salguero, S. P. (2009, August 18)).

Figure 10: Evolution of rural indigence in Andean countries



Source: Based on ECLAC data.

It is also important to highlight that the increased mobility of poor populations across urban and rural spaces and the deployment of combined livelihood strategies,[36] combined with high rates of urbanisation, make it difficult to clearly demarcate rural and the urban poor populations. This includes data on where they reside, what their livelihood strategies are, and how they can be reached more efficiently with public policies and programmes.

The division of poverty across each country is notoriously uneven. Furthermore, the territorial dynamics—i.e. the economic and social change as measured by changes in household expenditure, poverty rates and inequality indexes—observed in each country in the last 15 years shows that while some regions have progressed many others have remained underdeveloped. There are some territories which show signs of growth, poverty reduction and social inclusion. However, next to these successful cases are situations in which every indicator of development is changing in the opposite direction, whereby the local economy is stagnant, people are migrating elsewhere due to lack of opportunities, poverty is widespread, governability is weak and sustainability is seriously threatened. There are also territories in which the dynamics of development show mixed outcome.[37]

[36] See at this respect See: Hinojosa (2009), Escobal (2001), and Reardon and others (2001).

[37] Annex 2 provides detailed information on the territorial dynamics of poverty in the Andean Community countries.

2.2.2 Inequality

One of the striking features of Latin American countries is the widespread inequality observed in terms of income, poverty rates and most related social indicators (for instance, access to healthcare and educational services). Table 14 shows the disparities of income distribution.

Table 14: Gini coefficient of income inequality

Country	National	Urban	Rural
Bolivia (2007)	0.565	0.499	0.599
Colombia (2007)	0.586	0.587	0.495
Ecuador (2007)	0.540	0.520	0.484
Peru (2007)	0.52	0.455	0.432
Notes: Years are in parentheses. Higher numbers represent higher inequality in income distribution among the total population.			

Source: Bolivia, Colombia and Ecuador based on ECLAC (Statistics and Economic Projections Division, Social Statistics Unit, based on special tabulations of the respective country's household survey data. Colombia's national index based on UNDP (2008).[38] Peru based on INEI Peru and UNDP (2008).

2.2.3 Health and Education

Health

National health indicators in Andean countries suggest that health standards are relatively low when compared to higher income countries in Latin America and developed countries.

Table 15: Selected indicators on health conditions (2006 or latest available year)

	Adult mortality rate[39]	Incidence of tuberculosis (per 100000 population per year)	Life expectancy at birth (years)	Life expectancy at birth (years) female	Life expectancy at birth (years) male	Maternal mortality ratio (per 100 000 live births)	Prevalence of tuberculosis (per 100 000 population)
Bolivia	208	198	66	67	64	290	266
Colombia	131	45	74	78	71	130	59
Ecuador	166	128	73	76	70	210	195
Peru	136	162	73	75	71	240	187

Source: World Health Organisation (WHO)

[38] In a communication with the study team, Colombia's Ministry of Commerce, Industry and Tourism recently reported a Gini coefficient of 0.553. (Source: Stakeholder feedback from Salguero, S. P. (2009, August 18)).

[39] Notes: Adult mortality rate is defined as the probability of dying between 15 to 60 years per 1000 population

Table 16: Selected indicators on health conditions of children (2006 or latest available year)						
	Deaths among children under five years of age due to diarrhoeal diseases (%)	Infant mortality rate (per 1 000 live births) both sexes	Infant mortality rate (per 1 000 live births) female	Infant mortality rate (per 1 000 live births) male	Children under five years of age stunted for age (%)	Children under five years of age underweight for age (%)
Bolivia	14.3	50	47	52	32.5	5.9
Colombia	10.3	17	14	20	16.2	5.1
Ecuador	11.0	21	18	23	29.0	6.2
Peru	12.2	21	20	23	31.3	5.2

Source: World Health Organisation (WHO)

Rural populations in Andean countries are affected by a number of infectious diseases—malaria, tuberculosis and dengue being most recurrent—which in turn exacerbate poverty. According to the WHO, the incidence of these illnesses is higher in Colombia and Bolivia, followed by Peru. Malaria affects on average at least 2 out of 1000 people in Colombia, Bolivia and Peru. Dengue affects rural population in a range of 20 to almost 80 people (per 100,000) and tuberculosis approximately 20 (per 100,000).

In large urban areas such as the capitals of Colombia and Peru, public health problems are increasingly similar to those observed in developed countries. Obesity, diabetes, cancer and high blood pressure-related diseases are among the more recurrent diseases.[40] This places increasing pressure on public health services and increases the countries' need for medicines and medical equipment from abroad.

All Andean countries are dependent on foreign pharmaceuticals. As such, Andean countries access to medicines – in particular those of new generation – is constrained by their capacity to afford patented medicines and meet other conditions established under TRIPs.

[40] Gracia et al 2003.

Education

Access to social services is demographically disproportionate, especially with respect to gender and geographical location. Men still enjoy privileged access to education, and indicators continue to show lower education and health standards in rural areas. This situation helps to explain, at least in part, the high percentages of adolescent fertility rates which, in combination with women's lower access to education, constrains the opportunities for women to integrate into labour markets.

Table 17: Births attended by skilled health personnel (%)

	National average	Lowest wealth quintile	Rural	Urban
Bolivia	61	34.4	38.6	77.7
Colombia	96	72	76.8	97.1
Ecuador	80	n.d.	n.d.	n.d.
Peru	73	13	25.3	84.6

Source: World Health Organisation (WHO)

On average, however, education levels in Andean countries are relatively high. Since the 1980s, access to primary education has improved significantly. Yet, there remain two main issues of concern: access to secondary and higher education, and the quality of education services. While men from urban areas are among those who have more access to secondary education, in rural areas opportunities are almost equal for men and women. Still, the quality of public education in rural areas is notably low.

Table 18: Literacy and school enrolment in Andean countries

	Adult literacy rate (%)	Net primary school enrolment ratio female (%)	Net primary school enrolment ratio male (%)
Bolivia	86.7	95.0	94.0
Colombia	92.8	88.0	89.0
Ecuador	91.0	97.0	96.0
Peru	87.9	97.0	96.0
Note: Bolivia: 2001, Colombia: 2005,[41] Ecuador: 2001, Peru: 2005.			

Source: World Health Organisation (WHO)

[41] In a communication to the study team, Colombia's Ministry of Commerce, Industry and Tourism reported 98.4% and 97.5% of female and male adult literacy respectively. (Source: Stakeholder feedback from Salguero, S. P. (2009, August 18)).

With regards to access to public water distribution services and sanitation infrastructure, the disparities between urban and rural areas are clear (see Table 19).

Table 19: Population with sustainable access to improved drinking water sources and sanitation, 2006 (%)

	Water (rural)	Water (total)	Water (urban)	Sanitation (rural)	Sanitation (total)	Sanitation (urban)
Bolivia	69	**86**	96	22	**43**	54
Colombia	77	**93**	99	58	**78**	85
Ecuador	91	**95**	98	72	**84**	91
Peru	63	**84**	92	36	**72**	85

Source: World Health Organisation (WHO)

2.2.4 Poverty, inequality and rural livelihood strategies

In many ways, the poor in rural areas are more disadvantaged than the poor in urban areas. Studies on rural livelihoods in Latin America show that individuals and households from rural areas develop diversified strategies that combine farm, non-farm and off-farm activities (including subsistence agriculture, cattle grazing, food processing, making hand crafts, petty commerce, wage labour in agriculture, as well as in temporary or even permanent urban employment, and so on). However, insufficient productive and social infrastructure, limited access to public services and limited access to technology reduce the opportunities for the rural population to supplement farming incomes through salaried labour. It also makes the developing of small-scale non-farm and off-farm activities and access to local and regional markets more difficult.[42]

More positively, the rural poor's diversified livelihoods have produced incentives for specialisation and more efficient use of available assets. As a result, positive processes of decreasing poverty and local growth have been observed. The combination of livelihood strategies among rural and urban areas implies that the rural–urban divide becomes a narrow line in regions where, under certain conditions, both agriculture and non-agricultural activities are profitable.[43]

The relationship between livelihood strategies and economic performance, both at a household and sub-national level, depends on two important factors—the characteristics of local/regional markets and the agrarian structure.

[42] See, Berdegue and others (2001); Bebbington (2004); Hinojosa (2006).

[43] For a characterisation of main factors for the success of some livelihood strategies see FIDA (2009) and Berdegue y otros (2008).

Market characteristics that influence a farmer's economic performance include size, direct and indirect commercialisation costs and ongoing transaction costs. In regards to the agrarian structure, a farmers' ability to integrate into the economic growth processes and exploit commercial opportunities is determined by the size of their farms, the type of crops they grow and the degree of their asset concentration. Table 20 below shows the main features of the agriculture sectors in each of the Andean countries. Taking into account the given structure, chances for small farmers to be included in trade integration-led growth processes based on specialisation appears to be low.[44]

Table 20: Agrarian structure of selected Andean countries

Country	Main features	Size of exploitation		
		Small agriculture	**Medium scale**	**Large scale**
Bolivia	Land tenure (Ha)	< 50	> 50	> 2000
	Percentage of farmers	53%	47%	13%
	Main location	High plateau and valleys	Valleys	Llanos (Orient)
	Main crops	Staple food	Commercial crops (diversified)	Soy, girasol, cattle, sugar cane, maize, poultry
Ecuador	Land tenure (Ha)	< 5	5 to 20	> 100
	Percentage of farmers	64%	36%	2%
	Main location	Highlands		Coast
	Main crops	Potato, sugar cane, maize	Maize, potato, mora	Banana, sugar cane, African palm
Peru (a.)	Land tenure (Ha)	< 10	> 30	
	Percentage of farmers	85%	5%	
	Main location	Highlands	Coast and rainforest	
	Main crops	Staple food	Cotton, rice, sugar cane, palm	
Colombia (b.)	Land concentration	High concentration and little change since 1960 (Gini: 1960= 0.84, 1984=0.84, 1996=0.88, other Gini figures available above in body of report). Properties with more than 2000 Has. are dominant.		

Notes: a. No information available for Colombia; b. 24% of the 85% of small agriculture has less than 1 ha.

Source: Based on Inurritegui etc. (2008).

[44] See, for instance, Escobal and Ponce (2007), Aramburu (2008).

2.2.5 Indigenous peoples

Indigenous peoples have received particular attention in the last decade. Whether resulting from international pressure or national consciousness, recognition of indigenous populations and indigenous territories has been at the core of many constitutional reforms. This is particularly the case in Bolivia and Ecuador where indigenous peoples represent the majority of the population. Indigenous peoples make up significant social movement organisations in all Andean countries and are often the most engaged in political parties and electoral politics.[45]

Despite difficulties in defining reliable indicators to classify population by indigenous origins, some estimates can be made. Approximately 8.8 million people in Peru are identified as indigenous (97.8 percent Andean and 2.1 percent Amazonian). In Bolivia, 62 percent of the population over the age of 15 is thought to be indigenous (49.5 percent Quechua, 40.6 percent Aymara, 3.6 percent Chiquitano, 2.5 percent Guarani and 1.4 percent Moxeno). In Ecuador, 1 million people (split into 14 native nations) are thought to be indigenous. And In Colombia, 1.4 million people, or 3.4 percent of Colombia's total population (split into 87 indigenous peoples) is thought to be indigenous.[46]

In all Andean countries the vast majority of indigenous peoples live in rural areas. Some of them have obtained legal recognition of their territories. However, given that in all countries natural sous-soil resources belong to the country as a whole, the map of indigenous territories overlaps with areas of private or state run extraction industries.

In so far as poverty is deeper in rural areas, particularly in more remote areas, indigenous peoples are adversely affected by insufficient access to basic goods and services. Although little information exists about non-contacted indigenous peoples, there is evidence that the way of life of those who inhabit the Peruvian Amazon and the tropical forest of Bolivia are under constant threat, as modernization and commercial economic activity continues to penetrate these areas.

[45] Biekart and Bebbington 2007.

[46] Wessendorf 2008.

2.3 Baseline Environmental Conditions

2.3.1 Context

The geography of the Andean region is extremely varied. The Andes mountain range extends through seven countries -- including Bolivia, Ecuador, Colombia and Peru -- and constitutes the longest and second highest mountain range in the world. The northern (Colombia and Ecuador) and central (Peruvian and Bolivian) Andes are wide and contain numerous plateaux and valleys. Bogotá, Quito and La Paz are all situated in these areas. The northern Andes are typically rainy and warm, and the central areas are drier. Climate within the Andean region varies according to location, altitude and proximity to the sea. To the west of the Andes, the climate ranges from extreme humidity in the Colombian Chocó, to extreme aridity on the coastal desert strip. Extensive lowlands to the east of the Andes are typified by Savannah and forests with seasonal and heavy rainfall respectively.

The varied geography and climate of the Andean region contains a high level of environmental diversity and a wide range of ecosystems. These include forest systems, freshwater and coastal wetlands, grasslands, mountains and deserts.

The environment of the Andean region is under pressure from numerous factors driven by economic development and modernisation. These factors include:

- Increasing urbanisation
- Population growth
- Intensification and expansion of agricultural production
- Industrial growth
- Climate change
- Resource extraction

Pressures from these factors result in the following key environmental issues impacting the Andean region:

- Depletion and degradation of water resources
- Air pollution
- Industrial pollution
- Deforestation
- Soil erosion and desertification
- Biodiversity loss

The core environmental indicators for the SIA include natural resource stocks, environmental quality and biodiversity. The subsequent section provides an overview of the Andean regions' natural resources and then discusses the implications of the aforementioned environmental issues, paying special attention to environmental quality and biodiversity.

2.3.2 Natural Resource Stocks

Overview

Natural resources are critically important to both the people and economies of the respective Andean countries. The following subsection is designed to provide an outline of the natural resource stocks in each Andean country. Table 21 below lists the key natural resources for each Andean country.

Table 21: Key Natural Resources

Country	Natural Resource
Bolivia	tin, natural gas, petroleum, zinc, tungsten, antimony, silver, iron, lead, gold, timber and hydropower
Columbia	petroleum, natural gas, coal, iron ore, nickel, gold, copper, emeralds and hydropower
Ecuador	petroleum, fish, timber and hydropower
Peru	copper, silver, gold, petroleum, timber, fish, iron ore, coal, phosphate, potash, hydropower and natural gas

Source: World Fact Book, (2009)

Minerals

The mineral industry is an important part of Bolivia's national economy. In 2007, the total value of output from the industry accounted for 12.3 percent ($1,630 million) of Bolivia's GDP; natural gas was the leading fuel commodity export and zinc was the leading nonfuel mineral commodity export. Notable other nonfuel mineral commodities in Bolivia, in decreasing value of production in 2007, were tin, gold, silver, antimony, and lead.[47]

In 2007, Colombia's mining industry was led by the coal, natural gas, and petroleum sectors. Despite that an estimated 40 percent of Columbia's territory remained geologically unmapped, as of 2007, the nation had considerable mineral fuel reserves. Additionally, in the same year, notable production of other mineral commodities included petroleum, gold, nickel, cement, and phosphate rock.[48]

In Ecuador, petroleum and related services accounted for 99.8 percent of the total value of production for the mineral industry in 2007, with limestone remaining the nation's most economically valuable product in the non-metals sector. Additionally, significant undeveloped resources of copper, gold, and silver have been identified in Ecuador; however, as of 2007, investment uncertainty remained high.[49]

In Latin America, in terms of value, Peru was the leading or second largest producer of gold, silver, zinc, lead, tin, copper and molybdenum in 2007. Reserves of these mining products, measured in thousand metric tons, are estimated to be: 3,000 (gold), 43,800 (silver), 18,200 (zinc), 5,200 (lead), 700 (tin), 57,900 (copper), 450 (molybdenum). In addition, Peru is estimated to possess 6,425 million barrels of liquefied natural gas and 1.1 billion metric tons of coal reserves.[50]

[47] USGS, (2007)

[48] USGS, (2007)

[49] USGS, (2007)

[50] USGS (2007)

Energy

Tables 22-24 below summarise the mineral fuel reserves and fuels consumed by Andean countries.

Table 22: Mineral Fuel Reserves			
Country	Oil (bbl) [51]	Coal (million tonnes)	Natural Gas (trillion cubic meters)
Bolivia	465,000,000	-	.71
Colombia	1,323,000,000	6,814	.11
Ecuador	4,500,000,000	-	-
Peru	930,000,000	1,100	.33

Source: World Fact Book; USGS; World Energy Council, 2009.

Out of the four Andean countries, Ecuador has the largest oil reserves, followed by Colombia, Peru and Bolivia. Colombia has the largest coal reserves. Bolivia is dominant in terms of natural gas reserves in South America, second only to Venezuela. Table 23 and 24 below helps to characterize how the respective Andean countries utilise their mineral fuel reserves.

Table 23: 2008 Consumption by fuel (million tonnes)[52]						
Country	Oil	Natural gas	Coal	Nuclear energy	Hydro-electricity	**Total**
Bolivia	-	-	-	-	-	-
Colombia	10.7	7.3	2.3	–	9.8	**30.2**
Ecuador	9.3	0.5	–	–	2.6	**12.3**
Peru	7.9	3.1	0.5	–	4.5	**15.9**

Source: World Energy Council, 2009.

Oil consumption is higher than hydropower consumption in all Andean countries. Colombia has the highest oil consumption levels, followed by Ecuador and Peru.

Table 24: Hydropower Consumption[53]			
Country	2008 Consumption (Million tonnes oil equivalent)	Change in 2008 over 2007	2008 share of world total
Bolivia	-	-	-
Colombia	5.4	3.8%	0.8%
Ecuador	2.6	24.6%	0.4%
Peru	4.5	.8%	0.6%

Source: World Energy Council, 2009.

[51] This entry is the 1 January 2008 estimated stock of proved reserves of crude oil in barrels (bbl).

[52] Note: Oil consumption is measured in million tonnes. Other fuels are measured in million tonnes of oil equivalent, whereas the amount of hydropower consumed (Table 24) equals the amount of oil that would be needed to generate the equivalent amount of energy.

[53] Based on gross primary hydroelectric generation and not accounting for cross-border electricity supply. Converted on the basis of thermal equivalence assuming 38% conversion efficiency in a modern thermal power station.

Flora and Fauna

The following Tables 25-27 are designed to provide a general overview of baseline conditions. Flora and fauna resources in the Andean countries are discussed in more detail later in this section.

Table 25: Forest Area (sq. km)						
Country Name	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Peru	692.1	691.2	690.2	689.3	688.4	687.4
Ecuador	118.4	116.4	114.5	112.5	110.5	108.5
Columbia	609.6	609.2	608.7	608.2	607.8	607.3
Bolivia	600.9	598.2	595.5	592.8	590.1	587.4

Source: World Development Indicators database

Table 26: Agricultural Land (% of land area)						
Country Name	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**
Peru	16.6	16.6	16.6	16.6	16.6	16.6
Ecuador	29.1	28.1	27.1	26.2	27.2	27.3
Columbia	40.4	37.6	37.5	37.9	38.2	38.4
Bolivia	34.1	34.1	34.2	34.2	34.8	34.8

Source: World Development Indicators database

Table 27: Known and Threatened Species[54]												
	Mammals		**Birds**		**Plants**		**Reptiles**		**Amphibians**		**Fishes**	
Country	Known	Threatened	Known	Threatened	Known	Threatened	Known	Threatened	Known	Threatened	Known	Threatened
Bolivia	361	26	1,414	30	17,367	70	258	2	161	21	50	0
Colombia	467	39	1,821	86	51,220	222	518	15	623	208	318	23
Ecuador	341	34	1,515	69	19,362	..	419	10	428	163	246	12
Peru	441	46	1,781	94	17,144	274	354	6	361	78	166	8

Source: United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC), International Union for Conservation of Nature and Natural Resources (IUCN).

2.3.3 Environmental Quality

Water

The Andean region is rich in water resources, but they are under increasing pressure. Urban expansion, population growth and rising agricultural and industrial demand have increased water resource depletion. Deforestation and urban expansion influence the water cycle, decreasing the permeability of receiving zones, preventing rainwater from seeping into aquifers, and accelerating run-off in periods of high precipitation.[55] In many coastal cities of the Andean region local aquifers have been over-pumped, resulting in saltwater intrusion. Throughout the region, the majority of

[54] All data from 2004

[55] UNEP GEO-LAC (2003)

water resources are used in agriculture, followed by domestic and industrial consumption.[56]

Average annual rainfall rate in the Andean countries is 1,991 mm.[57] Although this rate is very high, the region exhibits marked differences in water availability throughout different geographic areas. Water extraction stress is not severe in the Andean region. It ranges from 0.4 percent in Bolivia and Colombia to 3.9 percent in Ecuador.[58] Reduction in water quality is a greater problem. It is caused by untreated sewage, excessive use of fertilisers and pesticides,[59] as well as industrial, mining and energy pollution.[60] In 2002, some 95 percent of Colombian municipalities did not treat raw sewage, and instead it was dumped into river systems.[61] Over the last 15 years, access to sewerage systems in the Andean states has improved with the exception of access by the rural population in Bolivia. Urban areas are still far more comprehensively serviced than rural areas; however, much of the urban sewage is not treated, and the pollution problems are merely transferred to other geographic areas.[62]

Access to clean piped water is not universal in the Andean region. Access to 'improved'[63] water sources increased markedly from 1970 to 2004, although supply is still less widespread in rural than urban areas.[64] Tables 28 and 29 below quantify both the percent of the population with access to improved water sources and the renewable internal freshwater resources per capita.

Table 28: Improved water source (% of population with access)

Country Name	2000	2006
Peru	81	84
Ecuador	88	95
Colombia	91	93
Bolivia	82	86

Source: World Development Indicators database

[56] (UNEP data)

[57] UNEP GEO-LAC (2003)

[58] UNEP GEO-LAC (2003)

[59] Drug production (especially in Colombia) and the associated cultivation of opium poppy has also resulted in the spread of chemical herbicides through river systems.

[60] UNEP GEO-LAC (2003)

[61] *Interim Environmental Review US-Andean Free Trade Agreement* (2005)

[63] 'Improved water sources include household connections, public standpipes, boreholes, protected dug wells, protected springs, and rainwater collections. Unimproved water sources are unprotected wells, unprotected springs, vendor-provided water, bottled water (unless water for other uses is available from an improved source) and tanker truck-provided water. http://www.worldwater.org/data.html.

[64] Table 2 (http://www.worldwater.org/data.html data)

Table 29: Renewable internal freshwater resources per capita (cubic meters)		
Country Name	**2002**	**2007**
Peru	60377.46	56684.89
Ecuador	34228.99	32384.83
Colombia	51401.87	48014.19
Bolivia	35044.36	31891.76

Source: World Development Indicators database

Air

Rapid and often unregulated urbanisation and industrialisation have caused a deterioration of air quality in the Andean region. Urbanisation has resulted in a high number of vehicles (typically with poor emissions controls), traffic congestion and increased industrial output. A lack of regulation concerning the placement of pollutant-emitting factories means that they are often situated near or within large cities, resulting in high levels of localised air pollution.

Households burning solid fuels also contribute to reduced air quality.[65] This is much more prevalent in rural than urban areas in the Andean region.[66] Therefore while external air pollution is worse in urban areas, indoor air quality is often worse in rural areas.

Air pollution differs from city to city. Its impact depends on the surrounding topography and weather conditions. For example, in Medellin and Cali, two of Colombia's largest cities, limited air circulation exacerbates the impact of air pollution.[67] Air pollution also varies within cities, and from season to season.

The effects of air pollution can be seen in high levels of chronic breathing problems amongst children, and chronic bronchitis amongst adults.[68] Three of the most relevant aerial pollutants are particulate matter, nitrogen oxide and sulphur dioxide. Particulate matter is emitted as part of the hydrocarbon combustion process, particularly by diesel and two-stroke engines. Particles less than 3 microns in diameter cause breathing problems and irritation of the lung capillaries, leading to respiratory morbidity, deficiencies in pulmonary functions and lung cancer. Chronically reduced lung capacity (e.g. emphysema) among urban populations is a major risk.[69]

Nitrogen oxides are released by motor traffic, power production, and the burning of wood and garbage, which in turn causes respiratory irritation, headaches, pulmonary emphysema and oedema of the lungs. Nitrogen oxides also contribute to the formation of acid rain, which can cause extensive damage to vegetation, and terrestrial and aquatic ecosystems.[70]

[65] WHO – 'The use of solid fuels in households is associated with increased mortality from pneumonia and other acute lower respiratory diseases among children as well as increased mortality from chronic obstructive pulmonary disease and lung cancer (where coal is used) among adults. It is also a Millennium Development Goal indicator.'

[66] Table 4 (WHO Data)

[67] Hardoy & Satterthwaite (2007)

[68] UNEP GEO-LAC 2003

[69] http://www.unep.org/tnt-unep/toolkit/pollutants/facts.html

[70] http://www.unep.org/tnt-unep/toolkit/pollutants/Nitrogen.html

Sulphur dioxide is produced by the combustion of fossil fuels which contain sulphur, including coal, oil and diesel. Adverse health effects include the aggravation of asthma and chronic bronchitis. Sulphur dioxide also contributes to acid rain.[71]

Urban environment and waste management

While population growth in the Andean region has slowed down since 1990, urbanisation has increased.[72] Urbanisation has exerted pressure on the environment of the Andean region, and resulted in 'megacities' such as Lima and Bogota.[73] Around a third of the Andean population live in cities of 750,000 people or more.[74] Unplanned urban growth in the Andean countries has occurred without the necessary expansion of infrastructure and services, and generally outside of a planning and regulatory context which would limit environmental costs and protect natural resources. Environmental protection and sanitation services have failed to keep pace with urbanisation in the Andean region. Much land is illegally occupied – either squatted, or lived upon without planning permission – meaning that facilities for piped water and waste collection are typically lacking.

Solid waste production has increased beyond collection capacity in many cities. In the Lima metropolitan area only 60 percent of solid waste was collected in 2003 and in Quito 85 percent was collected. This should be compared to an average of 90 percent in the South America/ Caribbean region.[75] In Bogota, however, 99 percent of solid waste was collected. Lack of collection often results in waste being deposited in the nearest open area, causing an increase in disease vectors and rodent infestations. Additionally, uncollected waste often blocks drainage channels, creating a negative impact on water facilities. Despite these persistent problems, progress has been made to improve sanitation facilities, most notably in urban areas.

Table 30: Improved sanitation facilities, urban (% of urban population with access)

Country Name	2000	2006
Peru	80	85
Ecuador	90	91
Colombia	83	85
Bolivia	52	54

Source: World Development Indicators database

[71] http://www.unep.org/tnt-unep/toolkit/pollutants/Sulphurdioxide.html

[72] Table 5 (WHO data)

[73] UNEP GEO-LAC (2003)

[74] Table 5 (UNEP data)

[75] UNEP GEO-LAC (2003)

2.3.4 Biodiversity

The Andean region is considered one of the most ecologically diverse areas in the world. The specific location, elevation and geological youth of the Andes result in unique conditions for biodiversity.[76] The tropical Andes are one of 25 worldwide 'endemism hot spots', containing 20,000 endemic plants, representing 6.7 percent of the world's total.[77] The area also contains the largest variety of amphibians in the world, with 664 distinct species, 450 of which are listed as threatened on the 2004 IUCN Red List.[78]

Colombia is one of the most biologically rich areas in the world, with 21 distinct bio-vegetational zones.[79] Some 46 percent of the country is covered in forest. Ecuador, in terms of land size, is considered the world's most biodiverse country.[80] Peru and Colombia have been declared by Conservation International as two of 17 countries worldwide with 'megadiversity'.[81]

There are a number of key ecosystems in the Andean region. The forest systems include the Amazon forests, the mountain forests of the Andes, and the Chocó forest which stretches along the Pacific coasts of Colombia, Ecuador and north-west Peru. They are considered some of the most important environmental areas in the Andean region due to their valuable role as a carbon sink.

These areas are under threat from deforestation as a result of national and international market demands, which demand the clearing of land for agricultural use and livestock grazing. Once cleared, the production capacity of the land decreases dramatically due to soil erosion and acidification, the loss of organic material, soil compacting, the loss of nutritive elements, chemical pollution and salinisation. Deforestation causes sedimentation of water courses and deterioration of water resources. The change in land use also typically increases emissions of carbon dioxide, both from reduced carbon sequestration and increased carbon emission (i.e., methane from increased livestock numbers and nitrogen oxides from fertilisers), all of which impact climate change.[82] Peru lost about 9.5 million hectares of its native forests by 2000, and it is estimated that about a third of Colombia's vegetative cover has been lost in the 30 or 40 years before 2000.[83]

Deforestation in the Andean region is also caused by urbanisation, road building, infrastructure assembly (electricity networks, dams etc), and resource extraction. Illegal logging is a well documented problem throughout the area. For instance, approximately 70 percent of Ecuadorian timber has been harvested illegally, and Ecuador's deforestation rate is higher than anywhere else in South America.[84] Increasing oil exploration and development has occurred on the eastern slopes of

[76] *Regional Biodiversity Strategy for the Tropical Andean Countries* (2005)

[77] UNEP GEO-LAC 2003 p.64

[78] www.biodiversityhotspots.org

[79] *Interim Environmental Review US-Andean Free Trade Agreement* Feb 2005

[80] *Interim Environmental Review US-Andean Free Trade Agreement* Feb 2005

[81] http://www.conservation.org/documentaries/Pages/megadiversity.aspx

[82] UNEP GEO-LAC (2003)

[83] *Interim Environmental Review US-Andean Free Trade Agreement* Feb 2005

[84] *Interim Environmental Review US-Andean Free Trade Agreement* Feb 2005

the Andes and in the Amazonian lowlands. Despite the negative environmental impacts, resource extraction is economically important to the region; for example, half of the Ecuadorian economy is based on the extraction of oil and gas.[85]

The Andean region is also home to freshwater and coastal wetlands, which are also threatened by pollution and the growing exploitation of water resources for human use.[86] The mangroves of Colombia and Ecuador, which play an important role in coastal stabilisation, are threatened by logging and the development of aquaculture.[87] Between Colombia, Peru and Bolivia, there are grassland ecosystems which are used for cattle farming. These areas play a valuable role in the regulation of water resources, but are under threat from overgrazing.

2.3.5 Climate Change

In the Andean region, the most pronounced impact of climate change can be seen in both coastal and mountainous areas.[88] The coral reefs of the Colombian Caribbean were affected by the El Niño events of 1982/3 and 1997/8, resulting in widespread reef damage.[89] Another problem is coral bleaching, resulting from increasing sea temperatures. Rising sea levels endanger low lying coastal areas of the Andean region. The Ecuadorian coast is considered particularly vulnerable, and the concentration of the Andean population in the coastal zones is a potential cause for concern.[90]

Global circulation models project a disproportionately large temperature increase in the Andes compared to surrounding lowlands, resulting in widespread glacier retreat. [91] It is thought that many lower lying Andean glaciers could disappear within the next 10 to 20 years.[92] Tropical glaciers between Bolivia and Venezuela have decreased from over 2,940km² in 1970 to 2,490km² in 2002.[93] An IPCC report claims that "glaciers in the tropical Andes of Bolivia, Peru, Ecuador and Colombia have decreased in area by amounts similar to global changes since the end of the Little Ice Age".[94] As glaciers retreat, their ability to contribute to runoffs during dry warm periods and to store water during wet cold periods is reduced.[95] This has the potential to cause considerable impacts on the hydroelectric power sector, water supply for urban and agricultural areas, and ecosystem integrity.

As noted above, the Andean states are heavily dependent on hydroelectric power for electricity.[96] Large-scale rainfall fluctuations due to El Niño and La Niña also have a large impact on the viability of

[85] *Interim Environmental Review US-Andean Free Trade Agreement* Feb 2005

[86] *Regional Biodiversity Strategy for the Tropical Andean Countries* (2005)

[87] *Regional Biodiversity Strategy for the Tropical Andean Countries*(2005)

[88] Vergara (2007)

[89] *Regional Biodiversity Strategy for the Tropical Andean Countries*

[90] Vergara (2007)

[91] Ibid

[92] Bradley *et al* (2006)

[93] Vergara (2007)

[94] IPCC Technical Paper VI *Climate Change and Water* 2008 p.96

[95] Vergara (2007)

[96] Table 1 (EIA and CIA data)

hydroelectric power generation.[97]

High mountain wetland ecosystems are extremely sensitive to climate change. The Páramos (Northern Andean wetlands) are thought to already have their water vapour circulation patterns influenced.[98] Numerous densely populated areas, such as Bogotá and Quito, depend on these ecosystems for their water supply.[99]

The effect of climate change on temperatures and precipitation cycles seriously threatens the Amazonian basin ecosystem.[100] This could reduce the Amazon basin's capacity to store carbon, and result in desertification.[101] The Amazon basin plays an important role in the water cycle and water balance of the whole continent, so changes to its function would have far-reaching consequences.[102] Increased precipitation has recently been observed in Bolivia, north-west Peru and Ecuador, and more frequent floods have occurred in the Mamore Basin of the Bolivian Amazon.[103] The occurrence of climate-related disasters in South America has increased 2.4 fold between 1970-1999 and 2000-2005.[104] This clearly demonstrates the vulnerability of the Andean region to climate change.

2.4 Baseline Regulation Characteristics

2.4.1 Introduction

The magnitude and significance of the direct and indirect sustainability impacts resulting from trade liberalisation are affected by the status of the regulatory system and broader institutional governance structures through which these sustainability pressures are managed. This section of the baseline study provides an insight into regulatory policies and institutional frameworks in the Andean countries. It also provides an evaluation of effectiveness and quality of the regulatory framework in each of the four countries.

The baseline regulatory conditions provide part of the evidence base for impact analysis and policy recommendations. Firstly, the assessment of impacts takes into account what is known about the effectiveness of the regulatory regime to prevent or mitigate potential negative and enhance any positive effects of market opening and trade rules changes. Secondly, evidence of the strengths and weaknesses of the regulatory framework will enhance the recommendations for these policy measures, particularly in the area of institutional strengthening and capacity building.

[97] IPCC Technical Paper VI *Climate Change and Water* 2008

[98] Ruiz *et al* (2007)

[99] Vergara (2007)

[100] IPCC Special Report (1997)

[101] Vergara (2007)

[102] IPCC Technical Paper V *Climate Change and Biodiversity*

[103] IPCC Technical Paper VI *Climate Change and Water* 2008

[104] IPCC Technical Paper VI *Climate Change and Water* 2008

2.4.2 Environmental Regulation

Andean countries overall

The Andean countries have taken an active part in defining and developing legal, policy and institutional measures for environmental policy. In countries such as Ecuador, the environment has been treated as the key element for a bio-centric development strategy and has been sanctioned as such by the country's new constitution.[105] In Bolivia, environmental regulation has been addressed at the constitutional level as well, in relation with regulations on indigenous peoples' rights. Environmental regulations have been introduced in all Andean countries and high level government bodies have been established to coordinate environmental policies at the international, regional and national levels.

In the Andean sub-region, the Andean Community of Nations and its Andean Committee of Environmental Authorities have attempted to promote consensus and collaboration mechanisms in sustainable development areas. Recent achievements include the Carabobo Accord (June 2001) and the Guidelines for Environmental Management and Sustainable Development in the Andean countries. These guidelines analyse priority themes and commitments assumed by member countries in international fora.[106]

The first meeting of the Andean Community Council of Ministers of the Environment and Sustainable Development in Paracas, Peru in 2005 mandated the Andean Committee of Environmental Authorities (CAAM) with updating the Andean Environmental Agenda and reinforcing institutional capacities so that the targets established in the Andean Environmental Agenda could be met.

The Andean Environmental Agenda 2006- 2010 is a guiding document framed in a long term vision which proposes short and medium-term actions. Sub-regional actions are established in order to add value to national efforts and build capacity of the member countries on environmental and sustainable development matters.[107] The Andean Environmental Agenda has two sections. The first contains three thematic issues (biodiversity, climate change and water resources), and three crosscutting issues (capacity building for trade, environment and sustainable development; environmental education; and sustainable production and consumption). The second section contains issues proposed by one or more countries that will be subject to analysis and debate before becoming part of the operating agenda.

Additionally, it is notable that all four Andean countries are signatory members of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). CITES works by regulating the international trade in specimens of listed species through a permitting system. Each member state must designate one or more management authorities in charge of administering the licensing system and one or more scientific authorities to provide advice about the effects of any proposed trade on the status of the species.

[105] Gudynas 2009.

[106] UNEP, 2007

[107] Comumidad Andina (2007)

Bolivia

Overview

Natural resources are a fundamental source of revenue, both for the Bolivian people and their government. This is why the Morales government assigned the sustainable exploitation of natural resources a central place in the new constitution approved in January 2009, reinforcing the role of state intervention in the sector.

The new constitution (CPE) is a very ambitious, complex and at times a vague document which includes the recognition of 36 indigenous "nations", a wide range of social, economic and political rights, state interventions in the economy (including the control over natural resources), and a reform of the judiciary (with direct election of Supreme Court judges and a parallel system for indigenous peoples). Particularly contentious is the creation of four levels of autonomy without a clear definition of the distribution of competences and resources. The most important and controversial aspects of the constitution (autonomies, decentralization, electoral system, judicial reform) have yet to be clarified and implemented through secondary legislation.

The sound management of the revenues from finite natural resources is a key challenge for sustainability and good governance. The land reform process stands out as crucial for reduced inequality and poverty reduction, but involves a risk for accelerating the already high rate of deforestation. There is a strong need to strengthen the capacity of public institutions, including the land reform authorities, to integrate environmental considerations as a cross cutting issue as stipulated in the CPE.

The National Development Plan (NDP) outlines an ambitious plan for public investments, including support for micro- and small enterprises as well as large scale industrial projects with significant potential environmental effects involved. In this context, it is of concern that Bolivia does not have a well working system for environmental assessments. It took the government more than a year to decide which ministry should be assigned the role of being the Competent Environmental Authority with the responsibility for environmental assessments. The central role assigned to the state in the management of natural resources is one of the most important features of the CPE and the NDP. However, the capacity of the public administration to play this central role has been weakened by the large replacement of experienced staff from earlier administrations as well as by the reduction in public sector salaries.

This weakening of public administrative capacity continues to be an obstacle to effective environmental management. A clear division of responsibilities between different government entities is crucial, not least due to the increasing involvement of the state in industries with vast environmental impacts. A key explanation behind the lack of progress in implementing laws and reforms for sustainable and equitable natural resources management can be found in the conflicting interests around these issues in Bolivian society. Social and political conflicts related to access and control of key resources such as land, forests, water and gas are likely to continue as government reforms face fierce opposition by powerful groups. Reforms aimed at strengthening the legal system, dispute settling mechanisms and democracy at large are thus an important prerequisite to allow for

addressing the pressing environmental problems facing Bolivia.

Land use/land use changes and Bolivia's extractive industries

In the past, Bolivia had experienced two land reforms, one in the 1950s and the other in the 1990s. Both were unsuccessful at addressing unequal land distribution and low land productivity. Land reform is a flagship of President Evo Morales' government aiming to provide access to land to landless citizens, small landowners and indigenous communities through land titles and security of tenure,[108] the details of which can be found in the new constitution. The Institute of Agrarian Reform ("Instituto de Reforma Agraria", INRA) has been in charge of implementing this reform. During the reform of law and regulations approved in 2006, the Forestry Directorate ("Dirección Forestal"), which should be in charge of the promotion of forestry development, was not mentioned in the law or incorporated in the reforms as it was said the reform would only apply to the agrarian sector even though this claim seems to undermine evidence that titles are demanded mostly on forests.

The forestry law (Law 1715) promulgated in 1996, which replaced Executive Decree 28140, is designed to regulate access and titling of forests. The main change in legislation was the introduction of indefinite rights (as opposed to the temporary character it had before) on forests to landowners who present an adequate plan for forest management. There has been incertitude about the legality of this framework and the effects it could have on land appropriation, in particular in the Eastern part of the country where large states could be declared forest concessions once landowners present the required plan for forest management.[109] There is no available information on the extent to which this type of practice has occurred since the decree was promulgated.

Similarly, since the approval of the new land and forestry laws in 1996 and the establishment of regulatory and supervising public entities such as the *Superintendencia Forestal* and the *INRA*, the main longstanding problem has been incorrectly defined and overlapping duties and responsibilities of agrarian, forestry, mining and hydrocarbons government offices.[110]

The current Bolivian government has promulgated new policies for Bolivia's extractive industries. Proposed mining regulations within the new constitution include that mining concessions to be converted into mining contracts and unworked concessions will revert to the state.[111] Starting on 1 May 2006, Bolivia decided to re-nationalise its hydrocarbon industry and the Morales government issued the Supreme Decree No. 28701 (the "Nationalization Decree").

[108] Gobierno de Bolivia, 2007a

[109] Sanjines, 2005, http://www.ftierra.org/ft/index.php?option=com_content&view=article&id=774:rair&catid=130:ft&Itemid=188.

[110] Urioste, 2001 (http://www.ftierra.org/ft/index.php?option=com_content&view=article&id=955:rair&catid=130:ft&Itemid=188)

Ecuador

Overview

Environmental protection is embodied in Ecuador's 2008 Constitution which outlines 'rights for nature' in chapter seven. Ecuador's environmental laws are recent – many dating only from 2000. However, although the constitution guarantees environmental protection, implementation of a legal regime has been uneven.

Examples include the Environmental Management Law and environmental secondary laws, which were designed in part to ensure coordination within a National Decentralized System of Environmental Management. The Environment Ministry has the lead role in coordinating all agency efforts. However, the large number of agencies involved in environmental management, combined with overlapping responsibilities, leads to inefficiency and conflict. Ecuador possesses a series of national laws aimed at prevention and control of pollution, protection of forests, protecting and providing for clean water, controlling air emissions from fixed sources, and other laws aimed specifically at protecting public health. A special law exists for the conservation and sustainable development of the ecologically sensitive Galapagos Islands.

All environmental laws in Ecuador are legally enforceable through administrative, civil and criminal procedures, and Ecuador's Environment Ministry has the ability to refer cases to the Ecuadorian Attorney General for criminal prosecution. However, enforcement in most areas of environmental law has been weak, and fines and penalties are rarely imposed. Controls on the environmental impacts of some key industries, most notably oil exploration and extraction, are weak, ineffective or absent. Regulatory issues affecting the oil industry are handled by the Ministry of Mines, not the Ministry of Environment. In addition, PetroEcuador, the state oil company, has a special legal status which it has used to avoid certain environmental responsibilities.

The forestry sector in Ecuador is regulated by the Ley Forestal y de Conservación de Areas Naturales y Vida Silvestre (the Law of Forestry and Conservation of Natural Areas and Wildlife) (2005), which declares state ownership of all forest land and enables the state to allocate it according to the constitutional principles of protecting the environment and indigenous peoples' livelihoods. Despite such a legal framework, timber companies continue to exploit forests in unsustainable ways, and primary forests are increasingly allocated to be converted into African Palm fields. Major areas of deforestation can be found in the coastal regions, as well as in the Amazonian and tropical Andean lowlands. More recently, the north-western provinces of Esmeraldas, Carchi and Imbabura have been heavily affected with the presence of large timber companies, which control approximately 540 mil hectares of forested land.[112]

Environmental mismanagement of oil companies in the Ecuadorian Amazon is often overlooked. This situation has been observed over the last several decades. For instance, amazonian communities have demanded the company Chevron Texaco pay environmental damages equivalent to 27300

millions of US dollars.[113] The government has limited the expansion of mining concessions, and since 2007 has strengthened its control over the sector by requiring socially responsible mining practices. New legislation is expected to limit the duration of exploration concessions and to require stringent environmental impact assessments.[114]

Colombia

Overview

Colombia has some of the most comprehensive and up-to-date environmental regulations in Latin America and its environmental laws have been used as a model by a number of developing countries. Nevertheless, civil war, inadequate budgets, recession and a weak tax base have slowed advances in implementing and enforcing environmental regulations. Additionally, due to certain political ideologies that do not value conservation highly and the inability to enforce policies across vast swaths of land, environmental enforcement in rural and frontier zones has been weak. The enforcement situation is better in major urban areas, where the state is able to exercise more authority.

Colombia has had environmental programs and regulations in place for several decades. Between 1968 and 1993, the federal government's environmental responsibilities were carried out by the National Institute of Renewable Natural Resources (INDERENA). During this period Colombia also set up a regional governing network, the *Corporaciones Autonomas Regionales* (Regional Autonomous Corporation--CAR), whose responsibility also included handling environmental matters. In 1974, Colombia implemented a National Renewable Resources and Environmental Protection Code, which was one of the world's first comprehensive environmental protection acts. Under this act, INDERENA shared environmental responsibilities with the Ministries of Health, Public Works, Defence, Energy, the National Planning Department, other relevant government administrative bodies and relevant municipal authorities. In 1993, Colombia passed a law that established the Ministry of Environment, and created 15 new *corporaciones autonomas regionales* (autonomous regional corporations) that were dedicated solely to handle environmental matters. The 1993 law also established a National Environmental Council to coordinate environmental programs among the various government ministries.

The Colombian Constitution was approved in 1991 and contains 23 articles related to environmental protection. The Constitution sets up a structure for regional and local participation in environmental management. Despite these advances in environmental legislation and administration, concerns have been raised that restructuring and changing priorities may weaken Colombia's environmental legal regime.

In an effort to curb chronic air pollution in Colombia's large cities, the government recently mandated that all passenger vehicles sold must be able to run on flexible fuel containing up to 85 percent ethanol by 2016, a policy that will be phased in commencing in 2012.

[113] http://www.oilwatchsudamerica.org/Lo-Nuevo/ecuador-chevron-texaco-intenta-obstruir-investigacion-sobre-videos.html

[114] USGS, 2007, http://minerals.usgs.gov/minerals/pubs/country/2007/myb3-2007-ec.pdf

Land use/land use changes

Due to the longstanding armed conflict in Colombia statistics on changes in land use and control are lacking. Trends observed over the last 50 years, however, suggest that land conversion is particularly acute in Colombia, with lowland forests being rapidly cleared for cropping and ranching. The newest forestry law from 2006 attempts to protect primary forest areas and to promote the commercial forestry sector. According to some reports, however, these two goals may be incompatible.[115] Gallery forests of the savannas are less likely to be cleared than continuous rainforests. By contrast, the original savannah vegetation is being steadily eliminated from the landscape, which is a major concern for conservationists.[116]

Colombia's extractive industries

In the mining sector, the Mining Code Law of 2001 was recently reformed to clarify certain existing ambiguities. Some of the approved articles deal with awarding concessions objectively based upon the best economic, environmental, social, and technical use of resources; the creation of a special application process for the development of work plans in the emerald sector; and fees and royalties that would essentially limit speculation.[117] Notwithstanding the progress made in the reform,, communities in Colombia's rural areas have protested against large mining companies, claiming they carry out mining operations anywhere that minerals are located without consideration of the threat to water, the forced displacement of communities, and the opposition of people affected by these and other risks to the ecosystem and public health.[118] This situation, which is observed in all other Andean countries, is particularly exacerbated in Colombia due to the militarisation of mining districts.[119]

Peru

Overview

The concept of environmental protection is embodied in Title III, Chapter II, ("Environment and Natural Resources") of Peru's 1993 Constitution. Article 200 outlines various government obligations to provide citizens with legal tools they can use to pursue legal remedies for environmental wrongs. Additionally, Chapter II of the Constitution reserves the right to develop all of Peru's natural resources to the national government and promotes the use of natural resource, yet obligates the government to promote conservation of biological diversity, protect natural areas and promote sustainable development of the Amazon region through appropriate legislation. The Constitution is more recent than the 1990 Peruvian Environment and Natural Resources Code, which set responsibility for administration of environmental policies across several ministries. As a result, a

[115] See, for instance, Guhl Nannetti, 2006, www.ambiental.net/noticias/biodiversidad/ColombiaLeyForestal2.htm

[116] Etter et al, 2004.

[117] Unidad de Planeación Minero Energética, 2006; Sistema Informacion Minero Colombiano, 2007 (quoted in USGS 2007a)

[118] Mining Watch Canada. Declarations of Oruro Gathering on Environmental Justice and Mining in Latin America.

http://www.miningwatch.ca/en/declarations-oruro-gathering-environmental-justice-and-mining-latin-america

[119] Ramírez The Profits of Extermination (quoted in Cuffe, 2006).

http://www.miningwatch.ca/en/san-marcos-colombia-regional-integration-gold-and-bullets

Peruvian Congressional Commission is in the process of preparing a comprehensive update of Peru's Environment and Natural Resources Code in order to establish a new environmental framework law for the country.

Peru has recently created an environmental ministry (Ministerio del Ambiente)[120] which integrates all environmental programs across several ministries and special cross-sectoral programs, and is called to coordinate with other ministries and regional and local governments on environmental matters. The Ministerio del Ambiente took over the National Council of the Environment (CONAM) which was the coordinating body between the government, the private sector and civil society. Due to its recent creation, this ministry is still in process of carrying out a consultation process to define an environmental national policy.[121]

Throughout the 1990s, Peru took several legislative steps designed to broaden the scope of natural resource and environmental protection. The law creating the CONAM was implemented in 1994, at about the same time that Peru implemented a framework law on private investment containing a number of environmental components. Another 1990 law established a System of Natural Areas Protected by the State. In the period of 1997-2001, numerous laws were passed to address the sustainable development of natural resources and biological diversity, protection of natural areas and water resources, solid waste disposal and the need for national environmental impact assessments. The nation's Supreme Court also issued decrees establishing strategic regulations on biodiversity and regulations to implement the 1997 law establishing protected natural areas.

Peru has a highly decentralised form of environmental enforcement based on regulations that are specific to industries or industry sectors of the economy. Several sectoral offices have their own individual sets of administrative sanctions. These include authorities for forestry, mining, hydrocarbons, electricity and manufacturing. With enforcement occurring over such a wide variety of government agencies, it has been difficult for the Peruvian government to coordinate which institutions are responsible for certain roles. The national government is taking steps to improve coordination among these various institutions. Peru's 1990 Environment and Natural Resources Code gave Peruvian citizens some access to civil courts to address environmental issues. The 1990 Code provided citizens with the right to file injunctions (*amparos*) in civil court that can result in legal actions to stop environmental law violations. However, the *amparos* do not address issues of compensation for damages or issues of environmental remediation. The 1990 Code also established discovery processes (*procesos de conocimiento*) that are somewhat similar to filing civil lawsuits addressing environmental concerns.

Article 200 of the new Peruvian Constitution gave citizens four new legal tools that include: a governmental obligation to provide legal remedies for infractions of environmental law; a similar governmental obligation to force government authorities to comply with relevant environmental laws; a governmental obligation to provide "popular action" to more generally correct violations of environmental law; and a guarantee that violations of the environmental provisions of the

[120] Created by Legislative Decree No. 1013 on May 14th 2008.

[121] A document outlining the environmental policy for 2009-2021 was made available for discussion on March 2009. It can be found at http://www.minam.gob.pe/index.php?option=com_content&view=article&id=123&Itemid=65.

constitution will be considered by Peru's Constitutional Court. In circumstances where there is no governing sectoral agency, the environment ministry can apply administrative sanctions. Ministry and other government officials with environmental powers can impose administrative fines, but the fines are generally only very modest and do not act as a deterrent. Additionally, administrative judicial proceedings allow environmental offenders a large number of appeals.

Details relating to land use/land use changes and Peru's extractive industries

Deforestation in Peru has resulted from both illegal and legal mining and logging activities, due primarily to poorly implemented regulations, poverty, and bureaucratic corruption.

In 1992, with the promulgation of Supreme Decree No 051, Peruvian authorities stopped granting forest logging contracts. The resulting forest management system—characterized by short-term and small-scale forest logging contracts—increased bureaucratic overhead, making it more difficult to secure legal logging rights. As a result, illegal logging activities increased throughout the 1990s, as too did allegations of corruption and unethical behavior from officers of agricultural sector institutions. In 2001, Peruvian authorities passed a new forestry law. The new law contains many of the main principles of sustainable forest management; yet, reports indicate that the intended regulatory mechanisms and outcomes have not been achieved.[122] As of 2005, it was estimated that 95 percent of all Peruvian mahogany was logged illegally[123] and yet by early 2006 not a single commercial logger had been imprisoned in Peru for illegal logging.[124] Furthermore, despite being a signatory member of CITES, Peru has not fulfilled its obligations, especially with regards to sustainable mahogany logging.[125]

Peru has a long history of mineral extraction. As a result of policy reforms of the Alberto Fujimori government, investment in this sector has increased dramatically since the early 1990s. This influx of FDI and territorial expansion of mining activities has also led to increasing social conflict, which has inevitably led to new government regulations and legislation.

Peru has recently created the Ministry of the Environment (MEM). The MEM is responsible for managing Peru's environmental affairs in the mineral sector, notable responsibilities include: establishing the environmental protection policy and maximum allowable levels for effluents, signing environmental administrative stability agreements, overseeing the impact of operations, determining responsibilities, and imposing administrative sanctions.[126] Although seemingly positive, this has created tension within the governments' regulatory system, as well as reduced its capacity

[122] Sears, Robin. and Pinedo-Vasquez, Miguel. "LOGGING POLICY AND FOREST CONSERVATION IN PERU: A CRITIQUE" *Paper presented at the annual meeting of the International Congress for Conservation Biology, Convention Center, Chattanooga, TN*, Jul 10, 2008 <Not Available>. 2009-05-23

[123] Research Institute of the Peruvian Amazon (IIAP)

[124] http://rainforests.mongabay.com/20peru.htm

[125] Reasons for this include a lack of cooperation between agencies, insufficient resources, corruption and generally deficient implementation. For more details see: AIDESEP. (2007). *Illegal logging and international trade in mahogany (Swietenia macrophylla) from the Peruvian Amazon.* Lima: AIDESEP.

[126] U.S. Geological Survey—2007 Minerals Yearbook; Peru

to reinforce and control the private sector.

Recent events regarding land use in Peru have gained international attention. The Legislative Decree No. 1090 Forest and Wildlife Law was enacted on 28 June 2008. The Forest and Wildlife Law updated the old forestry system to comply with the new US-Peru FTA and, according to a press release from the US Embassy in Peru, aimed at promoting orderly and sustainable development of Peru's natural resources. However, AIDESEP (the organisation of Peruvian indigenous peoples) requested the abrogation of LD 1090, and the Peruvian Congress in turn amended articles of the original measure. AIDESEP and other community organisations felt the new law was still unjust. The indigenous people are opposed to this and other new legal decrees that make it easier for large international extractive industries to acquire land and set up operations, as well as other provisions that allow for the privatisation of water. During the first half of 2009, the Peruvian government had to quell indigenous protests about the law. At present, the future of the Forest and Wildlife Law is unclear, but has been repealed for the time being.

2.4.3 The Effectiveness of Environmental Regulation and Policy

Recent research has provided robust evidence to show that a country's environmental performance is positively related to the quality of environmental governance.[127] The Environmental Performance Index (EPI) is a measure of performance in six policy areas: environmental health, air pollution, water resources, biodiversity and habitat, productive natural resources and climate change.[128] The EPI is specifically designed to assist policymakers assessing the effectiveness of environmental policies against relevant performance goals and provides a baseline for cross country comparisons within relevant peer groups.

Table 31 shows the overall EPI results for each of the Andean countries. For comparison purposes, the table also provides the average score for the Latin American and Caribbean countries and for countries with similar level of per capita income.

Table 31: Environmental Performance Indicators, 2008

	EPI Score	Regional Group Average	Income Group Average	Global Rank[129]
Bolivia	64.7	78.4	66.8	110th
Colombia	88.3	78.4	75.9	9th
Ecuador	84.4	78.4	75.8	22nd
Peru	78.1	78.4	75.9	60th

The EPI scores indicate an impressive above average rating for Colombia and Ecuador, a slightly below regional average for Peru, and a well below average ranking for Bolivia.

[127] . See, for example, Dasgupta at al 2006

[128] The EPI score is calculated from 25 core indicators relating to the six policy areas. The results for the core indicators are used to calculate average scores for each of the six policy areas. The six scores are then combined to give an overall EPI score. All scores are scaled from 100 to 0. See Yale Center for Environmental Law and Policy, 2008

[129] Out of 149 countries; countries lacking sufficient data were not included.

A more detailed understanding on the current status of environmental policy in the Andean countries can be derived from careful analysis of the individual policy categories. Table 32 shows the scores for each of the six major sub-components of the EPI.

Table 32: EPI scores

	Environmental Health	Air Pollution	Water Resources	Biodiversity	Productive Natural Resources	Climate Change
Bolivia	61.2	49.4	70.7	78.4	84.5	61.3
Colombia	91.4	98.3	98.3	75.0	94.8	87.1
Ecuador	91.7	98.9	98.9	79.6	61.8	80.1
Peru	78.3	96.9	96.9	58.1	80.6	87.1

The rankings in Table 32 show variation in performance in different areas of environmental policy. In Ecuador, for example, performance in the management of productive natural resources is ranked below the other three countries, whereas its performance in the other five areas is superior to that of the other Andean countries.

The challenge for all Andean countries is to design strategies to encourage investors to enter their economies in environmentally sensitive sectors, such as the mining, hydrocarbons, forestry and fishing industries, while at the same regulating such sectors to improve technological conditions, environmental upkeep and the efficiency of the relevant regulating authorities. Colombia's "2019 Vision" initiative and Peru's environmental initiatives are prime examples showing that countries can take steps towards achieving compatibility between investments, growth and socio-environmental sustainability.[130]

2.4.4 Labour Regulation

The four Andean countries have individually signed most international agreements on labour standards that protect against child labour, forced labour and labour discrimination, and protect free affiliation to unions, collective negotiation, labour inspection in many sectors, and the rights of indigenous people. Additionally, in 2004, at the Andean Community level, the countries approved the Andean Social Security Instrument to adapt the Andean Common Market[131] objectives to the current structure of the social security systems of the countries.[132] They also approved Decision 584 on the Andean Work Safety and Health Instrument to promote and regulate the activities to be developed at work centres in Member Countries, to reduce or eliminate any and all damages to workers' health through the implementation of control measures and the development of activities

[130] See also the World Bank's "Environmental priorities and poverty reduction" study on Colombia for an analysis of the relationship between institutional change and environmental priorities (World Bank 2007).

[131] In 1969, Bolivia, Chile, Columbia, and Ecuador forged an economic agreement designed to assist in reducing trade barriers and fostering the economic development of each member state. The members eventually established the Andean Common Market in which trade restrictions between members have been reduced. Venezuela joined in 1973. Chile withdrew in 1976.

[132] Decision 583 adopted on May 2004.

required to prevent work related risks. Both decisions are now fully in force.[133]

Notwithstanding the progress made in regulations, concerns have been raised about the weak mechanisms designed to ensure compliance with the basic decent work standards in all the four Andean countries. A number of labour rights issues affect individual countries. Ecuador has a poor track record of supporting worker's rights and preventing child labour, and in 2005 US trade negotiators stated this as a reason for not concluding a trade agreement.[134] While workers do have the right of assembly, complex rules govern assembly and protest rights, making actually doing so difficult without breaking the law. These rules include, for example, that a minimum of 30 workers are required to form a union, a policy criticised by the ILO. Additionally, forming unions across companies even within the same occupation is not permitted.

In Bolivia, the requirement to have at least 20 employees to form a union still excludes approximately 70 percent of the country's workforce from union activities. However, the new Constitution significantly extends labour rights.

Colombia has a poor history with the right to assembly, which unfortunately has persisted despite its economic growth this decade. In the first 5 months of 2008, 26 trade union officials were killed, a 70 percent rise over the same period in 2007. Of a labour force of 20 million, only 1 percent, or 200,000 people, can exercise their legal right to strike, a result of tangible threats of violence.[135] The government has made labour rights an increasing priority, with funds to protect trade union officials growing from US$ 1.7 million to US$ 34 million in 2007.

Forced labour is also a persistent concern. In Bolivia, up to 7,000 indigenous Guaranis work as indentured servants in remote areas of Chuquisaca, and up to 30,000 indigenous people are in forced work on agricultural operations in the Beni and Santa Cruz Departments of the country.[136] Such patterns arise despite the country's national minimum wage of 436 Bolivianos per month (2007) and maximum hours per week of 48, which are not effectively enforced.

Driven largely by endemic poverty levels, workers in Andean countries often earn wages below minimum levels, which in turn undermines efforts to protect legal workers' rights. In Bolivia's mining sector, for example, workers earn an average of 21 Bolivianos per 12 hour days, with work safety conditions having improved little in the last decade.[137] In both Ecuador and Colombia, typical wages amount roughly to merely half the necessary amount for daily living expenses, capturing workers in a cycle of debt. A significant number of female workers state they have been victims of on the job sexual harassment.[138]

[133] Details available at: http://www.comunidadandina.org/normativa/res/R957sg.htm

[134] U.S.: Ecuador's Labor Abuses Violate Trade Act, Human Rights Watch, 19 September 2005

[135] Capdevila, Gustavo, COLOMBIA: ILO to Keep an Eye on Labour Rights, Inter Press Service, 13 June 2008

[136] Enganche y servidumbe por deuda en Bolivia, International Labor Organisation, Geneva, January 2005

[137] Bolivia, Country Report on Human Rights Practices, Bureau of Democracy, Human Rights, and Labor, US Dept of State, 11 March 2008

[138] Ibid

In addition, although less widespread, instances of child labour have been a persistent problem.[139] Additionally, in cases where children manage to be removed from worksites, they usually lack sufficient assistance to resume a normal lifestyle and end up returning to work. All of Peru's 14 child labour inspectors lack appropriate training, logistical support and supplies, and often even lack a vehicle to reach inspection sites. The Bolivian government has a Defender of Children and Adolescents program, with a total of 260 offices in operation in 2007 to try to protect children from such circumstances.[140]

2.4.5 Regulations on indigenous peoples' rights

The four Andean countries in the study have signed ILO convention 169, which recognises special status of indigenous peoples and ensures a wide range of basic human rights and fundamental freedoms for them to preserve their culture and livelihoods, and full participation in determining their own development strategies. In that line, the new Ecuadorian and Bolivian constitutions recognize indigenous peoples' rights in several chapters.[141] The European Union has also supported the ILO convention and related initiatives since the late 1990s.[142]

However, adaptation of national legal systems to this international agreement and implementation of reinforcement mechanisms is just commencing. As a result of the economic and political implications that are expected from this agreement, tensions and conflicts have been observed in most of the countries. Some of these have been linked to trade agreements regarding the easing of entry conditions for large foreign investments in indigenous territories; for example, the recent confrontation between Peruvian Amazonian indigenous peoples and the Peruvian government, which is trying to adapt the national legislation to the recently signed USA-Peru trade agreement. Other conflicts have been linked to opposing interests between large companies and indigenous peoples in areas where extractive industries are already operating, for instance gas fields located in Guarani peoples' territories in Bolivia and oil fields in Amazonian Ecuadorian peoples' territories. In these areas, active participation of transnational civil society networks has been observed.[143]

[139] See, for instance, IREWORC's (International Research on Working Children) reports on Andean countries (http://www.childlabour.net/docs/Rural%20Child%20Labour%20in%20Andean%20Countries_summary%20bundle_final.pdf).

[140] Bolivia, Country Report on Human Rights Practices, Bureau of Democracy, Human Rights, and Labor, US Dept of State, 11 March 2008

[141] Gudynas 2009, Nueva Constitucion Politica de Bolivia 2009.

[142] See, for instance, the UE Resolution on Indigenous Peoples, Session No. 2141 of the Development Council, November 30th 1998.

[143] Edelman 2003, Hinojosa and Bebbington forthcoming.

2.4.6 Regulatory Quality and Governance

It is important to distinguish between the regulatory policies that a country has and the capacity to implement these policies. A country's regulatory framework is embedded in a wider institutional and governance context and regulatory quality will include both the design and implementation of regulatory instruments, and the broader aspects of good governance. The World Bank's Governance Indicators provide country rankings in terms of government effectiveness, covering competence of the bureaucracy, quality of policymaking and quality of service delivery; and rule of law, including predictability and effectiveness of the judicial system, respect for law and order, and enforcement of contracts.[144] The tables below show the values for each indicator for the Andean countries, for 1998, 2003 and 2007.[145]

Table 33: Government Effectiveness Indicators			
	1998	2003	2007
Bolivia	-0.04	-0.36	-0.83
Colombia	-0.41	-0.20	+0.01
Ecuador	-0.49	-0.75	-1.04
Peru	+0.07	-0.44	-0.44

Table 34: Rule of Law Indicators			
	1998	2003	2007
Bolivia	-0.30	-0.47	-0.96
Colombia	-0.75	-0.92	-0.57
Ecuador	-0.66	-0.67	-1.04
Peru	-0.67	-0.62	-0.71

Table 33 indicates that government effectiveness has declined over the observed time in Bolivia, Ecuador and Peru, while improving in Colombia. Table 34 suggests that with the exception of Colombia, the rule of law indicators have deteriorated in each of the Andean countries over the past decade.

Corruption is a concern in the four Andean Countries. There is a fragility of public institutions such as the national police, armed forces, the judiciary and the public administration. This has implications for public procurement efficiency as well as for the states' overall ability to lead good governance processes.[146]

[144] Kaufmann et al 2008

[145] The scores rank from -2.5 to +2.5 with a higher score indicating a higher quality of governance.

[146] Soberon 1997.

According to the World Bank's control of corruption indicator, Bolivia ranks at 38.6 among all world countries, Ecuador ranks 14.6, Peru ranks 47.8 and Colombia ranks at 50.2.[147] These numbers indicate that control of corruption is less likely to happen in countries such as Ecuador and Bolivia than Peru and Colombia. All of the four countries fall far below EU-15 countries rank levels.

Acknowledging these structural trends of governance indicators, governments of each of the countries have started to implement institutional reforms oriented to improve the quality of public administration, as well as to provide a better legal environment which would facilitate economic growth and democratic society. Herein, the Colombian government in particular is carrying out important reforms in the judiciary system to make it more trustable and efficient. Reforms include procedures to expedite judicial rulings, pilot projects to improve the judiciary system at local levels, decentralization of judiciary administrative centres, and measures to reduce the backlog of cases.[148] Similar reforms are also happening in Peru, and in Bolivia the last Constitution establishes the formation of ad-hoc judiciary systems for indigenous peoples.

2.4.7 Summary

The review of qualitative and quantitative evidence and available indicators relating to regulation baseline conditions suggests variations in the effectiveness of environmental regulation and environmental policy outcomes among the Andean countries. Some countries achieve results that exceed those of others in their income-group, while others fail to keep up. Environmental outcomes are strongly correlated with the quality of overall governance, as measured in terms of government effectiveness and the rule of law. The slow progress in the quality of governance in the Andean countries over the past decade suggests that all countries will continue to be challenged in ensuring effective implementation and compliance with environmental regulatory measures. Institutional reforms initiated in the past decade may increasingly help to speed up certain policy changes at the national and local government levels.

[147] The indicator, calculated at 2007, measures the extent to which public power is exercised for private gain, including petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.
http://info.worldbank.org//governance/wgi/cs_chart.asp

[148] Communication from a Colombian government representative. (Source: Stakeholder feedback from Salguero, S. P. (2009, August 18)).

3. SUSTAINABILTIY IMPACT ASSESMENT

Trade SIAs are based on the analysis of a causal chain which identifies the significant cause-effect link between a proposed change in trade policy and economic; social, including gender and poverty; and environmental impacts.

The methodology used in this study builds on methodologies used in previous Trade SIAs and combines quantitative and qualitative approaches, using sustainability indicators based on the principle of proportionate analysis (See Table 35). Primarily, the analysis focuses on the core indicators identified in the EC Trade SIA Handbook.[149]

Table 35: Core Sustainability Indicators

Sustainability dimension	Core indicator
Economic	Real income Fixed capital formation Employment
Environmental	Biodiversity Environmental quality Natural resource stocks
Social	Poverty Equity Health and education

Application of a multi-regional Computable General Equilibrium model is used to derive the core economic impacts of the proposed multi-party trade agreement. Results from the economic modelling identify the expected magnitude of the increase or decrease in production in each economic sector. In turn, this provides the basis for assessing the environmental and social impacts of trade liberalisation in the following sectors:

- Agricultural and non-agricultural primary products
- Industrial products
- Services
- Other trade related areas under negotiation

The results obtained from the economic analysis are considered in conjunction with information on the relevant regulatory regimes. The latter is important since the impact of social and environmental regulation has a significant influence on how economic changes affect social and environment issues.

Impacts identified in this chapter form the basis of impact prevention, mitigation and enhancement measures outlined in Chapter 4.

[149] http://trade.ec.europa.eu/doclib/docs/2006/march/tradoc_127974.pdf

3.1 Economic modelling and output

3.1.1. The ICE Model

The ICE (IIDE Computable Equilibrium) model is employed in this study. The application of this global, multi-regional and multi-sectoral Computable General Equilibrium (CGE) model is used to derive the core economic impacts of the proposed multi-party trade agreement between the EU and Andean countries. The methodology is comparable with recent policy analyses from the World Bank, the IMF and the OECD, incorporating similar quantitative modelling frameworks.

The ICE model builds on the latest developments in trade modelling in the areas of goods and services trade, and can be used to analyse long-run investment-related effects (called dynamic effects in the report), and short and long term implications, imperfect competition, heterogeneous households, and includes social and environmental indicators where required.

More information on the ICE model, including policy data and baseline definitions, can be found in the Technical Annex.

3.1.2 Liberalisation scenarios

When applying CGE-analysis to a specific question, such as in the impact of a potential Free Trade Agreement, the core of the analysis is set up around liberalisation scenarios. The EU-Andean SIA examines two potential trade liberalisation scenarios – a 'modest' and an 'ambitious' scenario. Both scenarios entail liberalisation of tariffs, barriers to services and a reduction in trade facilitation costs.

As trade SIAs take place in real time and in parallel to active trade negotiations, the liberalisation scenarios used in this report are based on assumed liberalisation measures, rather than exact representations of the negotiated outcome between parties.

Table 36: Trade liberalisation scenarios

	Assumptions		
	Goods	**Services**	**Trade facilitation**
Modest trade agreement	90% bilateral tariff reductions	50 % liberalisation	1 % of the value of trade
Ambitious trade agreement	97% bilateral tariff reductions	75 % liberalisation	3% of the value of trade

The **modest trade agreement scenario** assumes a 90 percent reduction in tariffs in the goods sector, a 50 percent liberalisation of trade in services, and measures to facilitate trade and lower non-tariff barriers corresponding to 1 percent of the value of trade.

The **ambitious trade agreement scenario** implies a 97 percent bilateral tariff reduction for trade in goods, a 75 percent liberalisation of trade in services, and trade facilitation measures corresponding to 3 percent of the value of trade.

The SIA models both static/short-run effects of the policy scenarios, and dynamic/longer term effects, including capital accumulation and investment effects. This follows the procedures outlined in the GTAP technical paper on capital accumulation in the GTAP model.[150]

The static setting represents, in effect, the assumed impact of implementing a trade agreement in 2018. The dynamic/long term setting represents effects in 2018 based on the assumption of the trade agreement already having been in effect for several years so that resulting changes in investment levels and installed capital stocks can be observed.

3.1.3 Baseline data

Tariffs

Baseline tariff data is derived from several sources. 2004 applied tariffs were taken from the GTAP database (see tables below), which include GSP Plus preferences which are used as a starting point. This information originated from MacMAPS, the WTO and WITS. Nominal tariffs for the year 2018 have then been calculated using post-Doha Development Agenda tariff estimates, based on a range of coefficients in the 2008 set of Doha modalities texts on NAMA and agriculture and consultations with the EC on a likely outcome for sensitive products in agriculture (on bananas and sugar in particular). The baseline scenario therefore represents a "most likely" scenario. Further information on these technical aspects can be found in the Technical Annex.

As mentioned, the countries in the Andean region benefit from EU preferences, including GSP Plus. The table below provides a comparison using the consortium's post-Doha benchmark of actual applied rates and the rates for MFN-based trade. For Bolivia and Peru, current EU applied rates are substantially below MFN rates. However, as these are given at the discretion of the EU, they are not guaranteed. An FTA would both provide duty-free treatment (rather than reduced GSP rates) that is guaranteed by treaty. An FTA would therefore provide an extra degree of market access security, even in cases were preferential rates otherwise apply.

Table 37: EU applied and MFN tariffs for goods -- post-Doha

	MFN rates trade weighted	Applied Rates			
		Bolivia	Colombia	Ecuador	Peru
primary commodities	*2.0*	*0.3*	*5.8*	*17.0*	*0.6*
grains	26.5	5.9	5.8	20.8	20.9
vegetables, fruit, nuts	1.9	0.0	22.3	20.4	2.5

[150] Francois, McDonald, and Nordstrom 2000

other primary food	0.4	0.0	0.0	0.0	0.0
other agriculture	10.8	0.0	1.2	0.0	0.0
forestry	0.1	0.0	0.6	0.0	0.0
primary fishing	4.2	0.0	0.0	0.0	0.0
primary mining	0.0	0.0	0.0	0.0	0.0
manufactured goods	*1.6*	*0.2*	*0.6*	*1.4*	*0.3*
processed foods, bevs, tobacco	16.7	0.6	1.9	1.6	0.4
textiles	3.1	0.6	0.0	0.1	0.3
wearing apparel	3.1	0.0	0.0	0.0	0.0
leather products	2.5	0.2	0.1	0.2	0.3
wood products	1.5	0.0	0.0	0.0	0.0
paper products, publishing	0.0	0.0	0.0	0.0	0.0
petroleum, coal products	0.0	0.0	0.0	0.0	0.0
chemicals, rubber, plastic prods	0.7	0.0	0.0	0.0	0.1
mineral products nec	0.9	0.0	0.0	0.1	0.0
ferrous metals	0.1	0.0	0.0	0.0	0.0
metals nec	2.6	0.2	0.1	0.2	0.2
metal products	0.2	0.0	0.0	0.0	0.0
motor vehicles and parts	0.6	0.0	0.0	0.0	0.0
transport equipment nec	0.1	0.0	0.0	0.0	0.0
electronic equipment	0.6	0.0	0.0	0.0	0.0
machinery and equipment nec	0.1	0.0	0.0	0.0	0.0
manufactures nec	0.1	0.0	0.0	0.0	0.0
TOTAL	**1.9**	**0.3**	**4.2**	**11.6**	**0.4**

Note: MFN rates are based on trade with world (extra-EEA). The commodity basket will vary from that for the Andean countries where, for example, banana exports are more important for some countries.

Services

Modelling studies are not well suited to take into account the highly differentiated nature of services and the linkages to domestic regulatory policy. The nature of liberalisation in services is fundamentally different to liberalisation in goods, as impediments to trade in services are not as clearly visible as is the case with tariffs for trade in merchandise. Rather, trade barriers in the services sector often entail prohibitions, quantitative restrictions and government regulations which limit the market access to foreign suppliers. These are not easy to quantify.

Estimates of services barriers come from two sources. For the Andean countries, gravity estimates of trade costs from Francois, Hoekman, and Woerz (2007) for trade in commercial services are used as the benchmark rate of service sector protection. For the EU, estimates of EU barriers against extra-EU partners from ongoing research with DG-Trade on EU non-tariff barriers affecting trade with Canada, Japan, and the United States have been used, since they are more sector-specific.

These estimates are represented in the form of a percentage of overall trade costs. Estimated average service trade costs in Andean countries are as follows:

- Bolivia 40%
- Colombia 33%
- Ecuador 35%
- Peru 32%

For the EU, the corresponding estimate for imports of Andean services is 8 percent.

3.1.4 Macro level results

The analysis of the effects of a potential trade agreement is set up in two steps. First there are the static/short term effects, i.e. the trade, consumption, income and resource allocation effects that follow directly from the liberalisation of trade between the Andean countries and the EU. Given the 2018 baseline, these short-run estimates provide an immediate assessment of implementing a trade agreement in 2018.

In addition to the short run effects, a trade agreement is also expected to give rise to a number of dynamic effects/long term effects. A more liberal trading environment between the EU and the Andean countries should enhance investment and innovation incentives, resulting in a faster pace of capital accumulation. These additional boosts to economic growth are expected to take a little longer to be fully realised, perhaps up to a decade.

The model results indicate that all four Andean countries gain in terms of an increase in GDP by 2018. However, as Table 38 shows, the change expressed as a percentage of baseline GDP is small, ranging from 0.7 percent in Peru to 2.1 percent in Bolivia under the 'ambitious' liberalisation scenario and allowing for an increase in fixed capital formation.

For the EU27 countries, no change in GDP results from the trade liberalisation scenarios.

Table 38: Real Income Effects - Change in GDP (%)

	Static / short term effects		Dynamic / Long term effects	
Country	**Modest liberalisation**	**Ambitious liberalisation**	**Modest liberalisation**	**Ambitious liberalisation**
EU 27	0.0	0.0	0.0	0.0
BOLIVIA	0.5	1.0	1.1	2.1
COLOMBIA	0.2	0.6	0.5	1.3
ECUADOR	1.2	1.2	1.8	1.9
PERU	0.2	0.3	0.5	0.7

In absolute terms, the estimated real income effect is greatest for the EU, ranging from € 1000 billion in the static/short term setting for the comprehensible trade agreement to € 4000 million in the dynamic/long term setting for the very comprehensive trade agreement. Among the Andean countries, the increase in real income is expected to be biggest for Colombia, the largest economy studied, and smallest for Bolivia. Looking at the relative changes in real income, real income effects as percent change in GDP, the effect for the EU is less than 0.1 percent of GDP.

Across all economies, the real income roughly doubles when moving from the modest to the ambitious scenario in the same setting. The effects are also bigger when taking into account capital accumulation. Comparing the effects of the static/short term and long-run, dynamic settings (including investment effects) for a specific scenario, the capital accumulation leverage effect is shown to be the biggest in the EU and Colombia, whilst having a marginal effect in Ecuador.

Table 39: Real Income Effect, Millions of Euros, 2007				
	Static / short term effects		Dynamic / Long term effects	
Country	Modest liberalisation	Ambitious liberalisation	Modest liberalisation	Ambitious liberalisation
EU 27	1,043	2,754	1,571	4,055
BOLIVIA	100	195	222	406
COLOMBIA	394	1,229	1,034	2,761
ECUADOR	551	541	834	868
PERU	277	436	696	940

The relative income gain is expected to be biggest for Bolivia and Ecuador, where real income is expected to increase between 0.5 percent and 2 percent of GDP.

3.1.5 National Wage Effects

Wage effects for unskilled and skilled labour are shown in Table 40 and 41. As can be seen from Table 30, there are no effects in wages for unskilled workers in the EU under either of the scenarios. For all Andean countries the effects are very small for the short term. The long term changes in unskilled wages are also very small with the effects being the highest for Bolivia with a 1.3 percent increase in unskilled workers' wages under the ambitious long term trade agreement scenario.

Table 40: Effects on European and Andean wages, Unskilled workers, % change				
	Static / short term effects		Dynamic / Long term effects	
Country	Modest liberalisation	Ambitious liberalisation	Modest liberalisation	Ambitious liberalisation
EU 27	0.0	0.0	0.0	0.0
BOLIVIA	0.2	0.6	0.5	1.3
COLOMBIA	-0.1	0.3	0.1	0.9
ECUADOR	-0.1	-0.2	0.0	0.0
PERU	0.2	0.3	0.5	0.7

Source: ICE Model Simulations.

Table 41 provides estimates of the adjustment process as the economy moves from the pre-liberalisation equilibrium to the new post–liberalisation equilibrium.

Changes in wages for skilled workers are even smaller than changes for unskilled workers. Similarly to unskilled wages, no changes occur in the EU. Changes in wages for skilled workers in the Andean countries are all around or below 0.5 percent, indicating a very small change.

Table 41: Effects on European and Andean wages, Skilled workers, % change				
	Static / short term effects		Dynamic / Long term effects	
Country	Modest liberalisation	Ambitious liberalisation	Modest liberalisation	Ambitious liberalisation
EU 27	0.0	0.0	0.0	0.1
BOLIVIA	-0.2	0.3	-0.3	0.6
COLOMBIA	-0.5	-0.1	-0.5	0.3
ECUADOR	-0.3	-0.4	-0.5	-0.5
PERU	0.0	0.2	0.1	0.3

Source: ICE Model Simulations.

3.1.6 National Employment Effects

An underlying, necessary assumption of the model is that the size of each country's national labour force is assumed to be constant. However, by employing data on weighted average or absolute changes in sectoral employment, we can calculate the national labour displacement, i.e. the share of labour moving across sectors due to the change in production as a result of trade liberalisation. Table 42 provides estimates of the adjustment process as the economy moves from the pre-liberalisation equilibrium to the new post–liberalisation equilibrium. The table shows the scale of labour force shifts (in percentage terms) between sectors during the transition period.[151] The estimates indicate that close to 3 percent of the employed labour force in Bolivia and Ecuador would be involved in inter-sectoral shifts in employment, giving rise to accompanying adjustment costs.

Table 42: Shifts in Total Employment (%)								
	Static / short term effects				Dynamic / Long term effects			
Country	Modest liberalisation		Ambitious liberalisation		Modest liberalisation		Ambitious liberalisation	
	Unskilled	Skilled	Unskilled	Skilled	Unskilled	Skilled	Unskilled	Skilled
EU27	0.03	0.01	0.03	0.01	0.04	0.02	0.04	0.02
BOLIVIA	1.03	1.45	0.99	1.40	2.11	3.02	2.O5	2.93
COLOMBIA	1.3	0.9	0.9	1.3	2.0	1.8	2.0	1.8
ECUADOR	2.2	1.7	1.7	2.2	2.7	2.9	2.7	2.8
PERU	0.7	0.6	0.6	0.7	1.1	1.2	1.1	1.2

[151] The model assumes that the total level of employment remains unchanged.

Table 43: Effect on European and Andean Labour displacement for unskilled and skilled workers (%)								
	Static / short term effects				Dynamic / Long term effects			
Country	Modest liberalisation		Ambitious liberalisation		Modest liberalisation		Ambitious liberalisation	
	Unskilled	Skilled	Unskilled	Skilled	Unskilled	Skilled	Unskilled	Skilled
EU27	0.03	0.01	0.03	0.01	0.04	0.02	0.04	0.02
BOLIVIA	1.03	1.45	0.99	1.40	2.11	3.02	2.O5	2.93
COLOMBIA	1.3	0.9	0.9	1.3	2.0	1.8	2.0	1.8
ECUADOR	2.2	1.7	1.7	2.2	2.7	2.9	2.7	2.8
PERU	0.7	0.6	0.6	0.7	1.1	1.2	1.1	1.2

Source: ICE Model simulations

Changes occurring in the EU are limited, with less than 0.5 percent of the labour force affected. Moreover, the changes in the Andean countries are also very small. The highest changes occur in Bolivia and mainly for skilled workers.

3.1.7 National Trade Effects

Tables 44 and 45 below summarise the changes in the EU and Andean countries' global trade flows.

Table 44: percent change in Value of National Exports				
	Static / short term effects		Dynamic / Long term effects	
Country	Modest liberalisation	Ambitious liberalisation	Modest liberalisation	Ambitious liberalisation
EU 27	0.0	0.1	0.1	0.1
BOLIVIA	2.7	3.5	4.9	6.5
COLOMBIA	5.8	6.2	9.0	9.9
ECUADOR	5.8	5.9	7.8	7.9
PERU	3.6	4.0	6.6	7.2

Source: ICE Model Simulations.

Table 45: percent change in Value of National Imports				
	Static / short term effects		Dynamic / Long term effects	
Country	Modest liberalisation	Ambitious liberalisation	Modest liberalisation	Ambitious liberalisation
EU 27	0.0	0.1	0.1	0.1
BOLIVIA	3.5	3.7	6.4	6.8
COLOMBIA	6.0	6.3	9.5	10.2
ECUADOR	6.0	6.1	8.3	8.3
PERU	4.8	4.7	8.3	8.3

Source: ICE Model Simulations.

Table 45 shows there are minimal effects on the EU's global trade flows. On the other hand, the Andean countries, being small countries, experience changes in both export and import flows. Colombia's trade is affected the most, with approximately 6 percent increase in both exports and imports in the short run, and around 9 - 10 percent increase taking place in the long run. All other Andean countries experience important increases in both exports and imports. Smaller changes occur in the short run and under the less comprehensive trade agreement scenarios. The increase in exports and imports is around 7 percent for Bolivia in the long run, ambitious agreement scenario, and around 8 percent for Ecuador. For Peru under the same scenario, imports would increase by 8.3 percent, while exports would increase by 7.2 percent.

3.1.8 Global Effects

A bilateral trade agreement between the EU27 and the Andean countries is expected to have repercussions on other economies as well, through both trade creation and trade diversion. Table 46 below contains a summary of the global effects of a potential trade agreement. This is based on the estimations of the ambitious scenario. The effects of the other liberalisation scenarios, which are even smaller, are available in more detail in the Technical Annex.

Table 46 Summary of Global Effects, Static/short term and Dynamic/long term setting for Ambitious Scenario

Region	National Income Effect (Millions of 2007 €)	Income Effect % Change in GDP	% Change in Value of Exports	National Income Effect (Millions of 2007 €)	Income Effect % Change in GDP	% Change in Value of Exports
Mercosur	-115.7	0.0	-0.1	-582.2	0.0	-0.2
USA	-269.4	0.0	-0.1	-756.3	0.0	-0.1
Other LDCs	6.4	0.0	0.0	55.0	0.0	0.0
Rest of the World	-449.5	0.0	0.0	-1972.3	0.0	0.0

Source: ICE Model Simulations. Note: All results are reported for a baseline including expected effects of a successful completion of the Doha-round, and a projection of baseline to 2018.

As can be seen from the table, the global effects of even the most ambitious scenario are very small. The national income effects for Mercosur, USA and the rest of the world are negative, yet positive for the LDCs. Nevertheless these effects are small in both the short and long run. This is also reflected in the second and fifth column of the table, showing the percentage change in GDP for the short and the long run. None of these regions experience a change in their GDP after the implementation of the trade agreement. There are some very small changes occurring in both exports and imports of the two regions which are more economically linked to the Andean countries, with a minor drop in exports occurring under both the short and the long run. These changes are nevertheless close to zero.

3.1.9 Cross cutting environmental effects

In this section, the estimated effects of the proposed trade on the environment are reported, focusing at first on the changes in annual CO2 emissions, and later on the changes in fisheries, horticulture, and overall forest natural resource utilisation. The changes are presented in Tables 47 and 48 below. The changes in CO2 emissions are calculated by mapping changes in activity at the sector level against estimates of CO2 emissions linked to such activity on a sector basis. These CO2 emission coefficients are from the GTAP7 database. The overall changes are then estimated on this basis. Basically, changes in emissions reflect changes in the level and composition of economic activity, to the extent these then contribute to changes in emission levels. The changes in resource utilization rates are estimated directly from the CGE model, which tracks intensity of natural resource use by sector as part of the basic model structure (similar to use of capital and labour).

Table 47: Change in annual CO2 emissions (2018 baseline), in 1000mt				
	Static/ Short term effects		Dynamic/ Long Term Effects	
Sector	**Modest liberalisation**	**Ambitious liberalisation**	**Modest liberalisation**	**Ambitious liberalisation**
European Union	256	330	901	1 270
Bolivia	74	162	161	330
Colombia	231	576	747	1 646
Ecuador	74	246	50	273
Peru	181	398	301	583
ROW	259	387	684	386
TOTAL	1 075	2 098	2 843	4 488
% increase in global total	0.00	0.00	0.00	0.01

Source: Ice model simulations

The general pattern for the effect on CO2 emissions largely follows the pattern observed in the previous sections, i.e. bigger effects in the dynamic/long term than in the static/short term settings and bigger effects in the ambitious than in the modest scenarios, while biggest absolute effects take place in the two biggest economies in the study, the EU and Colombia. However, the overall effects are small; in fact a potential EU-Andean trade agreement is not expected to have any significant effect on the total CO2 global emission.

As for the effects on fisheries, horticultural land use and forestry resource use, the table below shows that the change in utilisation of fisheries and forestry land use as an effect of liberalising trade will have very small, albeit negative effects. However, the expansion of the vegetables, fruit & nuts sectors (which are estimated to increase production by about 10 percent) in Colombia and Ecuador is shown to have repercussion on the increase in the utilisation of horticultural land use by between 8 to 11 percent in these countries.

Table 48: Change in Fisheries, Horticulture and Forest Natural Resource Utilization, % change from 2018 Baseline.				
	Static/ Short term effects		Dynamic/ Long Term Effects	
Sector	Modest liberalisation	Ambitious liberalisation	Modest liberalisation	Ambitious liberalisation
Fisheries				
European Union	0.0	0.0	0.0	0.0
Bolivia	0.0	0.1	0.1	0.1
Colombia	-0.3	-0.3	-0.2	-0.0
Ecuador	-0.1	-0,1	-0.1	-0.1
Peru	0.0	0.1	0.0	0-1

Horticultural Land Use				
European Union	-1.2	-1.5	-1.2	-1.5
Bolivia	0.2	0.5	0.4	0.0
Colombia	9.8	11.5	9.7	11.2
Ecuador	7.6	8.7	7.6	8.7
Peru	0.4	0.7	0.4	0.7
Forestry Resource Use				
European Union	0.0	0.0	0.0	0.0
Bolivia	0.1	0.3	0.2	-0.1
Colombia	-1-0	-1.1	-0.9	-1.0
Ecuador	-0.6	-0.6	-0.6	-0.6
Peru	-0.1	-0.1	-0.1	0.0

Source: ICE model simulations

3.2 Primary Sectors: Agricultural and Processed Agricultural Goods, Mining and Fishing

Notes on presentation of the following section: (1) For presentation purposes, the long-run ambitious scenario (2b) has been selected for inclusion in the sectoral economic modelling data tables. Tables of changes in sectoral output and trade for all scenarios on a country and sector basis are contained in the Technical Annex of this report. An ambitious liberalisation scenario is also assumed in the social and environmental assessment. However, where appropriate, a distinction is made between short term adjustment effects and long term equilibrium outcomes. (2) This section includes the most important primary sectors to be affected by a trade agreement. The assessment of the social and environmental impacts of a likely expansion of mining (mineral metals and hydrocarbons) and of agricultural growth is performed together due to their geographical overlap in the rural areas of the four Andean countries.

Box 1. The impacts of biofuel production

This box discusses the potential effects of the inclusion of biofuels and their feedstocks in particular in the proposed free trade agreement in terms of economic, social and environmental effects.

Brief background

All the Andean countries include regions with climatic and geographical conditions suited to growing biofuel feedstocks. Biofuel development is strongly policy-driven, with stimulating policies covering both supply and demand sides, and ranging from market creation (compulsory fuel mixing percentages, and consumer tax cuts) to productive investment stimuli (tax and customs exemptions, credit, and infrastructure).

Of the four Andean countries, Colombia has the most explicit and ambitious policy for stimulating biofuel production. Its biofuel industry is already well established, producing ethanol from sugarcane and biodiesel from palm oil.[152] Colombia promotes its biofuel industry vigorously through a range of tax exemptions and regulations requiring domestic fuel consumption to use a blend of 10 percent bio-ethanol with gasoline and 5 percent biodiesel with fossil diesel. The regulatory framework includes the Ethanol Law and the Biodiesel Law, which mandate use of mixed fuels and tax exemptions for biofuels; and Decree 393, which establishes free-trade areas for biofuels, tax and customs incentives, etc. The compulsory mix is currently set at E-10 (10 percent ethanol in gasoline) and B-5 (5 percent biodiesel in fuel oil), and both standards will change to 20 percent from 2012 onwards. Biodiesel and alcohol are exempt from VAT and the global fuel tax, which is 35 percent and 25 percent respectively for the products.

The Colombian government also offers personal and corporate tax deductions, and preferential

[152] USDA (2008) Colombia Bio-Fuels Annual 2008, GAIN Report Number CO8014, USDA Foreign Agricultural Service, Washington DC

credit lines for agro-industrial projects. Colombia has installed pilot biofuel plants in Mexico, El Salvador and Honduras via joint ventures to expand the regional energy network.[153] Ethanol production started in late 2005 and had reached 70 percent of domestic demand by 2008.[154] Palm oil biofuel production began in late 2007, and is expected to fully meet domestic needs by the end of 2009. The biofuel industry is expected to be exporting significant quantities by 2010.

For the future (2012 onwards), Colombia has announced a requirement that new passenger cars be operated on flexible technologies. On a related note, the European automobile sector has raised concerns over the potential reduced vehicle exports to Colombia.

Ecuador is a major exporter of palm oil and also produces sugarcane. It has a small biodiesel industry, and plans have been announced by the Ministry of Agriculture and the local sugar industry for an ethanol project.[155] Expansion of the biofuel industry in Ecuador has been inhibited by the lack of a legal and economic framework for promoting domestic consumption combined with high world prices for palm oil.[156]

Little biofuel production has occurred in Bolivia, as president Morales has criticised the industry in other Latin American countries for causing higher food prices.

President Garcia of Peru has echoed this criticism.[157] However, the Peruvian government has introduced legislation promoting the use of environmentally friendly biofuels, and land in the northern coastal region has been bought by Peruvian and US companies to establish sugar cane plantations for ethanol production.[158]

Table 49: Sugar cane and ethanol production

	Sugar cane area (2007, x 1.000 ha.)	Ethanol production (2007, x 1.000 m3)
Colombia	212,4	270,0
Perú	66,1	78,4
Ecuador	78,0	47,1

The European Commission has highlighted the role of biofuels in European energy policy, both for reducing dependence on oil imports and for reducing carbon emissions. The 2003 Directive on the promotion and use of biofuels required that by 2010 5.75 percent of all fuels on the market would

[153] Carrizo, Ramousse and Velut, 2008; Peñaloza, 2009; Altomonte, 2008; Santos Montero, 2008; Reyes, 2007

[154] USDA (2008)

[155] USDA (2008a) Ecuador Sugar Annual 2008, GAIN Report Number EC8004, USDA Foreign Agricultural Service, Washington DC

[156] Albán M. A. and Cárdenas H. (2007) Biofuels trade and sustainable development: The case of Ecuador's palm oil biodiesel, IIED, London

[157] The Guardian, Tuesday 22 April 2008, http://www.guardian.co.uk/environment/2008/apr/22/biofuel.crisis

[158] USDA (2008b) Peru Sugar Annual 2008, GAIN Report Number PE8009, USDA Foreign Agricultural Service, Washington DC

be from renewable sources, primarily bioethanol and biodiesel. The Biofuels Progress Report of January 2007 concluded that the 2010 target would not be met.[159] The European Council decision of March 2007 endorsed a binding target for 2020 of 10 percent for biofuels in petrol and diesel transport fuels.[160] The production of biofuels in the EU is limited by land availability, although this has been eased by EU expansion, particularly the accession of Romania and Bulgaria. Nevertheless, it is widely anticipated that if the targets are to be met imports will be necessary. EU ethanol imports have increased by more than fourfold since 2001, coming mainly from Brazil.

Economic impact

The EU allows duty free imports from the Andean countries of both ethanol and palm oil. Once the Colombian ethanol industry has reached sufficient capacity for export growth, the EU is likely to provide a significant market. The EU also has a strong domestic industry for producing biodiesel from vegetable oils, so that rising EU demand could lead to increased imports of palm oil as a feedstock. However, preferential treatment under GSP plus can be withdrawn unilaterally by the EU. The proposed EU-Andean trade agreement could continue this preferential treatment on a more permanent basis, and hence provide a greater incentive for production of both ethanol and palm oil for the EU market.

In Colombia, more than 95 percent of sugarcane is grown in the Cauca Valley. CENICAÑA (the Sugar Cane Research Centre) estimates, however, that only 30 000 hectares in the Cauca Valley remain for additional sugarcane production.[161] An additional 200 000 hectares have been identified in Sucre, Bolivar and Cordoba as sources of sugarcane and ethanol for export with additional output potential in Vaupes, Guainia, Vichada, Meta, Auraca, Casanare and Guaviare in the east. In total, estimates suggest than an additional 1 to 2 million hectares could be used in sugarcane production should global demand dictate further cultivation.[162]

Particular areas in the Andean region might see biofuel production rise due to increased demand from the EU and greater access granted through the proposed trade agreement. This will be particularly prevalent in the eastern areas of Colombia. In Ecuador, increased bio fuel development would likely occur in Pastaza, Napo, Sucumbios and Morona Santiago, while Loreto in Peru would be expected to see further expansion.

These regions should witness increased tax revenue generated from the industry's development and expansion. In Colombia's Cauca Valley, for example, tax revenues from sugar mills and ethanol plants accounted for 11 percent of its 34 municipalities' budgets in 2008.[163] Depending on the institutional

[159] Commission of the European Communities (2007) Biofuels Progress Report: Report on the progress made in the use of biofuels and other renewable fuels in the Member States of the European Union, COM(2006) 845 final, 10.1.2007, Communication from the Commission, Brussels

[160] Council of the European Union (2007) Presidency Conclusions 8/9 March 2007, 7224/1/07, Brussels

[161] www.cenicana.org

[162] www.cenicana.org

[163] Toasa (2009)

environment, it is expected that similar revenue should be generated in the aforementioned areas. These tax revenues, if used appropriately, could help deflect the negative costs associated with the industry's expansion.

These regions, in addition to those where sugarcane, palm oil and ethanol production are already established could also receive greater inflows of investment from the EU as a result of a trade agreement. The latter regions would include Ecuador's Guayas region in the southeast, the Cauca Valley in Colombia and the northern coast of Peru as well as palm oil producing regions of Ucayali and San Martin. According to the USDA Foreign Agricultural Service, Peru should reach a surplus of sugarcane production by 2011. Though there is no ethanol production yet, there are large projects in the pipeline that will start production in the upcoming years.[164] These investments would help increase productivity through technological upgrades, while helping to minimise the negative environmental impacts that would otherwise occur. As a result, EU consumers should expect a greater supply of ethanol to become available at lower cost.

The trade agreement could also extend duty free access to biodiesel, providing a further incentive for expansion of the industry in the Andean countries. While the other countries have lagged behind Colombia in establishing domestic biofuel industries, the EU-Andean trade agreement would add to their incentives to do so. It would therefore provide a stimulus for the expansion of both biofuel production and feedstock production (primarily sugarcane and palm oil) in all the Andean countries.

The magnitude of these effects will depend strongly on future world demand for biofuels and their feedstocks and on future changes in world prices. If world demand continues to rise rapidly the economic gains could be substantial, particularly in the absence of similar agreements with other countries. If the world palm oil price remains high the effect will be smaller for palm oil than for biofuels. For biofuels the effect will be less significant if internal or external factors lead to the Andean countries failing to compete on price with other potential suppliers.

The magnitude of these effects will depend strongly on future changes in the competitiveness of the Andean countries compared with other suppliers, and on other trade agreements that might come into effect. For example, Brazil is particularly competitive in the production of ethanol, so that an EU-Mercosur trade agreement with the same provisions as those in EU-Andean agreement (or full multilateral liberalisation through the WTO) could result in rising EU imports from Brazil rather than from the Andean countries. For palm oil and biodiesel similar considerations apply in relation to competing countries in South East Asia.

Social impacts

The Inter-American Development Bank (IADB) supports biofuel production to combat poverty and create a peaceful environment for rural workers. It foresees positive social impacts due to larger

164 http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Commodity%20Report_SUGAR%20ANNUAL_Lima_Peru_4-8-2009.pdf

rural incomes, but also enumerates various risks.[165]

The social impacts in the EU are unlikely to be significant. While increased biofuel imports from the Andean countries could reduce EU producers' market share, the EU's total production levels are expected to increase as Europe attempts to meet its energy security and GHG emissions targets.

The main social impacts in the Andean countries arise from the production of oil palm and sugarcane. The magnitude and significance of the impact depends on the same factors that influence the economic impacts. If the economic effect of the proposed trade agreement is low, the social impact will likely be low; equally, a more significant economic impact will be associated with larger social impacts. Counter-productive effects might be expected if the increase in world prices or demand for biofuels pushes up biofuels feedstock production to a point that it detrimentally impacts local production, hurting food crops through increased competition whether for land or water.

In certain situations, increased biofuel production could result in social unrest. Colombia in particular has been heavily criticised for violent attacks on peasants and agricultural trade unionists by paramilitaries freeing up land for palm oil plantations.[166] Lands collectively owned by black and indigenous communities granted after the 1991 constitutional reform have been the main targets.[167] To that end, it is noteworthy that in order to maintain food security and exports, the majority of sugarcane expansion is expected to come from new cropland and unproductive pasture land. As such, populations living in eastern regions of Vaupes, Guainia, Vichada, Meta, Auraca, Casanare and Guaviare, where sugarcane production would increase, would be particularly subject to displacement.

Similar but less acute problems have been reported in Ecuador, where indigenous and Afro-Ecuadorean populations have been displaced by palm oil plantations. Although there is no such evidence in Peru, the Afro-Peruvian populations who are largely engaged in sugarcane production could also be subject to such displacements due to increased expansion. In Ecuador it is expected that populations in Pastaza, Napo, Sucumbios and Morona Santiago would be subject to the greatest danger of displacement from expansion of biofuel feedstock, while those in Loreto, San Martin and Ucayali in Peru would be at the greatest risk.

In addition, high levels of skin disease have occurred among biofuel plantation workers arising from the use of agro-chemicals. The problems in Ecuador are reported to have declined in recent years through social programmes adopted by some of the main palm oil companies, government social programmes, stricter control of agro-chemicals and regulation of plantation workers' wages.[168]

[165] Pfaumann, 2006

[166] Transnational Institute (2008) Colombia Given a Trade Lease, Inter Press Service, TNI Amsterdam

[167] Friends of the Earth International (2008) Fuelling Destruction in Latin America: The Real Price of the Drive for Agrofuels, Amsterdam

[168] Albán and Cárdenas (2007)

In Peru, the expansion of sugar cane plantations has resulted in consolidation of landholdings and displacement of workers from agricultural cooperatives.[169] In general, the number of jobs created by the plantations is far smaller than the number lost. It has been estimated that of the 30 main crops grown in the region, sugarcane provides the lowest number of jobs per hectare and oil palm the second lowest.[170]

As noted above, the biofuel component of the proposed trade agreement has a high chance of exacerbating these social issues if it has a significant impact on production levels. Both the economic and the social significance of the EU Andean trade agreement will depend on the factors discussed above.

Environmental impacts

There are a number of potential environmental impacts of the proposed trade agreement. If the agreement were to result in a significant expansion of production of palm oil and sugarcane for biofuel, and if the land required were to come from forested rather than agricultural areas, the environmental issue of greatest concern would be the loss of biodiversity. In practice, any expansion of production is likely to create a mixture of both agricultural and forest land exploitation.

The principal environmental benefit expected from biofuel production is a reduction of greenhouse gas emissions from fossil fuels, although this is uncertain. Biofuel production itself generates greenhouse gases, including methane as well as carbon dioxide, and increased production will add to carbon emissions. The net impact on the total emissions is expected to be beneficial, provided that land use changes are small. However, if biofuel production is associated with the razing of tropical forests or replacement of grasslands, these changes can result in large releases of greenhouse gas from soil and existing biomass, to a certain degree negating benefits.[171]

Colombia's current expansion of sugarcane production for use in biofuel signals that the country is fully prepared to develop new cropland rather than transfer existing cropland over to sugarcane. As such, the forested areas in the eastern regions of Vaupes, Guainia, Vichada, Meta, Auraca, Casanare and Guaviare stand to suffer the greatest razing of tropical forests, leading to potentially large releases of greenhouse gasses from soil. With the current plans to develop sugarcane in Sucre, Bolivar and Cordoba and the potential for further development in the east, it is estimated than 1 to 2 million hectares of new cropland could be developed to increase ethanol production and exports.[172] At the same time, however, the expansion in the former areas is likely to take place regardless of the existence of a trade agreement with the EU, causing any such agreement to have only a minimal impact on the razing of tropical forests in these areas.

[169] USDA (2008b)

[170] Friends of the Earth International (2008)

[171] WWI (2006) Biofuels for Transportation: Global Potential and Implications for Sustainable Agriculture and Energy in the 21st Century, Worldwatch Institute Washington, D.C.

[172] USDA (2008b)

Forests in the eastern regions of Colombia could be affected by a trade agreement with the EU if the agreement provides incentives to cultivate these lands. This effect would also be expected in Ecuador's Pastaza, Napo, Sucumbios and Morona Santiago regions and in Loreto in Peru. Overall, while the proposed trade agreement could lead to greater utilisation of biofuels in the EU and in the Andean region, it is expected that a significant amount of forested areas will be cleared in order to achieve this end, thereby negating the positive environmental impact from increased biofuel use to a certain degree.

A wide range of other potential environmental impacts associated with the production of biofuels has been catalogued in the literature.[173] These include increased needs for irrigation and water, fertiliser and pesticide runoff, soil degradation and pollutants such as liquid waste and smoke from burning fields.

Colombia has thus far exhibited a positive deployment of both water-saving and pollution-reducing technologies in the production of ethanol and there is potential for the other Andean countries to follow their example. Using Indian technology rather than Brazilian, Colombian ethanol plants are reported to produce lower volumes of vinasse – the by-product of distilling fermented molasses – reducing the threat to water and soil conditions.[174] In addition, Colombian ethanol plants use about one-half of the energy of Brazilian plants and approximately one-third of the water. A drawback, however, is that these plants require irrigation whereas those in Brazil do not. Overall, however, the sugar-ethanol industry in Colombia has not had disproportionately negative effects on water quality in the Cauca Valley as it has accounted for only 2 percent of the pollution in the Cauca River despite being the largest industry in the area.[175]

In summary, the environmental impacts of increased biofuel production resulting from a trade agreement are mixed. Still, these consequences must be contextualised with current trends. Due to fears that increased biofuel production may lead to greater food insecurity, the Andean countries have signalled a greater desire to cultivate new lands rather than transfer existing cropland to the production of ethanol feedstock. This has manifested itself through expanded cultivation of sugarcane in Sucre, Bolivar and Cordoba in Colombia and in Peru's northern coast; and palm oil in Peru's Ucayali, San Martin and Loreto regions. This expansion is currently ongoing and will increase in the short-term, even in the absence of the proposed trade agreement with the EU.

Where the proposed trade agreement with the EU significantly increases further cultivation, it is

[173] Kartha S (2006) Environmental Effects of Bioenergy, in Peter Hazell and R. K. Pachauri, (eds.), Bioenergy and Agriculture: Promises and Challenges. International Food Policy Research Institute (IFPRI). Washington, DC; World Bank (2007) World Development Report 2008: Agriculture for Development The World Bank, Washington DC 2007; Doornbosch R and Steenblik R (2007) Biofuels: is the Cure Worse Than the Disease? Report SG/SD/RT(2007)3, OECD, Paris; Turner B, Plevin R, O'Hare M and Farrell A (2007) Creating Markets for Green Biofuels: Measuring and Improving Environmental Performance. University of California. Berkeley; Farrell AE, Plevin RJ, Turner BT, Jones AD, O'Hare M and Kammen DM (2006) Ethanol Can Contribute to Energy and Environmental Goals. Science 311(5760):506–8

[174] Toasa (2009)

[175] Toasa (2009)

expected that the economic impact of the trade agreement will be larger over the mid- to long-term. This is expected to be reflected in higher tax revenues and FDI for the areas that undergo biofuel feedstock cultivation. Under such a scenario, the social impact is expected to be reflected in greater employment in these regions, while potentially also leading to greater social unrest among indigenous groups who stand to have their land encroached upon. Further cultivation of new land could also lead to greater rates of deforestation and losses of biodiversity, leading to potentially significant negative environmental impacts.

3.2.1 Economic Impacts

Real output

Table 50(a) shows the estimated changes in output for grains, vegetables, fruit and nuts, other primary foods and other agricultural goods, for scenario 2b (which assumes 97 percent reduction of tariffs in all sectors, including sensitive sectors such as bananas and sugar).[176] Bananas are a very sensitive product for Southern EU countries and some LDCs, and sugar is sensitive for Central European countries. Therefore, the concessions to be granted by the EU could likely be different than the tariff reductions envisaged in the modest and ambitious scenarios. Moreover, any case will be influenced by the final decision of the panel with regard to bananas and the evaluation of the results of the partial reform already implemented concerning sugar.

Table 50: (a) Agricultural goods: Sectoral Changes (%) (share in total value added in brackets)

	EU27	Bolivia	Colombia	Ecuador	Peru
Grains	0.198 (0.2)	1.244 (2.7)	-4.449 (0.8)	-2.581 (1.4)	0.181 (1.8)
Vegetables, fruit and nuts	-1.481 (0.5)	0.756 (5.4)	11.245 (2.9)	8.722 (6.7)	0.662 (2.1)
Other primary foods	0.104 (0.9)	0.491 (8.5)	-1.467 (3.9)	-1.899 (2.8)	0.486 (2.8)
Other agriculture	0.236 (0.6)	-0.498 (1.2)	-5.086 (1.8)	-9.764 (2.5)	0.257 (3.0)
Totals	-1.178 (2.2)	1.993 (17.8)	0.243 (9.4)	-5.522 (13.4)	1.586 (9.7)

[176] i.e. long run ambitious scenario. The results for the other three scenarios give similar changes although the magnitude of the changes is smaller, reflecting the lower level of liberalisation and fixed stock of capital. For a complete list of products included in each subsector, refer to Annex 2.

Table 51:(b) Primary products and processed agricultural goods: Sectoral Changes (%) (share in total value added in brackets)					
	EU 27	**Bolivia**	**Colombia**	**Ecuador**	**Peru**
Forestry	0.012 (0.2)	0.574 (1.3)	-0.994 (0.3)	-0.619 (1.9)	0.019 (0.7)
Primary fishing	0.002 (0.2)	0.162 (0.6)	-0.045 (0.8)	-0.065 (3.4)	0.089 (2.7)
Primary mining	-0.022 (0.7)	0.262 (10.7)	0.419 (5.9)	0.195 (16.0)	0.452 (3.9)
Processed foods, beverages and tobacco	0.066 (2.9)	1.025 (2.9)	-0.836 (3.4)	-1.834 (4.2)	0.567 (7.4)
Totals	0.058 (4)	2.023 (15.5)	-1.456 (10.4)	-2.323 (25.5)	1.127 (14.7)

While there is some heterogeneity in the effects of the different scenarios on sectoral output in the Andean countries, for the EU27 the liberalisation of trade with the Andean countries has a negligible impact on primary products and processed foods sub-sectors. There are only very small changes in the agriculture and agricultural processed goods sector and a small decline in the vegetables, fruit and nuts subsector; but this subsector accounts for less than 0.5 percent of total output in 2018. For the EU 27 countries the total decline in agricultural goods resulting from scenario 2b is 1.12 percent.

Andean countries experience more pronounced changes in the output of some of the sectors. Table 51(a) shows a significant decline in agricultural products in Ecuador and small increases in the other three Andean countries. The vegetables, fruit and nuts subsector is predicted to increase its output significantly in Colombia (11.2 percent) and Ecuador (8.7 percent), contributing a significant share of total national value added in both countries. This is almost entirely due to banana production.[177] At present, the EU market is heavily protected with applied tariffs. Hence, the large reduction in tariffs that is assumed in the 'ambitious' scenario results in a large increase of banana exports to Europe from Colombia and Ecuador.

Both Bolivia and Peru experience small increases across all sectors, with the exception of a 0.5 percent decrease in Bolivia in output of 'other agriculture', which includes cotton and wool. Both countries – particularly Bolivia – exhibit overall net increases in agriculture output.

Table 51(b) shows the changes in primary sectors (forestry, fishing and mining) and processed foods, beverages and tobacco.[178] The EU 27 countries show a marginal decline in mining. The importance of the mining sector, particularly in Bolivia and Ecuador, results in a significant expansion in this sector under scenario 2b, in Table 51(b). The growth in mining output is linked to the growth in

[178] The figures are for scenario 2b and assume 97% liberalisation.

capital stock through investment which is assumed to occur under scenario 2b. However, this growth assumes that the political conditions and negotiations with local populations regarding mining expansion in the rural area are favourable to further large-scale mining development. The processed foods, beverages and tobacco subsectors account for between 7.2 percent (Colombia) and 10.2 percent (Peru) of total national output in the Andean countries. In two of the four countries—Bolivia and Peru—liberalisation scenario 2b is predicted to result in an increase in production.

3.2.2 Social Impacts

Poverty and Inequality

As discussed in section 2, the baseline conditions for poverty and inequality in the Andean countries are below the levels prevailing in most other Latin American countries. Poverty is more pronounced in the rural sector, although there are considerable intra-rural differences in poverty levels, depending on the income–generating opportunities open to households in formal and informal employment.

Most of the positive impact of increasing horticultural production is related to the reduction of tariffs on banana and sugar. Banana, sugarcane and other agricultural commodities (e.g. coffee and African palm) are located in the tropical areas of Northern Peru and Central Andes of Ecuador and Colombia. The expansion of output in the banana sector in Colombia and Ecuador might have a positive impact on household income through the increase in employment. However, long term growth in poor household incomes and poverty reduction will be dependent upon significant local reinvestment on the part of the large foreign companies that dominate the agro-export industries.[179] In Ecuador, for instance, the banana sector has represented an average of 16 percent of agriculture GDP between 2000 and 2008, and generated approximately 383,000 jobs (in direct and indirect employment), benefiting nearly 12 percent of the country's population.[180] However, in the last 15 years, improvements in income, poverty reduction and inequality have not resulted in most of the provinces where the banana sector is concentrated (El Oro, Guayas and Los Ríos).[181]

Other sectors which will benefit from agricultural liberalisation in Ecuador are floriculture, cacao and fruits (other than bananas). These sectors are largely dominated by large agro-industries located in tropical areas, and their expansion is therefore more likely to produce positive effects on employment in those regions characterised by high poverty rates.[182] Liberalisation could also have negative impacts on inter-regional inequality. Government intervention to include small farmers in these sectors and to improve public infrastructure (in particular roads) can enhance the positive

[179] In past years, agro-export firms have benefited from pro-export subsidy policies and exchange-rate differentials without any clear impact on local economies (see the regional reports of the Red EU-CAN).

[180] Servicio de infomación agropecuaria del Ministerio de Agricultura y Ganadería del Ecuador. Banano Informe 2. (http://www.sica.gov.ec/cadenas/banano/docs/informe2.html).

[181] See Larrea and others (2008).

[182] Hidalgo and Ruiz 2008, Larrea et al 2008, Hernandez et al 2008, Escobal and Ponce 2008.

effects expected from higher output.

Given that agriculture and extractive industries (mining and hydrocarbons) are in many cases competing activities in rural areas, the growth in output from the mining sector can be expected to have differential social impacts on different segments of the sector. While employment in the large-scale formal mining sector is expected to increase, the restrictions on workers' rights will restrain any significant increase in real wages or improvement in working conditions. As noted in the preceding discussion of baseline labour conditions, a number of adult labour rights issues affect individual countries.

Additional negative social impacts of further expansion of mining and hydrocarbons in rural territories of the four Andean countries might arise from the local and national conflicts that have emerged in the last five years. Although governments have been eager to set policies and promote institutional change aiming to attract new FDI in the extractive industries, the local population's reaction has, in many cases, opposed such an expansion. Factors that explain tensions and conflicts are related to competition over the resources involved (land and water), the negative effects of mineral development (enclave economies, social problems, environmental damage) and the increased awareness of desirable alternative strategies of development in rural – in particular indigenous – territories.[183] Given that European companies are involved in the mining and hydrocarbons sectors in Andean countries and in initiatives for promoting social corporate responsibility,[184] attention needs to be paid to the fragile political conditions in which a mineral-based growth strategy develops.

Box 2. Social Impact Assessment: Rural Poverty, Livelihoods and Gender Issues in Andean Countries

Rural poverty is one of the main concerns in Andean countries. As noted in the baseline section, poverty incidence – and in particular rural poverty – is particularly high in Bolivia and Peru with more than 70 percent of rural population living under the poverty line. The vulnerable rural peoples are women, young people and indigenous peoples.

The poor in rural areas are often faced with inadequate infrastructure, difficult access to public services and limited access to modern technology. This reduces opportunities for the rural population to supplement farming incomes through salaried labour while also making it more difficult to develop small-scale non-farm and off-farm activities. Given these constraints, much of the discussion about the likely effects of trade-led development strategies is centred on the competition that trade liberalisation could produce for land and water between large scale investments (and/or companies) and small farmers and/or community groups, and on the extent to which trade agreements can be a channel to foster pro-poor growth.

[183] Bebbington and others (2008).

[184] For example the ICMM's resource endowment initiative and DFID's transparency initiative.

Land distribution in the eastern regions of Bolivia, tropical zones of Ecuador and Colombia, and coastal areas of Peru is concentrated in large scale farms. These areas are often oriented towards commercial agriculture due to better access to infrastructure, e.g. irrigation and roads. Even though peasant communities and indigenous peoples may have reasonably large amounts of land, their lands are usually less productive and used only for securing rural livelihoods.

Large-scale agriculture and the development of agricultural commodities (banana, sugar cane, soybean, and flowers) are led by large companies from the agro-industry sector (e.g. in Colombia and Ecuador) and some large domestic entrepreneurs (in Bolivia and Peru). Forest clearing and further expansion of the agricultural frontier into the Peruvian Amazon, the Bolivian Chaco or the Ecuadorian rainforest reduces the natural resources on which the livelihoods of indigenous people depend.

The expansion of extractive mineral industries (oil, gas and metals) in rural territories of Andean countries observed since the beginning of the 2000s has generated increasing concern about the impact on the rural poor and quite different views on the role that extractive industries might play in national development. While foreign and national governments, and private investors alike, see mining as a source of great potential profit and revenue which can be used in poverty reduction policies, many communities and civil society groups have opposed excessive expansion arguing that profit has come at the detriment of host localities. As a result, there have been multiple conflicts between foreign mining and oil companies and local people, with the latter complaining of environmental damage and/or a lack of tangible benefits from these investments.[185]

In these circumstances, trade liberalisation is considered by small farmers, peasant communities, indigenous peoples and the civil society organisations who advocate for them as a threat rather than an opportunity. Since the beginning of the current decade when trade agreements such as the FTAA (Free trade agreement for the Americas) started to be popular, incidence of protest campaigns have risen.[186]

In addition to public opinion in Andean countries debating the advantages/disadvantages resulting after signing an FTA, the institutional changes that FTAs require can themselves produce significant political turmoil and social instability. For instance, in July 2009 the Peruvian government was in the midst of its worst political crisis since it was elected in 2006. This was caused by a highly divisive conflict in Peru's Amazonian region where indigenous peoples were protesting against the government's decision to pass legislation that would facilitate hydrocarbon exploration, mining, commercial farming and logging in their territories. The government's argument strongly relied on the Peru-US FTA requirements. This event raised questions about the prior institutional arrangements that may be needed before a FTA is signed.

[185] Hinojosa and A. Bebbington (Forthcoming).

[186] Examples of this are Oxfam's, CAFOD's, The Trade Justice Movement's and Friends of the Earth's international on fair trade, and in some cases against free trade agreements. Examples of organisations working in campaigning and advocacy at a more regional and national level are RedGE and RECALCA.

Given that individuals and households from rural areas develop diversified livelihood strategies (see the baseline section) depending on the household's access to assets (natural, physical and financial, human, and social), the effects of trade liberalisation on these assets will determine the impact on livelihoods. In general terms, if trade liberalisation facilitates sector diversification, the expected effect of trade policies on livelihood strategies is likely to be positive due to new off-farm job opportunities. Similarly, where trade contributes to agriculture intensification, positive effects are expected if job opportunities are created (for instance in new large plantations). Both possibilities increase the chances for small producers to develop farm and off-farm strategies in the rural areas. However, there could be a negative effect if increased trade results in dispossession of land and other natural assets. The magnitude and time period of the 'adjustment costs' associated with this process depend on the conditions in which the new landless are integrated into the labour market of the rest of the economy.

The final effect of the expansion of extractive mineral industries is not clear. Therefore, the effects of investments liberalisation as part of an FTA can be controversial. The expected positive effects are associated with a likely inflow of FDI into the Andean countries' extractive sectors and its macroeconomic impacts (e.g. on fiscal revenue, spending in social sectors, etc.), technology transfer and some effects on direct and indirect employment. Negative effects are associated with land and water competition between large companies and small farmers, and the environmental damage inevitably produced by extractive industries.[187]

The effects of migration on rural livelihoods and poverty levels are uncertain. In depressed areas such as the highlands in Peru (the *Sierra*) and Bolivia (the *Altiplano*), and regions most affected by armed violence in Colombia, migration has been shown to have an adverse effect on the age structure, while increasing demographic dependence and eroding human capital by reducing the average level of schooling. In these conditions, outward migration may benefit the migrant household, but intensify the causes of poverty and underdevelopment in the 'exporting' area.

The main concerns about the effects of trade liberalisation in agriculture on women's welfare and gender relationships are related to the potential deepening of 'feminisation of poverty'.[188] This could result from differentiated access to and control of land and other productive assets, unequal employment opportunities and working conditions, and differentiated effects in terms of food security.[189]

In so far as trade liberalisation increases existing incentives for conversion of small scale to large scale agriculture, there are likely to be both positive and negative (particularly in the short and medium period of adjustment to changing economic incentives) impacts on the rural livelihoods of the poor. The direct effects relate to the opportunities or constraints of rural households in their access to natural resources (mainly land and water) on which agricultural livelihood strategies rely. Direct positive and negative effects can also be expected on employment in agro-industry. The

[187] Hinojosa (2009); Bebbington et al (2008).

[188] WIDE (2007); ODI (2008)

[189] See, for instance, the material produced by the UN agency Women Watch (http://www.un.org/womenwatch).

indirect effects are related to the effects of trade liberalisation on facilitating or constraining access to assets (human, financial and physical) which enable the development of new forms of livelihood strategies.

The impact of EU- Andean countries trade liberalisation on rural livelihoods and gender is likely to accentuate related existing trends and processes of change. In the long term, the transition from small scale to large scale agriculture and to other higher wage activities can have significantly beneficial social effects. However, such a process may be concentrated in areas where land and water are available for present or future investments, and where the institutional structure of property rights and resource allocation facilitates those investments.

A number of adverse transitional effects are likely to be experienced. A significant expansion in agricultural production attributable to the EU- Andean countries trade negotiations would add incrementally to these positive and negative effects, unless they are effectively countered.

The increase in processed foods as a result of a trade agreement is likely to have a positive social impact in terms of the increased employment it generates for previously unemployed labour from lower-income households. However, while the increase will benefit agriculture commodities such as Andean grains (quinoa, amaranth, bean), flowers, fruits, cacao and potential biofuels feedstock, it may negatively impact products such as sugar cane, potato and dairy (both milk and its derivatives).[190] Given that the promotion of the latter products are an important component of the countries' programmes of poverty reduction, increased competition of food imports of European origin may produce negative effects.[191]

Health and Education

Improved economic performance, particularly in agricultural and mining exports, should in principle strengthen public finances and enable higher public expenditure on health and education. However, pro-poor fiscal policies have traditionally been given a low priority in the Andean countries. Moreover, where social expenditure and social protection programmes have been adopted, implementation and targeting have been weak.[192] These programmes show a large impact on the poverty gap, but little impact on the poverty headcount. While they also show a significant rise in school enrolments and attendance of boys and girls among beneficiary households, the impacts on child labour and primary health care utilisation are less clear cut.[193] For instance, a 2004 report by the *Controloria General de la Nacion* (CGN) noted that in Peru only about half of the resources allocated under the *Vaso de Leche* (Glass of Milk programme) actually reached the targeted

[190] See Inurritegui and others (2008).

[191] Mendoza, 2008

(http://www.cop-la.net/files/CIES-COPLA-ingles.pdf?q=en/system/files/var/www/copla/files/CIES-COPLA-ingles.pdf)

[192] Barrientos and Hinojosa, 2009.

[193] Barrientos and Santibañez, forthcoming.

population of young children and expecting and nursing mothers.[194] As such, there is potential that certain EU-Andean trade liberalisation may have a limited impact on the existing levels of health and education provision in the Andean countries.

More specific health impacts may be associated with the expansion in agricultural and mining activities. In agricultural areas, injudicious pesticide use contributes to high levels of premature births, congenital malformations and miscarriages.[195] The mining sector is a key source of water pollution – acid water with high metal content – giving rise to health problems for local communities. In Bolivia, for example, cooperative and small scale mining, in which more than 70,000 families work, is particularly polluting.[196] In western Bolivia, the severe contamination of the Pilcomayo River as well as the Poopo and Uru Uru lakes are examples where mining activities have resulted in significant health problems.[197]

Health effects related to contamination of water sources and soils can be very serious for indigenous groups whose livelihoods are strongly dependent on natural resources. As noted in section 2.3.6, an influx of large investments in the extractive sectors located in the Amazon and other rainforest areas will need to be balanced in a way that will not affect the non-contacted indigenous peoples and other indigenous peoples who are disadvantaged vis-a-vis commercial agriculture, mining or gas and oil activities.

3.2.3 Environmental Impacts

Natural Resource Stocks and Environmental Quality

The predicted growth in the agriculture and processed products sector is expected to place additional pressure on both land and water. Water pollution is a serious problem in each of the Andean countries. Key sources of pollution are discharges from mining activities and agricultural runoffs. One of the most obvious examples is the Pilcomayo river basin in Bolivia, where it has been estimated that the contamination of this river, mainly caused by mining, creates annual losses of millions of dollars to agriculture, cattle-breeding and fishery.[198] Due to uncontrolled use of pesticides, agricultural run-offs often include organo-chlorinated compounds.

In the processed agricultural products subsector, few industries comply with industrial discharge standards. For example, in Santa Cruz, Bolivia, only a few of the 600 largest industries, which include sugar refineries, tanneries and those that produce vegetable oils, pre-treat their waste.[199]

Deforestation is an additional potential area of environmental pressure. Regulation of illegal logging

[194] IMF, 2007

[195] Worker Justice and Basic Rights on Flower Plantations in Colombia and Ecuador, International Labor Rights Forum, 13 February 2007

[196] World Bank, 2006

[197] World Bank, 2006

[198] European Commission, 2005

[199] Sludge and Jarden, 2007

remains weak in all of the Andean countries. In Ecuador, for example, it is estimated that forest loss is occurring at the fastest rate in South America. Half the country's forests have been degraded or destroyed in the past three decades, with the primary cause originating with the (often illegal) extraction of high value timber species from the tropical forests in the Ecuadorian Andes. Ecuador's Wood Industry Association has estimated that 70 percent of all timber sold in the country is illegally harvested. Once these species have been extracted, the forest's value to the land user is often drastically reduced, which often leads to burning the rest of the forest and converting it into pasture or agricultural land.[200]

Peru has some of the largest amounts of rainforest in the world, making it a rich source of biodiversity and natural resources. Over 60 million hectares of forested land exist in Peru – more than 50 percent of the country – with more than 80 percent of this consisting of primary forest. Although deforestation is a problem, the rate is relatively low compared with neighbouring countries such as Brazil and Ecuador.[201] Moreover, Peru's national government has established a number of protected forest areas, though these are threatened by weak regulation and illegal exploitation activity.[202] Reasons for deforestation in Peru include illegal logging and the expansion of subsistence agriculture as farmers migrate from the highlands to capitalise on Peru's land tenure law. Soybean cultivation is expanding in the lowlands as is land clearing for cattle pasture. Industrial timber harvesting has thus far been selective with relatively small amounts of foreign involvement in the industry. As a result, the proposed trade agreement could potentially increase the rate of deforestation without properly structured institutional arrangements as the industry is likely to become more open to foreign investment.

One of the greatest threats to Peru's rainforests is the construction of the Inter-Oceanic Highway connecting Peru's Pacific ports of Matarini, Ilo, and San Juan to a highway in Brazil. This project will expose much of the forested areas in the southeastern portion of the country to considerable levels of deforestation. While the Inter-Oceanic Highway in itself will likely exacerbate the problem, the greater threat is likely to occur from the roads and settlements that emerge along the highway. Where increased EU investment occurs along this route as a result of the proposed agreement, it is expected that deforestation will increase.

Additional threats to deforestation in Peru have arisen in the form of increased hydrocarbon exploitation. In 2005, the Peruvian government granted significant concessions to the China National Petroleum Corporation amounting to 1.5 million hectares in ecologically-sensitive areas in the Madre de Dios Region, home to more than 10 percent of the world's bird species. Despite violent protests by indigenous groups against further expansion, the country's energy agency has announced that it plans to auction off oil and gas exploration rights to approximately 17 lots in October and November of 2009. With the majority of these lots located within the Amazon region, it is expected that exploration of Peru's oil and gas resources will exacerbate deforestation in the country. This active auctioning of exploration rights in Peru suggests that increased deforestation in these areas will increase without the conclusion of the proposed FTA with the EU.

[200] Günter et al, 2007

[201] FAO

[202] OUSTR, 2005

Peru's recently appointed environmental minister has set about securing funds from developing countries in order to conserve Peru's vast wealth of forested areas and biodiversity. The proposal would set about preserving or conserving areas in national parks, and those utilised by indigenous groups and in sustainable forestry development and eco-tourism. However, the proposal's effectiveness is questioned by some given uncertainty in the government's ability to effectively regulate deforestation and enforce laws. For example, Peru's environmental ministry currently has an environmental police force of only 61 people. Such measures, however, have significant potential to be strengthened from the adoption of REDD in a post-Kyoto agreement. Nevertheless, difficulties are expected to remain over ensuring that indigenous groups are benefiting fully from any adopted schemes and that internationally provided funds are not subject to misappropriation.

Colombia's forests account for slightly less than 50 percent of its total landmass. Significant deforestation has occurred as a result of Colombia's development goals initiated with the Plan Pacifico under President Vargas in the late 1980s. Deforestation in Colombia largely occurs as a result of large- and small-scale agriculture, logging, mining, energy development and infrastructure construction. Deforestation is particularly exacerbated by expansion of cattle ranching and development of the agricultural frontier to produce biofuel feedstocks and illegal crops such as coca. Colombia's active encouragement of expansion in such areas as biofuel signals that the proposed FTA with the EU is likely to have a marginal impact on increasing deforestation in the region. Similar to Peru, the expansion of infrastructure (most notably, roads) places Colombia's forested areas under heightened risk. Where EU FDI increases in these regions and facilitates such infrastructural investments, there is potential for the agreement to further exacerbate deforestation.

Increased market access for processed timber products can be expected to add to existing deforestation trends, including illegal logging. To counter this impact the EU has developed the Action Plan on Forest Law Enforcement Governance & Trade (FLEGT) which contains voluntary programmes and projects for producer and consumer countries to take measures to prevent the trade of illegally produced timber. However, the EU FLEGT Programme would only provide a framework through which to counter this illegal trade if the Andean countries were to conclude FLEGT Voluntary Partnership Agreements with the EU.

Bolivia possesses about 10 percent of South America's tropical forests. This asset is being rapidly reduced due to widespread deforestation. Causes of the deforestation include the advance of the agriculture frontier, legal and illegal logging, and expansion of large scale agro-industry, including production of soya beans for export, and cattle ranging. Similar to Peru, deforestation is further exacerbated by the construction of such projects as the Inter-Oceanic Highway which also passes through Bolivia.

Concerns have also been expressed about the potential adverse impact on animal welfare standards of any increase in animal products resulting from the trade agreement, and European negotiators have already proposed to include cooperation on animal welfare in the agreement.[203]

[203] The EU Chile Agreement included references to animal welfare in the SPS chapter of the Agreement

Biodiversity

The Andean region is considered one of the most ecologically diverse areas in the world and contains an estimated 20 percent of the world's biodiversity. The adoption by the Community of the 'Regional Biodiversity Strategy' has provided a framework for joint and coordinated action to achieve the goals of the Strategy.[204]

The expansion of production and trade in agricultural and agricultural processed products that results from the proposed EU-Andean trade agreement will have potentially adverse biodiversity impacts. The conversion of pristine habitats and natural resources to agricultural production and mining would have significant negative implications for biodiversity. The Northern and Central Andes are among the more diverse regions. In these regions the current trends of transformation from natural areas into agricultural lands show that Colombia and Ecuador have higher rates of transformation (58.9 percent and 43.2 percent, respectively), whereas In Peru and Bolivia transformation is lower (12.5 percent and 3.2 percent).[205] Further expansion of large-scale horticulture is likely to strengthen these trends and the impact on other pristine areas.

Peru has over 2 900 known species of amphibians, birds, mammals and reptiles. Of these, 16 percent are endemic and 7.6 percent threatened. Peru is also home to over 17 000 species of vascular plants, of which 31.2 percent are endemic. Sustaining Peru's biodiversity will significantly coincide with its ability to conserve and preserve its primary forests. Further expansion of the hydrocarbon sector heightens the threat to this biodiversity, with rights having already been auctioned off to foreign petroleum companies in areas of significant biodiversity. As mentioned above, however, it appears that this expansion will move forward with or without the enactment of the proposed trade agreement, suggesting that it will not have an overly adverse affect on the present situation. Proposals to secure international funds to compensate indigenous groups for preservation of forested areas and incentives to develop eco-tourism and sustainable forestry could significantly mitigate loss of biodiversity in Peru.

Colombia boasts 10 percent of the world's biodiversity despite its relatively small size, making it one of the world's most biodiverse countries in terms of species per land unit. Colombia is home to over 50 000 plant species, nearly 30 percent of which are endemic. The country also possesses over 450 mammal species, 600 species of amphibians, 500 species of reptiles, 3 200 species of fish, 15 percent of the world's primates and 18 percent of the world's birds. At present, however, over 1000 species of plant and 24 bird and mammal species are threatened with extinction due to deforestation. Where the proposed trade agreement facilitates further land transformation for development of biofuel feedstocks and greater infrastructural investments in biodiverse regions, it is expected that it will have a negative impact on the level of biodiversity in Colombia.

If the expansion of commercial agriculture involves the use of GMO and intensified use of scarce natural resources (land and water), the impact of the EU-Andean trade agreement is predicted to be

[204] Andean Community, 2005

[205] (CAN 2009).

potentially negative for the rich biodiversity of Andean country members.[206] Biodiversity is also threatened by rapid changes in land use, which modifies not only existing ecosystems but also water allocation, which in turn has territorial implications.[207] A potential negative impact on biodiversity is not only important because of ecological considerations but also for the impact on vulnerable groups, which are often small farmers and indigenous groups whose food security and livelihoods depend on a diversified crop portfolio. However, a trade agreement that facilitates the development of market niches for non-traditional agriculture – together with accompanying measures to help small farmers enter into selective European markets (of organic food, fair trade and the like) – can have a positive impact on both biodiversity conservation and improvement of rural populations' livelihoods. At the same time, however, it should be noted that the gain from these niche markets alone are not expected to fully offset the negative impacts that result from conventional agricultural practices.

In addition to the economic incentives that trade liberalisation provides, participation of small and medium producers of biodiverse products will require the elimination of entry restrictions for certain Andean foods and food ingredients ('novel foods')[208] into European markets and linking such initiatives to other cooperation initiatives for reducing current trends of biodiversity loss (such as the IUCN's Countdown 2010 initiative and the BIODAMAZ project in Peru).[209]

Similar to the description of health effects, the environmental deterioration that may occur with the increase of large scale economic activity in the rainforest and tropical areas of all Andean countries may negatively impact the long term development of indigenous peoples.

Note: Further potential impacts on biodiversity associated with the production of biofuels are discussed in Box 1 above.

[206] Inurritegui and others (2008, pp. 50).

[207] In many areas of the Peruvian and Ecuadorian Andes, competition for natural resources is particularly strong among intensive and extensive agriculture, as well as it does between mining and agriculture. The same can be said with regards to hydrocarbons and gathering/hunting activities in the rainforests of Peru, Ecuador and Bolivia.

[208] In this regard see, for instance, Peru's Government communication to the WTO (http://www.biotrade.org/BTFP/BTFP-docs/EU_NF_Communication_gen681_en.PDF)

[209] See http://www.countdown2010.net/documents/060901Declaration%20FI.pdf *and* http://www.iiap.org.pe/Biodamaz/

3.3 Industrial Products

3.3.1 Economic Impacts

Real Output

The industrial sector accounts for about one third of GDP in the Andean countries. The share of total employment ranges from 18 percent in Bolivia and Colombia to 24 percent in Peru. Industrial growth has been rapid in recent years in all four countries (Table 52).

Table 52: Industrial Sector in Andean countries

	Bolivia	Colombia	Ecuador	Peru
Industrial Sector as % of GDP (2007)	31.5	29.3	34.9	35.2
Industrial Employment as % of Total Employment (2007)	18.8	18.8	21.2	23.8
Industrial Sector Growth (%)	3.3	4.3	4.0	4.2

Source: World Bank, 2009

Similar to the results in agriculture, there are no major changes occurring in the sectoral output in the EU. For most of the sectors output remains unchanged under the different scenarios.

For Bolivia the most pronounced change occurs in 'machinery and equipment'. Although the change is 31 percent, the sector's total value-added is only about 0.4 percent. Thus the 30 percent increase in output in this sector will only have a small effect. Although the textiles sector also experiences a rather high increase in output, similar to machinery and equipment, this sector is relatively minor, contributing only 0.2 percent of total value added.

In the case of Colombia, there are some sectors with important changes under all scenarios. This is the case, for example for the sectoral output changes in 'motor vehicles and parts' in Colombia. Although the sector's output increases by 25 percent under the most comprehensive scenario, its share in total value added is smaller than 0.5 percent.

For Ecuador, important changes in sectoral output occur only in sectors which are small, making these effects only marginal.

In the Peruvian economy, output of 'textiles' and 'wearing apparel' are both expected to expand by over 3 percent, while the manufacturing of 'chemical, rubber and plastic products' is estimated to increase by more than 5 percent. These sectors represent shares of total value added of 2.6, 1.4 and 4.5 percent, respectively. The output of 'other machinery and equipment' sector contracts by 4-6 percent, depending on the scenario, while metal production expands by about 3-5 percent.

Table 53: Manufactured goods: Sectoral changes in output (%), (share of value added in brackets)					
Sectors	**EU 27**	**Bolivia**	**Colombia**	**Ecuador**	**Peru**
Textiles	-0.0236 (0.5)	20.7646 (0.2)	7.1795 (0.4)	-1.1642 (0.9)	3.2865 (2.6)
Wearing apparel	-0.0616 (.5)	4.0994 (0.7)	2.0969 (0.7)	-0.6445 (0.9)	3.4165 (1.4)
Leather products	-0.0614 (0.2)	7.6686 (0.4)	-1.975 (0.1)	1.0356 (0.3)	0.1128 (0.8)
Wood products	0.0248 (0.6)	1.267 (0.9)	-5.7884 (0.1)	-0.3782 (0.6)	-0.5102 (1.9)
Paper products, publishing	0.0658 (1.6)	-0.3188 (0.5)	0.3412 (1.1)	-0.3969 (0.6)	-3.9977 (1.9)
Petroleum, coal products	0.0495 (0.1)	1.9132 (0.4)	0.3107 (0.5)	1.0395 (1.1)	0.3998 (0.1)
Chemical, rubber, plastic prods	-0.0365 (2.6)	-5.2163 (0.5)	8.1577 (2.8)	0.9876 (0.8)	5.4777 (4.5)
Mineral products nec	0.0226 (0.9)	2.321 (1.2)	2.2029 (0.9)	-1.5245 (0.6)	0.0292 (1.3)
Ferrous metals	-0.0405 (0.5)	5.3528 (0.0)	5.9641 (0.8)	-1.0257 (0.0)	0.4116 (0.0)
Metals nec	-0.2066 (0.3)	6.9868 (0.0)	6.0387 (0.5)	3.4408 (0.0)	5.3078 (2.2)
Metal products	0.0123 (1.6)	3.0643 (0.1)	0.8076 (0.4)	-1.3064 (0.2)	-0.8471 (0.9)
Motor vehicles and parts	0.0161 (1.7)	0.9965 (0.0)	24.5056 (0.4)	-24.0723 (0.1)	-1.2096 (1.1)
Transport equipment nec	-0.0792 (0.5)	6.8707 (0.1)	6.3844 (0.2)	-0.6967 (0.1)	-0.4346 (0.5)
Electronic equipment	-0.0509 (0.8)	0.5865 (0.0)	6.1907 (0.1)	2.2619 (0.1)	-0.4993 (0.7)
Machinery and equipment nec	0.0346 (3.6)	31.1406 (0.4)	-1.4746 (0.8)	-4.2777 (0.3)	-5.5556 (2.4)
Manufactures nec	0.0753 (0.8)	3.9209 (0.7)	-2.6214 (0.5)	-3.2143 (0.6)	-1.1497 (3.0)

Employment

Table 54 shows the percentage changes in employment (skilled and unskilled) for the comprehensive long run scenario (scenario 2b). The employment changes mirror the changes in output shown in Table 53. In Bolivia, employment increases in most manufacturing sectors, particularly in textiles and machinery and equipment though these sectors are small in terms of share of national value added. Chemicals and rubber products show a decline in employment. Colombia shows a significant

increase in employment from expanded output in motor vehicles and parts. In Ecuador, however, employment in the manufacturing of motor vehicles and parts records a decline of more that 20 percent. In Peru, there are small increases in employment in textiles, chemicals and other metal products.

Table 53: Skilled labour employment effect per sector, % change					
	Skilled labour				
Sectors	EU 27	Bolivia	Colombia	Ecuador	Peru
Textiles	-0.0385	18.5189	6.23	-0.8356	3.1489
Wearing apparel	-0.0739	3.7462	1.8487	-0.376	2.8049
Leather products	-0.0736	6.9322	-1.7128	1.1283	0.2772
Wood products	0.003	1.1884	-5.4199	-0.1338	-0.2819
Paper products, publishing	0.0417	-0.3491	-0.1638	-0.1493	-3.5351
Petroleum, coal products	0.0207	1.123	-0.2969	0.8459	0.3283
Chemical, rubber, plastic prods	-0.0504	-4.6262	6.1878	1.004	4.8484
Mineral products nec	0.0025	2.0474	1.4169	-1.1628	0.1328
Ferrous metals	-0.0539	4.4723	4.992	-0.6854	0.4873
Metals nec	-0.2046	5.8253	5.0509	3.3509	4.7378
Metal products	-0.0051	2.2008	0.5279	-0.9312	-0.6098
Motor vehicles and parts	-0.0003	0.4955	21.3241	-22.1366	-0.9341
Transport equipment nec	-0.0888	5.3501	5.3757	-0.37	-0.183
Electronic equipment	-0.0629	0.124	5.729	2.1142	-0.3389
Machinery and equipment nec	0.0171	24.6098	-1.6236	-3.6437	-4.8834
Manufactures nec	0.05	3.8013	-2.3907	-2.6632	-0.8929

Table 54 shows similar changes for employment of unskilled labour.

Table 54: Unskilled labour employment effect per sector, % change					
	Very Comprehensive trade agreement Long Run				
All countries	Unskilled labour				
Sectors	EU 27	Bolivia	Colombia	Ecuador	Peru
Textiles	-0.0265	17.6848	5.5591	-1.3323	2.7132
Wearing apparel	-0.0619	3.0147	1.2051	-0.875	2.3707
Leather products	-0.0616	6.1786	-2.3342	0.6218	-0.1466
Wood products	0.015	0.4747	-6.0182	-0.634	-0.7033
Paper products, publishing	0.0538	-1.0521	-0.7948	-0.6494	-3.9429
Petroleum, coal products	0.0327	0.4098	-0.9272	0.3409	-0.0957
Chemical, rubber, plastic prods	-0.0384	-5.2994	5.5171	0.4982	4.4056
Mineral products nec	0.0145	1.3277	0.7759	-1.6579	-0.2904
Ferrous metals	-0.0419	3.7358	4.3287	-1.1829	0.0627
Metals nec	-0.1926	5.0794	4.3873	2.8335	4.2955
Metal products	0.0069	1.4801	-0.1075	-1.4274	-1.0298
Motor vehicles and parts	0.0117	-0.2133	20.5592	-22.5279	-1.3528
Transport equipment nec	-0.0768	4.6075	4.7101	-0.869	-0.6048
Electronic equipment	-0.0509	-0.5823	5.0612	1.6029	-0.7601
Machinery and equipment nec	0.0291	23.7333	-2.2456	-4.1265	-5.2856
Manufactures nec	0.0621	3.0694	-3.0079	-3.1508	-1.3117

3.3.2 Social Impacts

Poverty and Inequality

The CGE model results are not well suited for social impact assessments due to their lack of disaggregated information at the household level. However, the model does give estimates of the equilibrium effects on skilled and unskilled labour wages in each of the Andean countries. The estimates for scenario 2b are shown in Table 55.

Table 55: Change in Wages (%)

	Unskilled	Skilled
Bolivia	1.3	0.6
Colombia	0.9	0.3
Ecuador	0.0	0.5
Peru	0.7	0.3

The figures in Table 55 indicate that unskilled wages are predicted to increase more rapidly than skilled wages, which suggests a positive impact on lower income households and intra-sectoral inequality.[210] The longer term impact on poverty of an increase of output and employment in the manufacturing sector may be more positive as trade liberalisation raises investment and the longer term growth trajectory, allowing for improvements in poor household income. However, economic growth does not guarantee poverty reduction, and a pro-poor growth outcome is dependent on the quality and focus of public policy and governance. Positive effects on the textiles and leather sectors of Bolivia, Colombia and Peru may help to reduce urban poverty because of the extensive presence of SMEs. It can also be expected that higher output of Colombia's textiles and motor vehicles sectors will produce positive chain effects on other manufacturing sectors composed mainly of SMEs and, therefore, reduce vulnerability of urban workers. By the same token, output reduction in Peru's machinery and equipment sector, and Ecuador's automotive sector would increase urban unemployment and raise the risks of increasing poverty.

Health and Education

Cross country evidence indicates that trade liberalisation is typically associated with a marked decline in trade tax revenue.[211] The lowering of tariffs on imported manufactures from the EU would be expected to reduce import revenues, unless mitigated by an offsetting increase in other taxes. A reduction in social expenditure could then occur.

[210] These estimates are derived from the assumption that overall employment remains constant. If we allow for the lengthy adjustment period (until 2018) and the number of workers who will be required to shift between industrial sectors (shown in table 23), it is likely that significant income losses will be incurred during the adjustment period, as workers are forced to join the pool of unemployed. Many urban households are already close to the poverty level and a lengthy period of unemployment will push the affected households closer to or below the poverty level.

[211] IMF 2005

The impact on public health from an IPR chapter in the trade agreement will be determined by the extent that measures go beyond the safeguards contained in the WTO TRIPS amendment on public health. A study commissioned by *Alianza CAN-EU por el acceso a los medicamentos* indicates that restrictions on access to generic medicines may negatively affect governments' ability to improve public health conditions. A similar effect can be expected on population groups who rely on private sector health services. 'Over' protection of intellectual property in the pharmaceutical sector would result in a reduction in public health standards, particularly for the poor.

3.3.3 Environmental Impacts

Environmental Quality

Production levels are expected to increase in some industries and decline in others. Negative impacts may be offset in so far as air and water pollution will fall in those industries that are expected to reduce their output levels as a result of EU-Andean trade liberalisation. The principal environmental effects will occur through non-sequential changes in water and air pollution, both of which are already at already at high levels in the Andean countries.

Untreated water discharge will likely increase in those industries that are expected to expand their production as a result of trade liberalisation. As the textiles sector is a heavy polluter of water, unregulated liberalisation is likely to have a significant negative impact in Bolivia. In Peru, significant increases are predicted for chemicals, rubber and plastics and metals, which are again traditionally heavy polluting industries. Air pollution from industry (particularly metal foundries, brick production and oil refineries) can also be expected to increase as a result of industrial sector growth. Any increase in air and water pollution will impact negatively on health standards, particularly in urban areas.

In the long term, improved access to environmental goods and services as a result of the trade negotiations for goods and services is expected to contribute to improvements in pollution control. The potential gains to be made in this area, however, will be conditional on accompanying improvements in the enforcement and compliance with environmental regulation and controls.

Natural Resources

Any expansion in natural resource based industries will increase demand for raw materials and highlights the need for effective regulation and management to ensure the long term sustainability of natural resource stocks.

Biodiversity

The impact of industrial sector changes in output on biodiversity will be transmitted through the pressure on natural resources. Any expansion of wood and paper products can be expected to impact biodiversity, if increased demand for timber is supplied from non-sustainable sources.

A positive effect on biodiversity could be expected if value chains are developed based on biodiverse

products from Andean countries and these are accompanied by IPR provisions in a way that favours the locales from which the original input (product and knowledge) is obtained. This, while entailing complex relations between Andean countries where the value chain develops, opens space to take advantage of market niches. Sectors which could develop in this aspect are traditional (homeopathic) medicinal products and more broadly the small and medium sized agro-industry.

3.3.4 Selected sub-sectors

Motor vehicles and parts

Colombia is the only Andean country with a substantial domestic automotive industry. General Motors, Toyota, Mitsubishi, Mazda and Renault operate joint-ventures with Colombian firms to assemble vehicles for the domestic and overseas markets using local and imported parts. The applied tariff of 23.4 percent in Colombia against EU imports is the highest imposed amongst the four Andean counties. Production was estimated to be 145,000 units in 2006, with 50,000 of these exported to neighbouring countries, particularly other Andean countries under preferential duty rates. Exports to these markets grew by an average of 34 percent per annum from 2003-2007.

Ecuador has a very small automotive industry. Final assembly of small passenger cars takes place in a joint venture with Kia Motors of South Korea, with production of less than 2,000 units per year, sold both domestically and in Colombia.

Peru is the only major South American country that does not have a national auto assembly industry, however Peru does manufacture parts for US suppliers, namely gear boxes, brake systems and windshields.

The majority of new cars sold in Ecuador are imported from Colombia and the United States, where tariffs are low under preferential trade agreements. Imports of vehicles and parts from the EU were valued at $55 million in 2007. The lifting of this tariff under the ambitious scenario would see imports increase by four percent, with an associated decline of 24 percent in domestic output.

Despite low applied tariff barriers, imports from Andean countries of motor vehicles and parts are limited. Total imports of motor vehicles and parts were valued at just over $1 million in 2007, seventy percent of which came from Colombia. Half of this trade is in assembled motor vehicles, with the remainder consisting of auto parts – gear boxes, radiators and suspension systems. The CGE modelling predicts exports from Colombia will increase by 24% as a result of further trade liberalisation.

Exports of motor vehicles and parts from the EU to Andean countries has doubled between 2003 and 2007 to $591 million, driven by increased demand in Colombia, which accounts for 70 percent of trade, primarily of assembled vehicles and parts for final assembly. Several factors influence the potential for expansion of exports following trade liberalisation. Vehicle ownership rates in Andean countries are low by regional and international standards, at 54 per 1,000 inhabitants in Colombia

and 24 per 1,000 in Peru. Relatively high macroeconomic growth is driving the replacement of older vehicles. As disposable income levels are still much lower than in the EC, real export growth depends on assembled vehicles landing at a price point that is affordable to price sensitive consumers, combined with flexible consumer finance options. Chinese and Korean auto makers have gained a significant foothold in the market by selling low cost small cars priced below US$10,000. In Peru, this strategy resulted in imports of new cars to replace used cars for the first time in 2006.

Textiles

Textile production and trade in Andean counties grew at an average annual rate of 15 percent between 2003 and 2007, driven primarily by demand from US clothing companies under duty free tariffs afforded under the Andean Trade Preference Act. The competitive foundation of the textile production sector in Andean countries is low cost semi-skilled labour, rather than availability of raw materials. Colombia and Peru have major cotton production sectors, which supply approximately 40 percent of local industrial demands from textile factories. The shortfall is met by imports ($652 million in 2007), mainly from the United States, India and Brazil. Imported raw cotton is also milled into yarn for re-export. Total exports were valued at $3.8 billion in 2007, 68 percent of which was finished apparel. Exports to the EU were worth $255 million in 2007, including $170 million in apparel, $40 million in wool and $20 million in cotton.

The largest textile manufacturer and exporter in the region is Colombia with 2,774 companies operating in the textile sector in 2002. These are mainly small-and medium sized companies, estimated by the Ministry of Commerce to generate 2.9 percent of GDP and 200,000 direct and 600,000 indirect jobs. In 2007, exports were valued at $1.9 billion. In Peru, specialty native fibres (local cotton, llama, alpaca and wool) for the high quality apparel sector accounted for 2 percent of GDP and 1.2 percent of total exports in 2007, worth $1.7 billion. Ecuador is estimated to have 1,500 small textile companies, representing 1 percent of GDP and exporting $81 million annually.

Unlike the textiles industry in other Andean countries, the industry in Bolivia lacks the scale and vertical integration with overseas markets, focusing on production of woven clothing using native fibres for domestic consumption and export to Andean and Mercosur countries. Early processing capacity of these fibres is limited, with a large proportion of raw fibre processed by factories in Peru and re-exported to Bolivia as yarn and fabric for garment manufacturing. Production is on a small scale, with an estimated 5,000 small family manufacturing shops. The Bolivian government recently banned the import of low price used clothes to protect the domestic market. Exports were valued at $70 million in 2007.

Exports of textiles and apparels from EU countries in 2007 were valued at $134 million, mainly apparel ($33 million), synthetic fibres ($16 million), cotton ($14 million) and carpets and floor coverings ($10 million). While trade liberalisation will only result in an expected increase of 0.05 percent in EU exports in the long run ambitious scenario, EU companies can benefit from improved access for processing equipment. Under the same setting, exports from Andean countries to the EU

are expected to increase by as much as 23 percent in Bolivia, 12 percent in Colombia, 2 percent in Ecuador and 9 percent in Peru.

Chemicals, plastics and rubber

Chemicals and Plastics

Andean countries trade limited amounts of chemicals and plastic products with the EU relative to total trade between the blocs. Of those EU countries, the trade is primarily with Spain and England.

Andean exports in the chemicals and plastics sector are mainly comprised of inorganic chemicals, plastics, tanning extracts, organic chemical and essential oils and were valued at $203 million in 2007. Exports from Peru were valued at $108 million, followed by Colombia with $85 million, $9 million from Ecuador and $2 million in Bolivia. In contrast, exports from the EU to Andean countries were valued at $1.6 billion, with the largest exports being of pharmaceuticals ($400 million), plastics products ($237 million) and organic chemicals ($211 million).

The chemical sector in Andean countries has grown at a robust 32% a year from 2000 to 2008 despite slowing world demand. This has largely been due to healthy expansions in the Colombian and Peruvian economies, especially in the areas of plastics production, as well as increasing investment in the petroleum and mining sectors. Most of the trade in the chemical sector remains within the Andean and Mercosur trading blocks.

Out of the Andean countries, Peru has exhibited the strongest performance in the chemical sector, with import and export growth averaging 41% since 2000. Peru's strongest exports are organic and inorganic chemicals; plastic manufacturing related products; dyeing, tanning and colouring products; and essential oils and toiletries. The Peruvian government estimated in 2005 that there were over 2,200 businesses involved in chemicals and plastic production and almost all had fewer than 50 employees. Some observers believe the rapid growth of the Peruvian chemicals sector will slow markedly in the coming years.

Chemical and plastics exports from Colombia grew at 22.3% in 2008, totalling $275 million. Most of its exports are agricultural chemicals and products related to plastics manufacturing. Almost 3,000 businesses, employing over 45,000 people are involved in chemical and plastic manufacturing in Colombia.

Recently, exports of chemical products markedly decreased in Ecuador due to a deteriorating economic and political climate. In 2007, Ecuador imported $115 million of chemicals, mostly for medicines and the petroleum and mining industries. In 2007, Ecuador exported $65 million worth of chemicals and pharmaceuticals. Unlike its neighbours, most chemical and plastics production in Ecuador is concentrated in larger companies, with 55 companies responsible for 75% of the county's production.

Bolivia's chemical sector has failed to match the growth of its Andean neighbours over the last

decade. Approximately 250 companies, almost all with fewer than 20 employees, make up the chemicals and plastics manufacturing sector in Bolivia. Bolivia has no significant plastics or chemicals exports and most related imports are agricultural chemicals and medicines.

A trade agreement between Andean countries and the EU may slightly amplify current trends in the trade in terms of the economic, social, and environmental issues for plastics and chemicals mentioned directly and indirectly in other sections of this study.

Rubber

Andean countries have a relatively limited rubber production industry, which is mostly located in the Eastern reaches of the Amazon rainforest. Only Peru has enough production surpluses to export raw rubber outside the region, with most of its excess going to the United States. Colombia leads the group in producing processed rubber, especially in the form of tyres, and its biggest trading partner for such is the United States. There is no regular or significant trade in rubber or rubber products with members of the European Union. As such, a trade agreement may slightly increase the trade in rubber between the EU and Andean countries, producing a positive economic impact.

Bolivia and Ecuador have a relatively low level of rubber production, which meets domestic demand and is used to export small amounts of vehicle tyres in the region. Most of Bolivia's tyre production is concentrated in several small factories near La Paz and employs around 1,500 people. Ecuador imports a small amount of rubber from Peru. Recent foreign investment in Ecuador's largest tyre manufacturing facilities near Cuenca may signal the possibility of a growth of export capacity.

Peru exports raw rubber and rubber products primarily to Ecuador, Chile and the United States. The Central Bank of Peru estimated in 2005 that there were 450 businesses, mostly on rubber plantations, involved in the rubber trade within the country. The government has recently agreed to a new trade pact with the United States, which removes most trade restrictions and may spur increased rubber production for export.

3.4 Services

3.4.1 Economic Impacts

The performance of the services sector is an important contributor to economic growth. The availability of efficient financial services, for example, has been shown to be a key input to economic advancement. Infrastructural services are also an essential factor for rapid economic growth. Environmental services are increasingly important in managing environmental outcomes of economic growth. Similarly, the competitiveness of firms in open economies is determined in part by access to low-cost and high-quality telecommunications, transport and distribution services, and financial intermediation.

The lowering of barriers to trade in services can contribute significant static efficiency gains in terms of allowing foreign suppliers to provide lower cost services to the domestic market. Increased openness to international trade in services also offers large potential benefits through dynamic/long term effects on overall economic performance. Services liberalisation can also deliver significant gains in terms of sustainable development and poverty reduction, by raising investment in basic infrastructure and improving the quality of the services delivered.[212]

The EU has adopted a GATS approach to services liberalisation in its regional and bilateral trade negotiations.[213] In principle, GATS covers all commercial tradable services, with the exception of some aspects of air transport such as traffic rights, and services supplied under government authority. The WTO Secretariat has drawn up a list of twelve groups of service sectors, which is used in the negotiation of commitments by most WTO member countries.[214] These are:

- business (including professional and computer) services
- communication services
- construction and related engineering services
- distribution services
- educational services
- environmental services
- financial (insurance and banking) services
- health-related and social services
- tourism and travel-related services
- recreational, cultural and sporting services
- transport services
- other services not included elsewhere

[212] Adlung 2007

[213] As opposed to a NAFTA approach which is based on a negative list scheduling modality.

[214] WTO (1999)

The CGE model used in this study uses a similar but not identical categorisation of service sub-sectors and provides estimates of the impact of the different scenarios, for the following sub-sectors:

- Utilities
- Construction
- Distribution
- Other Transport
- Maritime
- Air transport
- Communications
- Financial services
- Insurance
- Business services
- Recreational and other services
- Public service and dwellings

CGE modelling of services liberalisation faces a number of challenges. Many of the barriers to trade in services are hard to quantify and this increases the unreliability of the resulting estimates of the effects of trade liberalisation. Also, the debates about liberalisation in services concentrate on rule changes, such as the removal of particular regulations, rather than the lowering of trade barriers by a given percentage. A further complication is that the impacts of a particular measure extend beyond the trade effects and can have significant impacts on domestic policy and national autonomy.

Modelling studies are not well suited to take into account the highly differentiated nature of services and the linkages to domestic regulatory policy. The nature of liberalisation in services is fundamentally different to liberalisation in goods. In the latter case, the discussion centres on changes in the level of effective trade barriers expressed in quantitative terms. In the case of services, liberalisation is mainly about qualitative measures, such as regulation changes, which have to be converted to quantitative equivalents in order to be modelled. Second, most services are consumed at the point of production, which means that trade in services is closely linked to movement of capital and labour.[215]

The modelling study estimates NTBs for services trade as part of the experiment baseline definition. The basic methodology for estimation of services barriers involves the estimation of a bilateral gravity equation for services trade, where country importer fixed effects terms are used (once certain variables are controlled, for example, GDP, income etc.) to estimate potential trade cost reductions linked to service NTBs.

[215] Stiglitz and Charlton (2006)

The estimated service trade cost averages for the Andean countries are:[216]

Bolivia – 40%
Colombia – 33%
Ecuador – 35%
Peru – 32%

Real Output

Based on these service trade cost averages, the model provides the following estimated changes in services, for the comprehensive, long run scenario (scenario 2b - Table 56). The table shows that the change in the utilities sector is positive in each of the Andean countries. The impact in the financial services sector is negative in all countries except Ecuador (the related insurance services sector declines in all four countries). Similarly, business services are predicted to be negatively impacted. Construction services are predicted to increase as a result of an EU Andean trade agreement. Distribution, which is the largest services sub sector, accounting for between 6 and 10 percent of GDP, declines in Ecuador but expands in the other three countries. Communications (mainly telecommunications) shows significant expansion in all countries except Peru.

Table 56: Change in Services Output (%) and (percentage value added in brackets) for Scenario 2b

	EU 27	Bolivia	Colombia	Ecuador	Peru
Utilities	-0.01 (1.7)	5.98 (0.8)	5.97 (2.0)	0.82 (1.2)	0.52 (1.3)
Construction	0.02 (6.2)	1.77 (3.1)	1.77 (7.4)	0.23 (8.8)	0.58 (13.6)
Distribution	-0.02 (13.1)	4.5 (8.7)	4.45 (13.2)	-0.69 (12.7)	0.42 (3.2)
Other Transport	0.036 (3.7)	1.21 (7.8)	1.21 (4.1)	0.10 (6.3)	-0.07 (3.2)
Maritime	0.0.55 (0.5)	0.12 (0.4)	0.12 (0.1)	0.39 (1.0)	-1.06 (0.2)
Air transport	0.08 (0.4)	-4. 33 (1.4)	-4.33 (0.3)	-9.58 (0.7)	-2.25 (0.5)
Communications	-0.01(2.2)	5.32 (1.3)	5.32 (1.6)	5.26 (1.9)	-0.95 (2.1)
Financial services	0.003 (2.7)	-3.10 (4.2)	-3.10 (2.6)	2.21 (2.0)	-0.83 (2.6)
Insurance	0.05 (1.0)	-19.81 (1.1)	-19.82 (0.7)	-14.8 (0.1)	-10.43 (1.1)
Business services	0.015 (19.0)	-8.51 (2.7)	-8.52 (3.0)	-10.21 (3.7)	-2.31 (6.1)
Recreation and other services	0.061 (3.8)	-10.26 (0.8)	-10.26 (1.8)	-13.03 (0.8)	-0.13 (7.6)
Public service and dwelling	-0.005 (22.7)	2.03 (28.2)	2.03 (33.1)	2.31 (14.8)	0.37 (8.9)

[216] Francois, Hoekman and Woerz, 2007

Similar to results in the other sectors, there are no important changes occurring in the services sectors' output in the EU.

In Bolivia, a number of the services sectors experience a drop in their output which is mainly due to increased competition from EU service providers.

For Colombia, changes in the output of services sector is very limited with the exception of business services and recreation services. Output in both of these sectors drops by 4 - 9 percent depending on the scenarios, which is due to increased competition from EU service providers. However, both of these sectors are relatively small in Colombia as business services represent about 3 percent of value added and recreation services about 2 percent.

In Ecuador, the changes in the output of service sectors is very limited with the exception of business services, insurance, and recreation services. Output in all three of these sectors drops, with the biggest decrease occurring in insurance services, as sector output drops by 15 percent under the long run scenarios. Nevertheless, both the insurance and recreation service sectors are small in Ecuador, with less than 1 percent of total value added. Only the business services sector is a bigger sector with about 4 percent of total value added of Ecuador. These decreases in the sectoral output are due to the increasing competition resulting from reduction in barriers in the service sectors.

Finally, there are no significant output changes taking place in Peru after the different trade agreement scenarios. The only large change occurs in the insurance sector, which represents 1.1 percent of value added.

Fixed capital formation

Liberalisation within the EU-Andean agreement is expected to lead to greater competition from EU providers in the Andean countries, particularly in banking, insurance, telecommunications, computer and related services, distribution services, and construction and engineering services.

The EU is the leading investor in the Andean countries, accounting for more than a quarter of total FDI in the region. EU direct investment in Andean countries has significantly increased in the last few years, with EU companies taking part in privatisation processes of services, in the financial system, manufacturing, and mining and oil activities. The opening of services sectors to EU companies can be expected to encourage further European investment in establishing a commercial presence in the Andean economies.

Employment

Changes in employment will follow the change in output shown in the table above. There is likely to be some growth in demand for more skilled labour in the telecommunications and financial services, whereas an expansion in construction and tourism will be reflected in increased demand for less skilled labour.

For the EU, the benefits from services liberalisation are likely to be related mainly to the increased European investment in the Andean economies. This will generate increased profits for European investors and may also create employment opportunities for skilled European employees in establishing and managing a commercial presence in the Andean region.

Services Liberalisation and Regulation

There are close linkages between international trade rules to liberalise trade in services and regulatory frameworks for services (telecommunications, transport, water, electricity, and financial services).[217] There is an inherent tension between services trade liberalisation and services regulation. The GATS recognises governments' rights to regulate 'services supplied in the exercise of government authority', although there is uncertainty on the interpretation of the requirement that a service is provided 'neither on a commercial basis' nor 'in competition with one or more services providers'.

An example of this potential conflict between services trade liberalisation and domestic regulatory objectives is found in the utilities services sector, particularly water services. Private sector involvement may result in increased prices (to ensure financial viability) or a concentration of investment and provision in areas of high population or income. As a result, if policies to ensure universal service at affordable prices are not put in place as part of the regulatory framework, the access of the poor to essential services may not improve with increased private sector participation.[218] Fears that privatisation would produce negative effects on local population are a potential source of conflict, as the "war of water" in Bolivia illustrates.[219]

[217] UNCTAD 2009

[218] Kirkpatrick et al (2007); Kirkpatrick and Parker (2005)

[219] Perreault 2006

3.4.2 Social Impacts

Poverty and Equity

With effective domestic regulatory control, market opening in the basic utilities sector improves access for the poor to affordable and reliable services in water, energy, communications and transportation. Liberalisation of distribution may result in some reduction in prices for consumers. An accompanying increase in food retailing concentration may have a damaging effect on small scale family owned shops.

Health and Education

There is a substantial body of evidence showing that such improvements in the quality and access to basic water and sanitation services leads to positive impacts on the health of the consumer. In addition, the expansion of water utilities and increased access to clean water in rural areas would have a direct impact on women's and children's workload.

3.4.3 Environmental Impacts

Environmental quality

Services liberalisation is expected to increase the utilisation of environmentally efficient technologies and management techniques. It may also raise pressure on government authorities to improve environmental regulation and enforcement, however, liberalisation of distribution services could lead to goods being sourced from a wider area, with adverse impacts in terms of increased local pollution and climate change associated with increased transportation.

Natural resources

Greater use of environmentally efficient management techniques and technologies will tend to reduce pressures on consumption of water and other resources. The impact is not expected to be significant in relation to other effects in this area.

Biodiversity

No significant impacts on biodiversity have been identified from services liberalisation, although some effects may exist, for example, if service industries like tourism grow in certain ways. For impacts on biodiversity from the related issue of investment, see the Investment section below.

3.4.4 Selected Services Sub-Sectors

The project's terms of reference require analysis to depict the current situation of service sectors such as *telecom, financial services, construction services and distribution services* and to identify the potential for development of these services to business and private consumers, the potential for

increased FDI, the potential impact on the development of the economy and to identify potential bottlenecks for development.

This section of the report provides a preliminary analysis for telecommunications, financial services, construction services and distribution services.

Telecommunications

The Andean Committee of Telecommunications Authorities (CAATEL) agreed to liberalize all telecommunications services, except for sound broadcasting and television, starting on January 1, 2002.

Communications services, particularly telecommunications, play an increasingly important role in enhancing business competitiveness in the Andean countries. As suggested by the Mattoo et al (2001) study on growth rates, improving communications can make a major contribution to economic development. Significant gains can be made either though liberalisation or private investment. The international evidence suggests that the liberalisation of telecommunications sector will be most successful when it is accompanied by effective regulatory institutions.[220] Additional efficiency gains may be available from regulatory convergence with the EU, although careful management would be needed to ensure that the potential convergence benefits outweigh the costs of negotiation, transition and compliance.

Financial services

In GATS, financial services are defined as insurance and insurance-related services, and banking and other financial services (excluding insurance). The estimates in Table 46 show that with the single exception of Ecuador financial services liberalisation would have a negative impact on the output of financial services industries in the Andean countries. The impact on insurance services is negative in all four countries. The EU-Andean negotiations aim for additional commitments for liberalisation of trade in financial services beyond those that have been made through the WTO under GATS.

Within the EU, the integration of financial services markets has been progressing across the board, but at a very different pace for different products and end-users. Wholesale markets are generally characterised by a high level of integration, while retail financial markets remain nationally fragmented.

A Commission White Paper from 2005 set out objectives in financial services policy for the period to 2010, with emphasis on financial integration and increased coherence and consistency in regulation and supervision. A review carried out in 2007 recognised that greater integration can strengthen competition and offer better opportunities for financing and risk diversification, but identifies risks associated with corresponding structural changes in the financial system. In parallel with measures for increased convergence within the EU, the review calls for the development of adequate safeguards to ensure financial stability.

[220] Wallsten, 2001

The Andean countries have suffered from several financial crises in the past decade. These have had significant consequences for their financial systems, which vary from country to country. The opening of the financial services market to European banks and finance institutions is expected to produce an initial decline in domestic financial services, except in Ecuador, but in the longer term there may be positive impacts from the contribution of the financial sector to economic growth.

Financial services liberalisation can have either beneficial or adverse effects, in terms of the risk of financial instability, depending on the effectiveness of regulatory mechanisms. The potential benefits of liberalisation, however, could be outweighed if the risks of instability were allowed to rise. Effective mitigation measures may therefore be necessary in order to avoid major adverse effects in all the Andean countries.

Construction services

The impact of EU Andean services liberalisation is predicted to be positive in all four countries. Construction and civil engineering are essential components of many aspects of development and can help to generate large economic benefits. Gains would come largely from productivity improvements or reduced economic rents as a result of increased competition in the domestic market. Relaxed entry requirements may result in a small loss of employment of Andean professionals, but salary differentials would limit this effect. Given that this sector concentrates an important share of unskilled urban labour force, which also absorbs temporary migrants from rural areas, [221] the expected impact of its expansion is likely to have positive effects on poverty reduction.

Distribution services

Distribution services account for a significant share of GDP in all four Andean countries. Market opening is predicted to have a positive impact in all countries except Ecuador, where a decline of less than 1 percent is predicted.

The scenario for services would expand the ability of EU distribution companies to establish outlets in the Andean countries, which would experience welfare gains from increased economic efficiency and potential reductions in consumer prices.

The number of small traders in the Andean countries can be expected to decline, with a smaller number of jobs becoming available in new, less labour intensive outlets. The welfare gain will come mainly from lower consumer prices, particularly for higher income urban communities.[222] Effective competition policy may be needed to prevent cartelisation and anti-competitive behaviour.

Significant reduction of recreation and services to business sectors in Ecuador, Bolivia and Colombia may impose negative impacts on urban unemployment. A reduction of the insurance sector in all countries may reduce the opportunities for the poor to access this service, which is already restricted to middle and higher income segments.

[221] Roderick et al 2008

[222] Arkell and Johnson 2005

In the longer term, liberalisation can be expected to improve the effectiveness of those distribution services which supply modern industrial and commercial equipment to other sectors of the economy. This may have a significant long term beneficial effect on Andean growth rates.

3.5 Other Trade Areas under Negotiation

3.5.1 Investment

Overall trends

The inclusion of investment in trade negotiations is intended to minimise the conditions and regulations on foreign investors entering and operating in the host countries, improve the transparency and consistency of the regulations that are applied to foreign investors, and to grant them national treatment.[223] The underlying premise in favour of an investment agreement is that it will increase the flow of foreign investment. In addition, by improving investor protection and confidence, domestic investment may also be stimulated.[224] Proponents of investment agreements argue, therefore, that the improvement of the investment 'climate' and the liberalisation of investment would be of mutual benefit to both parties in the trade agreement. The empirical evidence on the economic impact of investment provisions in regional trade agreements is generally positive.[225]

Still, the inclusion of investment provisions in trade agreements can be contentious, as it may limit domestic policy autonomy if it includes legally binding protection for foreign investment.[226] This is particularly applicable to the liberalisation of investment in the basic utilities sector, including water and sanitation services, where the application of national treatment principle has been seen as weakening the public sector's capacity to deliver its social objectives in terms of accessibility and affordability.[227]

Latin America received record levels of foreign direct investment in 2007, exceeding the previous record set in 1999 (in the context of one-off privatisations). This surge in FDI was mainly fuelled by transnational corporations seeking to take advantage of the growth in local market demand and gain access to natural resources in light of buoyant world demand.[228]

Foreign investment has been more pronounced in the mining sector than in the hydrocarbons sector, where local state oil companies have a strong presence and changes in the regulatory frameworks may have made FDI more volatile. Some of the challenges facing mining companies are related to legal uncertainty (especially regarding taxation) and the effects that mining activities have on local

[223] Te Velde and Fahnbulleh, (2006) identify the following areas that can be covered in an investment agreement: Investment promotion and cooperation, liberalisation and market access, and investment protection.

[224] However, evidence in support of the 'crowding in' effect of FDI on domestic investment is weak (Agosin, 2008)

[225] Dee and Gali (2003) find that FDI responds positively to the non-trade provisions within RTAs. Similarly, Te Velde and Bezemer (2006) find that regions with more investment provisions provide US and UK investors with positive signals about how different regions will treat them. Furthermore, the type of regional grouping matters for attracting FDI (i.e. whether or not the RTA includes certain trade and investment provisions). The OECD (2006) finds that investment provisions in RTAs are positively associated with both trade and investment flows.

[226] UNCTAD, 2006

[227] Kirkpatrick and Parker,2005; Kirkpatrick 2006

[228] ECLAC, 2008a

communities and the environment.[229] In Ecuador, for example, the main copper deposits, in Mirador and Junin, are situated in highly vulnerable areas, both in environmental terms and from the viewpoint of local indigenous communities.[230] The challenge is to develop a regulatory framework to provide for sustainable mining practices that benefit the local communities and provide profitable investment opportunities.

The nationalisation process in Bolivia, announced in 2006, the re-negotiation of contracts with private companies, and changes to the extraordinary income tax legislation for the hydrocarbons sector in Ecuador are examples of measures that Andean countries have taken to ensure that the exploitation of oil and gas reserves will generate greater benefits for the local economy. However, such measures have made the Andean countries less attractive to some foreign investors.

Tensions and clashes have occurred between indigenous peoples and national police forces due to conflictive allocation of indigenous territories where gas and oil fields are allocated to large companies. These conflicts threaten the sustainability of foreign investments, the prospects of an extractive industry-based development strategy and, more broadly, governance basis in the four Andean countries.

A number of issues have been identified as important for harnessing the impacts of increased investment via a trade agreement with the Andean region. Capacity building in terms of regulation and competition policy can help improve the quality of investment inflows and the benefits of FDI for local development. Properly structuring and developing the institutional conditions necessary to maximise the spill over from FDI can help facilitate this outcome.[231]

Table 57 shows the differences in the scale of FDI inflows to the Andean countries.

Table 57: Foreign Direct Investment Inflows, 2005-07 (US $ million)

	2005	2006	2007
Bolivia[232]	-288	281	204
Colombia	10,240	6,464	9,028
Ecuador	493	271	178
Peru	2579	3467	5343
South America	44,305	43,102	71,699

Source: UNCTAD, 2008

An investment agreement is expected to have a positive impact on FDI and may also have a 'crowding in' effect on domestic investment. The increase in growth resulting from FDI inflows is expected to have a positive long term impact on employment.

[229] UNCTAD, 2007

[230] ECLAC, 2008

[231] ECLAC, 2008

[232] Bolivia data records net investment

The CGE modelling for this study has allowed for dynamic capital accumulation mechanisms. These effects stress the impact of changes in the supply of capital, in particular increased foreign direct investment. In addition to these direct effects, the signing of an FTA with the EU is also expected to have indirect effects on growth through induced changes in FDI.

To estimate additional effects related to FDI, simulations have been performed on the effect of reciprocal Free-Trade Agreements (FTAs) between the EU and a number of potential partners on aggregate and sectoral growth based on elasticities estimated econometrically. This involves a multi-step approach based on stand-alone reduced-form equations in which all potentially endogenous variables are instrumented, either through the use of outside instruments or through their own lagged values and first differences, using the GMM estimator. Limitations have also been set regarding the estimation to the relationship between FTAs, FDI and growth, without considering the effect of FTAs on trade. (This effect is the focus of the CGE exercise).

In a first step, estimates are performed on the effect of EU preferences on bilateral flows using a gravity equation (in which income levels are instrumented). In a second step, estimates are performed on the effect of aggregate FDI inflows on growth in a panel growth equation (where FDI inflows are instrumented). In a third step, allocations are made per the growth boost across 28 SIC manufacturing sectors according to long-run elasticities of sectoral value added to aggregate growth estimated on time series. Using this approach (based on Cadot-Tschopp 2009) it was possible to quantify the additional effects on sector output growth that a FTA with the EU will have for a range of countries (including in Central America) through resulting increases in FDI.[233]

The result of these sector specific econometric estimates are presented for the Andean countries below.

Table 58: Estimated FDI driven Additional Boost to Andean Output by ISIC sector (% of value-added)

	Bolivia	Colombia	Ecuador	Peru
Food Products	1.4	0.4	0.2	0.0
Beverages	0.0	0.5	0.5	0.0
Tobacco	0.0	0.0	0.0	0.0
Textiles	0.7	0.3	0.3	0.0
Clothing	0.6	0.4	0.5	0.0
Leather Goods Nes.	0.0	0.4	0.3	0.0
Leather Footwear	0.0	0.5	0.3	0.0
Wood & Cork excl. Furniture	0.3	0.5	0.2	0.0
Furniture	0.0	0.6	0.4	0.0
Paper and Paper products	0.0	0.4	0.0	0.0
Printing, Publish and Allied Industries	0.0	0.6	0.4	0.0
Industrial Chemicals	1.3	0.3	0.0	0.0

[233] Cadot , O and T. Schopp (2009), "*E.U preferences, FDI and Growth,"* manuscript.

Other Chemical Products	0.9	0.4	-0,7	0.0
Petroleum Refineries	0.0	0.9	0.0	0.0
Misc. Prod of Petroleum and Coal	n.a.	0.7	0.0	n.a.
Rubber Products	0.0	0.5	0.3	0.0
Plastic Products, Nes	0.6	0.4	0.5	0.0
Pottery, China and Earthware	0.0	n.a.	-0.3	0.6
Glass and Glass Products	1.0	0.5	0.3	0.0
Other Non Metallic Mineral Prod.	0.6	0.5	0.3	0.0
Iron and Steel Industries	1.5	0.4	-0.7	0.0
Non Ferrous Metal Basic Ind.	1.1	0.4	-1.2	0.3
Fab. Metal Prod exc. Machinery	0.8	0.6	0.4	0.0
Non Electrical Machinery	0.0	0.4	-0.7	0.0
Electrical Machinery, Appliances	1.5	0.4	-0.5	0.0
Transport Equipment	1.5	0.7	0.0	0.0
Prof., Scientific & Control Equip.	0.5	0.0	0.0	0.0
Miscellaneous Manufactures	0.0	0.5	-0.2	0.0

Source: Cadot and Tschopp (2009)

Increased FDI flows are expected to have almost no effect on Peruvian output, and mixed effects for Ecuador. For Bolivia and Colombia, however, the inflow of FDI is expected to have an additional positive impact on the majority of sectors, some by as much as a 1.5 percent increase in value added. In comparison to the direct effect of the trade agreement presented in the previous sections and based on the CGE model, the secondary effect on growth through the increased inflow of capital is comparatively smaller than the direct effects of the trade agreement.

Economic Impacts

The EU is the leading investor in the Andean Region, accounting for a significant share of total FDI in the region. EU FDI can be found in financial services, mining, oil extraction and manufacturing sectors. Given the substantial inflow of FDI into Andean countries, the impact of an investment agreement may be muted. However, if an agreement resulted in greater investor confidence, particularly in the oil and gas and mining sectors, there could be some increase in European investment in these sectors. An investment agreement might also act as a signal to non- EU investors. The additional inflow of FDI attributable to the agreement is unlikely to be significant, but any agreement can be expected to stabilise the long term flow of FDI. Over time, the inflow of new FDI is expected to contribute to economic growth.

Social Impacts

Stakeholders' reactions to FDI increases in each economic sector have been diverse. In general, improvements in the communications, transport and finance sectors through foreign companies have been welcomed. However, in the mining, oil and forestry sectors the increase of FDI has created increased controversy (see also Box 2).

In the long run, the increase in real income attributable to higher FDI inflows under a trade agreement may have an indirect positive effect on poverty. Better fiscal redistribution mechanisms could improve the poverty status of local communities adjacent to mining and oil projects. An inflow of FDI into the basic utilities sector is also likely to contribute to poverty reduction, provided that domestic regulatory offices are able to regulate for accessibility and affordability criteria in the delivery of services by private utility operators.[234]

An investment agreement can also be expected to have a positive impact on labour market conditions by increasing demand for skilled labour in local markets. FDI in technology intensive industries (e.g. large scale mining, hydrocarbons, and biofuels industrial processing) is likely to increase wages of skilled workers. Investments in biofuels' feedstocks, and to a much less extent in mining, can produce positive effects if they include a special labour package to include local populations.[235]

There are potentially significant linkages between the possible environmental and social impacts of any increase in FDI that can be attributed to an investment agreement. Increased foreign investment in the mineral and biofuel industries is predicted to give rise to environmental impacts (see below and Box 1), which if not mitigated properly could threaten the livelihoods of poor populations' and involve a risk of increasing vulnerability.

Similar concerns have been raised in relation to health and safety conditions in those sectors where FDI may increase as a result of an investment agreement. If foreign firms enforce higher labour standards, in compliance, for example, with the ILO decent work requirements, then there will be a positive social impact in terms of health and safety at work, reflected in an improvement in employees' health status.

Environmental Impacts

The impact of increased FDI on the environment has been widely discussed in the literature.[236] Given the biodiverse and fragile environments of Andean countries, the environmental impacts of investment liberalisation are likely to be mixed.

[234] See, Kirkpatick and Parker 2007

[235] There are currently few experiences on this matter from the corporate sector (see, for instance, the ICMM's Community Development Toolkit), http://www.icmm.com/page/629/community-development-toolkit-

[236] Kirkpatrick and Shimomoto, 2007

The trends observed since 2003 of large mining investments, located across coastal and highland regions of Peru, Bolivia's high plateau and lowlands, and Colombia's Antioquia region (see Map 5 in Annex 3), show that those regions' environments will be significantly impacted. Any increases in mining activity will have a negative impact on biodiversity, especially in remote rural areas. Additionally, the mines' high demand for water and the unavoidable contamination that they produce, in particular of ground and underground water sources, will add stress to current water shortages and reduce its availability for other uses (i.e. drinking water and agriculture). These trends, however, have been occurring in the absence of the proposed free trade agreement, and it is likely that they will continue to do so over the short- to mid-term. It is possible that EU inward investments in the mining sector can help increase the technological sophistication of mining operations, which will contribute to improving recovery rates while also minimizing waste and contamination. This will be further influenced by the regulatory environment and its ability to oversee mining activities and enforce environmental regulations.

The increase of investments in the biofuels[237] industry is more likely to impact the equatorial tropic of Colombia where most of palm oil plantations are located. Where FDI increases the output of biofuel feedstock and mining, it is expected that biodiversity will be negatively impacted. In particular, biodiverse regions in the eastern regions of Colombia, Ecuador and Peru stand to suffer due to increased sugarcane and palm oil expansion used to increase biofuel production for export. Colombia has already signaled its intention to utilise technology that limits the amount of water contamination and vinasse production. With further technological developments in the processing of biofuels, it is expected that increased FDI can help the region obtain biofuel plants and equipment that further limit energy and water usage, while ameliorating the negative environmental effects that result in the processing of palm oil and sugarcane.

FDI in manufacturing activities can be expected to increase air and water pollution, the scale of which will be determined by the investment-induced increase in production levels and the 'end of pipe' technology that is adopted by foreign companies.

If environmental regulations are not implemented and enforced by governments, and companies do not comply with adequate environmental standards, it is very likely that such an impact will threaten the fragile ecosystems of many regions across the Andes. The concern about hydrocarbons (oil and gas) expansion in rainforest and tropical areas is more related to the effects of potential oil spillages and pollution effects, which would reduce the potential for environmental services, mainly in Peru and Ecuador due to their high concentration of biodiversity hotspots, and to a less extent in Bolivia and Colombia.[238]

Negative impacts are generally associated with increased pollution and biodiversity loss. Conversely, there is evidence to suggest that FDI can introduce improved environmental control technology, thereby contributing to improvements in environmental quality. FDI in environmental services can

[237] See Box 1 for further details on the impacts of an agreement as it relates to biofuels

[238] Ecuador's President Rafael Correa recently raised this issue with regards to the oil project in the Yasuni National Park in the western Amazon. Yasuni is considered the most biodiverse park on the planet and has been named a Unesco Biosphere site; it also hosts almost 20% of Ecuador's oil reserves. (K. Gallagher, The Guardian, August 7th, 2009).

also contribute positively to environmental quality.[239] The environmental impacts of an increase in FDI are difficult, therefore, to predict. However, given the limited capacity to enforce environmental regulations, particular attention should be given to the introduction of mitigation measures where necessary. Although few, there are cases in the Andean region which show that, if there is a combination of instruments (e.g. license fee, standards, charge and subsidies, reinforced by active enforcement) an overall improvement in environment compliance can be observed.[240]

3.5.2 Public Procurement

Government procurement is arguably the largest trade sector sheltered from multilateral disciplines. It was initially excluded from the GATT; Article III (national treatment) does not apply to government procurement. With the completion of the Tokyo Round on multinational trade negotiations in 1979, a code of conduct for central government procurement, known as the Agreement on Government Procurement (GPA), was introduced into the GATT. The code bound only its signatories and most GATT contracting parties did not join. During the Uruguay Round the coverage of the agreement was expanded to include services and additional government entities.

Transparency in government procurement was re-introduced as part of the WTO negotiation agenda at the Singapore Ministerial meeting in December 1996, as one component of the so-called 'Singapore issues' (the other 'behind-the-border' Singapore issues related to multilateral rules for competition, trade facilitation and investment). In July 2004, the World Trade Organization (WTO) General Council decided not to launch negotiations on new multilateral rules on transparency in government procurement (or competition and investment). Multilateral disciplines on government procurement remain subject, therefore, to the amended plurilateral GPA which came into force in 1996. The agreement regulates public tenders in a way to guarantee the transparency of procedures and to ensure equal treatment for domestic and foreign suppliers. None of the Andean Countries are parties to the GPA.

The European Union has identified the absence of multilateral disciplines in the field of public procurement as a serious constraint on the ability of EU companies to compete for government contracts in areas such as transport equipment, public works and utilities, and seeks to improve the terms of access to procurement markets outside the EU for EU exporters.[241] To achieve this, the EU aims to negotiate access to procurement markets through its bilateral trade agreements and free trade agreements by encouraging third countries to negotiate substantial commitments with the EU.

Estimates on the size of public procurement by state bodies in goods and services in a sample of 106 developed and developing countries find that for the OECD countries, the total value of government procurement markets is estimated at US$ 4,733 billion, and for the non-OECD countries at US$ 816 billion.[242] The role of government procurement of goods and services typically accounts for 10-15 percent of GDP in developing countries and around 20 percent of GDP in developed countries. In the

[239] George, Kirkpatrick and Scrieciu, 2006

[240] See for a case in Colombia Kathuria, 2006.

[241] http://ec.europa.eu/trade/issues/sectoral/gov_proc/index_en.htm

[242] OECD, 2003

EU, the procurement market is worth € 1600 billion, or over 16 percent of GDP.[243]

Developing countries have in the past consistently opposed the inclusion of government procurement in the WTO negotiation agenda on the grounds that the scope of the issues is unclear and that they lack the technical and institutional capacity to comply with international tendering procedures. However, that position has more recently begun to shift, possibly in recognition of the fact that every country in the world already has some rules governing public expenditure, and also on account of the potential benefits in terms of governance and money saved which enhanced transparency may generate. A number of developing countries have therefore engaged in negotiations on transparency, if not also coverage.

Resistance to GPA compliance may also be based on more fundamental concerns about the potential damaging effects on the development process. Procurement policies may be part of an industrial policy or an instrument to attain social objectives (e.g. support for small and medium sized enterprises, minority-owned businesses, disadvantaged ethnic groups, or certain geographic regions) through set-asides and preference policies.[244] In addition, a government's ability to procure from firms of its own choice can be an instrument of macroeconomic management. There is the concern that premature or over-rapid opening of government procurement markets will allow large foreign firms to drive out local firms before increasing prices, similar to predatory dumping. However, there is also growing awareness that it may be possible to address these issues within a procurement chapter, to the mutual satisfaction of all parties involved. Therefore, it will be essential to enhance transparency measures that will ensure that corruption practices will not offset the benefits of preferential treatment to national (or local) providers.

Furthermore, most developing countries are unlikely to gain a significant share of the government procurement market in the developed country partner's market. Many developing countries' competitive advantage continues to be in the provision of labour intensive services. However, as emerging economies increasingly diversify, their exporting interests grow more varied. Developing countries can compete in the supply of goods required by hospitals, defence and other public organisations (e.g. office furniture and equipment, textile products, shoes, tyres and other rubber products); however, the lack of information and experience in responding to tender invitations can prevent suppliers in developing countries from accessing this market.

On the other hand, as tender information is increasingly published in several languages in central databases free of charge on the internet, access becomes easier for smaller companies. Suppliers from developing countries are increasingly active in the EU procurement market.

Liberalisation of government procurement remains a complex issue, and a move towards a rule based agreement may be perceived by some stakeholders as a potential weakening of domestic policy autonomy. However, as an increasing number of developing countries are engaging in public procurement reform, there is likely to be an increasing opportunity to test the validity of these arguments.

[243] EC (2004)

[244] Stiglitz and Charlton, 2005

Public Procurement Policies in the Andean countries

Bolivia enacted a new law on public procurement in 2004, aimed in particular at making public procurement a more efficient and transparent process. However, the new regime continues to give Bolivian companies and products preferences, which in some cases is linked to national content. Foreign companies wishing to bid for government consulting contracts must do so in association with a Bolivian company.[245]

Colombia's public procurement regime does not differentiate between domestic and foreign firms. However, certain provisions require a more favourable evaluation of offers that contain Colombian goods and services, or foreign goods and services that incorporate Colombian added value.[246]

Ecuador's current legislation enables it to limit tendering to domestic companies and restricts the participation of foreign consulting firms, except when the necessary expertise and capacity is not available locally. Efforts are being made to enhance transparency in government procurement.[247] Since 2000, important policy changes have been made to the regulatory framework on government procurement in Peru. Peruvian legislation grants a 20 percent preference margin to bidders that use Peruvian goods, and certain programmes (e.g. food aid) specifying that only domestic food products be acquired.[248]

Economic Impacts

There are two potential sources of benefit from liberalisation of government procurement.[249] First, as a result of the transparency requirements the government will be required to demonstrate better value for money in its contracting and purchases. More generally, greater transparency will contribute to improved governance. It is estimated that the introduction of the Internal Market reforms in the EU significantly improved the performance of public procurement markets over the past decade. Public procurement directives have effectively increased transparency and resulted in an estimated saving of 30 percent or more in public finances, despite the fact that direct cross border procurements remain low. Second, exports could expand as a result of purchases of goods and services by governments in the partner countries.[250]

There is a widely held view that opaque procurement practices are a significant source of corruption

[245] WTO, 2005

[246] WTO, 2007

[247] WTO, 2005a

[248] WTO, 2007a

[249] Evenett, 2003

[250] Ideally, there would be a robust evidence base to substantiate the claims made regarding the potential negative and positive impacts associated with government procurement reform in developing countries. Unfortunately, with the notable exception of the study published in 2004 by the European Commission demonstrating significant potential for cost savings (some 30%), to date, there is not enough solid evidence on the effect of liberalising government procurement markets.

and a key obstacle to the sustainable management of public finances.

An agreement on greater transparency in Andean governments' procurement procedures can be expected to generate economic gains from increased competition for government contracts. Further economic efficiency gains are expected to result from the improvement in the quality of public sector governance. The 'demonstration effect' of improvements in transparency and accountability in government procurement could spill over into improvements in other areas of public regulation and policy affecting the private sector. Consumers are likely to benefit from an improvement in the quality of goods and services provided by the state.

There may be additional gains to Andean exporting firms if an agreement assists these firms in competing for public sector contracts for the supply of goods and labour services in the EU countries. These economic gains would need to be compared to any benefits foregone in terms of developing domestic productive and technological capacity through the use of government long term contracting with local producers as an instrument of industrial strategy. In addition, a procurement framework which is perceived as more reliable and transparent by operators could also be a driver to attract more innovative inward investments.

Social Impacts

The liberalisation of government procurement could have an impact on the use of procurement to support SME development or regional development. However, it is unlikely that the economic gains from the liberalisation of government procurement could immediately be secured by the fiscal system and redistributed to support these goals. On the other hand, the money saved on more efficient procurements would become available for other important policy objectives such as social policy issues. Over time, tax revenues from corporate taxation could increase as the dynamic/long term effects of liberalisation of government procurement are realised in terms of increased economic performance and growth in the private sector. On the other hand, those groups who depend heavily on goods and services provided by the state are likely to benefit from the improvement in the quality of these goods that is engendered by the liberalisation of public procurement rules. However, given the restrictions for SMEs on access to government procurement bids,[251] competition from larger foreign firms may hinder employment in the SME sector and increase the risks of the potential displaced labour force to fall into poverty.

Given that the SME sector is one of the most important segments in the labour market, reduction of negative impacts of public procurement liberalization will require ad-hoc policies oriented to that sector, both to reduce transition costs and to improve its capacity to enter into public procurement markets. Institutional reforms to reduce the burden of administrative procedures for formalization, broad dissemination of information regarding public tenders accompanied by a training package, and more equitable tax structures might help to create opportunities for the SME sector.

[251] Yeng and Cartier 2003

Environmental Impacts

Reforms of government procurement procedures are generally not expected to have any significant environmental impacts. This could change, however, if Green Public Procurement Practices are implemented and government contracts are awarded based on the fulfillment of specific environmental considerations. With transparent and open bidding procedures, such mandates could induce greater environmental standards among domestic bidders leading to outcomes such as greater energy efficiency, less air and water pollution and more sustainable projects.

3.5.3 Trade Facilitation

The CGE model explicitly involves trade costs, which include both trade and transportation services. Trade facilitation, as it relates to issues like customs clearance, logically applies to goods but not as directly to services. These trade costs reflect the transaction costs involved in international trade, as well as the costs of the physical activity itself. In addition, there are frictional trading costs that represent real resource costs associated with producing a service for sale in an export market instead of the domestic market. There is a broad consensus that trade facilitation, which is of a set of reforms that simplify and harmonise trade procedures (i.e., activities, practices and formalities involved in collecting, presenting, communicating and processing data required for the movement of goods), does have the potential to contribute significantly to smoother and intensified trade between countries, particularly in terms of eliminating burdensome trade procedures, increasing transparency, improving business opportunities and security, and generally enhancing competitiveness and economic development to the benefit of both the government and the private sector.[252] Landlocked countries in particular can expect to benefit from reduced border delays and transit costs.

In order to reap the potential benefits, many developing countries have embarked on customs modernisation unilaterally as part of a broader programme of reforms, with assistance from international agencies such as the World Bank and UNCTAD.[253] Experience suggests that factors essential for success includes 'properly identifying problem areas and coherently designing reform programs.'[254]

These considerations suggest that trade facilitation does offer significant potential economic benefits, although these cannot be quantified with any certainty. Effective technical assistance is likely to make an important contribution in ensuring that the benefits are fully realised in a timely manner.

Recent data on the costs and constraints for trade across borders in the Andean countries suggests that there are significant gains to be realised from a reduction in trade facilitation costs incurred by exports and imports. Table 59 shows that all four countries are in the bottom half of country rankings for costs of trading across borders, suggesting that there are likely to be significant gains

[252] Hellqvist (2003),, Ivanow and Kirkpatrick (2007)

[253] OECD (2005b)

[254] OECD (2003)

from trade facilitation reforms.

Table 59: Indicators of Trade Costs							
	Documents for export (number)	Time for export (days)	Cost to Export (US $ per container	Documents for import (number)	Time for Import (days)	Cost to import (US$ per container)	World Bank Ranking (1-181)
Bolivia	8	19	1425	7	23	1747	117
Colombia	6	14	1690	8	15	1640	96
Ecuador	9	20	1345	7	29	1332	124
Peru	7	24	875	8	25	895	93

Source: World Bank, 2009

In the CGE model, trade facilitation is modelled as a reduction in the resources needed to supply a market. Technically, these are known as "iceberg" trade costs. Hence, for example, a 1 percent reduction in trade costs means that an export supplier realises a 1 percent reduction in the resources required to produce and deliver a good to the target market.

Economic Impacts

Trade facilitation in the ambitious scenario is modelled using a 3 percent reduction in trade costs for goods, and in the modest scenario at 1 percent in costs. In the 2018 benchmark, this implies that at most roughly 6.9 percent (modest scenario) and 12.8 percent (ambitious scenario) of the total estimated effects (based on long-run national income estimates) for the FTA scenarios examined are due to trade facilitation. This means that trade facilitation offers some benefits, though substantially less than those from basic liberalisation of goods and services trade (i.e., reduction/removal of tariffs and liberalisation of service trade). Still, the model results show reduced trading costs from standard trade facilitation measures (as described previously) in turn create significant welfare gains. Similar independent modelling studies of trade facilitation within the same context of trade liberalisation substantiate these findings, indicating significant welfare gains.

The main economic benefit to the Andean countries of trade facilitation provisions in a trade agreement will be in efficiency gains from customs and related procedural reforms. These gains can be expected to contribute to an improvement in the business environment and will facilitate the growth of investment and employment in exports production. An increase in imports could contribute to additional employment opportunities in port handling and distribution activities. There could also be gains in economic efficiency associated with a reduction in rent seeking activities. In the short term, however, economic gains will be limited by the financial costs of implementing the actual reforms. Also, the potential gains from trade liberalisation will also be reduced if they are not accompanied by a reduction in domestic regulatory barriers to private sector development.

Social Impacts

The social impacts associated with trade facilitation are unlikely to be significant and will be directly related to the economic impacts. There will be some direct employment effects associated with the stimulation of trade flows, but the main social impacts are expected to occur in the long term from the trickle-down effects of trade expansion and accelerated economic growth in reducing poverty levels and raising household incomes. Taking into account that in the last decade or so the significant growth experienced in all Andean countries has had little impact on poverty reduction, for a trickle-down effect to happen, social and pro-poor growth policies will have to accompany trade policies.

Environmental Impacts

The environmental impacts of trade facilitation reform are not expected to be significant. The growth in trade movements may have some impact on air quality. Any secondary effect, through induced expansion or upgrading of transport infrastructure, can be expected to have a negative impact on natural resources and biodiversity. In the long term, the increase in economic growth linked to trade facilitation may improve access to, and adoption of, environmental goods and services, which would have an offsetting positive environmental impact.

3.5.4 Intellectual Property Rights

In the short term, international intellectual property rights (IPR) agreements are argued to transfer wealth from countries low in intellectual property to those with a greater stock.[255] As the Andean Countries' IPR inventory is low in comparison to the EU, it is therefore expected that short-term gains will favour the latter at the cost of the former.

The longer term economic impacts are more complex. A stronger system of intellectual property rights is argued to facilitate increases in foreign direct investment, technology transfer, economic growth and the protection of local rights holders.[256] Furthermore, a strengthened and enforced IPR system encourages local research and development and increases sustainable development. Nonetheless, the relationship between IPR and economic development is complex as Accelerated technology transfer and technological development through systems that prohibit protection of intellectual property rights has been a feature of the economic development of less developed countries in recent decades.

The WTO's intellectual property rules are governed by the Agreement on Trade-Related Aspects of

[255] Hoekman, B. and P. Holmes (1999) 'Competition Policy, Developing Countries and the World Trade Organization', Policy Research Working Paper 2211, Development Research Group, The World Bank, Washington DC; McCalman, P. (2002) 'The Doha Agenda and Intellectual Property Rights', Asian Development Bank, Manila

[256] European Commission (2005) Strategy for the Enforcement of Intellectual Property Rights in Third Countries, Directorate General for Trade, Brussels

Intellectual Property Rights (TRIPs). Subsequent international regional and bilateral trade agreements between certain trading partners have sought to extend the intellectual property obligations in what is known as TRIPS Plus agreements, with additional coverage concerning legal enforcement, mandatory maximum levels of protection, compatibility with sustainable development, and protection of cultural and biological diversity. For example, the EU-Chile trade agreement requires compliance with other Intellectual property agreements, such as various treaties of the World Intellectual Property Organisation (WIPO), the International Convention for the Protection of New Varieties of Plants (UPOV) and the Budapest Treaty on international patent recognition for microorganisms.

In stakeholder consultations for the study, civil society organisations have expressed concerns in relation to extending intellectual property protections that would potentially increase the price of generic medicines, impact agricultural production and reduce food security. By way of summary, these concerns have focused on intellectual property provisions which would increase the cost of essential medicines by extending patent holders greater rights than the TRIPs 2005 amendment on public health permitting the import and export of generic medicines under compulsory licence. Under the TRIPs protection for plant varieties, countries maintain a degree of flexibility to develop their own *sui generis* regimes for patent protection. Further intellectual property protection schemes for plant varieties are required to balance traditional knowledge and rights of indigenous communities, biodiversity considerations, seed harvesting by local farmers and food security.

The European Commission has indicated in consultations for the study that European negotiations for the trade agreement will safeguard the 2005 TRIPs protection on public health with no additional request for patent protection for drugs subject to an administrative approval procedure. Colombia and Peru have strengthened commitments regarding data protection and UPOV in their trade agreements with the United States and consistent measures in future trade agreements should be considered. Similarly, in regards to border measures there is opportunity for the Andean Countries to extend consistently legislative in-transit controls for copyrights and trademarks to cover other areas of intellectual property.

4. POLICY PROPOSALS FOR PREVENTATIVE, MITIGATION AND ENHANCEMENT MEASURES

4.1 Overview

In accordance with the TOR, this section presents proposals for policy recommendations. The proposals are based on the results of the sustainability analysis in the preceding sections, and cover enhancement and preventative/mitigation measures, i.e. measures needed to reinforce any significant positive sustainability impacts and to prevent or at least mitigate negative sustainability impacts.

The aim of preventative, mitigation and enhancement proposals is to define a package of initiatives to yield the best possible outcome, not just in terms of trade liberalisation and economic growth but also of other components of sustainable development. The measures are intended to maximise the positive impacts of the trade negotiations in question, and to prevent or reduce any potential negative impacts.

The EU SIA Handbook (EC, 2006) defines the purpose of the mitigation and enhancement analysis in the following terms:

> 'to assess how best to define a full package of domestic policies and international initiatives to yield the best possible outcome, not just in terms of trade liberalisation and economic growth but also of other components of sustainable development. A Trade SIA should also provide guidelines for the design of possible accompanying measures. Such measures may go beyond the field of trade as such and may have implications for internal policy, capacity building or international regulation. Accompanying measures are intended to maximise the positive impacts of the trade negotiations in question, or to reduce any negative impacts'.

The recommendations are presented therefore in three categories:

- measures related to provisions that are included in the trade agreement
- non-trade related measures for cooperation that may accompany the trade agreement
- measures related to domestic policy, that can be taken in parallel with the trade agreement

4.2 Significant Impacts Identified in the SIA

4.2.1 Potentially Significant Impacts in the EU

No significant economic impacts are identified for the EU from the proposed EC – Andean countries trade agreement. There is no change in EU27 GDP and the impact on EU trade flows is negligible.

The EU is the leading investor in the Andean Region, particularly in the financial services, mining, oil extraction and manufacturing sectors. The trade agreement, including the proposed investment agreement, could result in greater investor confidence, particularly in the oil and gas and mining sectors, and could thereby provide improved returns to European investments. European firms may also benefit from improved opportunities in some parts of the services sector but these positive impacts are not expected to be significant.

4.2.2 Potentially Significant Impacts in the Andean Countries

The main *economic* impacts in the Andean Countries are as follows:

In the agriculture and agricultural processed goods sector, only horticulture (edible fruits, nuts and vegetables) is expected to increase production across all four Andean countries. Forestry and fisheries will display mixed results with both increases and decreases in output according to individual countries.

Changes in the mining sector are predicted. Primary mining is estimated to increase production in each country across the region.

In the agriculture and agricultural processed goods sector, primary mining and horticulture (edible fruits, nuts and vegetables) are the only two subsectors expected to increase production across all four Andean countries. Forestry and fisheries will display mixed results with both increases and decreases in output according to individual countries. In addition, primary mining is estimated to increase production in each country across the region.

In the industrial sector, output of light industrial goods (textiles, clothing, and leather goods) will generally increase among the Andean countries as a result of trade liberalisation. Output of heavy-industrial goods will increase *on average* over all Andean countries.

In the services sector, trade liberalisation would result in general decreases in the output of the financial, insurance, business and recreation services sub-sectors. Output in the utilities, construction, distribution and communication sub-sectors are predicted to increase in most Andean countries.

An investment agreement is expected to have a positive impact on inbound capital flow and

employment. The potential benefits of public procurement are positive. Trade facilitation reforms are expected to improve business efficiency and facilitate growth and investment.

These potential economic impacts in the Andean countries will pose significant *environmental and social* challenges:

- In the large-scale formal mining sector, the restrictions on workers' rights will restrain any significant increase in real wages or improvement in working conditions. Additional negative social impacts of further expansion of mining and hydrocarbons in rural territories of the four Andean countries might arise from the local and national conflicts that have emerged in the last five years. The mining sector is a key source of water pollution (acid water with high metal content) which gives rise to health problems for local communities.

- Key sources of pollution are discharges from mining activities, industrial and agricultural processing and agricultural runoffs.

- Increased market access for processed timber products can be expected to add to existing deforestation trends. Illegal logging is a significant contributor to this problem.

- The expansion of production and trade in agricultural and agricultural processed products that results will have potentially adverse biodiversity impacts. In particular, any additional pressure on the rate of deforestation represents an immediate threat to biodiversity. Similarly, the conversion of pristine habitats and natural resources to agricultural production and mining would also have significant negative implications for biodiversity.

- Changes within the industrial sector, with some industries expected to increase production and others to experience a decline, will give rise to short to medium term adjustment costs, including unemployment and decline in household incomes.

- Trade liberalisation is often associated with a decline in indirect tax revenues and an overall fall in total government revenue. This could lead to a fall in social expenditure, for example on education and health, with negative consequences for vulnerable households and poverty groups.

- Liberalisation of infrastructural services is expected to improve the quality of services supplied, but improvements in access and affordability of basic services for the poor will depend on effective regulation.

4.3 Policy Recommendations

The following policy recommendations are also called flanking measures. As alluded to, flanking measures involve some form of regulatory policy designed to mitigate the potential effects that trade liberalisation, on its own, might produce. An earlier section of the report (2.5 Regulation Baseline Conditions) highlighted the current regulatory environment in the Andean countries, particularly with respect to environmental and social regulation, and highlighted the existing weaknesses in the quality of regulatory governance and the enforcement of regulations in Andean countries. Strengthening the regulatory frameworks in Andean countries is a cross-cutting policy priority and a fundamental base on which to build the described flanking measures.

Trade Measures - full

1. Establish a timetable for phased reductions in tariffs and NTMs to allow for an orderly adjustment period in sectors that are expected to experience significant adjustment costs such as the machinery and equipment sectors in Peru and automotive sector in Ecuador. A properly structured timetable can help mitigate against costs associated with adjustment and allow affected sectors to brace for increased competition or reallocate resources into more productive sectors, while providing time for institutional arrangements to evolve to meet the needs of a changing economic environment. The timing of reductions in tariffs and quota restrictions for environmentally/biodiverse sensitive products should be conditional on compliance with improvements in relevant legislation and its enforcement as well as a set of sustainability criteria.

2. Include a Trade and Sustainable Development chapter in the Trade Pillar of the Agreement. The proposed Trade and Sustainable Development chapter could include a reference to the requirement that both parties commit to the effective implementation of core ILO labour standards and other basic decent work components and to effective environmental regulatory measures.

   Sector/business practice specific provisions should be central to the sustainability chapter. Provisions should stress sustainable logging in forested areas, particularly in regions of greater biodiversity, and should include a solid commitment to the FLEGT Action Plan. Within the mining industry, both parties could commit to wider economic and social development of the areas endowed with raw materials and to technological upgrading that minimises adverse ecological externalities. In terms of the biofuel industry, provisions could stress efficiency and minimisation of negative externalities of water and air pollution. Commitments from both parties could be made to limit destruction of biodiverse areas in the expansion of biofuel feedstock. Other provisions should address sustainability in fishing, organic farming, and other sectors/practices.

   The provisions of this chapter should be tied closely to ex post monitoring of social and environmental impacts, and any related preventative/mitigation measures put in place, as

mentioned in recommendation 3.

3. Establish an institutional framework for the monitoring of the social and environmental outcomes of the trade agreement. This body would provide for regular consultation with civil society in the EU and the Andean countries, and would be required to report regularly, in a transparent manner, to high-level EU – Andean Countries Association Agreement meetings.

   The institution would work closely with EC Delegation officials in the Andean countries. The framework would contain mechanisms to monitor issues such as the level of biodiversity loss, deforestation, water and air pollution, water diversion, labour conditions and the level of social services provided (i.e. access to education and health), while developing a means to initiate preventive and mitigating measures in circumstances where such issues are negatively deviating from their expected outcomes.

4. Binding measures on transparency of tax and non-tax incentives to attract FDI in the extractive industries and services sector. Ongoing initiatives, such as the Extractive Industries Transparency Initiative fostered by the UK's DFID, could be taken as a basis.

4.3.2 Cooperation Measures - full

5. Support for regulatory policy capacity building, particularly in environmental regulation, public utility regulation (water and electricity sub-sectors) and financial sector regulation. This support should be based on a prior assessment of the capacity of the existing policy making and regulatory framework to respond to the predicted changes of trade liberalisation. EU support could include provision of training and capacity building in the (Regulatory) Impact Assessment, drawing on the EC's extensive experience in the use of IA methods for better regulation design. Specifically, support should be given to environmental regulation and enforcement to help mitigate potential increases in pollution from the expansion of mining, agricultural and biofuel industries. Moreover, support should be given to enhance capacity to most fully capitalise from the expected social gains from the proposed trade agreement. These could include assistance in formulating institutional arrangements that improve access to services to the poor while ensuring greater access to water and sanitation.

6. Provision of technical assistance in education and training on sustainable forestry practices and alternative skills, while strengthening institutions and the legislative framework and enforcement in relation to environmental protection and safeguarding areas of natural forest. Any such measures should not only attempt to minimise potential increases in illegal logging, but also ensure that areas of noteworthy biodiversity be safeguarded against potential land use changes that may arise.

7. Industrial cooperation to support and promote industrial policy measures aimed towards developing a dynamic, integrated and decentralised approach to manage industrial development. These could include projects deriving from the process of opening-up the Andean countries' economies (such as the establishment of forms of infrastructure stimulated by European investments); to strengthen innovation, diversification, modernisation, product

development, and technical regulation on the basis of international and European standards; technical assistance for training initiatives; and development of uniform and simplified administrative procedures. Support to SMEs from Andean countries in these aspects might help to develop better linkages between industrial sectors from both parties.

8. Reporting on EU companies' compliance with initiatives for promoting social corporate responsibility in the mining, oil and gas sectors. Such a measure would be helpful in ameliorating tensions and conflicts that may arise in rural territories due to EU-backed expansion in these sectors. Recent initiatives include the ICMM's resource endowment initiative and DFID's transparency initiative. This monitoring role could be contracted to a civil society organisation.

   This can be complemented with more extensive cooperation on the energy and mineral sectors, which could include exchanges of information, technology transfers, involvement of public and private operators from both regions, assistance from the EU to deal with energy matters and the formulation of energy policy.

9. Cooperation on agriculture and rural sectors with a focus on environmental protection, capacity-building, infrastructure and technology transfer to facilitate the integration of small farmers into international markets and value-chains prompted by trade agreements, in particular value chains for exotic traditional products or food (described as "novel foods").

   Projects might include: supporting sanitary, phytosanitary, environmental and food quality measures, diversification and restructuring of agricultural sectors, exchange of information on agricultural policies, R&D on biodiversity-based agro-industry, and technical assistance for the strengthening of sanitary and phytosanitary control systems. Cooperating with rural sectors through these measures will not only help mitigate against incentives in rural populations to engage in environmentally harmful livelihoods (logging, destruction of biodiverse areas, unsustainable use of scarce resources), but also increase the likelihood that increased welfare is channelled to the poorer sectors of the population.

10. Cooperation on territorial planning. Given that some areas are unique habitats for indigenous populations and repositories of water sources and biodiversity while also having the potential to be developed for extractive industries and biofuels, expansion of large-scale investments in such sectors needs to be strictly regulated.

11. Cooperate in the field of foreign and security policy with joint initiatives against terrorism, corruption and drug-trafficking.

12. Establish a policy dialogue between the EU and Andean countries to promote and disseminate information on further development and maintenance of democratic values, such as the respect for human rights, the freedom of the individual and respect for community values, and the principles of the rule of law. To this end, the parties could develop a cohesive cooperation policy concerning goals such as security, stability, democracy and regional development.

4.3.3 Domestic Measures - full

European Union

13. Continued efforts to increase coherence between EU trade and sustainable development policies and those of Andean Countries.

14. Continued effort to cooperate with the corporate sector to improve corporate social responsibility measures, in particular in the extractive mineral industries. Such cooperation, in addition to recommendation 13, can help mitigate against tensions and conflicts in both areas and reduce resentment among constituents.

15. Continued effort to cooperate with civil society organizations to produce efficient mechanisms for monitoring and assessing the implementation of trade agreements.

16. Significant reduction of entry restrictions into the European market of exotic traditional products and foods (described as "novel foods") that were not marketed in Europe prior to the signing of the agreement.

Andean Countries

17. Strengthen environmental regulation in Andean countries to offset adverse impacts of forest conversion, mining expansion and industrial growth. Such an improvement would have a number of beneficial economic, environmental, and social outcomes. Strengthened regulation could help minimise potential increases in health problems arising from contamination of water, soil and air through expansion of the mining and industrial sectors. Moreover, the Andean region's rich biodiversity could be better sustained while allowing for more sustainable growth for those employed in the agricultural and services (tourism) sectors.
18. Strengthen financial services regulation prior to liberalisation. Ensure access to the financial market for SMEs.
19. Strengthen trade facilitation reform beyond those measures that are agreed in the trade agreement. This measure should be accompanied by a reduction in domestic regulatory barriers to private sector development and leveraged to facilitate growth of investment and employment in export production.
20. Strengthen public procurement reform beyond those measures that are agreed in the trade agreement. Ensure access to government procurement bids by SMEs to ensure that employment development of such firms is encouraged; in particular, disseminate information, provide training, facilitate joint-ventures and adapt bid standards to better fit SME's.
21. Strengthen social protection, particularly for labour and employment conditions in medium and small units of production. Target social protection towards vulnerable populations that will be affected by transition and adjustment costs. Ensure that populations residing in areas

targeted for expansion of mining, hydrocarbon, biofuel and agricultural expansion receive local reinvestment by firms operating in these areas.

22. Strengthen the Andean countries' diplomatic representations in EU countries. Target trade facilitation to enter into European markets and negotiation of free short- term visas for business trips of Peruvian, Colombian and Bolivian citizens.[257]

23. Adapt the countries' tax systems to be more progressive and equitable for local producers, in particular SMEs. The effects of tax incentives on large foreign investments should be carefully assessed before application to avoid under-taxation and potential inequity in regards to domestic tax-payers. Correspondingly, outsourcing should be better regulated.

4.3.4 Summary of impacts and policy recommendations

The following table summarises the sectoral impacts and relevant policy recommendations by linking together the trade, cooperation and domestic measures highlighted in sections 4.3.1, 4.3.2 and 4.3.3 (as listed in full above) with the appropriate impact.

Sector	Trend	Impacts identified	Policy recommendation[258]
Agriculture, processed agricultural goods	**Economic**		
	↕	• Potential for positive impacts of banana sector expansion (Colombia, Ecuador) and other agricultural commodities in Peru and Bolivia on household incomes and poverty reduction depends on local re-investment of large foreign companies	#9 – Develop an extensive set of economic and social policies oriented to produce pro-poor growth and extend the benefits of agricultural growth to small farmers #21 – Identify and support vulnerable populations likely to be affected by transition and adjustment costs
	Environmental		
	↓	• Potential increase in pollution due to discharges from mining activities and runoffs from agricultural production	#2 – Include a sustainable development chapter in the Trade Pillar of the Agreement stressing technological upgrading that minimises negative environmental externalities in the mining sector #3 – establish an institutional framework for the monitoring of environmental outcomes #5 - Support regulatory policy capacity building, particularly in environmental regulation

[257] Note: Ecuador has free-entry to Shenghen States

[258] The numbers associated with the measures in the chart correspond directly to the full measures listed in sections 4.3.12 – 4.3.3 above.

			#17 - Strengthen environmental regulation in Andean countries, including stricter control of compliance with industrial discharge standards
	↓	• Production expansion will add to deforestation trends, increased market access will increase illegal logging	#2 – Include a sustainable development chapter in the Trade Pillar of the Agreement stressing sustainable logging #3 – Establish an institutional framework for the monitoring of environmental outcomes #6 - Provide technical assistance on forestry practices, safeguard areas of natural forest #17 - Strengthen environmental regulation, which should include stricter measures on illegal logging and forest conversion. The TTAP programme should be adopted by the Andean governments who are not yet members
	↓	Potentially adverse impacts on biodiversity arise from: • Deforestation and other conversion of natural habitats and resources for agricultural production and mining • Use of GMOs and intensified use of scarce natural resources (land, water)	#2 – Include a sustainable development chapter in the Trade Pillar of the Agreement stressing sustainable logging and preservation of biodiverse areas #3 – Establish an institutional framework for the monitoring of environmental outcomes #9 - Cooperation on agriculture and rural sectors, including R&D on biodiversity-based agro-industry #17 - Strengthen environmental regulation
	Social		
	↓	• Potential increase of tensions and conflicts caused by mining and hydrocarbons expansion in rural territories	#3 – Establish an institutional framework for the monitoring of the social and environmental outcomes of the trade agreement #8 Monitor CSR-compliance of EU companies in the mining, oil and gas sectors #13 - Increase coherence between EU trade and sustainable development policies in Andean countries #14 - Cooperate with the corporate sector to improve CSR, in particular in the extractive mineral industries
	↓	• Loss of biodiversity and environmental deterioration will potentially cause adverse impacts for vulnerable groups whose livelihoods and food security depend on traditional agricultural production, especially indigenous	#3 – establish an institutional framework for the monitoring of social and environmental outcomes #9 - Technical assistance to facilitate the development of market niches for non-traditional agriculture and to help small

		people	farmers enter into selective European markets. Implement diversification training programmes and support the creation of alternative employment opportunities for indigenous people
	--	• Positive impacts of economic gains on health and education services unlikely	Improve health and education systems, especially as far as their implementation and their targeting of beneficiary groups
	↓	• Potential increase in health problems resulting from contamination of water sources and soil by the mining sector	#2 – Include a sustainable development chapter in the Trade Pillar of the Agreement stressing technological upgrading that minimises negative environmental externalities in the mining sector #3 – establish an institutional framework for the monitoring of environmental outcomes #17 - Strengthen environmental regulation, including stricter measures to avert contamination of water and soils
Industrial Products	**Economic**		
	↑	• Positive impacts on wage levels of skilled and unskilled workers	
	Environmental		
	↓	• Water and air pollution will increase in expanding industries	#2 - Include a sustainable development chapter in the Trade Pillar of the Agreement stressing minimisation of negative environmental externalities in the mining sector #3 – Establish an institutional framework for the monitoring of the social and environmental outcomes of the trade agreement #17 - Strengthen environmental regulation, including effective control of industrial growth in a sustainable manner
	↑	• Improvements in pollution control due to improved access to environmental goods and services	#17 - Strengthen environmental regulation, including stricter controls and enforcement of compliance with environmental standards #4 - Binding measures on transparency of tax and non-tax incentives to attract FDI in the extractive industries and services sector.
	↑	• Potential positive impact on biodiversity value chains which are based on bio-diverse products (e.g.	

		traditional medicinal products, small and medium-sized agro-industry)	
	Social		
	↑	• Potential positive impacts on unskilled wages, and thus urban poverty and intra-sectoral inequality	#3 – Establish an institutional framework for the monitoring of the social outcomes of the trade agreement #9 - Strengthen public policy regarding pro-poor programmes
	↓	• Potential increase of urban unemployment and poverty in certain sectors (e.g. machinery and equipment sectors in Peru, automotive in Ecuador)	#1 – Establish a timetable for phased reductions in tariffs and NTM to allow for an orderly adjustment period in sectors that are expected to experience significant adjustment costs #3 – Establish an institutional framework for the monitoring of the social and environmental outcomes of the trade agreement #21 - Strengthen social protection
	↓	• Adverse health effects of increased air and water pollution, particularly in urban areas	#3 – Establish an institutional framework for the monitoring of the social and environmental outcomes of the trade agreement #17 - Strengthen environmental regulation, including the effective control of industrial growth in a sustainable manner.
	↓	• Potential reduction in social expenditure resulting from declining tax revenues from declining trade	
Services	**Economic**		
	↑	• Growth in most service sectors leads to a general increase in demand for unskilled and skilled labour	
	Environmental		
	↑	• Potential positive impacts of environmentally efficient technologies and management techniques for water and other resources	#2 – Include a sustainable development chapter in the Trade Pillar of the Agreement stressing technological upgrading that minimises negative environmental externalities #4 - Binding measures on transparency of tax and non-tax incentives to attract FDI in the extractive industries and services sector.
	↓	• Potential adverse impacts on local pollution and climate change caused by increased transportation of goods	#2 – Include a sustainable development chapter in the Trade Pillar of the Agreement stressing technological upgrading that

		that are being sourced from a wider area	minimises negative environmental externalities #3 – establish an institutional framework for the monitoring of social and environmental outcomes
	Social		
	↑	• Potential improvements in access to services for the poor	#3 – establish an institutional framework for the monitoring of social outcomes #5 - Regulatory policy capacity building, including public utility regulation
	↑	• Potential positive impacts on consumer's health through improved quality and access to water and sanitation	#3 – establish an institutional framework for the monitoring of social outcomes #5 - Regulatory policy capacity building, including public utility regulation
Deeper Integration	**Economic**		
	↑	• The inclusion of **investment** in the agreement may lead to an inflow of FDI, act as an encouraging investment sign to non-EU investors and contribute to economic growth and a subsequent increase in employment	#4 - Binding measures on transparency of tax and non-tax incentives to attract FDI in the extractive industries and services sector
	↑	• Liberalisation of **government procurement** will create gains through increased competition, and create transparency thereby contributing to improved governance	
	↑	• **Trade facilitation** measures will positively impact the business environment and facilitate growth of investment and employment in export production	#19 – Strengthen trade facilitation reform beyond those measures that are agreed in the trade agreement. These should be accompanied by a reduction in domestic regulatory barriers to private sector development
	Environmental		
	↕	**Increased FDI** may lead to negative and positive impacts: • Investment-induced increase of air and water pollution in the manufacturing sector • Improved environmental control technology	Where necessary, mitigation measures should be introduced, given the limited capacity to enforce environmental regulations #2 – Include a sustainable development chapter in the Trade Pillar of the Agreement stressing technological upgrading that minimises negative environmental externalities #4 - Binding measures on transparency of tax and non-tax incentives to attract FDI in

			the extractive industries and services sector.
	Social		
	↑	• Potential trickle-down effect on poverty due to positive impacts of higher **FDI** on real income	
	↕	• Positive impacts may arise from the use of **procurement** to support SME development or regional development. • Existing restrictions for SME's to access government procurement bids may hinder employment in the sector.	#20 -Strengthen public procurement reform beyond those measures that are agreed in trade agreement.
	↑	• Potential reduction of poverty levels and increases in household incomes caused by trickle-down effects of growth related to **trade facilitation**	

5. CONSULTATION ACTIVITIES

5.1 SIA Website

The EU-Andean Trade SIA project has produced a project website to support the project's visibility and generate stakeholder feedback. The website can be accessed at and feedback can be sent to enquiries@euandean-sia.org.

The SIA website has received 34,537 hits from 3,128 unique visits over the period February-August 2009.

Figure 1 - The Spanish language version of the EU-Andean SIA website

The website is available in both English and Spanish and contains all relevant information concerning the SIA's progress, reports, minutes, presentations, background information, current related news items, and contact information of the consortium partners. The website has been designed to facilitate the SIA's target audience and wider stakeholders' access to the project's latest research in a user-friendly version and encourage the provision of feedback.

As of the beginning of August 2009, in excess of 100 specific emails on areas involving project research coverage had been received. The top five key issues raised in the correspondence include:

1. Clarification of research methodology, particularly the quantitative approaches to be used for economic assessment
2. Impacts on the Andean agriculture sector from further trade liberalisation
3. Environmental circumstances in the Andean region that should be considered by the study, with a focus on biodiversity and climate change impacts
4. The current trade barriers in relation to banana exports between the two regions
5. Consultation processes with civil society, including details for the Local Workshop.

The feedback received to date represents a wide range of sources including research think tanks, non-government organisations, academic institutions, industry groups and civil society actors. The comments received have been collated by the project team for assessment and inclusion in assessment and evaluations where appropriate. A summary of comments received on the draft interim report is presented in table format in Annex four. The project team actively encouraged feedback on the Draft Final Report for consideration in the final assessment and policy recommendations included in the Final Report.

5.2 Electronic SIA-Trade Newsletter

As part of the project's consultation activities, an EU-Andean Trade SIA newsletter was disseminated electronically to the consultation network following publication of the Draft Interim Technical Report. The newsletter included a summary of the main research results and provided an overview of economic, social or environmental impacts from the project research.


EU-ANDEAN *Trade Sustainability Impact Assessment*

Figure 2 - An email to the stakeholder network encouraging stakeholders to subscribe to the newsletter and provide comments on SIA

In addition to the release of the newsletter, the project team also emailed the stakeholder network encouraging users to register their details online and provide feedback on the SIA process and core sustainability issues from a local perspective. The project emails have coincided with the release of each report in the study and has also been a useful tool to receive feedback and further expand the consultation network as the project has progressed.

5.3 Consultation Workshops

The first civil society workshop was held in Brussels on 30 January 2009 to establish a dialogue and to gather the views of interested parties (business, local public administrations and civil society in particular). A copy of the minutes from this meeting is available online at www.euandean-sia.org. In addition, a full one-day consultation workshop with local project stakeholders was held in Lima, Peru on 26 May 2009. The key outcomes and feedback from the workshop have been incorporated into the development of impact enhancement and mitigation measures in the final report of the study where appropriate. The agenda for the local workshop can be found in Annex five, the participant list in Annex six and the draft minutes in Annex seven. The evaluation summary of the local workshop is also presented in Annex eight.

A further civil society meeting to discuss the Draft Final Report was held in Brussels on 16 July 2009.

5.4 Interviews

Key informant interviews were conducted throughout following distribution of the Draft Interim Technical Report and Draft Final Technical Report via email, and sending the link of the project website to the stakeholder network. Key stakeholders were contacted for telephone or face-to-face interviews as appropriate.

5.5 Questionnaires

Following the analysis of consultation from the research team from the first round of interviews, it was determined that a questionnaire would be most effective following the publication of the Draft Interim Technical Report. This approach was designed to provide stakeholders with a key understanding of the preliminary assessment for their feedback to be incorporated in the additional research impacts to be undertaken by all research teams. Two questionnaires were designed and disseminated by the project team covering both business impacts and key social and environmental issues. The survey was designed to solicit both quantitative and qualitative data from an expanded spectrum of industry, NGOs and civil society with key issues presented in this report.

5.6 Stakeholder consultation network

Below is a table of stakeholders for consultation by the project teams as part of the EU-Andean SIA.

Table 5.0:Stakeholder consultation network	
Colombia	Social Foundation Network on Inequality and Poverty, Latin America SER Investigation Institute Conona Foundation International Centre for Tropical Agriculture Colombian Confederation of Chambers of Commerce Colombian Flower Export Association Colombian National Association of Manufacturers Ministerio de Comercio, Industria y Turismo CORPORACION VALLENPAZ ALOP CENSAT Agua Viva, Amigos de la Tierra, Colombia UNIVERSIDAD ICESI FUNDACION PROBOQUILLA Quibi S.A.
Peru	The Economic and Research Consortium Institute of Development and Environment Science and Technology Coordinator of the Andes Institute for Freedom and Democracy Citizens Proposal Group Research Centre for Development and Participation Asociación de Bancos del Peru Junior Chamber International PERU-JCI PERU Ministerio de Relaciones Exteriores WHES BUSINESS S.A Instituto Peruano de Investigación y Desarrollo IPID SAI ALTERNATIVA, CENTRO DE INVESTIGACION SOCIAL Y EDUCACION POPULAR Asociación Cutivireni EU-CAN Civil Society Network Delegación de la Comisión Europea Peruvian Agency of Cooperation – PERAC Delegación de la Comisión Europea Director Regional Andino-ALOP Para organizaciones del Estado y la Cooperación Internacional Ministerio de Relaciones Exteriores Ministerio de Relaciones Exteriores

	Asamblea Nacional de Rectores, Directora de Presupuesto RED GE CEPES ALOP WWF Pontificia Universidad Católica del Perú
Ecuador	Faro Group CORPEI (Corporación de Promoción de Exportaciones e Inversiones) ALOP Fundación Esquel Ecuador FUNDACIÓN NATURA
Bolivia	Andean Centre for the Management and Use of Water Fundación Tierra Centro de Investigación y Promoción del Campesinado - CIPCA Cámara Nacional de Exportadores de Bolivia / CANEB Centro de Estudios para el Desarrollo de los Pueblos Andinos - CEDPAN Louvain Dévelopement Bolivian Ministry of Foreign Affairs Confederación Nacional de Mujeres Campesinas Bartolina Sisa ALOP
EU & other	Analysis Group of Development Overseas Development Institute European Fruit and Vegetables Association Peugeot Citroen Motors ALOP European Automobile Manufacturers Association European Services Forum Coalition of the Flemish North-South Movement European Trade Union Confederation (ETUC)

6. REFERENCES

Adlung , R. (2007) 'The contribution of services liberalisation to poverty reduction: what role for the GATS?' Staff Working Paper ERSD 2007-01. WTO Geneva

Agosin, M. (2008) 'Is Foreign Investment Always Good for Development?' Working Group on Development and the Environment in the Americas. Discussion Paper no.9

Aguirre, F., T. Ammour, O. Díaz, E. Ramírez, R. Sarno. (2009) *Aprendisajes* Innovadores para la Reducción de la Pobreza Rural. RIMISP, FIDA and FIDAMERICA. Santiago.

AIDESEP. (2007). *Illegal logging and international trade in mahogany (Swietenia macrophylla) from the Peruvian Amazon.* Lima: AIDESEP.

Alianza CAN-EU por el acceso a medicamentos (2009) Estudio de impacto acceso a medicamentos en el TLC UE. Resumen del primer informe. IFARMA, Alianza CAN-UE, ais. Bogota and Lima.Andean Community General Secretariat (2005) Regional Biodiversity Strategy for Tropical Andean Countries

Aramburu, C. (2008) The FTA between Peru and the USA: what about Andean peasants? CIES. Opinion Paper. Lima.

Arkell, J. and M. Johnson (2005) 'Sustainability Impact Assessment of Proposed WTO Negotiations: Final Report for the Distribution Services Study'. International Trade and Services Policy and University of Manchester.

Bebbington, A. (2004). 'Livelihood transitions, place transformations: Grounding globalization and modernity'. In: R. Gwynne & C. Kay (Eds.) *Latin America Transformed: Globalization and Modernity.* London: Edward Arnold.

Bebbington, A., L. Hinojosa, D.H. Bebbington, M.L. Burneo & X. Warnaars (2008) Contention and ambiguity: Mining and the possibilities of development. *Development and Change*, Vol. 39, No. 6, 887-914.

Berdegué, J., A. Schejtman, M. Chiriboga, F. Modrego, R. Charnay and J. Ortega 2008). Agricultura para el desarrollo: hacia una agenda regional para América Latina 2008. Debates y Temas Rurales No. 12.

Berdegué, J.A., Ramirez, E., Reardon, T. and Escobar, G. (2001). 'Rural nonfarm employment and incomes in Chile'. *World Development*, 29(3), 411-425.

Biekart, K. and A. Bebbington (2007) Northern NGOs and indigenous organizations in Peru, Ecuador and Bolivia: Reflecting on the past to look to the future. Synthesis study. Ibis, Hivos, Oxfam America and SNV.

Brackelaire, V. (2006) Pueblos indígenas no contactados de Bolivia, un Tesoro cultural sin protección. Bolpress. La Paz.

Bradley, R. S., M. Vuille, H. F. Diaz and W. Vergara (2006) Threats to water supplies in the tropical Andes, Science, 312 (5781), 1755–1756

CAN (2009) Atlas de los Andes del Norte y Centro. Secretaría General de la Comunidad Andina. Lima.

CIA. (2009). *The World Factbook*. Retrieved May 20 , 2009, from https://www.cia.gov/library/publications/the-world-factbook/index.html

CISEP (2005) La mujer palliri in Bolivia. CISEP, Oruro.

Comunidad Andina (2007) Andean Environmental Agenda, 2006-2110. 2nd Edition, August.

CONPES (2007) Estrategia para el desarrollo competitivo del sector palmicultor Colombiano. Documento No. 3477, Consejo Nacional de Política Económica y Social, República de Colombia.

Cuffe, S. (2006) From San Marcos to Colombia: The Regional Integration of Gold and Bullets. Mining Watch Canada.

Dasgupta, S., K. Hamilton and K. Pandey (2007) 'Environment during growth: accounting for governance and vulnerability' World Development, 34, 9.

Dee, P. and J. Gali (2003) 'The trade and investment effects of preferential trading arrangements'. NBER Working Paper 10160, Cambridge MA.

Dee P. and J. Gali (2003) 'The trade and investment effects of preferential trading arrangements'. NBER Working Paper 10160, Cambridge MA.

ECLAC (2008), Social Panorama of Latin America 2008, Report, Washington DC: ECLAC.(2008a) Foreign Investment in Latin America and the Caribbean, 2007 UN: Santiago

Edelman, M. (2003) Transnational peasant and farmer movements networks.

Engman, M. (2005) 'The economic impact of trade facilitation'. OECD Trade Policy Working Papers, no 21. Paris, OECD.

Escobal, J. (2001) The determinants of nonfarm income diversification in rural Peru.World Development, vol. 29, no. 3, pp. 497-508.

Escobal, J. and C. Ponce (2007) *"Liberalización comercial, tratados de libre comercio y pobreza"*, Lima: GRADE.

Escobal, J. and C. Ponce (2008) Dinámicas provinciales de pobreza en el Perú. GRADE and RIMISP. Lima. Documento de trabajo No. 11 DTR, Rimisp. Santiago de Chile.

EC (2004) A Report on the Functioning of Public Procurement Markets in the EU: Benefits From the Application of EU Directives and Challenges for the Future. Mimeo (http://ec.europa.eu/internal_market/publicprocurement/docs/public-proc-market-final-report_en.pdf)

Etter, A., C. McAlpine, D. C., Pullar D. and H. Posssingham H. (2006) Modelling the conversion of Colombian lowland ecosystems since 1940: Drivers, patterns and rates. Journal of Environmental Management Volume 79, Issue 1,Journal of Environmental Management Volume 79, Issue 1, April 2006, Pages 74-87.

European Commission (2007) Andean Community: Regional Strategy Paper, 2007-13. E/2007/678.

Evenett, S. (2002) 'Multilateral Disciplines and Government Procurement' in Hoekman B. et al, eds. Development, Trade and the WTO. Washington D.C., World Bank.

Follegatti, J.L.L. (1999) Ilo: A city in transformation. Environment and Urbanization, Vol. 11, No. 2, 181-202

Francois, Hoekman and Woerz (2007) Does Gravity Apply to Nontangibles? Estimates of trade and FDI openness in services, Plenary paper at ETSG 2007 annual meetings

Gracia B., C. de Plata, A. Pradilla and J. Leiva (2003) Factores de riesgo para enfermedades de mayor prevalencia en el Valle del Cauca útiles para el desarrollo de estrategias de prevención. Colombia Medica Vol 34 No.1

Guhl Nannetti, E. (2006) Colombia: Ministros de Agricultura y Medio Ambiente tratan la ley forestal. Ambiental.net, CLAES.

Gudynas, E. (2009) La ecología política del giro biocéntrico en la nueva Constitución de

Günter, S., M. Weber, R. Erreis and N. Aguirre (2007). 'Influence of distance to forest edges on natural regeneration of abandoned pastures: a case study in the tropical mountain rain forest of Southern Ecuador'. *European Journal of Forest Research*, vol. 126(1)

Ecuador Revista de Estudios Sociales No. 32

Kirkpatrick, C., C. George and S. Scrieciu (2006) 'Trade Liberalisation in Environmental Services: Why So Little Progress?' *Global Economy Journal*, vol. 6(2).

Hardoy, J. and D. Satterthwaite (2007) Environmental Impacts of Urbanisation. In Veblen, T.T, K.R. Young and A.R. Orme (p322-339) The Physical Geography of South America Oxford University Press, Oxford

Hellqvist, M. (2003) 'Trade facilitation from a developing country perspective'. Sweden, National Board of Trade.

Hernández, C., C. Jaramillo and A.M. Ibáñez (2009) Dinámicas departamentales de pobreza en Colombia 1993-2005. Documento de trabajo No. ... DTR, Rimisp. Santiago de Chile.

Hidalgo, F. and P. Ruiz (2006) Acuerdo Asociación UE-CAN: Quienes ganan y quienes pierden? Un estudio exploratorio sobre el sector agrícola. Anexo 3: Informe Regional Ecuador (Versión final). SIPAE, unpublished report. Ecuador.

Hinojosa, L., J.P. Chumacero and M. Chumacero (2009) Dinámicas provinciales de bienestar en Bolivia. Documento de trabajo No. 49. DTR, Rimisp. Santiago de Chile.

Hinojosa, L. (2006). 'Institutions, markets and economic development in the Southern Peruvian Andes'. PhD thesis. University of Manchester.

Hinojosa, L. (2009) Riqueza mineral y pobreza en los Andes. Paper prepared for delivery at the 2009 Congress of the Latin American Studies Association, Rio de Janeiro, Brazil June 11-14, 2009.

Hinojosa, L. and A. Bebbington (Forthcoming). Transnational companies and transnational civil society. In Birch et al (eds.) The Rise and Fall of Neoliberalism: The Collapse of an Economic Order? Zed Books, London.

IADB (2008) RG-T1503: Regional strategic framework for protection of non-contacted indigenous people. Washington DC.

Hinojosa L., J.P. Chumacero and M. Chumacero (2009) Dinámicas provinciales de pobreza en Bolivia. RIMISP. Manchester y La Paz. Unpublished report.

ILO (2006), Panorama Laboral 2006, Lima: International Labour Organisation.

IMF (2007) Peru: Staff Report for the 2006 Article IV Consultation and Request for Stand-By Arrangement. Washington DC

Inurritegui, M., I. Camacho, J. Ludena and others (2008). Acuerdo Asociación UE-CAN: quienes ganan y quienes pierden? CEPES. Unpublished report.

IPCC Special Report (1997) The Regional Impacts of Climate Change: An Assessment of Vulnerability

IPCC Technical Paper V (2002) Climate Change and Biodiversity

IPCC Technical Paper VI (2008) Climate Change and Water

Iwanow, T. and C. Kirkpatrick (2006) 'Trade facilitation, regulatory quality and export performance: a panel data gravity model approach'. *IARC Working Paper,* University of Manchester

Kathuria, V. (2006) 'Controlling water pollution in developing and transition countries—lessons from three successful cases'. *Journal of Environmental Management* 78, pp. 405–426

Kaufmann, D., A. Kraay and M. Masiruzzi (2008) Governance Matters VII: Governance Indicators for 1996-2007 World Bank

Kirkpatrick, C. (2006) 'Trade in Environmental Services: The Implications for Developing Countries in

the GATS'. International Centre for Trade and Sustainable Development (ICTSD) Issues Paper no 3. ICSTD:Geneva

Kirkpatrick, C., D. Parker and C. Figuera (2007) 'Infrastructure regulation and poverty reduction in developing countries'. Quarterly Review of Economics and Finance

Kirkpatrick, C. and D. Parker (2005) 'Domestic Regulation and the WTO: The Case of Water Services in Developing Countries'. World Economy, vol. 28(10), pp. 1491–1508

Kirkpatrick, C. and K. Shimamoto (2007) 'The Effect of Environmental Regulation on the Locational Choice of Japanese Foreign Direct Investment'. Applied Economics.

Larrea, C., R. Landín, A.I. Larrea, W. Wrborich and R. Fraga (2008)Mapas de pobreza, consumo por habitante y desigualdad social en el ecuador: 1995 – 2006. Metodologia y resultados. Documento de trabajo No. 13. DTR, Rimisp. Santiago de Chile.

Maajid, N. (2001). Economic growth, social policy and decent work. Employment Paper 2001/19. ILO. Geneva.

Mattoo, A., R. Rathindran and A. Subramanian (2001) 'Measuring Services Trade Liberalization and Its Impact on Economic Growth: An illustration'. World Bank Working Paper.

Narvaez, L.C.(2001) Pobreza en Colombia. Observatorio de la Economía Latinoamericana. http://www.scribd.com/doc/124049/Pobreza-en-Colombia

OECD (2006) Novel Features in OECD Countries' Recent Investment Agreements; an Overview Paris

OECD (2002) 'Business Benefits of Trade Facilitation'. TD/TD/WP(2001)21/FINAL.

OECD (2003a) 'Quantitative Assessment of the Benefits of Trade Facilitation'. TD/TD/WP(2003)31/FINAL.

OECD (2003b) 'Trade Facilitation Reforms in the Service of Development'. TD/TD/WP(2003)11/FINAL.

OECD (2004a) 'The Costs of Introducing and Implementing Trade Facilitation Measures: Interim Report'. TD/TC/WP(2004)36/FINAL.

OECD (2005) *National Strategies for Sustainable Development: Good Practices in OECD Countries.* SG/SD(2005)6, Paris, OECD.

OECD (2005a) 'The Economic Impact of Trade Facilitation'. TD/TC/WP(2005)12/FINAL.

OECD (2005b) 'Quantifying the trade and economic effects of non tariff measures'. TD/TC/WP(2005)26/FINAL.

OECD (2005c) 'Trade Facilitation Reforms in the Service of Development: Country Case Studies'. TD/TD/WP(2004)4/FINAL.

Office of the US Trade Representative (2005) Interim Environmental Review: US-Andean Free Trade Agreement, February

Office of the US Trade Representative (2005) Interim Environmental Review: US-Andean Free Trade Agreement, February

Reardon, T., J. Berdegué and G. Escobar (2001) Rural nonfarm employment and incomes in Latin America: Overview and policy implications. *World Development*, vol. 29, no. 3, pp. 395-409

Ruiz, D., H.A. Moreno, M.E. Gutiérrez and P.A. Zapata (2007) Changing climate and endangered high mountain ecosystems in Colombia. Exploratory analysis of changes in climate conditions – Case study: Los Nevados Natural Park, Andean Central Mountain Range

Salguero, S. P. (2009, August 18). *Comments on EU-Andea Trade SIA* . Columbia: Ministry of Commerce, Industry and Tourism, Republic of Colombia.

Sanjines, E.Esteban (2005) Análisis de los decretos promulgados durante el gobierno de Carlos Mesa. Fundación Tierra.

Schaedel, R.P. (1982). From Homogenization to Heterogenization in Lima, Peru. Urban Anthropology 3(2): 139-170.

Slunge, D. and R. Jalden (2007) Bolivia Environmental Policy Brief: Environmental Sustainability, Poverty and the National Development Plan. School of Economics and Commercial Law. Gotenborg University

Skinner, A.Skinner Anthony (2009) Expropriation and Nationalisation Loom Large in Latin America, Maplecroft. Gtnews, AFP Global Network.

Soberon, R. (1997) Corruption, drug trafficking and the armed forces. An approximation for Latin America. TNI/Accion Andina/CEDIB.

Stiglitz, J. and A. Charlton (2006) Fair Trade for All: How Trade Can Promote Development. Oxford, Oxford University Press.

Swyngedouw, E. (1995) La Crisis del Abastecimiento de Agua en Guayaquil ILDIS, Quito

Te Velde, D. W. and M. Fahnbulleh (2006) 'Investment and Economic Partnership Agreements'. EU-ACP Negotiations in Focus, Capacity Building in Support for the Preparation of Economic Partnership Agreements.

Te Velde, D. W. and D. Bezemer (2006) 'Regional integration and foreign direct investment in developing countries'. Transnational Corporations, vol. 15(2).

Toasa, J. (2009) 'Colombia: A New Ethanol Producer on the Rise?' USDA, WRS-0901

UDAPE (2006) Pobreza y desigualdad en municipios de Bolivia. Segunda Edición. UDAPE, INE, La Paz.

UNCTAD (2006) Investment Provisions in Economic Integration Agreements. Geneva and New York, UN.

UNCTAD (2007) World Investment Report.

UNCTAD (2008) World Investment Report

UNCTAD (2009) Services, Development and Trade: the Regulatory and Institutional Dimension. TD/b/c.1/MEM.3/2

UNDP (2008) Human Development Report 2007-2008. http://hdrstats.undp.org/indicators/147.html

UNEP (2003) Global Environmental Outlook –Latin America and Caribbean

UNEP (2007) Global Environmental Outlook (GEO4).

UNICEF (2005) Child poverty in Latin America. *Challenges* No. 1.

Urioste, M. (2001) Bolivia: fortalecimiento de los derechos de propiedad de los recursos naturales. Fundación Tierra.

USGS (2007) 2007 Minerals Yearbook. Bolivia (advance release). U.S. Department of the Interior, U.S. Geological Survey.

USGS (2007) 2007 Minerals Yearbook. ECUADOR (advance release). U.S. Department of the Interior, U.S. Geological Survey.

USGS (2007a) 2007 Minerals Yearbook. Colombia (advance release). U.S. Department of the Interior, U.S. Geological Survey.

USGS (2007) 2007 Minerals Yearbook. Peru (advance release). U.S. Department of the Interior, U.S. Geological Survey.

Vergara, W. (2007) The Impacts of Climate Change in Latin America. World Bank Latin American and Caribbean Region Sustainable Development Working Paper 30. Visualizing Future Climate in Latin America: Results from the application of the Earth Simulator

Wessendorf, K. (ed.) (2008) The indigenous world. IWGIA. Transaction Publishers. New Jersey.

World Bank (2006) Bolivia, Public Policy Options for the Well Being of All. Washington DC

World Bank (2007) Environmental Priorities and Poverty Reduction: Country Environmental Analysis for Colombia. World Bank, Washington DC.

World Bank (2009) Country Data and Statistics (www.worldbank.org)

World Bank (2009a) Doing Business Report: Trading Across Borders

WTO (2005) Bolivia Trade Policy Review. Geneva

WTO (2005a) Ecuador Trade Policy Review. Geneva

WTO (2007) Colombia Trade Policy Review. Geneva

WTO (2007a) Peru Trade Policy Review. Geneva

WWF (1999) World Ecoregions - Biological Distinctiveness. http://www.geographynetwork.com/explorer/explorer.jsp?goTo=search&extent=-180,-90,180,90&keyword=wwf&place=&type=007&typeText=%A0%A0Geographic%20Services&theme=0&themeText=%3CAll%20Content%20Themes%3E

Yale Center for Environmental Law and Policy (2008) 2008 Environmental Performance Index

Websites:

http://www.conservation.org

World Bank Key Development Data & Statistics.

United Nations Environment Programme Early Warning and Assessment GEO Latin America and the Caribbean Data Portal.

WHOSIS: World Health Organisation Statistical Information System

Energy Information Administration

CIA World Factbook

WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation

UNDP: http://hdrstats.undp.org/indicators/147.html

http://www.unep.org/tnt-unep/toolkit/pollutants/

http://www.worldwater.org/data.html

http://www.inei.gob.pe/

http://www.cenicana.org

6. ANNEXES

Annex 1: Environmental Baseline Indicators

Table A1

	Source	Bolivia	Colombia	Ecuador	Peru
Surface Area (sq. Km) (Thousands)	1	1,098.6	1,141.8	283.6	1,285.2
Surface Area (1.000 hectares)	2	108438	110950	27684	128000
Forest Area (sq. Km) (Thousands)2005	1	587.4	607.3	108.5	687.4
Total Protected Area (1.000 hectares) 2004	2	11529	9647	18287	7832
Agricultural land (% of land area) 2005	1	34.8	38.4	27.3	16.6
Hydroelectric consumption (billion KWH) 2006	5	2.14	39.9	7.06	19.4
Total electricity consumption (billion KWH) 2007	6	5.092	52.8	12.9	28.97
Electricity consumption from Hydroelectric (% total electricity consumption)	-	42%	74.4%	54.7%	67%

Table A2 Water Data

	Source	Bolivia	Colombia	Ecuador	Peru
Water use agricultural (%) 2000	2	83.0	46.0	82.0	-
Water use domestic (%) 2000	2	13.0	50.0	12.0	-
Water use industrial (%) 2000	2	3.0	4.0	5.0	-
Rural population with access to drinking water (%) 2004	2	68.0	71.0	89.0	-
Urban population with access to drinking water (%) 2004	2	95.0	99.0	97.0	-
Access to Improved Drinking Water[259] 1970 (% population)	4	33	63	34	35
Access to Improved Drinking Water[260] 2004 (% population)	4	85	93	94	83

[259] '**Improved water sources** include household connections, public standpipes, boreholes, protected dug wells, protected springs, and rainwater collections. **Unimproved water sources** are unprotected wells, unprotected springs, vendor-provided water, bottled water (unless water for other uses is available from an improved source) and tanker truck-provided water'

Table A3 Sewerage connections

% of population with sewerage connections	Source	1988	1989	1990	1992	2003	2005
Bolivia Urban	7		43.0			49.9	
Bolivia Rural	7		4.0			3.0	
Colombia Urban	7			89.0			92.0
Colombia Rural	7			17.0			25.0
Ecuador Urban	7	68.0				74.0	
Ecuador Rural	7	7.0				54.0	
Peru Urban	7				60.0		81.0
Peru Rural	7				3.0		8.0

Table A4 Air quality

	Source	Bolivia	Colombia	Ecuador	Peru
Rural population using solid fuels[261] (%) 2003	3	80.0	48.0	8.0	90.0
Urban population using solid fuels[262] (%) 2003	3	5.0	3.0	1.0	13.0

Table A5 Urbanisation

	Source	Bolivia	Colombia	Ecuador	Peru
Population total (millions) 2007	1	9.52	46.12	13.34	27.90
Population growth (annual %) 1990	3	2.3	1.9	2.3	2.1
Population growth (annual %) 2006	3	1.9	1.4	1.1	1.1
Population living in urban areas (%) 1970	2	35.4	49.7	39.5	-
Population living in urban areas (%) 1990	3	56.0	69.0	55.0	69.0
Population living in urban areas (%) 2006	3	65.0	73.0	63.0	73.0
Urban population residing in urban agglomerations with 750,000 or more inhabitants (%) 2005	2	31.0	36.0	30.0	-

[261] WHO – 'The use of solid fuels in households is associated with increased mortality from pneumonia and other acute lower respiratory diseases among children as well as increased mortality from chronic obstructive pulmonary disease and lung cancer (where coal is used) among adults. It is also a Millennium Development Goal indicator.'

Source 1: World Bank Key Development Data & Statistics
Source2: United Nations Environment Programme Early Warning and Assessment GEO Latin America and the Caribbean Data Portal
Source 3: WHOSIS: World Health Organisation Statistical Information System
Source 4: http://www.worldwater.org/data.html
Source 5: Energy Information Administration
Source 6: CIA World Factbook
Source 7: WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation

Annex 2. Technical Annex

A 2.1 Overview

The CGE model is based on Francois, van Meijl, and van Tongeren (2005), and is similar to World Bank, CEPII, and CPB global models. It is a multi-sector, multi-region model of the global economy. Estimated effects are based on a projected 2018 baseline. This baseline assumes a successful Doha Round as well as implementation of major regional agreements.[263] It is also built around medium-run macroeconomic forecasts from the World Bank, IMF, and OECD. From this baseline, we have estimated the impact, both immediate and medium-term (following investment responses) of NTM liberalisation. The immediate impact (short-run) estimates described below reflect the possible impact, on the 2018 baseline, if the relevant trade agreement was only implemented in 2018. The medium-term, in contrast, provides an estimate of how the 2018 baseline would look if the agreement had been implemented far enough in the past (approximately 7 to 10 years) so that the full set of investment impacts have already been realised. Hence, the short-run estimates are immediate, while the long-run give a sense of the difference in economic activity allowing for investment responses.

An important feature of the model involves a savings-investment-capital link, whereby the static or direct income effects of trade liberalisation induce shifts in the regional pattern of savings and investment. These effects have been explored extensively in the trade literature, including Baldwin and Francois (1999), Smith (1976, 1977), and Srinivasan and Bhagwati (1980). Several studies of regional and multilateral trade agreements have also incorporated variations on this mechanism. Such effects compound initial output welfare effects over the medium-run, and can magnify income gains or losses. How much these "accumulation effects" will supplement static/short term effects depends on a number of factors, including the marginal product of capital and underlying savings behaviour. In the present application, we work with a classical savings-investment mechanism (Francois et al 1996). This means we model medium- to long-run linkages between changes in income, savings, and investment. The results reported here therefore include changes in the capital stock, and the medium- to long-run implications of such changes.

The resulting estimates can be viewed as including two sets of effects. Our short-run or static estimates correspond to the impact of an agreement as observed in 2018, if the agreement was fully introduced and implemented in 2018. The longer-term (dynamic) estimates provide an overview of the observed impact in 2018, of the agreement had already been in place for several years, such that investment effects are fully realised. Hence, the estimates with capital accumulation provide a sense of the eventual outcome from dynamic gains linked to the agreement.

The data scheme is outlined in the tables below. Original data are from GTAP7, though values are expressed in 2004 euro prices rather than dollar prices (and the database is projected.)

Model Regions

[263] Given the aggregation scheme of the model, the background implementation of regional agreements into the baseline does not matter a great deal for the model, though full DDA implementation as discussed below does.

European Union	Mercosur
Bolivia	United States
Colombia	Other LDCs
Ecuador	Rest of World
Peru	

Model Sectors

Primary production	*Manufacturing*	*Services*
Grains (paddy rice, wheat, cereals)	textiles	utilities
vegetables, fruit, nuts	wearing apparel	construction
other primary food (oil seeds, unprocessed sugar cane & beets)	leather products	distribution
other agriculture (plant based fibres, crops nec, wool, silk worm cocoons)	wood products	other transport
forestry	paper products, publishing	maritime
primary fishing	petroleum, coal products	air transport
primary mining	chemicals, rubber, and plastic products	communications
processed foods, beverages, tobacco (meats & meat prods, vegetable oils and fats, dairy, milled rice, sugar, food products nec, beverages, tobacco)	mineral products nec	financial services
	ferrous metals	insurance
	metals nec	business services nec
	metal products	recreation and other services
	motor vehicles and parts	public services and dwellings
	other transport equipment	
	electronic equipment	
	other machinery and equipment	
	manufactures nec	

A 2.2 General Model Structure

The general conceptual structure of a regional economy in the model is as follows: Firms produce output, employing land, labour, capital, and natural resources and combine these with intermediate inputs, within each region/country. Firm output is purchased by consumers, government, the investment sector, and by other firms. Firm output can also be sold for export. Land is only employed in the agricultural sectors, while capital and labour (both skilled and unskilled) are mobile between all production sectors. While capital is assumed to be fully mobile within regions, land, labour and natural resources are not.

Fig. A-1 Nested production structure

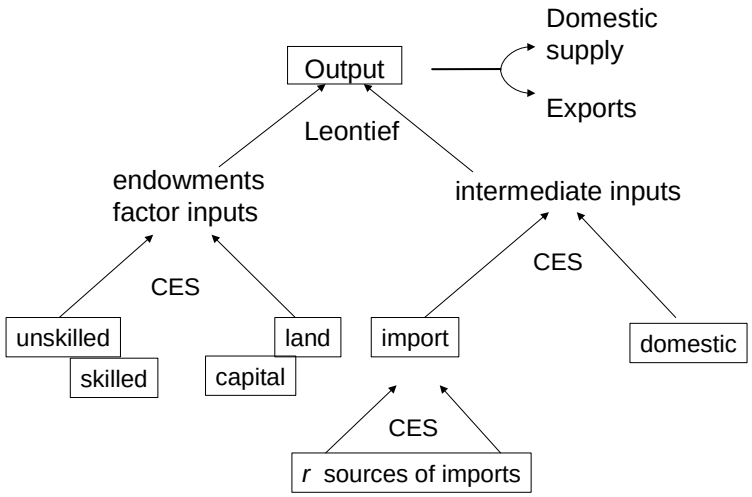
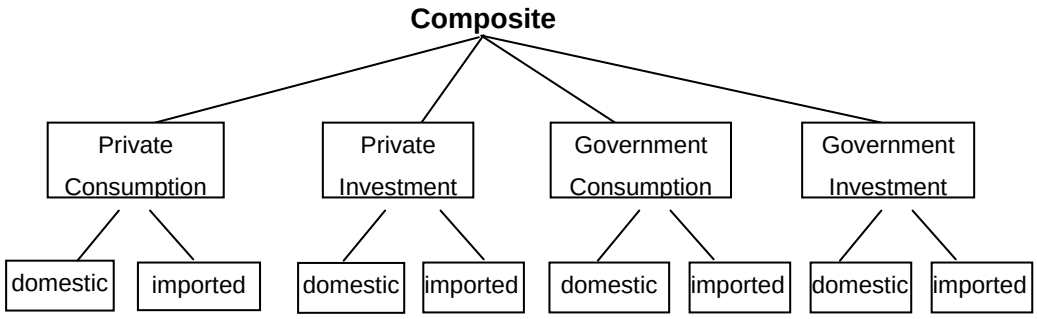


Fig. A-2 Consumption Structure



A 2.3 Taxes and policy variables

Taxes are included in the theory of the model at several levels. Production taxes are either placed on intermediate or primary inputs, or on output. Some trade taxes are modelled at the border. There are also additional internal taxes that can be placed on domestic or imported intermediate inputs, and may be applied at differential rates that discriminate against imports. Where relevant, taxes are also placed on exports, and on primary factor income. Finally, where indicated by social accounting data as being relevant, taxes are placed on final consumption, and can be applied differentially to consumption of domestic and imported goods.

Policy data comes from many sources. In the GTAP database, tariffs are based on HS tariff line data, from MacMAPS, the WTO, and WITS as implemented in the GTAP7 database. It's also important to note that many developing countries in the GTAP database receive significant preferences from OECD countries. These preferences are included in the baseline data. The applied tariffs, based on applied MFN and preferential rates, are implemented in the model on a trade-weighted basis by partner and sector.

Post-Doha tariff estimates are based on the range of coefficients in the recent (2008) set of Doha modalities texts (NAMA and agriculture. The problems in defining the post-Doha baseline for tariffs relate to agriculture rather than NAMA. Sensitive and special products are one of the most complex issues in the WTO negotiations. WTO members are allowed to freely choose the products they classify as sensitive, which causes considerable uncertainty about the outcome of this selection process and makes them very difficult to handle in simulations. The data we work with for the DDA in agriculture come from the German Federal Agriculture Research Institute - the Johann Heinrich von Thünen Institute (vTI). It follows the procedure outlined by Brockmeier and Pelikan (2008).[264] An advantage of the 2018 baseline is that it moves us past uncertainty about when the DDA will end, and about short-run assumptions about macroeconomic conditions. It also important to note that all the countries involved already receive significant preferences from the EU. These preferences are included in the baseline. Critically, we also assume the implementation of DDA tariff modalities on sensitive products by the EU in agriculture (bananas and sugar in particular) based on consultations with the EC on a likely outcome. The baseline scenario therefore represents a "most likely" scenario.

Services barriers come from two sources. For the Andean countries, we have gravity estimates from Francois, Hoekman, and Woerz (2007) for trade in commercial services. We have used this as the benchmark rate of protection. For the EU, we have taken estimates of EU barriers against extra-EU partners from ongoing research with DG-Trade on EU non-tariff barriers affecting trade with Canada, Japan, and the United States. These estimates are more sector-specific (unpublished source: "Draft Study on EU-US Non-Tariff Measures", ECORYS led project consortium report, 2009). For the Andean countries, average trade costs in services are as follows: Bolivia 40 percent, Colombia 33 percent, Ecuador 35 percent, and Peru 32 percent.

[264] Brockmeier, M. and J. Pekikan (2008), "Agricultural market access: A moving target in the WTO negotiations?" *Food Policy* 33: 250–259.

A 2.4 Technical aspects of transport, trade facilitation, and services barriers

International trade is modelled as a process that explicitly involves trading costs, which include both trade and transportation services. These trading costs reflect the transaction costs involved in international trade, as well as the costs of the physical activity of transportation itself. Those trading costs related to international movement of goods and related logistic services are met by composite services purchased from a global trade services sector, where the composite "international trade services" activity is produced as a Cobb-Douglas composite of regional exports of trade and transport service exports. Trade-cost margins are based on reconciled f.o.b. and c.i.f. trade data.

Frictional trading costs, is another form of trade costs identified in literature. These costs are implemented in the service sector. They represent real resource costs associated with producing a service for sale in an export market instead of the domestic market. Conceptually, we have implemented a linear transformation technology between domestic and export services. This technology is depicted in Annex Figure 1 below. The straight line AB indicates, given the resources necessary to produce a unit of services for the domestic market, the feasible amount that can instead be produced for export using those same resources. If there are not frictional barriers to trade in services, this line has slope -1. This free-trade case is represented by the line AC. As we reduce trading costs, the linear transformation line converges on the free trade line, as indicated in the figure. This approach is used for liberalisation of non-tariff measures, affecting both goods and services, where they are modelled as increasing the cost of goods and services sold to trading partners.

A 2.5 Market Structure

A 2.5.1 Demand for imports: Armington sectors

The basic structure of demand in constant returns sectors is Armington preferences. In Armington sectors, goods are differentiated by country of origin, and the similarity of goods from different regions is measured by the elasticity of substitution. Formally, within a particular region, we assume that demand for goods from different regions is aggregated into a composite import according to the following CES function:

$$q^{M}_{j,r} = \left[\sum_{i=1}^{R} \alpha_{j,i,r} M^{\rho_j}_{j,i,r} \right]^{1/\rho_j}$$

(1)

where $M_{j,i,r}$ is the quantity of imports in sector j from region *i* consumed in region *r*. The elasticity of substitution between varieties from different regions is then equal to σ^{M}_{j} , where $\sigma^{M}_{j}=1/(1-\rho_j)$. Composite imports are combined with the domestic good q^{D} in a second CES nest, yielding the Armington composite *q*.

(2)

$$q_{j,r} = \left[\Omega_{j.M.r} \left(q^{M}_{j,r} \right)^{\beta_j} + \Omega_{j,D,r} \left(q^{D}_{j,r} \right)^{\beta_j} \right]^{1/\beta_j}$$

The elasticity of substitution between the domestic good and composite imports is then equal to σ^{D}_{j}, where $\sigma^{D}_{j}=1/(1-\beta_j)$. At the same time, from the first order conditions, the demand for import $M_{j,i,r}$ can then be shown to equal

(5)

$$\begin{aligned} M_{j,i,r} &= \left[\frac{\alpha_{j,i,r}}{P_{j,i,r}} \right]^{\sigma^{m}_{i}} \left[\sum_{i=1}^{R} \alpha^{\sigma^{M}_{j}}_{j,i,r} P^{1-\sigma^{M}_{j}}_{j,i,r} \right]^{-1} E^{M}_{j,r} \\ &= \left[\frac{\alpha_{j,i,r}}{P_{j,i,r}} \right]^{\sigma^{M}_{j}} \left(P^{M}_{j,r} \right)^{\sigma^{M}_{j}-1} E^{M}_{j,r} \end{aligned}$$

where $E^{M}_{j,r}$ represents expenditures on imports in region *r* on the sector *j* Armington composite. In practice, the two nests can be collapsed, so that imports compete directly with each other and with the corresponding domestic product. This implies that the substitution elasticities in equations (2) and (3) are equal.

A 2.5.2 Imperfect competition

As indicated in Annex Table 1, we model manufacturing sectors and service sectors as being imperfectly competitive. The approach we follow has been used in the Michigan and the WTO assessment of the Uruguay Round, and many recent studies of the Doha Round (see Francois et al 2005). Recent model testing work indicates that this approach works "best" vis-à-vis Armington models, when tracked against actual trade patterns (i.e. Fox (1999), uses the U.S.-Canada FTA as a natural experiment for model testing).

Formally, within a region *r*, we assume that demand for differentiated intermediate products belonging to sector *j* can be derived from the following CES function, which is now indexed over firms or varieties instead of over regions.

(4) $$q_{j,r} = \left[\sum_{i=1}^{n} \gamma_{j,i,r} X_{j,i,r}^{\Gamma_j} \right]^{1/\Gamma_j}$$

Where $\gamma_{j,i,r}$ is the demand share preference parameter, $X_{j,i,r}$ is demand for variety *i* of product *j* in region *r*, and $\sigma_j = 1/(1-\Gamma_j)$ is the elasticity of substitution between any two varieties of the good. Note that we can interpret *q* as the output of a constant returns assembly process, where the resulting composite product enters consumption and/or production. Equation (4) could therefore be interpreted as representing an assembly function embedded in the production technology of firms that use intermediates in production of final goods, and alternatively as representing a CES aggregator implicit in consumer utility functions. In the literature, and in our model, both cases are specified with the same functional form. While we have technically dropped the Armington assumption by allowing firms to differentiate products, the vector of γ parameters still provides a partial geographic anchor for production (Francois and Roland-Holst 1997, Francois 1998).

Firms in different regions/countries compete directly on a global level. Firms are assumed to exhibit monopolistically competitive behaviour. This means that individual firms produce unique varieties of good or service *j*, and hence are monopolists within their chosen market niche. Given the demand for variety, reflected in equation (4), the demand for each variety is less than perfectly elastic. However, while firms are thus able to price as monopolists, free entry (at least in the long-run) drives their economic profits to zero, so that pricing is at average cost. The joint assumptions of average cost pricing and monopoly pricing, under Bertrand behaviour, imply the following conditions for each firm f_i in region i:

(5)
$$\zeta_{j,f_i} = \sum_{r=1}^{R} \frac{X_{j,f_i,r}}{X_{j,f_i}} \left(\sum_{k=1}^{n} \left(\frac{\alpha_{j,k,r}}{\alpha_{j,f_i,r}} \right)^{\sigma_j} \left(\frac{P_{j,k,r}}{P_{j,f,r}} \right)^{1-\sigma_j} \right)^{-1}$$

(6)
$$P_{f,i} = AC_{f,i}$$

The elasticity of demand for each firm f_i will be defined by the following conditions.

(7)
$$\varepsilon_{j,f,i} = \sigma_j + (1-\sigma_j)\zeta_{j,f,i}$$

(8)
$$\frac{P_{f,i} MC_{f,i}}{P_{f,i}} = \frac{1}{\varepsilon_{f,i}}$$

In a fully symmetric equilibrium, we would have $\zeta=n^{-1}$. However, the calibrated model includes CES weights γ in each regional CES aggregation function, that will vary for firms from different regions/countries. Under these conditions, ζ is a quantity weighted measure of market share. To close the system for regional production, we index total resource costs for sector *j* in region *i* by the resource index *Z*. Full employment of resources hired by firms in the sector *j* in region *i* then implies the following condition.

(9)
$$Z_{j,i} = \sum_{f=1}^{n_i} TC_{j,i,f}$$

Cost functions for individual firms are defined as follows:

(10)
$$C(x_{j,i}) = (a_{j,i} + b_{j,i}\ x_{j,i})\ P_{Z_{j,i}}$$

This specification of monopolistic competition is implemented under the "large group" assumption, which means that firms treat the variable n as "large", so that the perceived elasticity of demand equals the elasticity of substitution. The relevant set of equations then collapses to the following:

(11)
$$q_{j,r} = \left[\sum_{i=1}^{R} \bar{\gamma}_{j,i,r}\ \bar{x}_{j,i,r}^{\Gamma_j} \right]^{\frac{1}{\Gamma_j}}$$

$$\bar{\gamma}_{j,i,r} = \alpha_{j,i,r}\ n_{j,i\ 0}^{1-\Gamma_j}$$

$$\bar{x}_{j,i,r} = \left(\frac{n_{j,i}}{n_{j,i\ 0}} \right)^{(1-\Gamma_j)/\Gamma_j} X_{j,i,r}$$

(12)
$$\bar{x}_{j,i} = \left(\frac{Z_{j,i\ 1}}{Z_{j,i\ 0}} \right)^{(1-\rho_j)/\rho_j} X_{j,i}$$

In equation (12), n_0 denotes the number of firms in the benchmark. Through calibration, the initial CES weights in equation (12) include the valuation of variety. As a result, the reduced form exhibits external scale effects, determined by changes in variety based on firm entry and exit, and determined by the substitution and scale elasticities.

A 2.6 The composite household and final demand structure

Final demand is determined by an upper-tier Cobb-Douglas preference function, which allocates income in fixed shares to current consumption, investment, and government services. This yields a fixed savings rate. Government services are produced by a Leontief technology, with household/government transfers being endogenous. The lower-tier nest for current consumption is also specified as a Cobb-Douglas. The regional capital markets adjust so that changes in savings match changes in regional investment expenditures.[265]

[265]Note that the Cobb-Douglas demand function is a special case of the CDE demand function employed in the standard GTAP model code. It is implemented through GEMPACK parameter files.

A 2.7 Capital Accumulation and Investment

An important feature of the model involves a savings-investment-capital link, whereby the static or direct income effects of trade liberalisation induce shifts in the regional pattern of savings and investment. These effects have been explored extensively in the trade literature, including Baldwin and Francois (1999), Smith (1976, 1977), and Srinivasan and Bhagwati (1980). Several studies of regional and multilateral trade agreements have also incorporated variations on this mechanism. Such effects compound initial output welfare effects over the medium-run, and can magnify income gains or losses. How much these "accumulation effects" will supplement static effects depends on a number of factors, including the marginal product of capital and underlying savings behaviour. In the present application, we work with a classical savings-investment mechanism (Francois et al 1996). This means we model medium- to long-run linkages between changes in income, savings, and investment. The results reported here therefore include changes in the capital stock, and the medium- to long-run implications of such changes.

A2.8 Economic Modelling Results: Sectoral changes in output and trade by country

A2.8.1 European Union

Table A8: Changes in Sectoral Output, EU27 (percentage change)

	Static/ Short term effects		Dynamic/ Long Term Effects		
Sector	Modest Liberalisation	Ambitious Liberalisation	Modest Liberalisation	Ambitious Liberalisation	**Share of total VA**
Grains	0.2	0.2	0.2	0.2	**0.2%**
Vegetables, fruit, nuts	-1.2	-1.2	-1.5	-1.5	**0.5%**
Other primary food	0.1	0.1	0.1	0.1	**0.9%**
Other agriculture	0.2	0.2	0.2	0.2	**0.6%**
Forestry	0.0	0.0	0.0	0.0	**0.2%**
Primary fishing	0.0	0.0	0.0	0.0	**0.2%**
Primary mining	0.0	0.0	0.0	0.0	**0.7%**
Processed foods, beverages, tobacco	0.0	0.1	0.1	0.1	**2.9%**
Textiles	0.0	0.0	-0.1	0.0	**0.5%**
Wearing apparel	0.0	0.0	-0.1	-0.1	**0.5%**
Leather products	0.0	0.0	-0.1	-0.1	**0.2%**
Wood products	0.0	0.0	0.0	0.0	**0.6%**
Paper products, publishing	0.0	0.1	0.0	0.1	**1.6%**
Petroleum, coal products	0.0	0.0	0.0	0.0	**0.1%**
Chemicals, rubber, and plastic products	0.0	0.0	-0.1	0.0	**2.6%**
Mineral products nec	0.0	0.0	0.0	0.0	**0.9%**
Ferrous metals	0.0	0.0	-0.1	0.0	**0.5%**
Metals nec	-0.1	-0.1	-0.2	-0.2	**0.3%**
Metal products	0.0	0.0	0.0	0.0	**1.6%**
Motor vehicles and parts	0.0	0.0	0.0	0.0	**1.7%**
Other transport equipment	-0.1	-0.1	-0.1	-0.1	**0.5%**
Electronic equipment	-0.1	0.0	-0.1	-0.1	**0.8%**
Other machinery and equipment	0.0	0.0	0.0	0.0	**3.6%**
Manufactures nec	0.0	0.1	0.1	0.1	**0.8%**
Utilities	0.0	0.0	0.0	0.0	**1.7%**
Construction	0.0	0.0	0.0	0.0	**6.2%**
Distribution	0.0	0.0	0.0	0.0	**13.1%**
Other transport	0.0	0.0	0.0	0.1	**3.7%**
Maritime	0.0	0.0	0.1	0.1	**0.5%**
Air transport	0.0	0.0	0.1	0.1	**0.4%**
Communications	0.0	0.0	0.0	0.0	**2.2%**
Financial services	0.0	0.0	0.0	0.0	**2.7%**
Insurance	0.0	0.0	0.1	0.1	**1.0%**
Business services nec	0.0	0.0	0.0	0.0	**19.0%**
Recreation and other services	0.0	0.0	0.1	0.1	**3.8%**
Public services and dwellings	0.0	0.0	0.0	0.0	**22.7%**

Source: ICE model simulations.

Table A9: Effect on sector specific imports; EU27

	Static/ Short term effects		Dynamic/ Long Term Effects		
Sector	Modest Liberalisation	Ambitious Liberalisation	Modest Liberalisation	Ambitious Liberalisation	Sectors share of total imports
Vegetables, fruit, nuts	0.9	1.0	0.9	1.0	1.0%
Chemicals, rubber, and plastic products	0.0	0.1	0.0	0.1	12.1%
Motor vehicles and parts	0.0	0.0	0.0	0.0	10.1%
Other machinery and equipment	0.0	0.1	0.0	0.1	12.6%

Source: ICE model simulations.

Table A10: Effect on sector specific exports; EU27

	Static/ Short term effects		Dynamic/ Long Term Effects		
Sector	Modest Liberalisation	Ambitious Liberalisation	Modest Liberalisation	Ambitious Liberalisation	Sectors share of total exports
Vegetables, fruit, nuts	-1.2	-1.4	-1.2	-1.4	0.8%
Other agriculture	0.6	0.8	0.6	0.8	0.6%
Processed foods, beverages, tobacco	0.2	0.2	0.2	0.2	6.2%
Paper products, publishing	0.2	0.3	0.2	0.3	2.6%
Chemicals, rubber, and plastic products	0.0	-0.1	0.0	0.0	13.2%
Motor vehicles and parts	0.0	0.0	0.0	0.0	11.5%
Other machinery and equipment	0.1	0.1	0.1	0.1	15.4%
Manufactures nec	0.3	0.4	0.3	0.4	1.6%
Other transport	0.1	0.3	0.2	0.4	1.8%
Insurance	0.2	0.4	0.2	0.4	1.5%
Business services nec	0.1	0.2	0.1	0.2	8.3%
Recreation and other services	0.4	0.8	0.4	0.9	1.4%

Source: ICE model simulations.

A2.8.2 Bolivia

Table A11: Changes in Sectoral Output, Bolivia (percentage change)

	Static/ Short term effects		Dynamic/ Long Term Effects		
Sector	Modest liberalisation	Ambitious liberalisation	Modest liberalisation	Ambitious liberalisation	**Share of total VA**
Grains	0.4	0.8	0.7	1.2	2.7%
Vegetables, fruit, nuts	0.2	0.5	0.4	0.8	5.4%
Other primary food	0.2	0.4	0.3	0.5	8.5%
Other agriculture	-0.3	-0.3	-0.4	-0.5	1.2%
Forestry	0.1	0.3	0.2	0.6	1.3%
Primary fishing	0.0	0.1	0.1	0.2	0.6%
Primary mining	0.1	0.2	0.2	0.3	10.7%
Processed foods, beverages, tobacco	0.3	0.5	0.5	1.0	2.9%
Textiles	8.1	16.8	10.2	20.8	0.2%
Wearing apparel	1.2	2.7	1.9	4.1	0.7%
Leather products	2.7	6.1	3.5	7.7	0.4%
Wood products	0.7	1.2	0.8	1.3	0.9%
Paper products, publishing	-1.6	-2.2	-0.6	-0.3	0.5%
Petroleum, coal products	0.1	0.3	1.0	1.9	0.4%
Chemicals, rubber, and plastic products	-5.7	-8.1	-4.3	-5.2	0.5%
Mineral products nec	0.2	0.9	0.9	2.3	1.2%
Ferrous metals	1.0	2.5	2.4	5.4	0.0%
Metals nec	2.8	7.0	2.8	7.0	0.0%
Metal products	0.3	1.2	1.3	3.1	0.1%
Motor vehicles and parts	-3.2	-3.0	-1.1	1.0	0.0%
Other transport equipment	2.7	4.4	4.0	6.9	0.1%
Electronic equipment	-3.6	-3.1	-1.7	0.6	0.0%
Other machinery and equipment	7.9	16.3	15.3	31.1	0.4%
Manufactures nec	1.4	2.7	2.0	3.9	0.7%
Utilities	1.0	2.5	2.8	6.0	0.8%
Construction	0.9	1.5	1.0	1.8	3.1%
Distribution	0.7	1.8	2.1	4.5	8.7%
Other transport	0.0	-0.2	0.7	1.2	7.8%
Maritime	-0.4	-1.1	0.2	0.1	0.4%
Air transport	-2.2	-5.7	-1.4	-4.3	1.4%
Communications	2.4	3.7	3.2	5.3	1.3%
Financial services	-1.7	-3.8	-1.3	-3.1	4.2%
Insurance	-10.0	-19.1	-10.4	-19.8	1.1%
Business services nec	-4.4	-9.8	-3.7	-8.5	2.7%
Recreation and other services	-4.8	-10.0	-4.8	-10.3	0.8%
Public services and dwellings	0.4	0.9	1.0	2.0	28.2%

Source: ICE model simulations.

TableA12: Effect on sector specific imports; Bolivia

	Static/ Short term effects		Dynamic/ Long Term Effects		
Sector	Modest Liberalisation	Ambitious Liberalisation	Modest Liberalisation	Ambitious Liberalisation	Sectors share of total imports
Processed foods, beverages, tobacco	2.0	3.3	2.8	4.9	7.5%
Textiles	-1.6	-2.8	-1.5	-2.7	3.8%
Chemicals, rubber, and plastic products	2.9	4.7	3.3	5.5	16.9%
Other machinery and equipment	-1.5	-3.2	-4.1	-8.1	13.7%
Construction	26.1	60.6	26.1	60.6	0.3%
Distribution	17.7	40.9	17.7	40.9	0.7%
Other transport	16.1	37.0	16.2	37.6	1.4%
Maritime	15.9	37.7	15.9	37.7	0.1%
Air transport	9.0	18.3	9.4	19.3	3.6%
Communications	18.7	41.7	18.7	41.0	0.3%
Financial services	12.8	28.3	15.3	33.7	2.5%
Insurance	1.4	2.2	2.3	3.8	7.5%
Business services nec	19.5	40.9	19.9	41.9	3.0%

Source: ICE model simulations.

Table A13: Effect on sector specific exports; Bolivia

	Static/ Short term effects		Dynamic/ Long Term Effects		
Sector	Modest Liberalisation	Ambitious Liberalisation	Modest Liberalisation	Ambitious Liberalisation	Sectors share of total exports
Grains	10.0	13.7	9.0	11.8	0.6%
Primary mining	-0.1	-0.4	-0.8	-1.8	31.3%
Processed foods, beverages, tobacco	0.9	1.1	0.8	0.8	18.5%
Textiles	9.4	19.8	11.4	23.7	1.5%
Wearing apparel	4.3	8.8	5.4	10.7	1.5%
Leather products	8.3	20.1	9.3	22.0	0.9%
Other machinery and equipment	9.9	20.1	18.3	37.3	10.5%
Air transport	6.2	9.9	6.6	10.7	4.2%
Communications	13.3	22.2	14.3	24.0	2.2%
Insurance	11.9	22.3	11.0	20.5	0.7%

Source: ICE model simulations.

A2.8.3 Colombia

Table A14: Changes in Sectoral Output, Colombia (percentage change)

	Static/ Short term effects		Dynamic/ Long Term Effects		
Sector	Modest Liberalisation	Limited Liberalisation	Modest Liberalisation	Limited Liberalisation	**Share of total VA**
Grains	-3.5	-4.3	-3.6	-4.4	**0.8%**
Vegetables, fruit, nuts	9.8	11.5	9.7	11.2	**2.9%**
Other primary food	-1.6	-1.8	-1.5	-1.5	**3.9%**
Other agriculture	-4.2	-4.7	-4.4	-5.1	**1.8%**
Forestry	-1.0	-1.1	-0.9	-1.0	**0.3%**
Primary fishing	-0.3	-0.3	-0.2	0.0	**0.8%**
Primary mining	0.2	0.4	0.2	0.4	**5.9%**
Processed foods, beverages, tobacco	-1.2	-1.3	-1.0	-0.8	**3.4%**
Textiles	1.5	4.7	2.7	7.2	**0.4%**
Wearing apparel	0.4	1.5	0.6	2.1	**0.7%**
Leather products	-2.1	-0.5	-2.7	-2.0	**0.1%**
Wood products	-4.5	-5.7	-4.6	-5.8	**0.1%**
Paper products, publishing	-1.2	-0.9	-0.5	0.3	**1.1%**
Petroleum, coal products	-0.1	-0.5	0.3	0.3	**0.5%**
Chemicals, rubber, and plastic products	1.6	3.8	3.6	8.2	**2.8%**
Mineral products nec	0.3	0.8	0.9	2.2	**0.9%**
Ferrous metals	2.0	4.8	2.6	6.0	**0.8%**
Metals nec	2.8	5.1	3.3	6.0	**0.5%**
Metal products	-0.8	-0.2	-0.3	0.8	**0.4%**
Motor vehicles and parts	12.5	20.9	14.3	24.5	**0.4%**
Other transport equipment	2.9	4.9	3.6	6.4	**0.2%**
Electronic equipment	2.4	4.3	3.3	6.2	**0.1%**
Other machinery and equipment	-4.1	-4.2	-2.7	-1.5	**0.8%**
Manufactures nec	-2.9	-3.3	-2.6	-2.6	**0.5%**
Utilities	0.2	0.5	0.8	1.8	**2.0%**
Construction	0.5	0.9	1.1	2.3	**7.4%**
Distribution	-0.1	-0.2	0.4	0.8	**13.2%**
Other transport	-0.8	-1.7	-0.4	-1.1	**4.1%**
Maritime	-0.1	-0.9	-0.1	-0.9	**0.1%**
Air transport	-0.9	-3.5	-0.5	-2.7	**0.3%**
Communications	0.1	-0.3	0.6	0.8	**1.6%**
Financial services	-0.2	-0.5	0.4	0.7	**2.6%**
Insurance	-1.8	-3.9	-1.2	-2.8	**0.7%**
Business services nec	-4.5	-9.5	-4.1	-8.7	**3.0%**
Recreation and other services	-4.0	-8.6	-4.0	-8.5	**1.8%**
Public services and dwellings	0.2	0.5	0.7	1.4	**33.1%**

Source: ICE model simulations.

Table A15: Effect on sector specific imports; Colombia

	Static/ Short term effects		Dynamic/ Long Term Effects		
Sector	Modest Liberalisation	Ambitious Liberalisation	Modest Liberalisation	Ambitious Liberalisation	Sectors share of total imports
Vegetables, fruit, nuts	23.0	28.3	23.9	30.2	1.3%
Primary mining	14.6	29.3	15.8	32.0	0.7%
Processed foods, beverages, tobacco	14.7	18.5	15.2	19.6	4.7%
Chemicals, rubber, and plastic products	1.2	0.9	-0.3	-2.3	11.1%
Motor vehicles and parts	-4.8	-7.8	-5.0	-8.0	8.7%
Electronic equipment	-0.3	-0.1	0.4	1.1	10.4%
Other machinery and equipment	3.9	5.3	4.1	5.6	16.5%
Construction	17.3	40.7	18.0	42.0	0.0%
Distribution	12.8	29.6	13.9	32.1	2.6%
Other transport	11.9	27.2	13.0	29.9	2.2%
Business services nec	13.1	27.8	14.1	30.2	5.1%
Recreation and other services	6.1	13.2	7.8	16.7	5.4%

Source: ICE model simulations.

Table A16: Effect on sector specific exports; Colombia

	Static/ Short term effects		Dynamic/ Long Term Effects		
Sector	Modest Liberalisation	Ambitious Liberalisation	Modest Liberalisation	Ambitious Liberalisation	Sectors share of total exports
Vegetables, fruit, nuts	50.7	60.4	50.2	59.3	5.9%
Other agriculture	-2.6	-2.0	-3.1	-3.1	6.4%
Primary mining	1.0	2.4	0.6	1.6	22.8%
Textiles	4.7	9.9	5.9	12.5	2.7%
Chemicals, rubber, and plastic products	4.9	9.1	7.6	15.2	14.6%
Ferrous metals	5.4	11.7	5.5	11.9	3.8%
Motor vehicles and parts	15.6	25.8	17.5	29.5	4.9%
Air transport	6.5	10.1	6.7	10.4	2.9%
Communications	12.3	19.1	12.7	19.8	1.1%

Source: ICE model simulations.

A2.8.4 Peru

Table A17: Changes in Sectoral Output, Peru (percentage change)

	Static/ Short term effects		Dynamic/ Long Term Effects		
Sector	Modest Liberalisation	Ambitious Liberalisation	Modest Liberalisation	Ambitious Liberalisation	**Share of total VA**
Grains	0.3	0.2	0.3	0.2	**1.8%**
Vegetables, fruit, nuts	0.5	0.7	0.5	0.7	**2.1%**
Other primary food	0.1	0.3	0.2	0.5	**2.8%**
Other agriculture	0.1	0.2	0.1	0.3	**3.0%**
Forestry	-0.1	-0.1	-0.1	0.0	**0.7%**
Primary fishing	0.0	0.1	0.0	0.1	**2.7%**
Primary mining	0.2	0.4	0.3	0.5	**3.9%**
Processed foods, beverages, tobacco	0.1	0.4	0.2	0.6	**7.4%**
Textiles	1.6	2.8	1.9	3.3	**2.6%**
Wearing apparel	1.6	2.9	2.0	3.4	**1.4%**
Leather products	-0.2	-0.2	-0.1	0.1	**0.8%**
Wood products	-0.6	-0.7	-0.5	-0.5	**1.9%**
Paper products, publishing	-3.1	-4.2	-3.0	-4.0	**1.9%**
Petroleum, coal products	0.1	0.2	0.3	0.4	**0.1%**
Chemicals, rubber, and plastic products	2.4	4.7	3.0	5.5	**4.5%**
Mineral products nec	-0.1	-0.1	-0.1	0.0	**1.3%**
Ferrous metals	-0.1	-0.1	0.2	0.4	**0.0%**
Metals nec	2.7	4.7	3.0	5.3	**2.2%**
Metal products	-0.8	-1.0	-0.7	-0.8	**0.9%**
Motor vehicles and parts	-0.8	-1.5	-0.6	-1.2	**1.1%**
Other transport equipment	-0.1	-0.6	0.0	-0.4	**0.5%**
Electronic equipment	-0.5	-1.2	-0.1	-0.5	**0.7%**
Other machinery and equipment	-3.9	-6.0	-3.6	-5.6	**2.4%**
Manufactures nec	-1.1	-1.4	-1.0	-1.1	**3.0%**
Utilities	0.2	0.5	0.4	0.9	**1.3%**
Construction	0.4	0.6	0.3	0.5	**13.6%**
Distribution	0.2	0.4	0.4	0.7	**3.2%**
Other transport	0.0	-0.1	0.2	0.2	**3.2%**
Maritime	-0.1	-1.0	0.0	-0.8	**0.2%**
Air transport	-0.5	-2.2	-0.3	-2.0	**0.5%**
Communications	-0.3	-0.9	-0.1	-0.7	**2.1%**
Financial services	-0.3	-0.8	-0.1	-0.5	**2.6%**
Insurance	-5.0	-10.4	-4.9	-10.3	**1.1%**
Business services nec	-0.9	-2.3	-0.7	-2.0	**6.1%**
Recreation and other services	0.0	-0.1	0.1	0.1	**7.6%**
Public services and dwellings	0.2	0.4	0.2	0.5	**8.9%**

Source: ICE model simulations.

Table A18: Effect on sector specific imports; Peru

	Static/ Short term effects		Dynamic/ Long Term Effects		
Sector	Modest Liberalisation	Ambitious Liberalisation	Modest Liberalisation	Ambitious Liberalisation	Sectors share of total imports
Primary mining	2.2	4.7	2.4	5.0	7.5%
Processed foods, beverages, tobacco	4.6	6.4	4.5	6.3	5.7%
Paper products, publishing	3.5	5.1	3.7	5.4	8.5%
Electronic equipment	0.0	0.7	-0.1	0.4	9.0%
Other machinery and equipment	4.0	6.3	3.8	5.9	15.8%
Manufactures nec	13.0	18.7	12.7	18.2	2.7%
Construction	16.4	38.1	16.4	37.8	0.1%
Other transport	12.1	28.1	12.0	27.9	0.9%
Maritime	13.1	28.8	13.0	28.6	0.3%
Air transport	8.8	19.1	8.8	19.0	1.8%
Communications	15.3	34.7	15.0	34.3	0.6%
Financial services	15.8	36.1	15.7	35.9	0.5%
Insurance	9.0	18.6	9.2	18.9	3.3%
Business services nec	16.7	36.8	16.4	36.3	3.2%
Recreation and other services	12.9	30.1	12.8	30.0	1.3%

Source: ICE model simulations.

Table A19: Effect on sector specific exports; Peru

	Static/ Short term effects		Dynamic/ Long Term Effects		
Sector	Modest Liberalisation	Ambitious Liberalisation	Modest Liberalisation	Ambitious Liberalisation	Sectors share of total exports
Grains	74.7	94.7	73.7	94.7	0.0%
Other primary food	8.6	11.0	8.3	10.7	0.1%
Primary mining	0.4	1.4	0.3	1.1	16.6%
Processed foods, beverages, tobacco	2.9	5.4	3.1	5.6	11.4%
Wearing apparel	6.3	11.2	7.3	12.7	8.3%
Chemicals, rubber, and plastic products	6.3	12.1	7.5	13.8	17.7%
Metals nec	3.0	5.4	3.3	6.0	21.1%
Air transport	7.1	10.9	7.2	11.2	2.3%
Communications	11.4	17.4	11.7	17.9	0.5%
Business services nec	11.0	16.8	11.4	17.4	1.8%

Source: ICE model simulations.

A2.8.5 Ecuador

Table A20: Changes in Sectoral Output, Ecuador (percentage change)

	Static/ Short term effects		**Dynamic/ Long Term Effects**		
Sector	Modest Liberalisation	Ambitious Liberalisation	Limited Liberalisation	Ambitious Liberalisation	**Share of total VA**
Grains	-2.5	-2.7	-2.5	-2.6	**1.4%**
Vegetables, fruit, nuts	7.6	8.7	7.6	8.7	**6.7%**
Other primary food	-1.9	-2.0	-1.9	-1.9	**2.8%**
Other agriculture	-8.5	-9.8	-8.5	-9.8	**2.5%**
Forestry	-0.6	-0.6	-0.6	-0.6	**1.9%**
Primary fishing	-0.1	-0.1	-0.1	-0.1	**3.4%**
Primary mining	0.1	0.2	0.1	0.2	**16.0%**
Processed foods, beverages, tobacco	-2.0	-1.9	-2.0	-1.8	**4.2%**
Textiles	-1.5	-1.3	-1.6	-1.2	**0.9%**
Wearing apparel	-1.1	-0.8	-1.1	-0.6	**0.9%**
Leather products	-0.4	0.4	-0.3	1.0	**0.3%**
Wood products	-0.6	-0.5	-0.5	-0.4	**0.6%**
Paper products, publishing	-0.9	-0.5	-1.0	-0.4	**0.6%**
Petroleum, coal products	0.5	1.0	0.5	1.0	**1.1%**
Chemicals, rubber, and plastic products	0.9	2.8	-0.5	1.0	**0.8%**
Mineral products nec	-1.5	-1.6	-1.5	-1.5	**0.6%**
Ferrous metals	-2.3	-1.6	-2.2	-1.0	**0.0%**
Metals nec	0.7	2.6	1.0	3.4	**0.0%**
Metal products	-1.6	-1.5	-1.6	-1.3	**0.2%**
Motor vehicles and parts	-20.6	-23.8	-22.0	-24.1	**0.1%**
Other transport equipment	-2.1	-1.1	-2.1	-0.7	**0.1%**
Electronic equipment	-3.4	-0.4	-2.9	2.3	**0.1%**
Other machinery and equipment	-7.5	-5.8	-7.3	-4.3	**0.3%**
Manufactures nec	-2.7	-3.4	-2.7	-3.2	**0.6%**
Utilities	0.3	1.1	0.1	0.8	**1.2%**
Construction	0.0	0.3	0.0	0.2	**8.8%**
Distribution	-1.0	-0.7	-1.1	-0.7	**12.7%**
Other transport	0.2	0.0	0.1	0.1	**6.3%**
Maritime	0.3	0.3	0.3	0.4	**1.0%**
Air transport	-4.5	-9.8	-4.5	-9.6	**0.7%**
Communications	3.2	5.1	3.2	5.3	**1.9%**
Financial services	1.5	2.1	1.5	2.2	**2.0%**
Insurance	-7.4	-15.0	-7.4	-14.8	**0.1%**
Business services nec	-4.8	-10.3	-4.8	-10.2	**3.7%**
Recreation and other services	-6.4	-13.2	-6.3	-13.0	**0.8%**
Public services and dwellings	1.5	2.2	1.5	2.3	**14.8%**

Source: ICE model simulations.

Table A21: Effect on sector specific imports; Ecuador

	Static/ Short term effects		Dynamic/ Long Term Effects		
Sector	Modest Liberalisation	Ambitious Liberalisation	Modest Liberalisation	Ambitious Liberalisation	Sectors share of total imports
Grains	13.8	16.8	13.7	16.8	1.5%
Vegetables, fruit, nuts	37.4	45.9	37.4	46.0	1.3%
Other primary food	26.7	33.7	26.5	33.9	0.3%
Other agriculture	20.9	27.4	20.8	27.5	1.9%
Primary mining	7.9	13.7	7.9	13.8	0.5%
Processed foods, beverages, tobacco	16.7	21.0	16.5	20.8	6.4%
Chemicals, rubber, and plastic products	0.5	0.2	1.1	1.0	18.0%
Metal products	14.5	18.8	14.3	18.4	0.9%
Motor vehicles and parts	4.0	4.4	4.2	4.4	10.3%
Other machinery and equipment	1.5	1.3	1.4	0.9	14.4%
Manufactures nec	20.9	28.0	20.6	27.4	1.8%
Construction	18.9	41.5	17.0	41.5	0.0%
Other transport	13.7	30.4	13.5	30.0	0.9%
Communications	15.3	34.7	15.3	33.9	0.1%
Business services nec	13.5	27.1	13.3	26.9	3.9%

Source: ICE model simulations.

TableA22: Effect on sector specific exports; Ecuador

	Static/ Short term effects		Dynamic/ Long Term Effects		
Sector	Modest Liberalisation	Ambitious Liberalisation	Modest Liberalisation	Ambitious Liberalisation	Sectors share of total exports
Vegetables, fruit, nuts	24.2	28.7	24.2	28.7	26.3%
Other agriculture	-12.8	-13.5	-12.7	-13.5	3.9%
Primary mining	0.0	-0.1	0.1	0.0	35.5%
Processed foods, beverages, tobacco	-1.3	1.1	-1.2	1.3	11.2%
Motor vehicles and parts	-24.1	-28.1	-25.3	-28.2	1.0%
Other transport equipment	6.2	15.9	6.5	17.0	0.4%
Electronic equipment	2.4	12.6	3.4	16.5	0.1%
Other machinery and equipment	-4.0	0.4	-3.8	2.2	1.9%
Manufactures nec	7.1	12.4	7.5	13.0	0.3%
Communications	12.4	19.7	12.4	20.1	2.0%

Source: ICE model simulations.

A2.39 Technical Annex References:

Antweiller, W. and D. Trefler (2002), "Increasing Returns and All That: A View from Trade," American Economic Review, 96: March.

Baldwin, R.E. and J.F. Francois (1999), *Applied Issues in Dynamic Commercial Policy Analysis*, Cambridge: Cambridge University Press.

Ethier, W. (1982), "National and International Returns to Scale in the Modern Theory of International Trade," *American Economic Review*, 72 (June), 950-959.

Finger, J.M., U. Reincke, and M. Ingco (1996*), The Uruguay Round: Statistics on Tariff Concessions Given and Received*, World Bank: Washington.

Fox, Alan K. (1999), "Evaluating the Success of a CGE Model of the Canada-U.S. Free Trade Agreement," presented at The Second Annual Conference in Global Economic Analysis, June 20-22.

Francois, J.F., B. Hoekman, and J. Woerz (2007), "Does Gravity Apply to Nontangibles? Estimates of trade and FDI openness in services, Plenary paper at ETSG 2007 annual meetings

Francois. J.F., H. van Meijl and F. van Tongeren (2005), "Trade Liberalization in the Doha Development Round," *Economic Policy* April: 349-391.

Francois, J.F., THE NEXT WTO ROUND: North-South stakes in new market access negotiations, CIES Adelaide and the Tinbergen Institute, CIES: Adelaide, 2001. ISBN: 086396 474 5.

Francois, J.F. (1998), "Scale economies and imperfect competition in the GTAP model," GTAP consortium technical paper <http://www.gtap.agecon.purdue.edu/resources/res_ display.asp?RecordID=317>

Francois, J.F., B. McDonald and H. Nordstrom (1996), "Trade liberalization and the capital stock in the GTAP model," GTAP consortium technical paper <http://www.gtap.agecon.purdue.edu/resources/res_display.asp?RecordID=310>

Francois, J.F. and D.W. Roland-Holst (1997), "Scale economies and imperfect competition, in Francois,J.F. and K.A. Reinert, eds. (1997), *Applied methods for trade policy analysis: a handbook*, Cambridge University Press: New York.

Hall, R.E. (1988), "The relation between price and marginal cost in U.S. industry", *Journal of Political Economy*, Vol. 96, No. 5, pp. 921-947.

Hertel, T. and M. Tsigas (1996), "The Structure of GTAP," in Hertel, T., ed., (1996), *Global Trade Analysis*, Cambridge University Press: Cambridge MA. <http://www.gtap. agecon.purdue.edu/models/current.asp>

Martins, J.O., Scarpetta, S. and D. Pilat (1996), " Mark-Up Ratios In Manufacturing Industries Estimates For 14 OECD Countries," OECD Economics Department Working Paper No. 162.

McDougall, R., ed. (2001). *The GTAP database -- version 5*, Global Trade Analysis Center: Purdue University.

Roeger, W. (1995), "Can Imperfect Competition explain the Difference between Primal and Dual Productivity Measures? Estimates for US manufacturing*", Journal of Political Economy*, Vol. 103, No. 2, pp. 316-330.

Smith, M.A.M (1977), "Capital Accumulation in the Open Two-Sector Economy," *The Economic Journal* 87 (June), 273-282.

Smith, M.A.M. (1976), "Trade, Growth, and Consumption in Alternative Models of Capital Accumulation," *Journal of International Economics* 6, (November), 385-388.

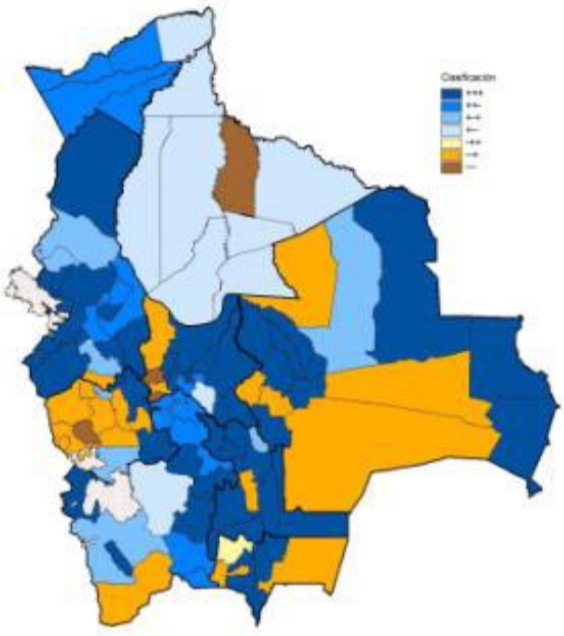
Srinivasan, T.N. and J.N. Bhagwait (1980), "Trade and Welfare in a Steady-State", Chapter 12 in J.S. Chipman and C.P Kindelberger, eds., *Flexible Exchange Rates and the Balance of Payments*, North-Holland Publishing

Annex 3: Territorial dynamics in Andean countries[266]

In a context of openness and globalisation, the territorial dynamics that one can observe in Andean countries is notoriously uneven. There are some territories which show processes of growth, poverty reduction and social inclusion and evidently taken advantage of the opportunities of globalisation. However, there are also situations where every indicator of development is changing in the opposite direction. The local economy is stagnant, people are leaving due to lack of opportunities, poverty is widespread, governability is weak and sustainability is seriously threatened. In between these two sides there are territories in which the dynamics of development show mixed outcomes.

Maps 1 to 4 show the situation of each one of the Andean countries from such a territorial perspective, taking into account that the occurrence of growth, poverty and inequality segments the national space and set the conditions under which events such as trade liberalisation may exhibit positive impacts on some territories, while perhaps hindering others.

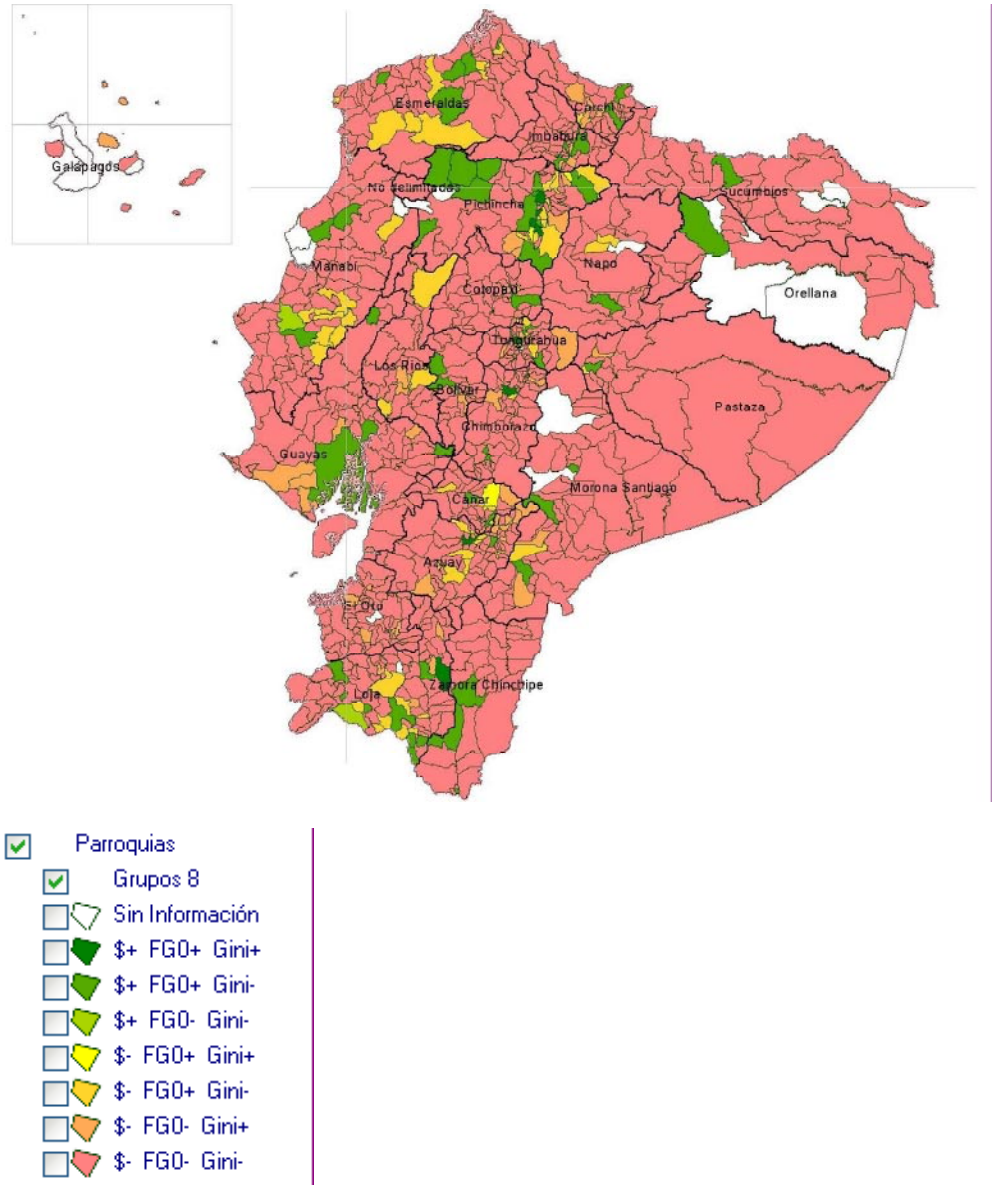
Map 1 Bolivia: typology of changes in consumption, poverty and inequality between 1992 and 2001



Note for the legend: from left to right each symbol indicates a positive (+) or negative (-) change in consumption, poverty or income distribution.
From: Hinojosa and others (2009).

[266] This section builds on research findings of the Rural Territorial Dynamics Program (RTD), coordinated by RIMISP. RTD is a research-based policy advice and capacity-development program for rural economic growth, social inclusion and environmental sustainability in Latin America. (Maps reproduced with author's permission).

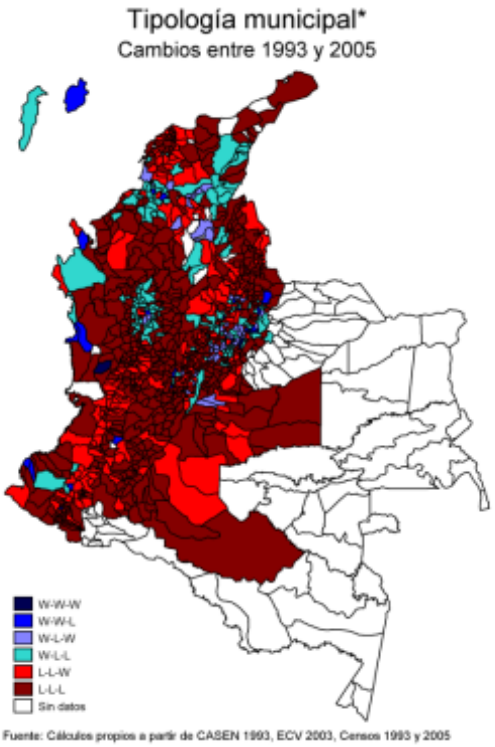
Map 2. Ecuador: typology of changes in consumption, poverty and inequality between 1990-95 and 2001-6



Note for the legend: from left to right each symbol indicates a positive (+) or negative (-) change in consumption, poverty or income distribution.

From: Larrea and others (2008).

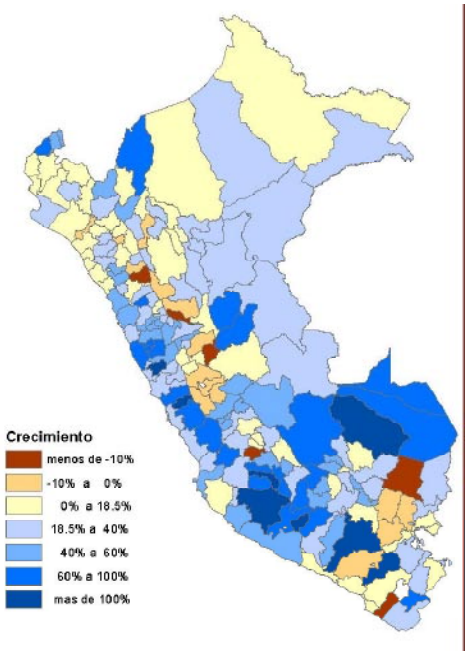
Map 3 Colombia: typology of changes in consumption, poverty and inequality between 1993 and 2005



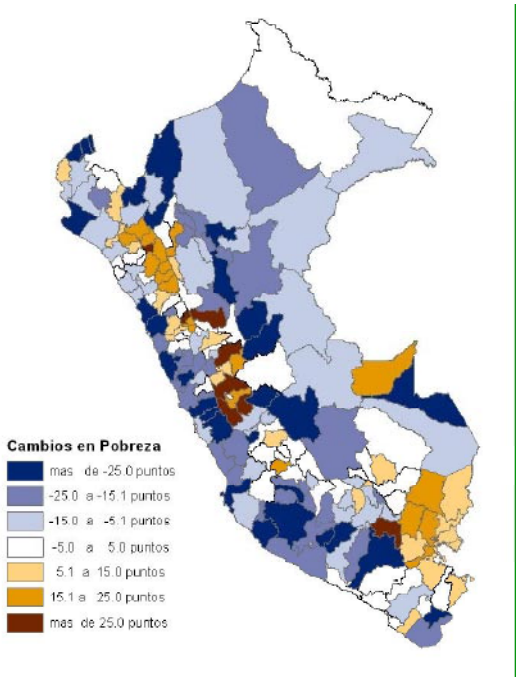
Note for the legend: from left to right each symbol indicates a positive (W) or negative (L) change in consumption, poverty or income distribution.

From: Hernandez and others (2009).

Map 4a. Peru: Change in consumption between 1993 and 2005

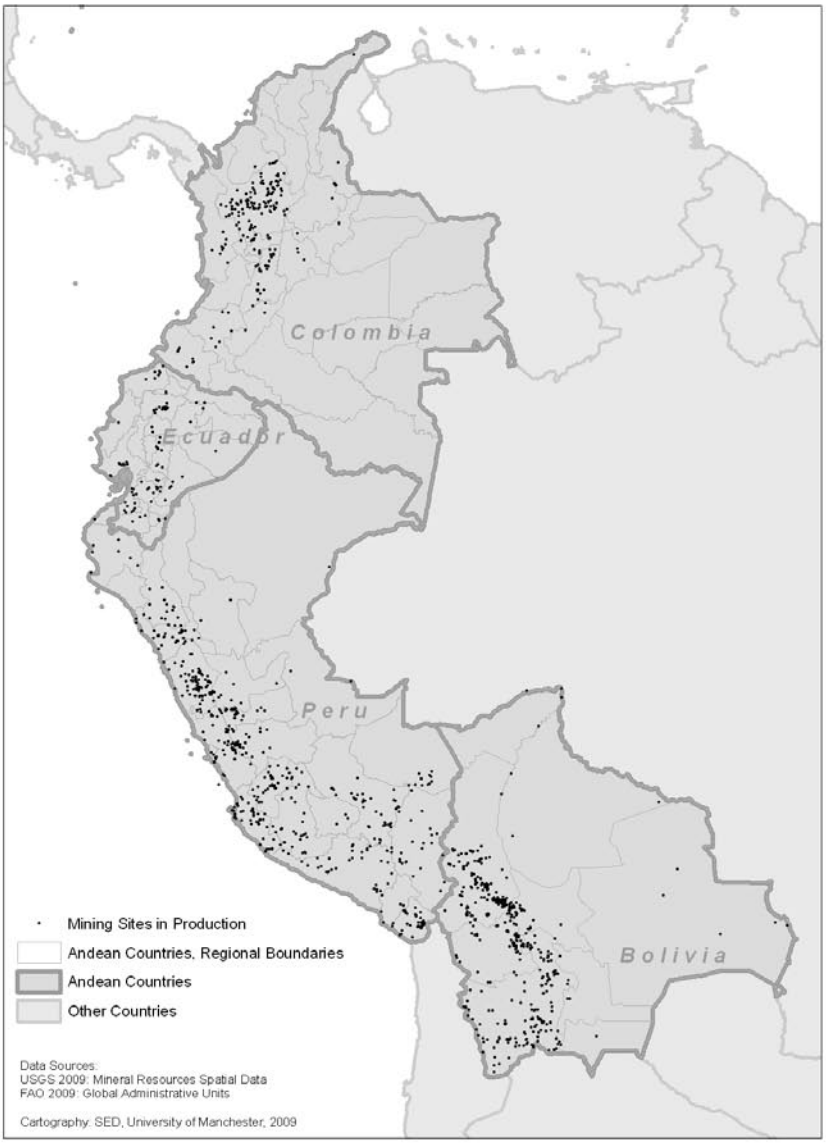


Map 4b. Peru: Change in poverty between 1993 and 2005



From: Escobal and Ponce (2008)

Map 5: Mining investments in Bolivia, Colombia, Ecuador and Peru



Annex 4: EU-Andean SIA - Written comments on the draft interim report for response[267]

Comment		Response
Red Peruana por una Globalización con Equidad –RedGE – Comments emailed 11/06/09		
1.	*Ability of state regulation to mitigate impacts* Some measures to mitigate negative social and environmental impacts suggested in the study makes an assumption on the capability of state regulation. Given this, it is important to note two missing elements in the analysis and that must be considered so as to provide the actual feasibility of these reforms: a) limitations on the countries' institutional capacity (measuring variables of corruption), b) restrictions that the obligation to apply the principles of national treatment to investors liberalization could have on Andean countries.	The limitations of state regulation capacity are discussed in section 2.5 of the draft Interim report (Regulation Baseline conditions) The need to strengthen regulatory capacity is emphasized in the draft Final Report in section 4 (Policy Measures). The recommendations for flanking measures include strengthening of regulatory capacity and enforcement in the environmental, social and financial regulation. Point (b) has been acknowledged in the draft Final Report by the inclusion of text and references to the literature
2.	*Full employment as a basis for the assumption of the model, in countries with high rates underemployment and informal employment?* Please explain the methodological assumption of full employment for the development of the model, as this constitutes a serious distortion in the calculation of impacts. This questions the relevance and application of these models for the Andean countries, especially when it comes to economies in which there is a very high percentage of underemployed workers in precarious employment conditions.	The model does not assume full employment, but rather that the level of employment will not be fundamentally changed by the FTA. We note that we estimate either positive wage effects or 0.00% wage effects which implies that under a flexible employment scenario, there would be a drop in unemployment. However, because we are focusing on long run scenarios, the assumption that core/structural unemployment rates depend on institutional factors outside the model is more appropriate.
3.	*Identify the impact of enforcing binding social, environmental and labour standards* In a FTA scenario that seeks to facilitate trade and investment, including social, environmental	The issue of compliance with environmental and social standards and regulations relating to the trade agreement impacts are discussed in the Policy Recommendations section of the draft Final Report. The recommendations include the establishment of

[267] Such comments constitute the most substantive comments received via e-mail during the study process, and thus are written out in this section of the annex

	and employment compliance measures of can be a useful measure to promote better conditions for social development of countries. In this context it is of high concern in negotiations are not incorporated mechanisms to provide better security for these rights and enforcement of standards. Considering that the study intends to "propose measures and policies to strengthen the effects a positive trade agreement and mitigate the negative" this would incorporate measurement and analysis of the impact of the binding mechanisms meeting them in the chapter on sustainable development. To this end, it is necessary to answer the question whether it is desirable to improve mechanisms that generate social development in bi-regional trade, push the effective implementation of core ILO and environmental standards, and identify what measures for bi-regional cooperation and mechanisms for responsibility on the part of European companies and investors in the region can be offered.	an effective mechanism for monitoring the effects of the agreement and the compliance with the other recommended flanking measures.
4.	*Distinguish liberalisation scenarios* With regard to the liberalization scenarios used in model, we consider it is necessary to distinguish between the liberalization of goods and services and to estimate the impact separately. Therefore we suggest to model a scenario in where there is only liberalisation of goods, and another where there is only liberalisation of services.	The model for the SIA was established in the inception phase of the project in consultation with the EC. The model examines the impacts of the FTA as a whole, and is not deconstructed along sector lines. This allows the research to focus on likely overall trade agreement outcomes, and map these into economic, social, and environmental impacts. Since the SIA process is focused on likely sustainability impacts of a trade agreement, we have focused on sets of trade agreement elements.
5.	*Include measuring the impact of the strong property standards intellectual driving European Union in the agreement.* A comprehensive impact study should include this measurement, especially in the case issues of vital importance for developing countries, including countries Andes, where the balance of the profit is	The SIA report has noted the IFARMA impact study 'Alianza CAN-EU por el acceso a los medicamentos' and is included in the report. This indicates that the Andean countries' pharmaceutical sector would be negatively impacted by the proposed extensions to TRIPs. It is concluded that the overall expected effect would be the worsening of health standards in the Andean countries, in particular for the poor.

	clearly tilted towards the EU. To our countries to raise these standards has a direct impact on their ability to access to innovation and technology, basic conditions for improving the opportunities for development of our countries. On the impact on specific areas such as standards intellectual property related to drugs (test data, extending patent enforcement measures) is not included an estimate of the impact it would have to Andean countries accept the EU proposal. In both cases there are methods recognized and validated to be incorporated into the study.	
6.	*Impact on the process of regional integration* The study does not include an assessment of impacts on the regional integration process of great importance for the Andean countries, which is a priority for the EU negotiating the agreement. This analysis should be a transversal analysis.	While this is a key objective of the EU in their negotiations, analysis of this aspect is not within the scope of the SIA study as commissioned by the EC. However please note that the detailed modelling results do include other regional countries and groups, including Mercosur
Asociación Latinoamericana de Organizaciones de Promoción al Desarrollo – Emailed comments 11/06/09		
7.	One key issue is that the report doesn't include detailed annexes on the modelling results. Tables on terms of trade, variations on import-export by sectors, by country and on employment, changes in prices.	Additional tables by country and sector have been included in the report. The economic modelling does not measure the expected changes in consumer prices as a result of trade liberalisation.
8.	When you say that the impact on financial, business, recreation services and insurance is negative for Andean countries (most of them), what does this means concretely? That service providers of the Andean countries will experience a drop in their output, due to EU competition? So EU firms will "gain" market share? Or the sector as a whole will decrease? For example, in insurance, this will mean that there will be a decrease in the offer in Andean countries? For financial services, a decrease in financial products available? What about prices? Same for recreation (tourism)?	The negative impact means that 'domestic' output of the services sector will shrink, as market share is taken by more competitive EU firms. It should be noted that the analysis includes all four modes of service supply under GATS, including mode three - the establishment of a commercial presence in-country (with in-bound capital flows). In this case, labour is expected to migrate from domestic to 'foreign' suppliers, as well as being absorbed by other sectors of the economy as the market adjusts to a post-liberalisation equilibrium. The model does not examine the impact on consumer prices for goods and services of trade liberalisation. However a 2007 independent report commissioned by the WTO (see section 3.4.1 – available online at http://www.wto.org/english/res_e/reser_e/ersd2007

		01_e.pdf) estimates that the lowering of barriers to service trade results in efficiency gains and lower prices to consumers, with associated welfare benefits including poverty reduction. Subject to effective regulation, competition will lead to overall sector growth in the long term and increase in the range of services available to the public. To manage the impact of adjustment in the services sector, section four of the report proposes improving the domestic regulatory environment in association with liberalisation.
South Centre – Emailed comments 11/06/09		
9	Please elaborate on the increase in output of "public services and dwellings". In essence the economic outcomes are driven by increases in this sector.	The public services and dwellings sector is not driving the economic outcomes of the model. The study identifies a wide range of effects, and at a sector level we have strong effects in various manufacturing sectors, for example. The public sector expansion is broadly consistent with changes in GDP, and we interpret this as meaning the general economic expansion identified for the non-public services sectors supports similar expansion in the public services sector.
10	Please incorporate analysis on unemployment to improve the social dimension of the impact assessment.	See the text above on employment. The project has not modelled unemployment in the CGE model. The long-run, structural levels of unemployment are a function of institutional factors outside the scope of a trade agreement. For unskilled labour, for example, when we examine the long-run estimates that include investment effects (most appropriate as a trade agreement will be implemented, and investment effects will be important), real wage effects are generally either positive (between 0.7 and 1.3 percent) or zero. This means that there is increased demand for unskilled workers (reducing unemployment pressures). The exception is Ecuador. Ecuador benefits from higher unskilled wages (and so reduced unemployment pressure) under the ambitious trade agreement scenario, but not under the modest scenario. Hence, if one is concerned about this dimension, the more ambitious trade agreement is better for

		unskilled employment in Ecuador. The same holds for skilled labour employment in all countries but Ecuador, where we see negative wage pressure for skilled workers. As unemployment is focused on unskilled households, the message is that labour market conditions for unskilled workers improve the most with a more ambitious FTA. We also note that, moving past the modelling itself, the social and sustainability assessment focuses on precisely this mix of wage and employment outcomes, given the adjustment signals and directions identified by the model.
11	What is the rationale of choosing 50% (or 75%) services liberalisation?	Standard practice in recent modelling for SIAs has been to assume partial (i.e. relatively modest) and more ambitious liberalisation. This recognises that full liberalisation might not be realised. The goal is not to identify an exact estimate, as this is not realistic. The objective is to make a comparative assessment of the overall impact of nominally less or more ambitious liberalisation scenarios.
12	Please include natural resource analysis to improve the environmental dimension.	Additional analysis on emissions and land use has been included in the report.
13	Please include baseline data, results for scenarios other than, tariffs and post-Doha tariffs, inclusion of price changes, size of sectors, export and import changes per sector.	These changes have been made in the report. The economic modelling for this SIA does not measure the expected changes in consumer prices as a result of of trade liberalisation.
RSPCA, WSPA, Compassion in World Farming, Eurogroup for Animals – Comments Emailed 05/06/09		
14	<u>Absence of references to animal welfare in the study</u> No reference is made in the study to the conditions in which a larger number of animals are likely to be reared as a consequence of trade liberalisation between the two regions. If the Agreement will determine a relevant growth in animal farming, this might lead to the expansion in Andean countries of intensive farming systems phased-out or already banned in the EU. *The SIA should include an analysis of the impact the EU-Andean Countries Free Trade Agreement can have on animal welfare, especially on farm animals,*	The Draft Final Report now includes reference to potential animal welfare impacts of an expansion in trade resulting from the EC Andean trade agreement. This includes noting that European negotiators have already proposed to include cooperation on animal welfare in the Agreement. The purpose of the SIA is to inform negotiators of potential negative and positive impacts already proposed the inclusion of animal welfare considerations in the Agreement. The inclusion of references to animal welfare in the SPS chapter of the EU Chilean Agreement is noted in

	in order to inform the negotiators on potential problems and ways to prevent them. *As in the case of the EU-Chile Agreement, the inclusion of references to animal welfare in the SPS chapter of the Agreement can generate co-operation among veterinary services and the use of EU resources to fund projects identified by - or in cooperation with - the Andean countries' authorities. The improvement of animal welfare would have direct positive repercussions on the life of many families dependant on farming activities.*	the draft Final Report.
Transparency International Comments Emailed - 04/06/08		
15	Transparency International will concentrate its comments and suggestions on the issue of public procurement, one of the focal areas of Transparency International's work because of the high and pervasive damage caused by corruption in procurement. Transparency International believes negotiations on public procurement shall focus on 'the transparency aspects and therefore not restrict the scope for countries to give preference to domestic supplies and suppliers' (see Doha Ministerial Declaration, 2001) Experience clearly demonstrates that open competition is the most effective method to obtain wide competition and thus offers which are competitive both in price and quality. Open competition should be the general principle and the grounds for exceptions should be limited and clear. In this context, Transparency International believes that developing countries should be completely free to decide (together with their financiers) which procurement they open to international competition. If they choose to go for international competition, developing countries' governments should be able to offer limited preferences to their infant industries, provided these incentives and preferences are fully transparent, strictly regulated, and openly announced so that all bidders know the full set of decision-making criteria.	The quality of governance is discussed in the interim report section 2.5.5. The issue of corruption in public procurement and the importance of competition and transparency are discussed in section 3.5.2 The text has been amended to indicate the adoption of more transparent procedures expected to yield significant benefits in the Andean countries.

PSA Peugeot Citron Motors – Emailed comments 03/06/09		
16	We would like to take the opportunity of this consultation to underline the draft E85 regulation issued by Colombia on March 31 of 2009, under the decree 1135 on which introduce as of 2012 the obligation of fuel flex engines for all new motor vehicles sold in the country. Each brand shall gradually offer vehicles which support E85 accordingly to the following table: As of 01-2012, 60% of the annual supply; As of 01-2014, 80% of the annual supply; As of 01-2016, 100% of the annual supply. Colombia would therefore be the only country in the world where gasoline cars are prohibited. Clarifications on this aspect should be made if a Trade Agreement is to be considered with the EU	Noted as an environmental measure in the report.

Annex 5: Local consultation stakeholder workshop agenda

Taller de Consulta : Estudio de Impacto y Sostenibilidad del Comercio entre la Unión Europea y los Países Andinos

Agenda

Lima, Perú, 26 de Mayo 2009 - Radisson Hotel Decapolis

Horario	Presentación
8.30 – 9.00	**Registro de participantes**
9.00 – 9.20	**Bienvenida y Presentación del Taller y del Estudio de Impacto y Sostenibilidad del Comercio entre la Unión Europea y Países Andinos** Dra. Leonor Malaver, Jefe de Misión, Fundación LASO
9.20 – 9.30	**Los acuerdos multipartidarios de negociación** Sra. Aurea Queralt, Delegación de la Comisón Europea en el Perú
9.30 – 9.40	**Posición del Perú ante los impactos del libre comercio** Sra. Ana María Sánchez, Ministerio de Relaciones Exteriores del Perú
9.40 – 10.10	**Resultados del modelo económico del Estudio. Metodología y probables cambios sectoriales** Dra. Hanna Norberg, Instituto de Economía Internacional y del Desarrollo
10.10 – 10.30	**Discusión y preguntas sobre el estudio y el modelo económico**
10.30 – 11.00	**Refrigerio**
11.00 – 11.30	**Resultados intermedios del Estudio sobre impacto y sostenibilidad** Dra. Leonith Hinojosa-Valencia, Universidad de Manchester
11.30 – 12.00	**Discusión y preguntas sobre los impactos previstos y medidas de mitigación**
12.00 – 14.00	**Almuerzo Buffet en el comedor del Hotel**
14.00 – 14.20	**Libre comercio y desarrollo económico en un contexto de Globalización** Prof. Alan Fairlie, Pontificia Universidad Católica del Perú
14.20 – 14.30	**Discusión y preguntas**
14:30 – 14:50	**Protección ambiental y desarrollo económico en la Región Andina** Sr. Michael Valqui, Fondo Mundial para la Naturaleza (WWF)
14.50 – 15.00	**Discusión y preguntas**
15:00 - 15:20	**Desafíos claves para el sector laboral en la Región Andina** Sr. José Luis Daza, Director, Oficina Subregional Andina OIT
15.20 – 15.30	**Discusión y preguntas**
15.30 – 15.50	**Los conceptos de desarrollo humano, la introducción de objetivos de desarrollo del Milenio, y los posibles impactos ambientales de los TLC y las estrategias de mitigación.** Sr. James Leslie, Programa de las Naciones Unidas para el Desarrollo, PNUD
15.50 – 16.00	**Discusión y preguntas**
16.00 – 16.15	**Refrigerio**
16.15 – 17.15	**Discusión general: Impactos y Recomendaciones** Dirigida por la Jefe de Misión, Dra. Leonor Malaver
17.15 – 17.30	**Conclusiones y cierre**, Dra. Leonor Malaver, Jefe de Misión
17.30 – 18.00	**Copa de honor**

Annex 6: Local stakeholder workshop participant list

No.	Name	Organization
1	Coraly Salazar Carrasco	Centro de Investigacion y Promocion del Campesinado - CIPCA
2	José Ribero Calvimontes	Cámara Nacional de Exportadores de Bolivia / CANEB
3	Trifón Choque Jimenez	Centro de Estudios para el Desarrollo de los Pueblos Andinos - CEDPAN
4	Jorge Daniel Pérez Cueto Eulert	Louvain Développement
5	Benjamin Blanco	Bolivian Ministry of Foreign Affairs
6	Ana Maria Sanchez	Peruvian Ministry of Foreign Affairs
7	Luis Carlos Niño Solima	CORPORACION VALLENPAZ
8	Sandra Milena Ràtiva Gaona	CENSAT Agua Viva, Amigos de la Tierra, Colombia
9	Edgar Orlando Benitez Salcedo	UNIVERSIDAD ICESI
10	Eustorgio Carrasquilla Barone	FUNDACION PROBOQUILLA
11	Antonio José Malaver Afanador	Quibi S.A.
12	Francisco Xavier Rivadeneira Sarzosa	CORPEI (Corporación de Promoción de Exportaciones e Inversiones)
13	Vicente Modesto Rivas Ayora	Fundación Esquel Ecuador
14	Rosario Valladares Garzón	FUNDACIÓN NATURA
15	Alberto Morisaki Caceres	Asociacion de Bancos del Peru
16	Vanessa Cantuarias Cordova	Junior Chamber International PERU-JCI PERU
17	Ana María Sánchez	Ministerio de Relaciones Exteriores
18	Wilfredo Sanchez Reynaga	WHES BUSINESS S.A
19	Carlos Lopez Osorio	Instituto Peruano de Investigacion y Desarrollo IPID
20	Marleni Canales	SAI
21	Miguel Palacin Quispe	SAI

22	Robert Guimaraes Vasquez	SAI
23	Pacha Cabascango	SAI
24	Sonia Emma Rodriguez Chavez	ALTERNATIVA, CENTRO DE INVESTIGACION SOCIAL Y EDUCACION POPULAR
25	David Llanos Dulanto	Asociación Cutivireni
26	Johan Bosman	EU-CAN Civil Society Network
27	Ms Aurea Queralt	Delegación de la Comisión Europea
28	Eco. Elma Martin Castillo	Peruvian Agency of Cooperation – PERAC
29	Ximena Sierralta	Delegación de la Comisión Europea
30	Luis Miguel Sirumbal R.	Director Regional Andino-ALOP
31	Olga del Carpio Velarde	Para organizaciones del Estado y la Cooperación Internacional
32	Silvia Soto Velasquez	Ministerio de Relaciones Exteriores
33	Eliana Castillo Mar	Ministerio de Relaciones Exteriores
34	Elvira Paula Parra	Confederación Nacional de Mujeres Campesinas Bartolina Sisa
35	Luis Piselli	Delegación de la Comisión Europea, asesor de prensa
36	Yeni Bailón Zegarra	Asamblea Nacional de Rectores, Directora de Presupuesto
37	Alejandra Alayza Moncloa	RED GE
38	Hernan Navarro Franco	CEPES
39	Karla Solis Ruiz	Pontificia Universidad Católica del Perú
40	Jodie Ludeña	CEPES

Annex 7: EU-Andean Trade SIA Local Workshop 16 May 2009 Minutes

Alan Fairlie, Catholic University of Peru

- Noted that the work is very interesting. Noted that normally multi-sectoral and multi-regional models are used to show diversion and preferences over other markets. Questioned if there are other countries and regions in the model? Doe these show up in the results?

- Asked if the modelling used GTAP, or are some additional sources used? Noted that the IDB has a database of effectively applied tariffs.

- Asked if the study had calculated the benefit above the GSP, or is the model calculated as if there is no GSP? Noted that based on his own study of the FTA with the United States, there is a considerable difference between the two.

- Questioned if the model takes into account short-run/long run? Do the calculations assume full employment?

- Regarding salaries, Mr. Fairlie noted that the results show unskilled labour salaries increase, this contradicts a series of sectoral studies of the WHO and World Bank, which show what tends to increase is the skilled labour wages in the most dynamic sectors (which leads to) a salary gap.

Response

- There are a number of regions included in the model, including the United States, Mercosur, Other LDCs and the rest of the world (report P54).

- The model was based on the GTAP database, and also included additional relevant information where available, including ad valorem tariffs. The model also made assumptions about the DDA.

- The pool of labour in the Andean region is expected to remain constant, with or without an FTA. The results of the project modelling found that unskilled wages would increase at a higher margin compared to skilled labour, in line with the increased output from the agriculture sector, where Andean countries comparative advantage lies.

Modesto Rivas, Esquel Foundation, Ecuador

- Congratulated the consortium on the quality of the study and welcomed the opportunity to examine sustainability impacts before an FTA is concluded.

- Questioned if the model has considered the effects of the financial and social crisis on Andean countries, and noted the effects were different on each country.

- Questioned if the model has considered the various levels of FDI in individual Andean countries? Noted there was a 'remarkable' difference in the level of FDI between Colombia and Ecuador.

- Asked if the model accounts for higher per unit production costs in Ecuador due to the use of the US Dollar?

Response

- The data on FDI includes a change in regional or national investments. There are both direct and indirect effects of attracting FDI as a result of entering into an FTA. This is explained in the report, although precise data on FDI flows for analysis is not readily available or compatible with the GTAP database.

Marlena Canales, SAI,Peru

- Intervened in the local language of Petchua. Raised the concerns over the time available to read the report before the workshop and that most of the information is in English, which cannot be understood by the inhabitants of Andean countries. Enquired if there is another way of communicating, noting that under convention 169 of the ILO, there are mechanism for consulting with indigenous peoples that have not been used.

- Noted the study looked into the overall problem of indigenous peoples, which in Peru represents more than 1⁄3 of the population. The study has shown that on mean average, all parties will benefit. Asked if the study estimated the impact on the individuation rights of indigenous peoples, for example, the impact of extractive industries on climate change?

Response

- How the benefits of an FTA accrue to different sectors of society is a political consideration for individual member states.

- The SIA is conducted simultaneously to the timeframe of FTA negotiation, which has a short timeframe. Comments in writing after the workshop were welcome until 5 June. For practical reasons it would be difficult to publish the report in indigenous languages.

Alejandra Alayza, Red GE

- Noted there are highly sensitive variables in the model; how has the study looked at the impact on intellectual property rights, in particular to medicines and bananas.

- Noted that the workshop must be broadened to include more representatives.

Response

- Deferred to SIA presentation

Sandra Raitiva, Friends of the Earth, Colombia

- Noted that the methodology of the independent study was based on official indicators, and noted that there are no sources based on civil society.
- Asked how the study would consider the political variables and circumstances of each country?
- If the European Union has no change in trade and income levels, why is there an interest in the FTA?
- Noted that the environmental baseline in the report did not include the issue of contamination of water sources and the impact on biodiversity.

Response

- Deferred to SIA presentation

CEPES

- Asked if the model investigates institutional corruption, and noted that mining royalties are not being distributed in a rational way. Therefore is not certain if royalties will be used on education. Has this been contemplated in the model?

Response

- The distribution of national income is a political variable that is not used in the model.

Robert Guimaraes, CCPICAN

- Although the study points out the economic impacts, such as poverty, it is also important to consider social and environmental impacts. Noted the impacts that other FTAs are already having on the collective rights of individuals. There have been more than 100 legislative decrees that have affected the rights of indigenous people. Noted that there are many more organisations that should be at the workshop but are not.

Response

- Deferred to SIA presentation

Benjamin Blanco, Ministry of Foreign Affairs, Bolivia

- Noted that unilateral open market policies in Bolivia over the past 20 years had not resulted in greater access to water, as referred to in the report. This has spurred social conflict and political pressure.

- In the methodology, there needs to be more attention paid to negotiations on IPR and services. The Bolivian experience shows that there have been increased medicine prices and monopolies in these respective sectors. Bolivia's own studies show that access to medicines will not be enhanced.

- Regarding public procurement, expressed the view that the proposed changes would result in a decrease in employment.

- Regarding investment, commented that Bolivia has investment with several European countries, and investment levels have not improved as a result.

- Commented that it would be important to try to link what is trying be negotiated to what is presented in each sector e.g. agriculture.

Response

- The SIA is an independent study that runs parallel to the negotiations. Communication with civil society on the negotiating objectives of the parties to the trade negotiation is a decision for the respective governments.

Francisco Rivadeneira, Ecuador Export and Investment Promotion Corporation (IA44:00)

- Requested that the slide showing a reduction in employment growth in Ecuador, related to sectors such as agri-business, be explained again.

Response

- Explained the sectors that are included in the study. Regarding Ecuador, the greatest impact on skilled labour occurs in the automotive sector.

- Noted that once sectors are opened up, there can be a diversion of production and trade between countries in line with competitive advantage.

Edgar Benitez, ICESI University Colombia

- Commented that the impact assessment addresses generalities, and does not give a clear idea about the level of impact of the FTAs. Example was given on the productive chains and the redistribution of remuneration throughout the chain, in particular the sugar industry in Colombia.

Response

- Noted that the report included analysis of the Agrarian structure in Colombia, however some information specific to Colombia was lacking. This analysis includes dominant crop varieties, the distribution pattern of land and the size of landholdings. Noted the case of banana plantations in Ecuador requires large scale land holdings, and this is typically associated with foreign investment. The maps shown in the English version of the report identify specific regions which are producers of certain crops, and the associated levels of poverty.

- Commented that the richest agribusiness regions, and some mining regions, have the highest incidence of poverty.

- Welcomed any sources that could supplement the study.

Modesto Rivas, Esquel Foundation, Ecuador.

- Commented that to understand the study better, updated information was required. In table 49, the level of poverty is 42.6 percent. Recommend the study by Robos and Larrea on the satisfaction of basic needs. Suggested that poverty be studied from three angles: 1. Poverty levels; 2. Satisfying basic needs (food, nutrition, education, health, housing and social secturity); 3. Concentration of wealth and income.

- Noted the study should look at subject of skill emigration, which was having the effect of increasing the price and quality of basic services, and the issue of illiteracy.

- Commented that in Ecuador, the increase of extractive goods for export has strongly affected the environment, with a number of legal cases still unresolved. Noted that the rapid expansion of banana plantations has led to monoculture, and the flower export industry in Ecuador has led to large scale abuses of child labour, acknowledged by the US. The 200,000ha of shrimp farming has led to the degradation of mangroves, reconverting such farms to mangroves would take 50 years and ten times the revenue of the farms. Noted that air and water pollution from industry must be controlled in cities such as Quito.

- Offered to provide study with additional data.

Response

- Welcomed the offer to provide additional information for the report.

- Explained how the model combined sources of data from the household surveys and official censuses. For areas of the informal economy which are not documented, case studies have been used.

Malena Canales, SAI, Peru

- Commented that there should not be a limit on comments, with as many to be included as possible. Commented that the methodology applied does not take into account the legal rights of indigenous people, such as the declarations of the UN and ILO.
- Commented that the FTA already signed between the US and Peru is already creating problems for the indigenous community.
- Suggested there is focus on the social infrastructure without understanding the people themselves, such as access in the Peruvian jungles, not just in areas close to the mines.
- Commented that the study appears to assume that rights will be affected, and stressed the need for mitigation measures on how these rights will be protected.

Response

- Acknowledged the sincerity on the indigenous issues mentioned and commented that the study is not a political platform.
- Noted that the study is about estimating and forecasts for the future, based on facts. This needs to be addressed with the utmost respect.

Alejandra Alayza, Red GE, Peru

- Stressed the need for further analysis in the report on the impacts and implications of enforcement of IPR for pharmaceutical products. Offered to provide own research and findings.
- Commented that she would like to read more in the report about the impact of intellectual property and investment in this regards.
- Commented that considering the lack of technological scientific resources of Andean countries, there is a limited ability to innovate and adapt to high technology - therefore the benefits of IPR enforcement in the market will be captured by the European Union.
- Noted that the report acknowledges the increased pressure on natural resources. The conclusions in the report are based on the ability of governments to set social inclusion policies regarding the distribution of royalties. The experience of Peru shows that it has been difficult to develop such policies. This impact of this issue needs to be measured.

Response

- Acknowledged the concerns over IPR and that this is a serious matter. Commented that in public statements, the EU has been one of the most active proponents of special and differential treatment on development in the DDA. In terms of eventual concrete legislation, this issue is a matter for political negotiation between Andean countries and the EU.

Annex 8: Local Workshop Summary Evaluation Results

Knowledge gained:

Eighty two percent of participants felt that the workshop provided a forum for feedback and presented them with new perspectives to a level they rated satisfactory or above, with 39% describing the workshop as "satisfactory". Participants commented positively on approaches presented in the workshop, but found the duration of the workshop too short. Reactions to the sustainability impact study were generally positive, however, the need was addressed to provide more in-depth information and undertake consultations with different stakeholders. Despite the limitations of workshop length and information provided by the study, participants found the workshop productive in terms of information and exchange.

Topics and Layout:

Forty three percent of participants considered topics and layout of the workshop as well-structured and in line with the workshop objectives to a level they rated "excellent" or "good". 32% stated they were satisfied with topics and layout of the workshop. Participants noted that the time for questions and debate was very limited. More time would have been needed to discuss areas of their concern.

Clarity of Interim Technical Report:

Thirty five percent of participants rated the information provided by the Interim Report to be suitable for dissemination as either "excellent" or "good", 39% rated these aspects as "satisfactory". Participants stated that the information had been presented clearly, but was insufficient. More information was required especially for the rural areas. It was also suggested to present the report in Spanish.

Expertise of Speakers:

Sixty four percent of participants found the speakers to be knowledgeable experts who delivered their presentations in an appropriate way to a level which they considered "excellent" or "good". 25% regarded this aspect as "satisfactory".

Pre-Workshop Logistics and Administration:

An overall majority of 72% of participants stated that administrative aspects such as travel arrangements, information dissemination and accommodation had been handled in a way they would describe as "excellent" or "good". Seven percent said these aspects had been handled "satisfactory". A small number complained about the late notice of their invitation.

Workshop Administration:

Ninety six percent of participants rated the handling of administrative aspects during the seminar, including venue selection and timing of presentations, as "excellent" or "good". No participants regarded this aspect as "below satisfactory" or "poor". Comments on the workshop's organization were all positive.

Communication Skills of Speakers:

79% of participants regarded the delivery of speakers' presentations and the answering of questions

as either “excellent” or “good”. Fourteen percent regarded these aspects as “satisfactory”.

Overall results:

Thirty nine percent of participants rated the overall results of the workshop as “excellent” or “good” in regard to its usefulness to their work and fulfilment of their expectations. 29% of participants described the overall results as “satisfactory”. Participants commented that the limited time provided by the workshop was not sufficient to cover the many issues they considered necessary. Generally the workshop was regarded as very valuable to professionals as well as citizens, and described as having created awareness about the process and its limitations. The different viewpoints on social sectors and international aspects presented during the workshop were received positively.