



***The environmental and economic
benefits for the European Union of
strengthening co-operation with the
Latin American region in the field of
environment***

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The environmental and economic benefits for the European Union of strengthening co-operation with the Latin American region in the field of environment

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This is a shorter version of a report that has been prepared by Milieu Ltd., by Gijs Nolet (Eco Nolet S.a.r.l.), Guillermo Hernández, Sandra Planes-Satorra, Valentina Mabilia and Sophie Vancauwenbergh.

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Abstract

Environment is receiving increased attention in the EU cooperation agenda, also in light of the EU's objective of reducing its global environmental footprint. In this context, the main purpose of this study is to ascertain the economic and environmental benefits which could accrue to the EU from strengthening co-operation with Latin America in the field of environment.

Based on an analysis of the main drivers of demand of environmental goods and services (EGS) and market conditions (including barriers to trade and investment), as well as on the creation of market development scenarios, the study shows that increased co-operation with Latin America can offer significant business opportunities for EU companies operating in the environmental market, particularly in the water and waste management sectors. Case studies for different countries (Mexico, Chile, Brazil and Colombia) assess opportunities in different segments. The study also highlights the scope for reduction of the EU environmental footprint linked to the consumption of commodities imported from Latin America. Finally, the study identifies pragmatic policy recommendations, highlighting the need to make efforts to reduce barriers to trade and investment in EGS, improving knowledge base of EU business and reducing EU's environmental footprint.

Synthèse

Les enjeux environnementaux font l'objet d'une attention croissante dans le cadre de l'agenda des politiques de coopération de l'UE, notamment compte tenu de l'objectif de réduire l'empreinte écologique globale de l'Union. Dans ce contexte, le présent rapport cherche à approfondir la compréhension des bénéfices potentiels pour l'UE d'une coopération accrue avec l'Amérique Latine dans le domaine de l'environnement.

Sur la base d'une analyse des principaux moteurs de la demande de biens et services environnementaux ainsi que des obstacles au commerce et à l'investissement et des perspectives de croissance pour ces marchés, il peut être conclu qu'un renforcement de la coopération avec l'Amérique Latine pourrait générer des opportunités substantielles pour les entreprises européennes présentes sur les marchés environnementaux, en particulier sur des segments tels que la gestion de l'eau et des déchets. Des études de cas ont été développées pour le Mexique, le Chili, le Brésil et la Colombie afin d'évaluer en détail ces opportunités. Ce rapport met également l'accent sur le potentiel de réduction des impacts environnementaux négatifs liés à la consommation et à la production de certaines matières premières ainsi que de certains produits agricoles importés de l'Amérique Latine. Des recommandations sont ensuite présentées dans le but de contribuer à ce que l'UE puisse profiter au maximum des opportunités identifiées dans la présente étude. Ces recommandations concernent notamment la nécessité d'éliminer un certain nombre d'obstacles au commerce et à l'investissement dans les biens et services environnementaux, d'améliorer les connaissances des entreprises européennes des marchés environnementaux en Amérique Latine, et d'accroître les efforts orientés à réduire l'empreinte écologique liée aux importations en provenance de cette région.

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1 INTRODUCTION¹

Latin America is increasingly seen as a region meriting closer attention, and the European Union (EU) has concluded a wide range of agreements with individual countries and groups of countries in the region. These agreements include provisions aimed at strengthening co-operation on environmental protection and at promoting sustainable development, although these provisions vary in both their scope and level of ambition.

The main purpose of this study is to ascertain the economic and environmental benefits which could accrue to the EU from strengthening co-operation with Latin America in the field of environment. The study aims, therefore, at evaluating whether it is in the EU's interest to strengthen co-operation on environment with Latin America in terms of environmental business opportunities and reducing the EU's environmental footprint.

To this end, the study firstly presents an overview of the environmental challenges and opportunities in Latin America (chapter 2) and of its economic importance (chapter 3). This is followed by an assessment of the potential that the current EU-Latin America co-operation initiatives offer for strengthened co-operation (chapter 4). The study then analyses the potential benefits that may accrue to the EU from enhanced co-operation with Latin America (chapter 5). This analysis focuses mainly on the economic opportunities in environmental markets. The environmental benefits to the EU from enhanced EU cooperation with Latin America (with a particular focus on Brazil) is also addressed but to a lesser extent. In chapter 6, the study takes the economic analysis further for four selected countries (Brazil, Chile, Colombia and Mexico). The goal of the country studies is to illustrate the economic benefits that may accrue to the EU as a result of enhanced cooperation in the field of environment.

Based on the study's conclusions, pragmatic recommendations for strengthening co-operation between the EU and the selected countries are put forward in order to reap the identified economic and environmental benefits.

The market data provided by Environmental Business International Inc. (EBI), a research company that generates strategic market intelligence in the environmental industry, are the building block for estimates produced in the present report. The different concepts used in the study (environmental markets, environmental goods and services) are explained in Annex 1.

2 ENVIRONMENTAL CHALLENGES

Latin America is home to 23% of the world's forests, 31% of the world's freshwater resources, approximately 70% of the world's species and six of the world's 17 mega-diverse countries²: Brazil, Colombia, Ecuador, Mexico, Peru and Venezuela. It also hosts the most biologically diverse region in the world: the Amazon rainforest³.

¹ Monetary data are generally expressed in EUR throughout the report. However, some sources (IMF, World Bank, EBI) report data in USD. In order to ensure consistency across sources and minimise conversion-related distortions, figures are expressed in the original reporting currency. When these are USD, conversion to EUR has been calculated for key figures, using the average annual exchange rate of the base year. In the case of projections, the average USD/EUR exchange rate of the past five years (2010-2014) has been used to convert the amounts from USD into EUR.

² There are 17 mega-diverse countries in the World, according to the classification of the World Conservation Monitoring Centre of the UN Environment Programme (UNEP-WCMC): the USA, Mexico, Colombia, Ecuador, Peru, Venezuela, Brazil, Democratic Republic of Congo, South Africa, Madagascar, India, Malaysia, Indonesia, Philippines, Papua New Guinea, China, and Australia.

³ UNEP (2012) Global Environmental Outlook 5, Summary for Latin America and the Caribbean

Latin America, however, also faces serious environmental challenges⁴, which often relate to population growth⁵, urbanisation-related pressures and unsustainable production and consumption patterns. Latin America is currently the most urbanised of the world's major developing regions, and the urbanisation rate is expected to increase to around 89% in 2050.⁶ In addition, Latin America's development model brings a series of challenges. According to a recent United Nations report⁷, this model is 'wholly dependent on the use of energy and natural resources' and 'environmentally degrading', as there is a 'strong correlation between GDP growth, energy consumption and pollutant emissions'.⁸ Despite differences between countries, the region is still highly dominated by a pattern of inter-industry trade based on exports of natural resources with a low level of processing and imports of manufactured goods, whereas its participation in intra-industry global value chains remains low.⁹

The region's main environmental problems relate to the following three areas: (1) biodiversity loss; (2) water supply and water quality; (3) and urbanisation-driven environmental pressures, in particular waste and wastewater generation and air pollution.¹⁰

According to UNEP, the immense **biodiversity** of Latin America is being lost or seriously threatened by human activities. The region¹¹ includes 5 of the 20 countries with the highest numbers of species of fauna endangered or threatened, and 7 of the 20 countries whose plant varieties are the most threatened.¹² WWF's Living Planet Report 2014¹³ found that Latin America has seen a dramatic drop in wildlife populations between 1970 and 2010 (a decline of 83% compared to a global average of 52%). In Brazil only, around 82 types of mammals, 84 fish species 152 bird species, and 499 varieties of higher plants are currently under threat.¹⁴

In 2010, 46% of Latin America's area was covered by forests, 8.8% less than in 1990. Indeed, between 1990 and 2010 the region lost around 93 million hectares of forest (or an average of 4.6 million hectares per year), accounting for nearly 70% of global forest loss during the period¹⁵. Brazil is one of the countries registering the highest rates of deforestation in Latin America: according to the National Institute of Space Research, the Brazilian Amazon had 18% less forest cover in 2014 compared to 1970¹⁶. Between August 2014 and April 2015 an estimated 1,900 square kilometres of forests were cleared in the Brazilian Amazon¹⁷. In addition, Latin America accounts for 14% of the world's degraded surface area.¹⁸ Deforestation and land degradation are contributing to severe biodiversity loss

⁴ UNEP (2012) Global Environmental Outlook 5, Summary for Latin America and the Caribbean, p. 319

⁵ According to the United Nations, Latin America's population is expected to continue to grow considerably and to reach more than 731 million in 2050. UN (2014). Probabilistic Population Projections based on the World Population Prospects: The 2012 Revision. Population Division.

⁶ UN (2009) Population Division, World Urbanization Prospects: The 2009 Revision

⁷ ECLAC (2013) Sustainable Development in Latin America and the Caribbean: Follow-up to the United Nations development agenda beyond 2015 and to Rio+20, p.69

⁸ ECLAC (2013) Sustainable Development in Latin America and the Caribbean: Follow-up to the United Nations development agenda beyond 2015 and to Rio+20, p.85

⁹ ECLAC (2013) Sustainable Development in Latin America and the Caribbean: Follow-up to the United Nations development agenda beyond 2015 and to Rio+20, p.14

¹⁰ UNEP (2013) Review of existing intergovernmental priorities on sustainable development, with an emphasis on environment, in Latin America and the Caribbean, Nineteenth Meeting of the Forum of Ministers of Environment for Latin America and the Caribbean.

¹¹ Figures include the Caribbean

¹² United Nations Environment Programme Regional Office for Latin America and the Caribbean (ROLAC) (2010): State of Biodiversity in Latin America and the Caribbean.

¹³ WWF (2014) Living Planet Report 2014: Species and spaces, people and places. Available online: http://wwf.panda.org/about_our_earth/all_publications/living_planet_report/living_planet_index2/

¹⁴ World Bank (2014) The little green data book

¹⁵ UNEP (2011) ILAC Regional Indicators Revision 2011

¹⁶ http://rainforests.mongabay.com/amazon/deforestation_calculations.html

¹⁷ IMAZON (2015) Deforestation report for the Brazilian Amazon (April 2015) SAD. Available online: http://imazon.org.br/PDFimazon/Ingles/forest_transparency/SAD-April2015.pdf

¹⁸ UNEP (2011) ILAC Regional Indicators Revision 2011

as well as to the degradation of valuable ecosystem services.

Latin America is rich in water - a key resource in the region's development. While substantial progress has been made over the past 20 years, access to water services is still highly unequal. Rapid urbanization in the region means water and sanitation services have been heavily weighted towards urban populations, to the detriment of interior, rural communities. **Water supply and quality** is a particular problem – today, '30 million Latin Americans are still without access to safe drinking water'.¹⁹

Freshwater resources are unevenly distributed throughout the Latin American territory. For instance, Brazil has abundant freshwater resources (approximately 14% of the global total) and consequently its share of withdrawals is comparatively low (around 1% of the total each year), whereas such resources are scarce in Mexico, which to a large extent explains its high percentage of water withdrawn for domestic, agricultural and other uses (around 20% of the total)²⁰. In addition, insufficient domestic and industrial wastewater treatment, together with excessive fertilizer and agrochemicals use, negatively affects the quality of water bodies and water sources.

Rates of **wastewater collection** vary greatly between countries (e.g. 96% in Chile compared to 10% in Paraguay²¹). The IDB estimates that less than 15% of urban wastewater discharges in Latin America receive treatment²². However, there are significant differences between countries: while practically all wastewater collected in Chile receives treatment, only 32% of wastewater collected in Brazil and 37% in Mexico are treated.²³

The percentage of the population with access to sanitation services has increased over the past years, reaching 81% in 2014, but significant disparities remain between urban and rural areas, with average coverage rates of 86% and 62% in 2014, respectively²⁴.

Air pollution and waste generation²⁵ are also important urban challenges. According to the Clean Air Institute report²⁶, over 100 million people in Latin America breathe polluted air. Moreover, air quality monitoring is weak, with no standardised monitoring techniques or data collection across the region.

Urban solid waste has increased and despite efforts across the LA region, many cities continue to struggle. In Mexico, around 5% of solid waste generated is recycled, while the rate is around only 1% in Brazil.²⁷ A number of laws have been put in place which should see a shift towards more sustainable practices.²⁸

According to the Inter-American Development Bank (IDB), much remains to be done to effectively mainstream environment-related considerations in policy- and decision-making²⁹. This, combined with an increasingly urgent need to decouple economic growth in Latin America from pollutant emissions,

¹⁹ World Bank (2013) World Water Day: Latin America leads in water management but inequalities in access persist. Available online: <http://www.worldbank.org/en/news/feature/2013/03/22/world-water-day-latin-america-achievements-challenges>

²⁰ World Bank (2014) The little green data book (data for Latin America and the Caribbean)

²¹ World Bank (2012) Inclusive green growth in Latin America and the Caribbean.

²² Noyola, A (2013) Municipal wastewater treatment in Latin America: a zoom to Mexico with emphasis in GHG emissions from municipal wastewater treatment. Methane expo 2013. Available online: https://www.globalmethane.org/expo-docs/canada13/mww_11_Noyola_Vancouver_2013.pdf

²³ World Bank (2014) The little green data book

²⁴ World Bank (2014) The little green data book (data for Latin America and the Caribbean)

²⁵ IDB (2009) Sustainability Report 2009

²⁶ CAI (2013) Calidad del Aire en América Latina

²⁷ World Bank (2012) What a Waste: a Global Review of Solid Waste Management.

²⁸ Brazil National Solid Waste Policy 2010

²⁹ IDB (2009) Sustainability Report 2009

the use of energy and natural resources and overall environmental impacts, suggests substantial expansion potential of the environmental goods and services sector³⁰.

3 ECONOMIC IMPORTANCE OF LATIN AMERICA AND RELATED OPPORTUNITIES

Latin America is home to more than 572 million people or approximately 8% of the global population, and has a combined GDP of approximately USD 5.5 trillion³¹ (about EUR 4.1 trillion) (2013). According to OECD data³², Latin America's economy grew at an average annual rate of 4% between 2003 and 2012, in spite of the international financial crisis. This growth was primarily driven by commodity export revenues, in particular linked to Chinese demand. Due to falling exports, growth slowed down to a rate of 2.3% in 2013. According to recent IMF estimates, the region, which includes members of the G20 (Brazil and Mexico), will continue to grow at a rate of 2.9% per year between 2015 and 2019, slightly lower than in the past decade, due to the slowdown in countries like Brazil and Argentina.

In recent times, the region 'has seen significant improvement in the job market, the fight against poverty and access to education'³³. Its middle class is growing and, as such, the region has the potential for significant increased trade and investment, including with the EU. As illustrated in this report, these developments have contributed to a growth of the region's environmental market at a faster pace than globally. Moreover, the demands linked to high urbanisation suggest there should be significant potential for increased investment in resource efficient technologies, as well as in environmental goods and services.

3.1 TRADE BETWEEN LATIN AMERICA AND THE EU

Trade in goods and services between Latin America and the EU more than doubled over the last decade – reaching EUR 212 billion for goods (2013) and EUR 101 billion for services (2012).³⁴ The EU is the third trade partner of Latin America, accounting for 15.4% of total trade with the region in 2013, after the USA (43.1%) and China (15.5%)³⁵. Furthermore, the EU is a major foreign investor in Latin America³⁶: between 2005 and 2008, FDI from the EU accounted for 40% of the total for LA. This share has declined since, and neared 20% in 2013.³⁷ FDI stock held by EU investors in Latin America neared EUR 850 billion in 2012.³⁸

According to UN forecasts³⁹, the EU will remain one of Latin America's largest trade partners in the coming years, although Latin America's shares in total EU trade will continue to be modest compared to those for more advanced regions. China's share of Latin America's imports and exports is expected to continue to grow over the period to 2020, and a slight decline is expected in the case of the USA.

In recent years, EU merchandise exports to Latin America have increased more rapidly (around 10% per year between 2004 and 2013) than EU imports (6% per year). EU exports to Latin America largely consist of manufactured products, which accounted for nearly 85% of total exports (EUR 97 billion) in 2013. A very significant share of these exports corresponds to machinery and transport

³⁰ ECLAC (2013) Sustainable Development in Latin America and the Caribbean: Follow-up to the United Nations development agenda beyond 2015 and to Rio+20

³¹ World Bank, World Development Indicators. GDP data in 2013 current USD.

³² OECD (2013) Latin American Economic Outlook 2014: Logistics and Competitiveness for Development

³³ European Commission (2014) MEMO: EU cooperation with Latin America, 24 March 2014.

³⁴ European Commission (2015) European Union, Trade in goods with Latin American Countries. Available online: http://trade.ec.europa.eu/doclib/docs/2006/september/tradoc_113483.pdf

³⁵ European Commission (2014) European Union: trade in goods with Latin America

³⁶ http://www.eas.europa.eu/lac/docs/2012_eu-celac_leaflet_en.pdf

³⁷ UN ECLAC (2014): Foreign Direct Investment in Latin America and the Caribbean 2013. Figures include the Caribbean.

³⁸ Eurostat

³⁹ UN ECLAC (2012) Latin America and the Caribbean and the European Union: striving for a renewed partnership

equipment (47% of the total). The EU imports primarily primary products, which together accounted for nearly 70% of total EU imports from Latin America in 2013⁴⁰.

Trade in commercial services between Latin America and the EU more than doubled over the past decade –from EUR 48 billion in 2004 to more than EUR 100 billion in 2012. The EU has traditionally had surplus in trade in commercial services with Latin American countries.

In 2012, Latin America accounted for 8.4% of global EU exports in commercial services⁴¹, and 8.9% of global EU imports⁴² according to Eurostat. In addition, as in the case of trade in goods, exports of commercial services from the EU to Latin American countries have increased more rapidly (around 12% per year between 2004 and 2012) than overall EU exports of commercial services (8% per year over the same period). Imports of services from Latin America have also increased more rapidly than global EU imports of services (8% and 6% per year, respectively), but the difference is less pronounced.

At the level of the four countries analysed more in-depth for this report, Brazil is currently the EU's main trading partner in Latin America. In fact, the EU is Brazil's first trading partner, accounting for around 20% of Brazil's total imports and exports in 2013.⁴³ Mexico is the EU's second largest partner in the region, followed by Chile and Colombia⁴⁴. In all, the four countries account for 74% of EU exports and 70% of EU imports to and from Latin America.

In 2013, **Brazil's** trade in goods amounted to EUR 507 billion or 22% of GDP⁴⁵, a relatively low share compared to other Latin American countries and among the lowest in the world. This reflects the importance of Brazil's domestic market as well as the protectionist nature of some of its economic and trade policies⁴⁶. EU exports to Brazil consist mainly of manufactured products, such as machinery, chemicals and transport equipment (85.8%)⁴⁷. In turn, the majority of EU imports from Brazil are primary products (67.9% of the total in 2013), in particular agricultural products (45.7%)⁴⁸, making Brazil the single largest exporter of agricultural products to the EU.⁴⁹ Products from Brazil's extractive industry also account for an important share of total exports to the EU (around 21%).

In 2013, **Mexico's** trade in goods amounted to EUR 613 billion or 61.2% of Mexican GDP, one of the largest shares in Latin America⁵⁰. This reflects the high level of openness of the Mexican economy⁵¹, with the USA as its main trading partner. In terms of imports, the EU accounted for around 10.6% of total imports to Mexico (EUR 34 billion), up from 8.6% in 2000, making it the third trading partner for Mexico in terms of imports, after the USA (49%) and China (16%). The strong US presence on the

⁴⁰ http://trade.ec.europa.eu/doclib/docs/2006/september/tradoc_111527.pdf

⁴¹ 'The services sector accounts for more than 70% of GDP in the EU and in other developed economies, as well as for a substantial share of GDP in emerging economies. The sector is also the largest employer in the EU and other advanced economies. Yet the proportion of services trade in total international trade lags well behind its importance in overall economic activity. Reasons for the low share of services in overall trade include lower tradability of (some) services, under-reporting of the importance of services for overall trade in the balance of payments, and barriers to trade in services. (...) As services are instrumental in ensuring the smooth running of the economy, and play an increasing role in facilitating international trade in goods, restrictions imposed on the services trade may lower the international competitiveness of an economy' (source: http://www.europarl.europa.eu/thinktank/en/document.html?reference=EPRS_IDA%282015%29549000)

⁴² The main trading partners in the region are Brazil (accounting for 2.3% of EU exports to non-EU countries and 2% of total EU imports from the rest of the world in 2013) and Mexico (1.6% of EU exports and 1% of EU imports in 2013).

⁴³ European Commission (2014) European Union: trade in goods with Brazil

⁴⁴ In 2013, Brazil accounted for 38.6% of LA's GDP, Mexico for 21.7%, Argentina for 10.5%, Chile for 4.8% and Colombia for 6.5%, according to World Bank data (World Development Indicators, GDP at current USD).

⁴⁵ World Bank database (<http://data.worldbank.org/indicator/TG.VAL.TOTL.GD.ZS/countries?display=default>)

⁴⁶ World Bank (2015) The curious case of Brazil's closedness to trade. Policy Research Working Paper 7228

⁴⁷ European Commission (2014) European Union: trade in goods with Brazil

⁴⁸ European Commission (2014) European Union: trade in goods with Brazil

⁴⁹ European Commission (2013) Agricultural trade in 2013: EU gains in commodity exports. Available online: http://ec.europa.eu/agriculture/trade-analysis/map/2014-1_en.pdf

⁵⁰ World Bank database (<http://data.worldbank.org/indicator/TG.VAL.TOTL.GD.ZS/countries?display=default>)

⁵¹ Exports plus imports as a share of GDP is a measure commonly used to assess the countries' openness to trade.

Mexican market is due to the relative advantageous position of US suppliers of such goods, compared to suppliers from other regions. The long-established economic relations between the two countries⁵², enhanced by their geographical proximity and strengthened with the entry into force of North American Free Trade Agreement (NAFTA), have facilitated their market entry and dominance in certain sectors. With regards to the environmental market, the USA and the EU are both providers of advanced technologies and services (i.e. substitutes in many cases), and therefore incumbent firms are likely to hold an advantageous position vis-à-vis new entrants.

In 2013, **Chile**'s trade in goods amounted to EUR 120 billion or 53% of GDP⁵³, one of the largest shares in Latin America. This reflects the Chilean economy's relatively high openness to trade⁵⁴. In the same year, the EU accounted for around 16.4% of Chile's total imports (approximately EUR 10 billion), making it the third trading partner for Chile in terms of imports, after the USA and China (with around 20% each). The EU is the second market for Chilean exports (15%) after China (25%). It is important to note that the copper industry accounts for more than 50% of total Chilean exports (2012)⁵⁵ and that, historically, copper has represented around 55% of total Chilean exports to the EU.⁵⁶

In 2013, **Colombia**'s trade in goods amounted to EUR 91 billion or 31% of GDP⁵⁷. The EU accounted for around 13% of Colombia's total imports (approximately EUR 6 billion), making it the third trading partner for Colombia in terms of imports, after the USA (28%) and China (17%). The EU is the second market for Colombian exports (16% of the total), far behind the United States (32%). Germany holds the largest share of EU exports to Colombia accounting for around 28%, followed by France (18%), Italy (13%), Spain (12%) and the United Kingdom (6%). EU exports to Colombia largely concern machinery and appliances, chemicals and transport equipment⁵⁸. Overall, 91% of total EU exports to Colombia in 2013 were manufactured products.⁵⁹ Colombian exports to the EU are primarily: petroleum oils, coal, bananas and coffee, which account for 87% of total exports to the EU.

3.2 CONCLUSION

EU trade with Latin America has expanded more rapidly than overall extra-EU trade. The trade exchanges between both regions underscore the potential for increased technology transfer via EU exports of capital goods, including, potentially, environmental equipment and environmentally preferable products. As pointed out by the OECD⁶⁰, increased trade in environmental goods and services (EGS) tends to result in a win-win situation. For importing countries, fewer and lower barriers to trade in EGS can translate into greater access to the most efficient, diverse and least expensive goods and services. For exporters, liberalisation can create new market opportunities and spur the development of globally competitive industries dedicated to measuring, preventing, limiting or correcting environmental damage.

⁵² The high volumes of trade between Mexico and the USA is to a great extent explained by the traditional gravity model, according to which trade between two countries increases with the economic size of the trade partners and the potential flow is reduced by distance between them. Mexico and the USA are large neighbouring economies. In addition, NAFTA has also highly increased the flows between them, as discussed in the trade policy section below.

⁵³ World Bank database (<http://data.worldbank.org/indicator/TG.VAL.TOTL.GD.ZS/countries?display=default>)

⁵⁴ Exports plus imports in goods and services as a share of GDP is a measure commonly used to assess the countries' openness to trade.

⁵⁵ This includes refined copper (28% of Chile's total exports in 2012), copper ore (20%) and raw copper (4.1%), according to data from the Observatory of Economic Complexity (available online: <http://atlas.media.mit.edu/profile/country/chl/>)

⁵⁶ European Commission, DG Trade (<http://ec.europa.eu/trade/policy/countries-and-regions/countries/chile/>)

⁵⁷ World Bank database (<http://data.worldbank.org/indicator/TG.VAL.TOTL.GD.ZS/countries?display=default>)

⁵⁸ European Commission, Annual Report on the Implementation of the EU-Colombia/Peru Trade Agreement, 2014

⁵⁹ European Commission (2014) European Union: trade in goods with Colombia

⁶⁰ OECD (2005): Trade that Benefits the Environment and Development. Opening markets for environmental goods and services. OECD Trade Policy Studies

4 CO-OPERATION ON ENVIRONMENTAL MATTERS

4.1 OVERVIEW

The EU and Latin America have developed mechanisms for cooperation since the 1990s.⁶¹ The 1999 Strategic Partnership Agreement between the EU and the Latin American and Caribbean Region (LAC) set out priorities for cooperation. Over the years cooperation has expanded to include further political and cooperation agreements including association agreements as well as country specific strategic partnerships.

The EU has concluded **Association Agreements** covering political dialogue, cooperation, and trade with Chile, Mexico and Central America, as well as Strategic Partnerships with Brazil and Mexico. In addition, the EU has negotiated or is negotiating bilateral agreements with all three sub-regional blocs: MERCOSUR⁶², ANDEAN⁶³ and SICA⁶⁴. The EU is also negotiating a trade agreement with MERCOSUR as part of the overall negotiation for a bi-regional Association Agreement.

In recent years, provisions for the protection of the environment and the promotion of sustainable development have become important components, for example:

- The 2003 **Political and Cooperation Agreement between the EU and the Andean Community** calls for the promotion, conservation and sustainable management of natural resources including the sustainable use of biodiversity resources.
- The 2012 **Association Agreement with Central America** includes a specific chapter on Environment and Sustainable Development with a clear identification of the areas for co-operation. Moreover, the objectives of environmental protection and sustainable development are reflected in several other chapters dealing with trade and industrial development.
- The 2012 **Trade Agreement between the EU and Colombia and Peru** includes a detailed Trade and Sustainable Development chapter to promote and preserve a high level of environmental protection. The signatories commit to strengthening the role of trade in the conservation and sustainable use of biological diversity, natural resources and in the reduction of pollution. More specifically, they pledge to facilitate trade and foreign direct investment in environmental goods and services.

In general, the Agreements have led to a range of **cooperation measures** including: policy dialogue, exchanges of best practices, transfer of technology, the creation of incentives for innovation and environmental protection, the integration of environmental considerations in other policy areas, the promotion of sustainable production and consumption patterns, participation in multilateral environmental agreements as well as strengthening environmental management, monitoring and control systems.

As mentioned above, the EU has also concluded **strategic partnerships** with Brazil and Mexico, given their respective positions as economic actors. These partnerships have also paved the way to strengthen bilateral co-operation on the environment:

- The 2007 **EU-Brazil Strategic Partnership** calls for closer co-operation, notably on forests,

⁶¹ <http://eeas.europa.eu/>

⁶² The members of MERCOSUR include Argentina, Brazil, Paraguay, Uruguay and Venezuela.

⁶³ The Andean Community (ANDEAN) includes Bolivia, Colombia, Ecuador and Peru.

⁶⁴ Belize, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, and Panama have established the Central American Integration System (SICA).

biodiversity and to curb unsustainable production and consumption patterns. The Strategic Partnership is implemented through Joint Action Plans (JAP). Some 30 sectorial dialogues (including on environment dialogue) foreseen in the JAP are currently active. In relation to forest issues, Brazil and the EU agree to promote sustainable forest management at all levels and exchange experience on best practices and measures to prevent and combat illicit trafficking in forest products, including timber, wildlife and other forest biological and genetic resources. In relation to biodiversity, Brazil and the EU reaffirm the need to enhance their mutual efforts in implementing the Convention on Biological Diversity (CBD) in order to achieve its three objectives and the new global targets to significantly reduce the current rate of biodiversity loss by 2020, including in regards to financial targets and to the mobilization of new and additional resources. Both parties also agree to take into account the principles set out in the Rio Declaration and other internationally agreed instruments, especially the Nagoya Protocol to the CBD, on access to genetic resources and associated traditional knowledge, and the fair and equitable sharing of benefits arising from their utilization.

- The 2008 **EU-Mexico Economic Partnership, Political Coordination and Cooperation Agreement** and associated Joint Executive Plan have enabled Mexico and the EU to broaden their dialogue and deepen bilateral co-operation. Both sides agree to collaborate on environment and sustainable development and to enhance co-operation on: international environmental governance, climate change, biological diversity, the management of dangerous chemical substances and to improve fishery conservation measures. It should be noted that climate change/biodiversity co-benefit projects/policies are encouraged and involve ecosystem based approaches.

In addition to the dialogue created under the various co-operation programmes, there is also institutional cooperation in the form of regular High Level Dialogues on Environment with Brazil⁶⁵ and Mexico⁶⁶. These structured meetings provide opportunities to exchange information about policy developments and approaches to multilateral environment processes. Moreover, they pave the way to establish specific bilateral cooperation at technical level, in particular on issues of mutual interest.

4.2 REGIONAL CO-OPERATION

In December 2014 the EU announced its regional cooperation package for Latin America (2014-2020), known as the Multiannual Indicative Programme (MIP). This regional cooperation programme will be a fundamental instrument for strengthening the strategic partnership between Latin America and the EU. An indicative budget of €805 million, an increase of 45% compared with the 2007-2013 period (€556 million), will be dedicated to regional initiatives open to all the partner countries in Latin America and will focus on a series of priority areas: the security-development nexus, good governance, accountability and social equity, inclusive and sustainable growth for human development, environmental sustainability and climate change and higher education.

4.3 FUTURE BILATERAL RELATIONS

Under the Development Cooperation Instrument (2007-2013), Brazil, Mexico and Chile received support for the development of bilateral relations (including support for the protection of the environment). From 2014 to 2017, they will benefit from support provided through regional⁶⁷ and

⁶⁵ http://ec.europa.eu/environment/international_issues/relations_brazil_en.htm

⁶⁶ http://ec.europa.eu/environment/international_issues/relations_mexico_en.htm

⁶⁷ Development Cooperation Instrument 2014-2020: Multiannual Indicative Regional Programme for Latin America. Available online: http://eeas.europa.eu/la/docs/mip_alr_vf_07_08_14_en.pdf

thematic programmes⁶⁸ and also from the new Partnership Instrument (PI)⁶⁹. Loans from the European Investment Bank⁷⁰ are equally available. The PI has an overall budget of EUR 954.8 million for the period from 2014 to 2020. The indicative allocation of the budget to strategic priorities is prepared in the form of Multi-annual indicative programmes (MIPs), adopted by the Commission⁷¹.

4.4 SUMMARY

Latin America will remain an important partner for the EU on environmental matters. Co-operation should be enhanced over the coming years to tackle the increasing loss in biodiversity and related issues contributing to this loss – deforestation and land degradation. The regional and thematic programmes and Partnership Instrument should provide the necessary support to meet this challenge.

5 ECONOMIC AND ENVIRONMENTAL BENEFITS FROM ENHANCED COOPERATION

5.1 OVERVIEW OF ECONOMIC OPPORTUNITIES IN LATIN AMERICA ENVIRONMENTAL MARKETS

The environmental market in Latin America was worth around USD 58 billion or about € 44 billion in 2013, i.e. approximately 5.5% of the global total that year⁷². At country level, Brazil, which is the region's largest and most populated economy, is also its largest environmental market: 45% of Latin America's total (2013), followed by Mexico (24%), Chile (8%), Argentina (6%), Colombia and Peru (around 5% each).

The largest environmental segment is water utilities, accounting for USD 14.6 billion or 27% of the total environmental market in LA, followed by water treatment works (USD 10.3 billion, 19% of the total), solid waste management (USD 7 billion, 13%) and water equipment and chemicals (USD 6.8 billion, 12%).

Figure 1 below presents the share of each segment over the total environmental markets in Latin America.

⁶⁸ International cooperation and development, thematic instruments and programmes:

https://ec.europa.eu/europeaid/funding/funding-instruments-programming/funding-instruments/thematic-instruments_en

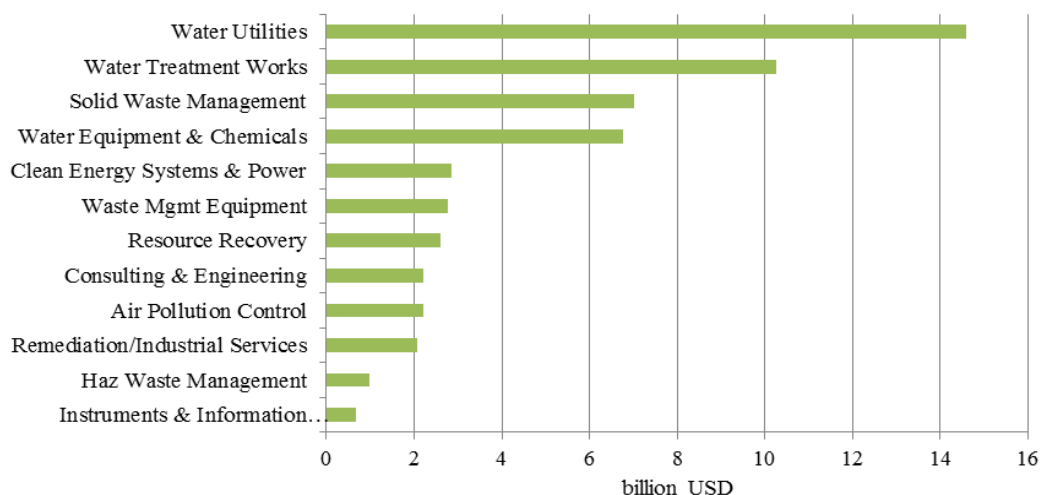
⁶⁹ Partnership Instrument, First multi-annual indicative programme for the period 2014-2017. Available online: http://ec.europa.eu/dgs/fpi/documents/pi_mip_annex_en.pdf

⁷⁰ See: <http://www.eib.europa.eu/projects/regions/ala/index.htm>

⁷¹ Partnership Instrument, First multi-annual indicative programme for the period 2014-2017, Available online: http://ec.europa.eu/dgs/fpi/documents/pi_mip_annex_en.pdf

⁷² Environmental Business International

Figure 1. Latin American Environmental Market per industry segment, 2012 (billion USD)⁷³

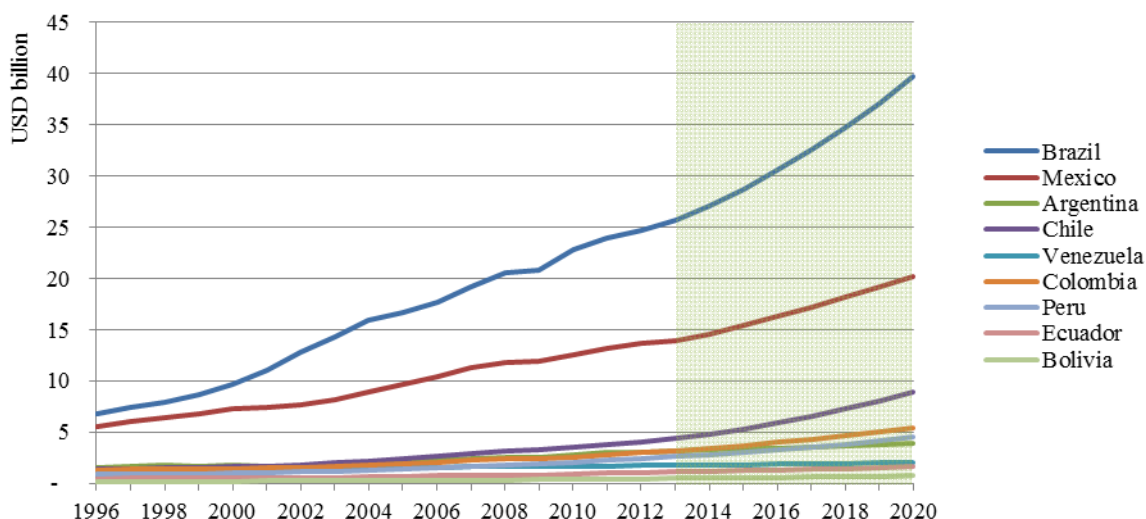


Source: Environmental Business International Inc.

Between 1996 and 2013, Latin America’s environmental market grew more rapidly than the global environmental market as a whole: 6.5% compared to 3.9% per year. This is expected to continue in the period 2013-2020, when Latin America’s environmental market is expected to grow by an average 6.4% per year (from USD 58 billion in 2013 to nearly USD 90 billion in 2020), compared to 3.9 percent per year globally, according to EBI forecasts. Latin America is projected to account for around 10% of the global environmental market growth between 2013 and 2020⁷⁴.

At the country level, Figure 2 shows the relative size of the different environmental markets in Latin America and the expected evolution of these markets in the coming years, according to EBI forecasts. Brazil is expected to grow the most in absolute terms over the coming years, to reach USD 40 billion by 2020. Markets in Mexico and Chile are projected to be worth approximately USD 20 billion and USD 9 billion by the end of the decade.

Figure 2. Evolution of Latin American environmental market per country, 1996-2020 (USD billion)



Source: Environmental Business International Inc.

⁷³ Definitions of the industry segments are presented in Section 1.1

⁷⁴ This figure is higher than LA’s expected contribution to global GDP growth (6% for the period 2012-2019, as presented in section 3.2.2 above).

In relative terms, Chile is expected to experience the highest growth in its environmental market between 2013 and 2020 (an average growth rate of 10.7% p.a.), followed by Colombia (around 9% p.a.), Brazil (6.4% p.a.) and Mexico (5.5% p.a.). While Brazil has the largest environmental market, the largest importer of EGS within Latin America is Mexico.⁷⁵

5.2 ENVIRONMENTAL BENEFITS FROM ENHANCED COOPERATION

From an EU perspective, the environmental benefits that could stem from strengthening cooperation with Latin America relate to two main interrelated co-operation activities. First, environmental benefits could arise from the promotion of adherence to and enforcement of multilateral environmental agreements (MEAs). Second, environmental benefits could originate from the reduction of the EU's environmental footprint of its consumption of commodities imported from Latin America.⁷⁶ Both categories of environmental benefits are discussed in this section. It must be noted that, concerning footprint reductions, the focus is on environmental benefits related to selected commodities and producing countries.

5.2.1 Convention on Biological Diversity – a key MEA for Latin America and the EU

The Convention on Biological Diversity (CBD) is a legally-binding Multilateral Environmental Agreement signed in Rio de Janeiro, Brazil, in 1992, which has three main objectives: (1) the conservation of biodiversity; (2) the sustainable use of biodiversity; and (3) the fair and equitable sharing of the benefits arising from the use of genetic resources.⁷⁷ Overall, it aims at making biodiversity conservation an integral part of the development process. The CBD calls for each country to develop a National Biodiversity Strategy and Action Plan (NBSAP), which should include a range of measures to be implemented in order to fulfil the Convention's objectives⁷⁸.

In 2010, the CBD parties adopted the *Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets*⁷⁹. The vision of the plan is a world where, 'by 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people'.⁸⁰ Its strategic objectives are grouped under five main goals⁸¹ and are implemented through the 20 so-called Aichi Biodiversity Targets that all Parties are required to further develop through specific and measurable targets under their NBSAPs.⁸²

As one of the mega-diverse countries, Brazil is committed to develop and implement policies to conserve and sustainably use biological resources. Brazil is one of the countries to have adopted national targets specifically implementing the Aichi targets⁸³. Brazil's targets include the reduction in

⁷⁵ Source: Bucher, H., Drake-Brockman, J., Kasterine, A., and M. Sugathan (2014). Trade in Environmental Goods and Services: Opportunities and Challenges. International Trade Centre Technical Paper, Geneva.

⁷⁶ The section below outlines the footprint-related impacts of EU consumption of commodities imported from Latin America. These are considered to be an estimate of the potential benefits that could accrue to the EU from taking measures to reduce such environmental footprint.

⁷⁷ United Nations (1992) Convention on Biological Diversity. Available online: <https://www.cbd.int/doc/legal/cbd-en.pdf>

⁷⁸ <https://www.cbd.int/nbsap/default.shtml>

⁷⁹ CBD, Decision adopted by the Conference of the Parties to the Convention on Biological Diversity at its tenth meeting, X/2. The Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets, Nagoya, Japan, 18-29 October 2010 (UNEP/CBD/COP/DEC/X/2, 29 October 2010), available online: <https://www.cbd.int/doc/decisions/cop-10/cop-10-dec-02-en.pdf>

⁸⁰ <https://www.cbd.int/doc/decisions/cop-10/cop-10-dec-02-en.pdf>

⁸¹ The five main goals are: (1) Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society; (2) Reduce the direct pressures on biodiversity and promote sustainable use; (3) To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity; (4) Enhance the benefits to all from biodiversity and ecosystem services; (5) Enhance implementation through participatory planning, knowledge management and capacity building.

⁸² See: <https://www.cbd.int/sp/targets/#GoalB>

⁸³ Fifth National Report to the Convention on Biological Diversity, Brazil, January 2015. Available online: <https://www.cbd.int/doc/world/br/br-nr-05-en.pdf>

the rate of loss of native habitats by at least 50% by 2020, compared with the 2009 rate; the incorporation and promotion of sustainable management practices in agriculture, livestock production, aquaculture, silviculture, extractive activities, and forest and fauna management; and the reduction of pollution to levels that are not detrimental to the ecosystems. Chile, Colombia and Mexico have also taken measures to protect biodiversity.

However, for many Latin American countries, the implementation of the Biodiversity Convention remains a challenge, particularly for developing countries that have limited financial, human and technical capacity. Challenges vary and include: the generation of vital information on existing stocks, the development of suitable monitoring systems, strengthening enforcement capacities and mainstreaming biodiversity concerns into sectoral policies and programmes. The EU is one of the largest contributors of biodiversity finance to developing countries and this funding has been instrumental in providing support to meet the related CBD challenges. Under the current programming (2014—2020) for Latin America, biodiversity should continue to be a priority area for support.

In addition, the EU Biodiversity Strategy to 2020⁸⁴ includes 6 Targets to ensure biodiversity conservation in the EU through domestic measures and purports to step up its ‘contribution to averting global biodiversity loss’ Under target 6 the EU aims to reduce indirect drivers of biodiversity loss, for instance by providing the right market signals for biodiversity conservation and enhancing the contribution of trade policy to biodiversity conservation. In this regard, the Strategy aims at reducing the EU’s biodiversity footprint on the rest of the world: it seeks to enhance ‘the contribution of EU trade policy to conserving biodiversity, whilst eliminating as far as possible any negative biodiversity impacts of EU trade agreements; and to assist developing countries in their efforts to conserve biodiversity and ensure its sustainable use’⁸⁵.

5.2.2 Reducing the EU’s environmental footprint

One of the aims of the EU’s 7th Environmental Action Programme (EAP) consists of reducing the negative impact of consumption in the EU on the environment beyond its borders by improving the production methods of the consumed resources. For example, pollution and resource use linked to the production of imported goods consumed in the EU can be attributed to EU consumers. In this context, EU’s international trade is a logical area to be carefully considered, as the consumption in the EU relies heavily on imported resources. As a result the EU is currently in a way ‘exporting’ a large part of its consumption-related negative environmental pressures. In today’s interconnected world where the negative environmental impacts (such as habitat degradation) of the production of resources take place in countries far removed from the place of consumption, those embodied pressures are estimated to account for about three-quarters of the total pressures activated by consumption.

Commodities in particular are associated with significant environmental pressures, including on land and water use, and in terms of polluted water, soil and air, degraded ecosystems and biodiversity loss in producing countries. The present sub-section briefly discusses the potential for environmental benefits by reducing the negative environmental impacts of EU commodity imports in producing countries in Latin America. To do so, it outlines the main drivers for those impacts and highlights their implications in the most affected producing regions, the rationale being that, by using EU-LA cooperation to act upon those drivers, environmental benefits can be reaped in the form of reductions in the global environmental footprint of EU consumption.

⁸⁴ COM(2011) 244 final. Our life insurance, our natural capital: an EU biodiversity strategy to 2020.

For an overview of the EU biodiversity Strategy see:

<http://ec.europa.eu/environment/nature/info/pubs/docs/factsheets/Biod%20Strategy%20FS.pdf>

⁸⁵ Fifth Report of the European Union to the Convention on Biological Diversity, June 2014, p. 37. Available online: <https://www.cbd.int/doc/world/eur/eur-nr-05-en.pdf>

As will be seen, soy and livestock products are the commodities with the greatest environmental footprint. In terms of producing countries, Brazil clearly stands out as both the main commodity exporter to the EU and the country in the region with the highest potential for the EU to reduce its commodity-related environmental footprint.

A number of studies based on input-output modelling as well as environmental accounts for nine EU Member States (Czech Republic, Denmark, Germany, France, Italy, the Netherlands, Austria, Portugal and Sweden) have identified four product groups that are particularly environmental pressure-intensive: construction works; food products; products of agriculture, forestry and fisheries; and electricity, gas and water services. Although these groups account for less than 20% of the EU's total consumption, they together contribute 42 % to GHG emissions, 52 % to acidifying emissions, 37 % to ground ozone precursors and 57 % to material input, respectively. Other sectors, such as mining and quarrying (e.g. the EU imports copper from Chile and iron from Brazil, among others), manufacturing and transport also generate negative pressures on the environment, both direct and indirect. In all cases, the nature and extent of these pressures and related impacts are location-specific and depend on harvesting and production conditions.

In general terms, however, the production and consumption of agricultural and forestry commodities tend to have sizeable negative impacts on the environment. Indeed, the harvesting and production of agricultural and forestry commodities are powerful land take and land use change drivers as well as heavy users of energy and chemical inputs. Pollution including water runoff is also associated with agricultural activities, and associated transport infrastructure often results in pollution and ecosystem fragmentation and degradation.

Cuypers et al provide an estimation of overall environmental impacts for a broad range of commodities by considering their impacts on climate change, biodiversity, human health and natural resource use. On a global scale, the most significant impacts relate to crustaceans (first ranked) and bananas, beef, rice and soybeans (all second ranked). Once the total volume of EU imports is factored in, the consumption of livestock products from ruminant animals which are fed on grazing land (mainly beef), emerges as the most harmful to the environment in source countries due to its strong links to deforestation. The same study concludes that the EU is the world's largest importer of deforestation embodied in crops and livestock products (9 million ha of deforestation). Embodied deforestation refers to deforestation involved in the production of a good, commodity or service, and is the concept commonly used to link deforestation to consumption.⁸⁶ Imported oil crops appear to be a major driver in this regard, as embodied deforestation is primarily associated with two crops and their derived secondary crop products: soybean cake and soybeans (together 82%) and oil palm (17%). In the case of the first group of products, the EU is, together with China, the most important destination of imports from Brazil, Argentina and, increasingly, Paraguay and other Latin American countries (which are the world's largest net exporters of embodied deforestation, both globally and from an EU perspective) in recent decades, thus driving the expansion of pasture areas in those countries. Brazil accounts for almost 50% of the EU's embodied deforestation imports.

A study for Friends of the Earth Europe, in turn, estimates that Europe imports around six times more embodied (or "virtual") agricultural land than it exports. There is therefore significant scope for reducing the environmental pressures that EU consumption puts on the exporting countries of Latin America. After China (33 million ha), the countries from which Europe imports the most virtual agricultural land are in Latin America: Brazil (19 million ha) and Argentina (12 million ha) – mainly related to grazing areas and oil seed production. Furthermore, according to a recent FERN report, the EU is thought to have imported EUR 6 billion worth of agricultural commodities in 2012, including

⁸⁶ Cuypers, D., Peters, G., Prieler, S., Geerken, T., Karstenen, J., Fisher, G., Gorissen, L., Hizsnyik, E., Lust, A., & Van Velthuizen, H. (2013). The impact of EU consumption on deforestation: Comprehensive analysis of the impact of EU consumption on deforestation. Study funded by the European Commission, DG ENV, and undertaken by VITO, IIASA, HIVA and IUCN NL. Technical report – 2013 – 063. ISBN: 978-92-79-28926-2.

beef, leather, soy and palm oil, which were grown or reared on land illegally cleared of forests in the tropics. The same report underscores that, although most extensive evidence of such illegalities relates to Brazil and Indonesia, which together account for about half of all tropical deforestation, available data and information suggest that most forest clearance for soy and cattle elsewhere in Latin America is also illegal.

Although agricultural and forestry commodities, soy and livestock products in particular, are incontestably major drivers of negative environmental pressures, accurately measuring environment-related impacts of EU consumption of imported commodities is not without challenges. This is due to several reasons such as complex supply chains for many commodities which are hard to unravel (lack of transparency in the global trade markets where many intermediaries are involved, heterogeneity of national import and export datasets, etc.) as well as the broad range of potential impacts and lack of standardised metrics. A recent study prepared for the European Commission attempted to assess biodiversity-related impacts of EU direct as well as embodied imports of selected commodities. The findings of that study for soy (and soy products) and beef from Latin America are summarised next. As previously stated, Brazil is the main focus.

5.2.2.1 Environmental benefits of reduced biodiversity impacts of soy and related products

Brazil and Argentina account for nearly half of the global soybean production. These countries increased their soybean production by, respectively, 357% and 276% between 1990 and 2011. In addition, both countries plan to keep expanding soybean planting in future. Paraguay is a comparatively smaller yet fast-growing producer and exporter.

In the EU, demand for soy is mainly driven by soybean meal requirements. Soybean meal accounts for 60% of the vegetable meals used as feedstuff. EU soy demand is also driven by soybean oil, of which the food and non-food uses are split two thirds to one third. The bulk of non-food use of soybean oil corresponds to biodiesel. Brazil, Argentina and Paraguay are among the top countries in Latin America that export soy to the EU. Roughly two-thirds of Brazil's production is produced for export. In 2007, in terms of soybean equivalent of the total amount of soybeans and soybean-based commodity imports, Brazil exported 32% of its harvest to the EU, whereas Argentina and Paraguay exported, respectively, 25% and 17% of their harvest to the EU. In turn, about half of EU soybean imports come from Brazil, while Paraguay has kept increasing its market share to 17% percent in 2011-12. As to soybean meal, the bulk of imported supplies to the EU are provided by Brazil and Argentina.

The consumption and production of soy and soy products is strongly linked to deforestation. Recent studies identify soybean cultivation as one of the major drivers behind deforestation and the subsequent loss of biodiversity in Latin America. This dramatic direct effect on biodiversity is mainly caused by large-scale monoculture soya fields leading to a near 100% reduction of forest species in these fields. In the land clearing process, burning is often applied, which is an additional threat to flora and fauna. The expansion of soy production in Latin American countries, particularly in Brazil, has resulted in the conversion of large areas of tropical forest and savannah into plantations. The high biodiversity of the Cerrado, Amazon basin and Pantanal are under serious threat by these practices. Erosion and subsequent siltation of rivers and wetlands, as well as hydrological disturbance and chemical pollution are additional environmental threats related to soy production. Over the past three decades, more than half of the Brazilian Cerrado's surface of two million km² has been taken for agriculture. It is now among the world's top regions for the production of beef and soy. By some estimates, if this trend is pursued, the whole ecosystem of the Cerrado could have disappeared by 2030. Moreover, as soya and other crops expand into the Cerrado region, beef production is being displaced into the Amazon, thus further threatening rainforest ecosystems. In Southern Brazil, soy farming has contributed to the near extinction of the Atlantic Forest. In addition, according to EORA

modelling results, the largest number of threatened species attributable to soy consumption in the EU corresponds to Brazil. Argentina and Paraguay also feature prominently.

EU consumption of soy and soy products for both food and non-food uses can therefore be considered to be one of the main contributing factors to the alarming progress of deforestation and biodiversity loss in Brazil and other Latin American countries. The potential for reducing these environmental pressures and thus the EU's environmental footprint by ensuring both the legality and the respect of ecological boundaries, although not without challenges, is therefore significant.

5.2.2.2 Environmental benefits of reduced biodiversity impact of beef production

In 2012, the EU produced approximately 7.5 million tonnes of beef of which about 350,000 tonnes was imported (5% of the EU beef consumption). In 2012, Brazil was the largest supplier of imported beef to the EU with about 50,000 tonnes. Other suppliers to the EU include Argentina, Uruguay, Australia and the USA. According to the OECD, three countries show particularly high potential for beef production increases in the near future: Brazil (9.35 million tonnes by 2016), China (11 million tonnes) and India (3.5 million tonnes). Of these, China is expected to direct its production towards its domestic market. Conversely, Brazil and India can be expected to end up exporting as much as 30% and 50% of their production respectively. Despite relatively low traded volumes at present, beef production in Latin America and associated EU imports have severe negative environmental impacts. In Brazil, which is the EU's main provider of imported beef, these impacts have to do, among other factors, with the fact that the expansion of soy and other crops result in the displacement of cattle raising activities towards ever more environmentally vulnerable regions, particularly in the Amazon. As in the case of soy, this section attempts to highlight the main impacts of EU consumption of imported beef, as well as the underlying drivers, to provide an indication of the potential environmental benefits which would accrue from a reduction in the EU's environmental footprint.

Meat production is one of the most important drivers of a variety of environmental impacts. In 2010 livestock production was estimated to have contributed to the destruction of 24 million ha of land that was still forest in 2000. Moreover, the FAO estimates that 306 of the 825 world's ecoregions and 10% of its species are under threat from livestock production activities, which are responsible for habitat destruction, the main driver behind biodiversity loss in Latin America. Cattle-ranching is indeed a key driver of habitat destruction in South America, particularly in the Amazon region, but also in the Cerrado, Pantanal and Argentinean Chacos. Habitat change, including deforestation, destruction of riparian forests and drainage of wetlands are among the direct drivers causing biodiversity loss. Livestock production indirectly impacts biodiversity through feed production and directly contributes to habitat change due to overgrazing, which is a specific problem of Latin America, and overstocking. Pasture degradation is particularly worrisome in this regard. It results in a series of environmental problems, including soil erosion, degradation of vegetation, carbon release from organic matter decomposition, loss of biodiversity due to habitat changes and impaired water cycles. Beef production is also highly water-intensive and is associated with impacts on water availability, water quality, hydrology and aquatic ecosystems.

Despite the low ratio between trade and production of bovine meat, strengthened co-operation between the EU and Latin America (especially Brazil) could be instrumental in reducing the environmental footprint associated with imports of this commodity. Given the interlinkages between soy and beef value chains, the reduction potential would be all the greater under a holistic approach encompassing both commodities (and possibly others such as corn).

5.2.2.3 Environmental benefits of reduced impact of timber production

In addition to the two groups of agricultural commodities described above, trade in timber and timber product has significant environmental impacts due to the sector's harvesting and production activities. Latin America accounted for more than 10% of the world production of timber (or 361 million m³

p.a.) between 2000 and 2010. Most of it is produced by Brazil and Chile, followed far behind by Argentina. Slightly over one-fifth of the region's timber exports go to the EU. Brazil and Chile accounted, respectively, for 63% and 34% of the region's timber exports in 2010. Brazil is by far Latin America's largest supplier of timber to the EU. The EU, in turn, imports about 20% of the country's domestic tropical timber production. It must be noted, however, that the EU is likely to receive a larger share of this region's timber exports in the form of manufactured goods (e.g. flooring products made in China out of imported raw material from Latin America).

Although a large amount of Latin America's timber exports to the EU stem from plantations, there are a number of environmental and social impacts linked to the production of timber and timber products in the native forests of the Amazon Basin. These notably concern illegal logging and subsequent "laundering". According to Greenpeace, despite government efforts, more than half of the wood from the two biggest timber producing regions of Brazil (Pará and Mato Grosso) may come from illegal sources.

There is therefore scope for reducing the environmental footprint of EU timber exports from Latin America, both direct and indirect. To do so, further efforts will be required to ensure that all EU imports of timber and timber products are sustainable and do not come from illegal sources. It will also be important to take account of the global nature of timber and timber-containing products supply chains.

5.2.2.4 Environmental benefits from enhanced cooperation in the mining industry (Chile)

In Chile, the largest source of demand for water equipment, treatment and delivery in the coming years is expected to be the mining industry (EBI). In this sense, opportunities for EU companies relate, among others, to demand for desalination and water reuse systems for mining. In addition to commercial opportunities for EU economic actors, potential environmental benefits relating to improvements in Chile's mining sector should not be overlooked. This is particularly true for copper, the country's number one export item, which is water- and energy-intensive and also generates mining waste. Further cooperation could further contribute to the transfer of technology and know-how to render copper mining more efficient and thus less environmentally harmful. This would in turn help the EU to reduce the environmental footprint of its copper consumption, which is likely to increase in coming years – notably to further develop power grids, which will be required for the expansion of renewable energy use, but also for clean technologies in other sectors.

6 COUNTRY STUDIES

The country studies provide a detailed analysis of the economic benefits. Given the importance of Brazil in the region and as an EU trade partner, environmental benefits are also assessed for Brazil.

Each of the four country studies provide, as a first step, a general country overview followed by an analysis of the environmental market in the country at hand and a more detailed assessment of the two or three different environmental segments that appear to be more promising in terms of opportunities for EU actors. The economic opportunities are quantified to the extent possible through the development of scenarios. Finally, a short number of practical recommendations are provided for stronger and better-targeted cooperation.

6.1 MEXICO

6.1.1 Country situation

Mexico is the second largest economy of Latin America after Brazil. It is also EU's second largest trade partner in the region.

The Mexican government has developed a strategy⁸⁷ 'for the transition to a low-carbon economy for the period 2013-2018, rethinking Mexico's water management, stop biodiversity loss and improve waste management'. The cost of environmental degradation in Mexico has been estimated at 6.3% of GDP (in 2013)⁸⁸. The objectives for 2018 include a doubling of the value of the production of EGS to 2.14% of GDP and a substantial increase of green jobs (from almost 700,000 to 1,000,000).⁸⁹

Its environmental market is large and expected to grow, notably in relation to urban environment challenges.

6.1.2 Economic benefits and opportunities

In 2013, Mexico's environmental market was estimated at approximately USD 14 billion (EUR 10.5 billion) or about 1% of Mexico's GDP (2013). Of the total EGS demand in Mexico, around 28% is covered by imports. In the case of environmental goods, import shares in total demand range between 60% and 88%. The Mexican market for EGS is expected to continue to grow at an average rate of 5.5% p.a. between 2013 and 2020, reaching USD 20 billion (EUR 15 billion) by 2020, thus remaining the second largest in Latin America behind Brazil.

According to our analysis, based on market size and expected market and policy developments, the greatest business opportunities in Mexico for EU firms operating in the EGS sector lie in the following sectors:

- water (supply and drinking water as well as water treatment);
- solid waste management; and
- air pollution control.

Water

Mexico faces a number of challenges in the water sector. The National Development Plan for 2013-2018⁹⁰ identifies overexploitation of aquifers and treatment of wastewater as two of the six major aspects of environmental degradation that should receive priority attention in the coming years. The Environmental and Natural Resources Sectorial Programme for 2013-2018⁹¹ identifies water scarcity, availability of potable water, management of water infrastructure and water pollution as main challenges for the country.

Under two possible growth scenarios⁹² of the water sector market in Mexico⁹³, the market could reach

⁸⁷ Programa Sectorial de Medio Ambiente y Recursos Naturales 2013-2018, available online:

<http://www.semarnat.gob.mx/archivosanteriores/Documents/PROMARNAT%202013-2018.pdf>

⁸⁸ World Bank (2013) Country Partnership Strategy for the United Mexican States for the period 2014-2019

⁸⁹ Note: indicators relating to climate change exclusively have not been included here.

⁹⁰ Plan Nacional de Desarrollo 2013-2018

⁹¹ Formulas and explanations are included in the Sectorial Plan for the Environment and Natural Resources, see above.

⁹² Business-as-usual scenario: it is assumed that the average annual growth rate for the period 2012-2020 will be the same as that registered in the period 2008-2012 (see section 6.3.2), i.e. 3.2% per year. High-growth scenario based on estimates from Global Water Intelligence at http://www.siww.com.sg/sites/default/files/DES_Dr-Rick-Stover.pdf, according to which the capital expenditure in the water sector in Mexico is expected to grow at an average annual rate of 7.6% between 2013 and

USD 4.8 billion to USD 6.5 billion in 2020 from (2012) volume of USD 3.7 billion.

Although the water and wastewater equipment market in Mexico is largely dominated by imports (accounting for more than 75% according to EBI estimates), the EU share in the imports is limited. Between 2005 and 2009, the lion's share of imports was from the United States (53% of the total), followed by Japan (24%). EU countries accounted for only 9% of Mexico's imports⁹⁴ (in reality the EU share may be a little higher as the origin of 7% of total exports is not specified). The main EU partners in the water treatment sector during the period are Italy, Germany and France⁹⁵.

In order to assess the scope of EU business opportunities, we have developed two further scenarios concerning the evolution of EU exports of water equipment to Mexico⁹⁶:

- **Business-as-usual exports scenario:** it is assumed that the EU share of Mexico's imports in the water equipment sector is stable at 10% over the period⁹⁷. Therefore, under this scenario, the volume of EU exports will increase proportionally to the expected growth of the market.
- **High-exports scenario:** it is assumed that the EU share of Mexico's imports in the water equipment sector grows as a result of elimination of barriers, including the progressive elimination of non-tariff trade barriers. Based on World Bank study estimates⁹⁸, it can be assumed that the elimination of non-tariff barriers between Mexico and the EU would increase EU export volumes by approximately 6%⁹⁹, and that the increase would be progressive between 2013 and 2020¹⁰⁰.

Under the different scenarios, the growth of exports from the EU to Mexico in the water equipment sector could be between USD 40 million and USD 100 million, which is a considerable range. As shown in Table 1, depending on the scenarios, the total volume of EU exports to Mexico in the water equipment sector in 2020 could be between USD 150 million and USD 210 million by 2020.¹⁰¹ (¹⁰²).

Table 1. Estimated volume of the EU exports to Mexico in the water and wastewater equipment sector, 2020 (USD million)

	BAU sector growth scenario	High-growth sector scenario
BAU EU exports scenario	150	200
High-growth EU export scenario	160	210

2018, while the operating expenditure would grow at an average annual rate of 8.6% over the same period. Under this scenario the water market is expected to grow, on average, at a rate of 8% per year in 2012-2020.

⁹³ Water sector here includes two water-related industry segments of the EBI classification: water equipment and chemicals, and water treatment works. The former refers to the provision of equipment and the latter to the provision of services.

⁹⁴ The origin of 7% of total exports is not specified.

⁹⁵ Environmental Business International Inc. Report 3010 Global Environmental Market. The report only refers to these three EU countries. However, other EU countries (particularly in the case of Spain) might be included in the 5% allocated to 'other countries' in the report.

⁹⁶ Information on market shares is only available for the water equipment segment, and not for the water sector overall. As noted above, it has been assumed here that imports account for 75% of the total water and wastewater equipment market.

⁹⁷ It has been assumed here that EU's share is slightly higher than the 9% figure presented in EBI study, as there is probably a share of the 7% allocated to 'other countries' that corresponds to the EU.

⁹⁸ World Bank (2007) Warming up to trade? Harnessing international trade to support climate change objectives.

Environment department, sustainable development network. Available online: http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2007/07/05/000310607_20070705152626/Rendered/PDF/402170REVISED01and1Climate01PUBLIC1.pdf

⁹⁹ The World Bank study estimates that the increase would be of 6.3%, but the number has been rounded here. In addition, the study refers to trade volumes overall, and it is assumed here that imports and exports would increase at the same rate.

¹⁰⁰ Trade volumes are expected to be 6 higher by 2020 than it would otherwise be if market share would be stable at 10%

¹⁰¹ The average volume of EU exports of water equipment in the period 2012-2020 would be between USD 140 million and USD 170 million per year, depending on the scenarios.

¹⁰² It should be noted here that figures are considerably smaller than in the overall market growth scenarios, as only water equipment is considered (while in the previous scenarios also water management services are also included).

Note: The growth rates applied for each of the scenarios are the following: BAU growth scenario=3.8% .p.a.; High-growth scenario=8% p.a.; BAU export scenario= EU exports volumes increase at the same rate of market growth (stable 10% market share); High-growth export scenario= EU export volumes increase by 6% by 2020 compared to baseline. Rounded figures.
Source: Milieu elaboration

The most promising areas for EU companies specialized in the water sector are: water supply (aquifer management, modern irrigation technologies, desalination); advanced water purification equipment, both for existing and new treatment facilities; advanced wastewater treatment equipment (municipal, agricultural and industrial); and new techniques for water treatment.

Water and waste are the largest in terms of market size and volume of imports. They are projected to grow and are among the Mexican government's key priority areas. Water supply and water treatment offer potential opportunities for EU firms. EU water equipment exports to Mexico could exceed USD 200 million (EUR 150 million) by 2020 (i.e. twice current export volumes). Further potential export opportunities exist in other sub-segments of the water and waste market.

Solid waste

Mexico has serious waste management challenges, with major waste disposal issues, coupled with very low recycling rates. The Environmental and Natural Resources Sectorial Programme for 2013-2018¹⁰³ identifies solid waste treatment as one of the main challenges for the country. The Mexican government has adopted several measures aimed at strengthening the integral management of waste. These include increasing the recovery of solid residues as a means for reducing emissions (e.g. organic waste) and for reintegration in the production chain (e.g. cardboard, paper, metal, plastics and glass). It also identifies hazardous waste management as another important area which requires improvement.

In Mexico, solid waste management is both a public and a private sector activity and there is significant scope for deeper private sector involvement. Due to the technology intensive character of the sector, European companies are well placed to enter the market. Mexican firms in the sector are mainly SMEs who compete on price, while technological development and innovation remains limited¹⁰⁴. In the field of equipment, USA companies still dominate the market and therefore have an advantageous position vis-à-vis EU companies. In addition, competition from Asian providers is rising rapidly.

The two possible growth scenarios¹⁰⁵ for the future development of the solid waste market in Mexico¹⁰⁶, reveal that the market could grow to USD 4 billion or USD 6.5 billion by 2020 from a current (2012) volume of USD 3.3 billion.

Around 60% of total solid waste management equipment used in Mexico is imported (based on EBI estimates). The EU share in imports is higher than in the water sector. However, the United States supplies around 60%¹⁰⁷ of waste management equipment. The EU is the second largest supplier, with a share of between 15% and 20%, Germany, France, Italy and Spain are the main countries of

¹⁰³ Formulas and explanations are included in the Sectorial Plan for the Environment and Natural Resources, see above.

¹⁰⁴ Torres (2011) Estudio de Mercado del sector de residuos sólidos urbanos en México.

¹⁰⁵ Business-as-usual scenario: it is assumed that the annual average growth rate experienced in the period 2012-2020 will be the same as the rate registered for the period 2008-2012 (see section 6.3.2), i.e. 2.6% per year. High-growth scenario: this scenario is based on estimates from Technavio (Infiniti Research Ltd reports: Global Municipal Solid Waste Management Market 2014-2018; Global Industrial Waste Recycling and Services Market 2014-2018) according to which the global industrial waste recycling and services market is expected to grow at an average 10.5% per year between 2013 and 2018, and global municipal solid waste management market would grow at an average rate of 8.7% per year over the same period. Under this scenario the market would grow, on average, at a rate of 9% per year in 2012-2020.

¹⁰⁶ The solid waste management sector includes four EBI categories: waste management equipment, solid waste management, hazardous waste management, resource recovery.

¹⁰⁷ The high volumes of trade between Mexico and the United States is to a great extent explained by the traditional gravity model, according to which trade between two countries increases with the economic size of the trade partners and the potential flow is reduced by distance between them. Mexico and the USA are big neighbouring economies.

origin.¹⁰⁸

In order to assess the scope for EU business opportunities, two further scenarios have been developed for the possible EU share of imports in the solid waste management equipment segment¹⁰⁹. The assumptions are the following¹¹⁰:

- **Business-as-usual exports scenario:** it is assumed that the EU share of Mexico's imports in the waste management equipment sector is stable at 15% over the period¹¹¹.
- **High-growth exports scenario:** it is assumed that the EU share of Mexico's imports in the waste sector grows as a result of the elimination of barriers, including the progressive elimination of non-tariff trade barriers. This leads to a higher share of EU exports. Based on World Bank study estimates¹¹², it is assumed that the elimination of non-tariff barriers between Mexico and the EU would increase trade volumes by approximately 6%, and the increase would be progressive between 2013 and 2020.

Under the different scenarios (Table 2), the growth of exports from the EU to Mexico in the waste equipment sector could be between USD 10 million and USD 60 million, depending on the scenario, the total volume of EU exports to Mexico in the waste equipment sector in 2020 could be between USD 75 million and USD 130 million by 2020.¹¹³

Table 2. Estimated volume of the EU exports to Mexico in waste equipment sector, 2020 (USD million)

	BAU sector growth scenario	High-growth sector scenario
BAU EU exports scenario	75	125
High-growth EU export scenario	80	130

Note: The growth rates applied for each of the scenarios are the following: BAU growth scenario=1.8% p.a.; High-growth scenario=9% p.a.; BAU export scenario= EU exports volumes increase at the same rate of market growth (stable 15% market share); High-growth export scenario= EU export volumes increase by 6% by 2020 compared to baseline. Rounded figures.

Source: Milieu elaboration

There are possibilities for EU businesses within the waste management sector in: recycling and waste recovery, integral management of urban solid waste, and construction of infrastructure for the collection, treatment, recycling and disposal of waste.¹¹⁴ It should be noted that hazardous waste management and resource recovery are expected to grow more rapidly than waste management equipment and solid waste management.¹¹⁵

¹⁰⁸ US commercial service (2009) Mexico: Waste Management Equipment Market. Available online:

<http://www.orbitmetal.com/wp-content/uploads/2011/01/Waste-Management-Equipment-Market-Report-WREM-2010.pdf>

¹⁰⁹ In addition, imports account for a large share of the market in solid waste management equipment (around 60%), whereas only a small share of solid waste management (10%) and hazardous waste management (15%) is covered by imports.

¹¹⁰ As noted above, it has been assumed here that imports account for 60% of the solid waste management market

¹¹¹ It has been assumed here that EU's share is slightly higher than the 9% figure presented in EBI study, as there is probably a share of the 7% allocated to 'other countries' that corresponds to the EU.

¹¹² World Bank (2007) Warming up to trade? Harnessing international trade to support climate change objectives.

Environment department, sustainable development network. Available online: http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2007/07/05/000310607_20070705152626/Rendered/PDF/402170REVISED01and1Climate01PUBLIC1.pdf

¹¹³ The average volume of EU exports of waste equipment in the period 2012-2020 would be between USD 70 million and USD 100 million per year, depending on the scenarios. It should be noted here that figures are considerably smaller than in the market growth scenarios, as only water equipment is considered here (while in the previous scenarios also water management services are included).

¹¹⁴ EBI (2014) Report 3010 The Global Environmental Market : Latin America; Torres (2011) Estudio de Mercado del sector de residuos sólidos urbanos en México.

¹¹⁵ Environmental Business International Inc.

Air quality control

Air quality continues to be of particular concern in Mexican cities: more than 72 million people in the country are exposed to bad air quality, and atmospheric pollution represents the major share of costs related to environmental degradation in Mexico, or 3.6% of GDP in 2011.¹¹⁶ In response, one of the measures comprised in the Sectorial Programme is the improvement of the air quality standards. National air quality programmes (ProAire) have also been established with a view to improve the situation.¹¹⁷

The air quality control market is smaller than the water and waste sectors. Despite this, Mexico is an attractive market for EU firms particularly operating in this business area. In part, this is due to the fact that imports account for a large share of total air quality control demanded in Mexico: around 73% of the total¹¹⁸. As in the case of water and waste, the United States is the largest supplier of this equipment (accounting for around 55% of total imports), but the EU share is relatively high with around 25% of the total. Within the EU, Germany and the UK are the main countries of origin.¹¹⁹

Under two different growth scenarios¹²⁰ for the future development of the air quality control market in Mexico the expected size of the air quality control market in Mexico would increase from USD 570 million (in 2012) to USD 770 million or USD 820 million in 2020.

In order to estimate the potential future development of the EU export share in the air quality control sector, two further scenarios have been developed¹²¹:

- **Business-as-usual exports scenario:** it is assumed that the EU export share in the air quality control equipment sector is stable at 25% over the period¹²². Therefore, the volume of EU exports will increase proportionally to the expected growth of the market.
- **High-growth exports scenario:** it is assumed that the progressive elimination of non-tariff trade barriers would result in an increase of EU exports by approximately 6%,¹²³ and that the increase would be progressive between 2013 and 2020.

According to these estimates, the total volume of exports from the EU to Mexico in this sector could reach a total volume of between USD 110 million and USD 160 million by 2020, depending on the scenarios, which would imply an increase of between USD 20 million and USD 50 million with respect to volumes of EU exports in 2012 (see Table 3 below).

¹¹⁶ Information obtained from the Mexican National Office for Statistics, INEGI.

¹¹⁷ For more information, see: <http://www.semarnat.gob.mx/temas/gestion-ambiental/calidad-del-aire/programas-de-gestion-para-mejorar-la-calidad-del-aire>

¹¹⁸ Environmental Business International Inc.

¹¹⁹ US commercial service (2006) Mexico: Air Pollution Control Equipment and Services. Available online: http://egs.apec.org/uploads/docs/Mexico_AirPollutionControlEquip.pdf

¹²⁰ Business-as-usual scenario: it is assumed that the annual average growth rate for the period 2012-2020 will be the same as the rate registered for the period 2009-2012, i.e. 3.8% per year. High-growth scenario: it is assumed that the Mexican market will grow at the rate forecasted by MarketsandMarkets (Air quality control systems by technology and Geography, 2014). Global trends and forecasts to 2019 for the American region as a whole, i.e. 4.6% per year between 2014 and 2019

¹²¹ As noted above, it has been assumed here that imports account for 73% of total air quality control equipment market

¹²² It has been assumed here that EU's share is slightly higher than the 9% figure presented in EBI study, as there is probably a share of the 7% allocated to 'other countries' that corresponds to the EU.

¹²³ World Bank (2007) Warming up to trade? Harnessing international trade to support climate change objectives.

Environment department, sustainable development network. Available online: http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2007/07/05/000310607_20070705152626/Rendered/PDF/402170REVISED01and1Climate01PUBLIC1.pdf

Table 3. Estimated volume of the EU exports to Mexico in the air quality control equipment sector, 2020 (USD million)

	BAU sector growth scenario	High-growth sector scenario
BAU EU exports scenario	110	120
High-growth EU exports scenario	150	160

Note: The growth rates applied for each of the scenarios are the following: BAU growth scenario=3.8% .p.a.; High-growth scenario=4.6% p.a.; BAU export scenario= EU exports volumes increase at the same rate of market growth (stable 25% market share); High-growth export scenario= EU export volumes increase by 6% by 2020 compared to baseline. Rounded figures.

Source: Milieu elaboration

Among the most promising areas for EU companies in this respect are air pollution monitoring and control equipment (in particularly for stationary pollution sources) as well as alternative fuel conversion technologies for vehicles.¹²⁴

6.1.3 Summary

Mexico's environmental market is large and expected to grow, as a result of economic growth and urbanisation. As the Mexican economy is relatively open, there are clear market opportunities for EU companies, although it should be acknowledged that the USA, Mexico's main trading partner, is likely to have a competitive advantage.

6.2 CHILE

6.2.1 Country situation

Chile has a large diversified economy and is one of the richest countries in Latin America. In GDP terms, Chile is the 6th largest economy in the region (USD 277 billion in 2013¹²⁵). It also is the country with the highest per capita GDP in Latin America (USD 15,700 in 2013)¹²⁶

According to Chile's four-year Governance Programme 2014-2018¹²⁷, environmental protection is one of the priority areas. The most important environmental problems are air pollution and waste.¹²⁸ Water scarcity is an important constraint for the mining (cooper) industry, the largest sector in Chile's economy, accounting for around 10% of GDP and for more than 50% of exports¹²⁹. The demand for water in Chile's mining industry is expected to increase in the coming years, from around 350 million cubic metres in 2012 to 500 million cubic metres in 2020¹³⁰. In addition, the mining industry must now comply with more stringent environmental regulations, and meet local and international expectations regarding the environmental impacts of their operations. These impacts span several environmental areas including water.¹³¹

Chile boasts a relatively high level of environmental stringency, hosting a mature environmental market, which can be associated with higher value added.

¹²⁴ Jha, V. (2008) *Environmental Priorities and Trade Policy for Environmental Goods: A Reality Check*, ICTSD Trade and Environment Series Issue Paper No.7. International Centre for Trade and Sustainable Development, Geneva, Switzerland,

¹²⁵ IMF, World Economic Outlook Database October 2014. GDP figures in current USD

¹²⁶ World Bank database, GDP per capita in current USD

¹²⁷ Programa Nacional Bachelet 2014-2018. Available online: <http://www.gob.cl/programa-de-gobierno/>

¹²⁸ <http://portal.mma.gob.cl/wp-content/uploads/2015/03/Informe-Primera-Encuesta-Nacional-de-Medio-Ambiente.pdf> (March 2015).

¹²⁹ This includes refined copper (28% of Chile's total exports), copper ore (20%) and raw copper (4.1%), according to data from the Observatory of Economic Complexity (available online: <http://atlas.media.mit.edu/profile/country/chl/>)

¹³⁰ CSIRO (2014) The future of mining in Chile, CSIRO Futures.

¹³¹ CSIRO (2014) The future of mining in Chile, CSIRO Futures.

6.2.2 Economic benefits and opportunities

Chile's environmental market has been estimated at USD 4.4 billion (EUR 3.4 billion), or 1.6% of Chile's GDP in 2013. It accounted for 7.6% of the Latin American environmental market in the same year. The environmental industry is quite well developed in Chile compared to other countries in the region, as Chile's relatively open markets and appealing business environment for foreign firms have provided opportunities for companies operating in EGS segments¹³². This has enhanced the adoption of advanced environmental technology, especially in the field of water, at the expense of the development of competitive local manufacturing capacity. At the same time, the adoption of advanced technology has fostered the development of a competitive environmental services industry.¹³³

Although the environmental market mainly consists of services (around 71% of the total, USD 3.1 billion or EUR 2.4 million in 2012), imports are particularly important in the case of environmental equipment, with import shares ranging between 60% and 70% of total segment value (USD 914 million or EUR 711 million), according to EBI estimates. In contrast, imports only account for around 2% of the total value of environmental services, with the exception of remediation services (25%) and consulting and engineering (20%).¹³⁴

The market segment with the largest share of imports in value terms is equipment for the supply of water and treatment of water and wastewater (USD 375 million worth of imports in 2012)¹³⁵, followed by air pollution control (USD 100 million), waste management equipment (USD 61 million) and consulting and engineering (USD 43 million). These can therefore be considered the largest environmental export markets in Chile. Chile's environmental market is expected to grow at an average rate of 10.7% per year between 2013 and 2020, the highest growth rate in Latin America (with an average of 6.4% p.a.) to reach USD 8,9 billion by 2020¹³⁶. The mining industry is expected to be a key driver for EGS demand in the coming years given the significant needs in terms of services and equipment relating to water supply, waste management and treatment, control of pollutant emissions as well as consulting services.¹³⁷

According to our analysis, based on market size and expected market and policy developments, the greatest business opportunities in Chile for EU firms operating in the EGS sector are in the following sectors:

- water (supply and drinking water as well as water treatment);
- waste management; and
- environmental consulting and engineering.

Water

Chile's National Strategy for water resources 2012-2025¹³⁸ sets out the main lines of action for the sustainable use of water resources in the country, in view of the projected increase in demand for

¹³² Environmental Business International, Report 3010

¹³³ Environmental Business International, Report 3010

¹³⁴ The low share of imports for services is not a particularity of the EGS sector. In general, services are less tradable (i.e. less suitable to be sold in a location distant from where it was produced) than manufactured goods. In addition, different goods and services are likely to have differing levels of tradability depending on a number of factors, such as transport costs, possibility of online provision, or the presence of strong local suppliers or subsidiaries of international firms producing for the domestic market (source: Gervais, A., Jensen, J.B. (2013) The tradability of services: geographic concentration and trade costs, NBER Working Paper No. 19759).

¹³⁵ According to the EBI company surveys, much of the specialty treatment, automation or analytical equipment is imported from EU suppliers, while local manufacturers supply most of the commodity equipment such as pipes, pumps and valves (EBI, 3010 Report).

¹³⁶ Source: Environmental Business International Inc.

¹³⁷ Environmental Business International, Report 3010

¹³⁸ Estrategia nacional de recursos hídricos 2012-2025, http://www.mop.cl/Documents/ENRH_2013_OK.pdf

water in coming years. The Strategy foresees regulatory improvements to deal with contamination, but also incentives to the private sector for technological developments. The industrial and mining sectors will be required to reduce contamination and the use of water in the production processes. The government also intends to investigate desalination and other non-conventional sources of water with a view to deal with seasonal scarcity.

The mining industry is likely to be the main driver of demand of water-related EGS in the coming years. The industry's high water needs have led many mining firms to invest in desalination plants and systems to pump up the water to the mines (located at a high altitude), an expensive and energy-intensive process. The demand for water in Chile's mining industry is expected to increase in the coming years, from around 350 million cubic metres in 2012 to 500 million cubic metres in 2020¹³⁹. This is forcing mining firms to consider other options for water purification and recycling. New technologies are also being tested to replace freshwater by seawater in primary mining processes in the north of the country.

Under two possible scenarios¹⁴⁰ for the future development of the water sector¹⁴¹ in Chile, the current market (2012) would grow from USD 2.9 billion to USD 4.7 billion or USD 5.8 billion in 2020.

Imports account for more than 60% of total water treatment equipment market in Chile (data for 2012)¹⁴². If considered jointly, the seven most important EU partners account for around 43% of total imports in Chile (data for 2005-2009). These are Italy (12% of Chile's imports), the Netherlands (9%), Germany (9%) and Spain (6%). The USA accounted for 18% of the total imports between 2005 and 2009.¹⁴³ In order to assess the potential of EU business opportunities in the water equipment segment, two further scenarios for EU exports have been developed:¹⁴⁴

- **Business-as-usual exports scenario:** it is assumed that the EU share of Chile's imports in the water equipment sector is stable at 43% over the period¹⁴⁵ and therefore the volume of EU exports will increase proportionally to the expected growth of the market.
- **High-exports scenario:** it is assumed that the EU share of Chile's imports in the water equipment sector grows as a result of elimination of barriers, including the progressive elimination of non-tariff trade barriers. Based on World Bank estimates¹⁴⁶, it is assumed here that the elimination of non-tariff barriers between Chile and the EU would increase EU export volumes by approximately 6%¹⁴⁷, and that the increase would be progressive between 2013

¹³⁹ CSIRO (2014) The future of mining in Chile, CSIRO Futures.

¹⁴⁰ Business-as-usual scenario: it is assumed that the annual average growth rate for the period 2012-2020 will be the same as that registered for the period 2006-2012 (see section 7.3.2), i.e. 6.4% per year. High-growth scenario: based on estimates from Global Water Intelligence (Chile Water Market Insight http://www.researchandmarkets.com/reports/2681921/chile_water_market_insight_2013), according to which capital expenditure on water and wastewater infrastructure in Chile stood at USD 560 million in 2012 and is expected to reach nearly USD 950 million by 2018. This would imply an annual average growth of 9.2% per year between 2012 and 2018. Under this scenario, the market is expected to grow at the same annual rate as investment in water and wastewater infrastructure over the period 2012-2020, i.e. at 9.2%.

¹⁴¹ The water sector includes two EBI categories: water equipment and chemicals, and water treatment works/water utilities. The former refers to the provision of equipment and the latter to the provision of services. It should also be noted that, for Chile, the water treatment works segment is grouped with water utilities segment, whereas in Mexico they are disaggregated.

¹⁴² This excludes water treatment works and water utilities.

¹⁴³ Environmental Business International Inc. Report 3010 Global Environmental Market

¹⁴⁴ As noted above, it has been assumed here that imports account for 60% of the total water and wastewater equipment market

¹⁴⁵ It has been assumed here that EU's share is slightly higher than the 9% figure presented in EBI study, as there is probably a share of the 7% allocated to 'other countries' that corresponds to the EU.

¹⁴⁶ World Bank (2007) Warming up to trade? Harnessing international trade to support climate change objectives.

Environment department, sustainable development network. Available online: http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2007/07/05/000310607_20070705152626/Rendered/PDF/402170REVISED01andIClimate01PUBLIC1.pdf

¹⁴⁷ The World Bank study estimates that the increase would be of 6.3%, but the number has been rounded here. In addition, the study refers to trade volumes overall, and it is assumed here that imports and exports would increase at the same rate.

and 2020¹⁴⁸.

Under the different scenarios, the growth of EU exports in the water equipment sector could be between USD 90 million and USD 170 million. As shown in Table 4, depending on the scenarios, the total volume of EU exports to Chile in the water equipment sector may range between USD 265 million and nearly USD 350 million by 2020.¹⁴⁹

Table 4. Estimated volume of the EU exports to Chile in the water and wastewater equipment sector, 2020 (USD million)

	BAU sector growth scenario	High-growth sector scenario
BAU EU exports scenario	265	325
High-growth EU export scenario	280	350

Note: The growth rates applied for each of the scenarios are the following: BAU growth scenario=6.4% .p.a.; High-growth scenario=9.2% p.a.; BAU export scenario= EU exports volumes increase at the same rate of market growth (stable 43% market share); High-growth export scenario= EU export volumes increase by 6% by 2020 compared to baseline. Rounded figures.

Source: Milieu elaboration

With regards to water utilities and water treatment works sector, Chile's leading provider is Aguas Andinas, owned by a 50/50 joint venture of the Agbar Group (Spain) and the Suez Group (France)¹⁵⁰, which accounts for more than 43% of the market¹⁵¹.

Solid waste

Landfill capacity in Chile has considerably increased over the past years. However, waste treatment is mostly limited to final disposal. Collection systems remain fragmented and formal recycling and composting programs are not consistently implemented.¹⁵² Waste recycling is carried out in many cases by informal recyclers. Similarly to the case of water analysed in the previous section, the mining sector in Chile is an important consumer of EGS in the field of industrial and hazardous waste management and treatment, and its demand of waste management-related goods and services is likely to increase as that sector continues to expand.

The waste management sector in Chile is currently worth around USD 680 million (2012). In order to assess potential business opportunities for EU firms in the solid waste management and recycling sector in Chile, two scenarios for market development have been created based on the assumptions below:¹⁵³

- **Business-as-usual scenario:** it is assumed that the annual average growth rate experienced in the period 2012-2020 will be the same as the rate registered for the period 2006-2012, i.e. 8.7% per year.
- **High-growth scenario:** this scenario is based on EBI forecasts for Chile's environmental market as a whole, according to which the environmental market will grow at an average rate

¹⁴⁸ Trade volumes are expected to be 6% higher by 2020 than it would otherwise be if market share would be stable at 43%

¹⁴⁹ The average volume of EU exports of water equipment in the period 2012-2020 would be between USD 218 million and USD 260 million per year, depending on the scenarios. It should be noted that figures are considerably smaller than in the overall market growth scenarios, as only water equipment is considered here (while in the previous scenarios water management services are also included).

¹⁵⁰ Environmental Business International Inc. Report 3010 Global Environmental Market; ICEX (2014) El mercado del tratamiento de aguas en Chile

¹⁵¹ For a more detailed analysis of the Chile's water market players, see: ICEX (2014) El mercado del tratamiento de aguas en Chile (available online: <http://www.icex.es/icex/es/navegacion-principal/todos-nuestros-servicios/informacion-de-mercados/paises/navegacion-principal/el-mercado/estudios-informes/DOC2015369520.html?idPais=CL>)

¹⁵² Environmental Business International, Report 3010

¹⁵³ Due to the lack of data on EU market shares in the solid waste management sector, this section only develops scenarios for overall market growth, not exports development potential. The analysis of EU opportunities is based on a qualitative assessment.

of 10.7% per year between 2012 and 2020¹⁵⁴.

From the current (2012) volume of approximately USD 680 million, it is estimated that the solid waste market could reach between USD 1.3 billion and USD 1.5 billion by 2020.

Table 5. Size of the Chilean Solid Waste market, 2012 and 2020 (USD million)

	Market size 2012	Average annual growth rate 2012-2020	Estimated Market size 2020	Difference 2012-2020
Business-as-usual Scenario	680	8.7%	1,320	640
High-growth scenario	680	10.7%	1,530	850

Note: Rounded figures

Source: Milieu elaboration.

Chile's waste industry is dominated by a few leading companies (KDM, Hidrosan, Proactiva, Ecoser), some of which are EU-based.¹⁵⁵ Among the firms operating in hazardous waste management activities, the largest ones are of EU origin, particularly Belgium (Hidronor) and Spain (HERA Ecobio, Abengoa Chile, Proactiva). According to EBI estimates, EU-based firms account for around 50% of the hazardous waste market in Chile¹⁵⁶.

Key segments for EU businesses within the waste management sector include the following: collection and disposal of waste; building and managing the infrastructure of modern sanitary landfills; and integrated solid waste management; industrial waste recycling; and recycling and waste recovery.

Environmental Consulting & Engineering

The consulting and engineering sector is more developed in Chile, compared to other countries in the region. Chile's relatively open markets and appealing business environment have provided the opportunity for foreign environmental firms to export to Chile. As a result, the environmental technology used is similar to that in developed countries. Exposure to leading equipment firms has, at the same time, fostered the development of a competitive and sophisticated environmental service industry, particularly in the field of environmental consulting. Consequently, multinational consulting and engineering firms have frequently chosen Chile as a hub for their operations in LA.¹⁵⁷

The environmental consulting and engineering sector is currently worth around USD 220 million (2012). Two scenarios have been created in order to estimate the scope of potential business opportunities for EU firms in this sector in Chile.¹⁵⁸

- **Business-as-usual scenario:** it is assumed that the annual average growth rate experienced in the period 2012-2020 will be the same as the rate registered for the period 2006-2012. Under this scenario, the environmental consulting and engineering sector would grow at a rate of 11.7% per year.
- **High-growth scenario:** it is assumed that the Chilean market will grow at the rate estimated by EBI based on surveys. A recent report by EBI¹⁵⁹ highlights that growth rates for the sector in Chile are expected to be above 12% or more. Since growth rates in 2011 and 2012 were

¹⁵⁴ Given that no projections have been found for Chile's solid waste management sector in particular, it will be assumed here that the sector will grow at the same rate as Chile's environmental market overall, as projected by EBI. Projections were found, however, for the industrial waste management sector: according to Frost and Sullivan, the industrial waste management sector in Chile is expected to grow at an annual average rate of 9.4% per year between 2011 and 2017.

¹⁵⁵ KDM is owned by a joined venture of a Spanish conglomerate and a US firm, and Proactiva is a Spain-based firm.

¹⁵⁶ Environmental Business International Inc. Report 3010 Global Environmental Market

¹⁵⁷ EBI, Report 3010 Global Environmental Market

¹⁵⁸ Due to the lack of data on EU market shares in the environmental consulting and engineering sector, this section only develops scenarios for overall market growth. The analysis of EU opportunities is based on a qualitative assessment.

¹⁵⁹ EBI, Report 3010, Global Environmental Market

around 16% per year, this figure has been used to create the high growth scenario.

From the current (2012) volume of approximately USD 220 million, it is estimated that the environmental consulting and engineering market in Chile could reach between USD 530 million and USD 710 million by 2020 (Table 6).

Table 6. Size of the Chilean Environmental consulting and engineering market, 2012 and 2020 (USD million)

	Market size 2012	Average annual growth rate 2012-2020	Estimated Market size 2020	Difference 2012-2020
Business-as-usual Scenario	217	11.7%	526	309
High-growth scenario	217	16%	711	494

Source: Milieu elaboration

Some of the leading foreign consulting and engineering companies present in Chile belong to EU-based entities.¹⁶⁰ In the coming years, more stringent enforcement of existing environmental laws is expected to bring about substantial opportunities in the environmental consulting sector. In particular, opportunities are likely to expand to the areas of design, engineering, compliance with emission standards, environmental permitting, environmental management and auditing, environmental feasibility analysis, and to providing advice on water and carbon footprints of products and organisations¹⁶¹. This could open up opportunities for EU-based firms who would have a competitive advantage, considering the environmental consulting and engineering expertise developed over the past decades.

6.2.3 Summary

The water/sanitation and waste sectors have had robust growth rates over the past years and are key priority areas for the Chilean government. The mining industry is expected to be the main source of demand for water equipment, treatment and delivery in the coming years. Thus, opportunities for EU companies will be, among others, for desalination and water reuse systems for mining. The environment-related consulting and engineering sector is also interesting for EU companies in particular, regarding areas set to expand in the near future, such as advice on compliance with emission standards, environmental permitting, environmental management and auditing, environmental feasibility analysis, and advice and consultancy on water and carbon footprints.

6.3 BRAZIL

6.3.1 Country situation

Brazil is the largest economy in the Latin America region and the EU's largest trade partner in the region. It is also a high-potential market despite the current slowdown, not least due to the emergence of a large middle class and a relative progress in environmental regulation enforcement.

Water, waste, deforestation and sustainable development feature prominently in Brazil's strategic plan for 2022. The plan which was adopted in 2009 includes several quantifiable environmental targets. In 2014, the Brazilian government reaffirmed its commitment to sustainable development. Priorities include ensuring water security, tackling deforestation and improving solid waste management.¹⁶²

¹⁶⁰ Arcadis Geotecnica (NL), Halcrow (UK), Hatch Ingenieros y Consultores Ltda (UK-USA)

¹⁶¹ ICEX (2011) *El sector del medio ambiente en Chile*. Oficina Económica y Comercial de la Embajada de España en Chile

¹⁶² *Mais Mudanças, mais futuro, programa de governo Dilma Rousseff 2014*, p. 28 <https://www.pt.org.br/wp-content/uploads/2014/07/Prog-de-Governo-Dilma-2014-INTERNET1.pdf>

The Brazilian market for EGS is expected to continue to grow at an average rate of 6.4% per year until 2020, thus reaching USD 40 billion (EUR 30 billion) by 2020, and its share would increase to approximately 50% of the total Latin American market.

6.3.2 Economic benefits and opportunities

In 2013, Brazil's environmental market was estimated at approximately USD 25.7 billion (EUR 19.4 billion) and accounted for 44.7% of the Latin America environmental market or about 1.1% of Brazil's GDP (2013).¹⁶³ Although disaggregated data on imports by environmental segment are not available, an estimated 25% of total EGS in Brazil are provided by imports¹⁶⁴. Of these, approximately 45% is provided by EU companies¹⁶⁵ and around 25% by USA-based companies.¹⁶⁶ Under these assumptions, Brazilian imports of EGS (excluding environmental resources) would be worth around USD 3.7 billion per year. However, important differences are likely to exist across segments.¹⁶⁷

According to the analysis conducted, based on current market size and policy developments, the greatest business opportunities in Brazil for EU firms operating in the EGS sector are in:

- water sector (supply of drinking water as well as water treatment); and
- waste management.

Water

The expansion of sewage collection and treatment in Brazil remains an important challenge: only 49% of rural population and 87% of urban population have access to wastewater collection services. In addition, only around 32% of sewage generated is treated.¹⁶⁸ The North, North-East and Mid-West are the areas with the poorest sanitation conditions. High water loss rates (around 40% and 50% of total potable water supplied in Brazilian cities) are another pressing problem: leakages and inaccurate consumption metering are estimated to cause a financial loss of around USD 5 billion per year¹⁶⁹.

The bulk of investment needs in the water sector are in Brazil's largest cities, such as São Paulo and Rio de Janeiro.¹⁷⁰ The Brazilian Ministry for Urban Development estimates total investment requirements in basic sanitation between 2010 and 2030 at around USD 210 billion¹⁷¹, or an average USD 10.5 billion per year (i.e. an average annual increase of 6.3%¹⁷²). According to the same estimates, investment requirements are distributed as follows:

¹⁶³ Environmental Business International Inc.

¹⁶⁴ US Commercial Service (2013) Environmental technologies : a top export prospect for Brazil, September 2013

¹⁶⁵ ProChile (2012) Estudio de Mercado: Servicios relacionados con el Medio Ambiente en Brasil. Oficina Comercial de Prochile en Sao Paulo.

¹⁶⁶ US Commercial Service (2013) Environmental technologies : a top export prospect for Brazil, September 2013

¹⁶⁷ Environmental equipment tends to register higher shares of imports than environmental services, as services are generally less tradable (i.e. less suitable to be sold in a location distant from where it was produced) than manufactured goods. In addition, different environmental goods and services are likely to have different levels of tradability depending on a number of factors, such as transport costs, possibility of online provision, or the presence of strong local suppliers or subsidiaries of international firms producing for the domestic market. (source: Gervais, A., Jensen, J.B. (2013) The tradability of services : geographic concentration and trade costs, NBER Working Paper No. 19759)

¹⁶⁸ US Commercial Service (2013) Environmental technologies : a top export prospect for Brazil, September 2013

¹⁶⁹ ABDI (2012) Relatório de acompanhamento setorial : competitividade do sector de bens e serviços ambientais

¹⁷⁰ EBI, Report 3010

¹⁷¹ This figure includes funds made available by federal, state and municipal governments, multilateral development agencies and private sector companies.

¹⁷² ABDI (2012) Relatório de Acompanhamento Setorial: Competitividade do sector de bens e serviços ambientais, citing LCA Consultores (2011)

Table 7. Brazil's estimated investment requirements in the water sector (USD billion)

Segment	Total Investment requirements 2010-2030 (%)	Annual investment requirements
Sewage	78 (37%)	3.9
Water supply	53 (25%)	2.7
Utility management	44 (21%)	2.2
Drainage	27 (13%)	1.4
Solid waste	8 (4%)	0.4

Source: US Commercial Service (2013) Environmental technologies: a top export prospect for Brazil, September 2013

Under the country's constitution, Brazil's municipalities are responsible for the supply of basic sanitation services (water and sewage). Most cities seek to fulfil this constitutional requirement by means of a concession to a state-run basic sanitation company, while others operate their services via their municipal sanitation department or a municipally-owned company.¹⁷³ Overall, around 90% of these operations are run by public companies, the remainder being concessions to private sector enterprises.¹⁷⁴ As demand for increased efficiency in the provision of these services grows, an increased participation of the private sector in the water and wastewater sector through these concessions is expected. In 2008 private sector companies provided water and sanitation services to 6.5% of the country's urban population. This figure is expected to near 30% by 2017¹⁷⁵.

The majority of industry equipment is manufactured domestically by Brazilian and foreign companies. This close association between manufacturers and service providers might hinder market access by new equipment suppliers. As previously stated, partnerships with local providers are thus frequently regarded as the best way to access the Brazilian market for foreign manufacturers.

Basic sanitation equipment and services are currently provided by both domestic and international suppliers. EU suppliers include Alfa Laval (Sweden), De Nora (Italy), Netzsch (Germany) and Veolia Water Systems and Degremont (France)¹⁷⁶.

Estimates (from EBI) for the market size of the water supply and wastewater management sector in Brazil is provided in Table 8 below, disaggregated by its main segments. As can be seen, the water and sanitation market was worth nearly USD 14 billion in 2010, of which nearly half corresponds to water utilities.

Table 8. Brazilian Water and sanitation market by industry segment, 2010 (USD million)

Water and sanitation	Market size 2010
Water Equipment & Chemicals	2,947
Water Treatment Works	4,404
Water Utilities	6,219
TOTAL	13,570

Source: Environmental Business International Inc.

Sources consulted for this study single out specific sub-segments offering commercial opportunities for international and thus EU firms. The level of disaggregation varies across these sources, which generally do not provide precise quantitative estimates. A recent study by the US Commercial Service, for example, highlights increasing demand for advanced water treatment systems, water loss prevention solutions (e.g. leakage detection control), effluent treatment, efficient water distribution,

¹⁷³ UKTI (2010) Sector briefing: Brazil Opportunities in Environment and Water

¹⁷⁴ ABDI (2012) Relatório de Acompanhamento Setorial: Competitividade do sector de bens e serviços ambientais

¹⁷⁵ EBI, Report 3010

¹⁷⁶ EBI, Report 3010

water saving devices, water reuse and rainwater systems.¹⁷⁷ It also indicates that the sector offers opportunities for specialised consultancy services. A similar study, prepared in 2010 by UK authorities, identifies a slightly different range of products as particularly promising service categories: new technology and products such as analytical and measuring equipment, monitoring equipment for water and sewage treatment stations, sludge treatment, leakage detection control, odour removal process, flow meters, pipe cleaning, pipe joints and flow control products, sensor sand environmental monitoring and industrial effluent.¹⁷⁸

Waste

The disposal of waste is a major environmental issue in Brazil, particularly in its largest cities¹⁷⁹: estimates show that more than 42% of waste generated is disposed of in open dumps, in water courses or other environmentally sensitive areas.¹⁸⁰ In addition, recycling is still at an infant stage, as only 1% of all waste collected is recycled.¹⁸¹

Despite the municipalities' slow pace in complying with waste-related policies mainly due to insufficient resources, the solid waste management sector in Brazil offers significant business opportunities for private sector providers¹⁸². This is due to two factors: first, investments in the sector are expected to be substantial in the coming years in order to address the health and environmental problems caused by the current low rates of adequate waste disposal and treatment, as well as to achieve the abovementioned targets set by the government; second, pressures to increase efficiency in the provision of waste management services and the lower availability of public funding owing to the ongoing fiscal adjustment process are likely to lead to increased participation of the private sector (similarly to the waste and sanitation sectors).¹⁸³

The Brazilian Association of City Cleaning and Waste Treatment Companies (ABRELPE) estimates that the market for collection and disposal of municipal solid waste was worth around USD 3.2 billion in 2009, the market for collection and disposal of industrial waste around USD 2.5 billion, and the market for waste treatment around USD 5 billion.¹⁸⁴ These estimates are roughly in line with those produced by EBI for the year 2010, which are presented in Table 9 below (the difference is likely to be due to slightly diverging definitions applying to certain segments).

Table 9. Brazilian Environmental Market per industry segment, 2010 (USD million)

Segment	Market size
	2010
Waste Management Equipment	1,222
Solid Waste Management	3,057
Hazardous Waste Management	345
TOTAL	4,625

Source: Environmental Business International Inc.

Recycling in Brazil is mainly carried out as an informal activity performed by waste pickers. In particular, discarded cans represent a source of income for poor city dwellers. For this reason, Brazil achieves one of the highest rates of aluminium can recycling in the world (around 95%). In addition,

¹⁷⁷ US Commercial Service (2013) Environmental technologies: a top export prospect for Brazil, September 2013

¹⁷⁸ UKTI (2010) Sector briefing: Brazil Opportunities in Environment and Water

¹⁷⁹ ProChile (2012) Estudio de Mercado Servicios relacionados con el Medi Ambiente en Brasil, Octubre 2012.

¹⁸⁰ Waste Atlas (2013) Waste Atlas 2013 report; UKTI (2010) Sector briefing: Brazil Opportunities in Environment and Water.

¹⁸¹ Waste Atlas (2013) Waste Atlas 2013 report

¹⁸² US Commercial Service (2013) Environmental technologies: a top export prospect for Brazil, September 2013

¹⁸³ US Commercial Service (2013) Environmental technologies: a top export prospect for Brazil, September 2013

¹⁸⁴ ProChile (2012) Estudio de Mercado Servicios relacionados con el Medi Ambiente en Brasil, Octubre 2012. Available online : http://www.prochile.gob.cl/wp-content/blogs.dir/1/files_mf/documento_10_23_12173917.pdf

around 50% of plastic bottles (PET) and glass waste is recycled (2008).¹⁸⁵ The National Solid Waste Policy, adopted in 2010, is expected to help shift waste treatment and recycling towards the formal economy by boosting investment from private and public sectors in reverse logistics¹⁸⁶.

Opportunities for EU firms in the solid waste management sector notably relate to the installation and management of new sanitary landfills; the adoption of reverse logistic methods to collect, reuse, recycle and adequately dispose specific types of waste (e.g. electronic, oils, pesticides, etc.); the installation and management of voluntary recycling delivery points; the implementation of warehouses for recyclable waste, composting units, waste sorting areas, transshipment and recycling of debris and small sanitary landfills; and the provision of specialised consulting services for both public and private sector clients.¹⁸⁷

It is important not to overlook the protectionist measures which are commonplace in Brazil. According to a report from the Office of the US Trade Representative¹⁸⁸, , Brazil applies federal and state taxes and charges to imports that can effectively double the actual cost of imported products in Brazil. The same report also mentions a complex domestic tax system, “including multiple cascading taxes and tax disputes among the various states” as well as costly domestic content requirements. Tariffs are another contentious issue. Given the large difference between bound and applied tariff rates in Brazil, exporters are exposed to uncertainty “because the government routinely changes tariffs to protect fledgling domestic industries from import competition or to manage prices and supply”.

6.3.3 Summary

Brazil’s water and waste segments are the most relevant in terms of market size and correspond to two key policy priorities for the Brazilian government in the field of environment.

6.4 COLOMBIA

6.4.1 Country situation

Colombia is one of the largest¹⁸⁹ and fastest-growing economies in the region, and is currently undergoing a process of economic modernisation including the development of environmental infrastructure¹⁹⁰. The EU is Colombia’s third trading partner in terms of imports, after the USA (28%) and China (17%) and the second market for Colombian exports (16% of the total, mostly petroleum, coal, bananas and coffee), far behind the United States (32%). Although Colombia accounts for a relatively small share of EU trade, bilateral trade growth has grown in recent years.¹⁹¹

In 2014, Colombia’s President Juan Manuel Santos presented his plan¹⁹² for a more peaceful, equal and educated Colombia, which is to be implemented over a four-year period. Green growth is an important part of this plan and seen as the key transformational element for rural regions. In 2007, it was estimated that the cost of environmental damage in Colombia amounted to 3.7% of its GDP¹⁹³,

¹⁸⁵ UKTI (2010) Sector briefing: Brazil Opportunities in Environment and Water;

¹⁸⁶ Reverse logistics refers to the flow of surplus or unwater material, goods or equipment back in the supply chain, through its logistics chain, for reuse, recycling or disposal.

¹⁸⁷ US Commercial Service (2013) Environmental technologies : a top export prospect for Brazil, September 2013

¹⁸⁸ Office of the US Trade Representative. Foreign Trade Barriers, Brazil. Accessible at:
https://ustr.gov/sites/default/files/Brazil_0.pdf

¹⁸⁹ Colombia is the fourth largest economy in Latin America, behind Brazil, Mexico and Argentina.

¹⁹⁰ World Bank database (<http://data.worldbank.org/indicator/TG.VAL.TOTL.GD.ZS/countries?display=default>)

¹⁹¹ Source: European Commission (2014) European Union: trade in goods with Colombia; Stevens, C. et al, European Union: trade agreement with Colombia and Peru, European Parliament Study, 2012 available online:
[http://www.europarl.europa.eu/RegData/etudes/etudes/join/2012/433865/EXPO-INTA_ET\(2012\)433865_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/etudes/join/2012/433865/EXPO-INTA_ET(2012)433865_EN.pdf)

¹⁹² Bases del Plan Nacional de Desarrollo 2014-2018,ailable online: <https://colaboracion.dnp.gov.co/CDT/Prensa/PND%202014-2018%20Bases%20Final.pdf>

¹⁹³ World Bank, Prioridades ambientales para la reducción de la pobreza en Colombia, p. 115

mostly as a result of water and air pollution. More recent Government estimates indicate that the cost may have decreased to 2% of GDP in 2012, and is expected to reach 1.7% in 2018.¹⁹⁴

Colombia boasts a sizeable environmental market in both absolute terms and as share of GDP.

6.4.2 Economic benefits and opportunities

In 2013, Colombia's environmental market was estimated at approximately USD 3.2 billion (EUR 2.4 billion) and accounted for 5.5% of the Latin America environmental market or about 0.8% of Colombia's GDP (2013). Although disaggregated data on imports by environmental segment are not available, available data suggest that practically all pollution control equipment in Colombia is imported, half from the USA¹⁹⁵. Assuming similar rates of import dependency also apply to other segments, Colombian imports of environmental goods would be worth around USD 580 million (EUR 436 million) per year¹⁹⁶. Demand for EGS is expected to increase as a result of continued economic growth, population growth and urbanisation, as well as increasingly stringent environmental legislation¹⁹⁷. Therefore, the value of the environmental market is expected to grow until 2020, at an average rate of 7.9% per year, which is the third fastest growth rate in the Latin America region after Chile (10.7%) and Peru (8%). The environmental market is projected to reach USD 5.4 billion (EUR 4.1 billion) by 2020.

The analysis, based on current market size and policy developments predicts that the greatest business opportunities in Colombia for EU firms operating in the EGS sector will be in the following sectors:

- water sector (supply of drinking water as well as water treatment); and
- waste management.

Water

Access to drinking water is relatively high in Colombia's main cities. However, almost 30% of the rural population has no access to drinking water. Moreover, Colombia's Water Regulatory Agency (CRA) estimates that around 45% of treated water is unaccounted for, due to leakages or inaccurate consumption metering, which creates a large problem for utilities and discourages investment.¹⁹⁸

In addition, only 85% of the urban population and 66% of the rural population have access to sewage systems¹⁹⁹. Basic water treatment is deficient in many cases, as sanitation equipment and facilities are often technologically obsolete.²⁰⁰ The Ministry of Environment, Housing and Territorial Development (MMA) estimates that around 80% of Colombia's municipalities discharge untreated wastewater into rivers or lakes.²⁰¹

The World Bank estimates that approximately USD 1 billion per year needs to be invested to improve

¹⁹⁴ Bases del Plan Nacional de Desarrollo 2014-2018

¹⁹⁵ International Business Publications (2013) Colombia Business and Investment Opportunities Yearbook, Volume 1 Strategic and Practical Information. Washington DC: USA.

¹⁹⁶ These data are in line with data presented by the International Trade Administration (Department of Trade) from the USA, according to which exports of environmental goods from the US to Colombia was worth around USD 220 million in 2010.

Differences in figures are likely to be due to slightly different use of definitions. (See : http://www.trade.gov/mas/ian/build/groups/public/@tg_ian/documents/webcontent/tg_ian_002623.pdf)

¹⁹⁷ According to EBI estimates

¹⁹⁸ International Business Publications (2013) Colombia Business and Investment Opportunities Yearbook, Volume 1 Strategic and Practical Information. Washington DC: USA.

¹⁹⁹ World Bank (2014) Little Green Data Book

²⁰⁰ Source : Antea group (2012) Colombia: Water Sector Market Survey 2012, commissioned by the Netherlands

²⁰¹ International Business Publications (2013) Colombia Business and Investment Opportunities Yearbook, Volume 1 Strategic and Practical Information. Washington DC: USA.

Colombia's water and sewage networks and wastewater treatment plants.²⁰² Nearly a third of these investments (i.e. approximately USD 300 million per year between 2014 and 2024²⁰³) should be devoted to projects in rural areas, according to governmental projections.²⁰⁴

Overall, investments in the water and sanitation sectors are expected to grow substantially in Colombia in the years to come.²⁰⁵ Table 10 below presents the projected investments in the sector in Colombia in the period 2010-2016, developed by Global Water Intelligence, as well as the average annual growth rate registered over the period.²⁰⁶ These figures suggest that the largest business opportunities relate to the expansion and modernisation of water and wastewater networks²⁰⁷, as well as with the construction and upgrading of water and wastewater treatment plants, as these activities are expected to register annual growth rates of around 10%. In addition, environmental laws are becoming increasingly stringent, particularly regarding the organic content of wastewater, prompting the industry to increase their investment in wastewater treatment technologies.²⁰⁸

Table 10. Estimated investments in the water sector, Colombia, 2010-2016 (USD million)

	2010	2011	2012	2013	2014	2015	2016	Annual growth*
Water								
Networks	287.7	319.1	358.7	400.5	436.5	455.0	500.3	9.7%
Treatment plants	194.2	217.6	246.9	278.2	105.7	321.2	355.8	10.6%
Water resources/other	150.3	166.5	186.8	208.2	226.3	235.2	257.7	9.4%
Wastewater								
Networks	237.5	261	297.1	342.5	392.1	438	467.9	12.0%
Treatment plants/other	205.2	226.1	255.9	291.2	327.1	356.3	383.8	11.0%
Utility operating expenditure								
Water utilities	733.5	762.1	791.8	822.7	854.8	888.2	922.8	3.9%
Wastewater utilities	474.7	493.2	512.5	532.5	553.2	574.8	591.2	3.7%
Industrial water								
Industrial capex	40.6	43.7	46.4	49.0	52.2	55.3	59.8	6.7%
Industrial chemicals	44.4	46.4	47.8	49.1	50.5	51.9	53.3	3.1%
Industrial services	2.7	2.7	2.8	2.9	2.9	3.0	3.1	2.3%
TOTAL	2,370.8	2,538.4	2,746.7	2,976.8	3,001.3	3,378.9	3,595.7	7.2%

*Compound Annual Growth Rate (2010-2016)

Source: Antea group (2012) Colombia: Water Sector Market Survey 2012, commissioned by the Netherlands, citing Global Water Intelligence (2011) Global Water Market 2011: Colombia.

The potential investments are expected to present opportunities for foreign firms in the water sector,

²⁰² International Business Publications (2013) Colombia Business and Investment Opportunities Yearbook, Volume 1 Strategic and Practical Information. Washington DC: USA.

²⁰³ The original source cites figures in Colombian Pesos: COP 7,634,989 million

²⁰⁴ Departamento Nacional de Planeación, política para el suministro de agua potable y saneamiento básico en la zona rural, 2014

²⁰⁵ Finpro (2013) Opportunities for Finnish companies in the water sector in the Andean region: Peru, Bolivia, Colombia and Ecuador (PPT presentation available online: http://www.finpartnership.fi/_kehitysmatiecto_/130/P-Water%20Industry%20in%20the%20Andean%20Countries-101213-HV.ppt)

²⁰⁶ More disaggregated estimates per segment can be found in the Antea Group (2012) study, Annex 1.

²⁰⁷ According to the same source, around half of the investments in water networks are allocated to network rehabilitation, and half of it to the construction of new water networks; in the case of wastewater networks, around two thirds of the investments is expected to be allocated to new networks, while one third would be devoted to network rehabilitation.

²⁰⁸ MetaSus (2011) Opportunities in waste management and biomass in Colombia (available online: https://www.b2match.eu/system/holanda/files/metabus_colombia_marketspecial_090611.pdf?1367683295)

all the more since Colombia's government is seeking to promote further private sector participation in the sector.²⁰⁹ Overall, private sector participation in the water supply and sanitation sector in Colombia has been stronger and more stable than in other Latin American countries.²¹⁰ EU providers appear to be well positioned to provide advanced technologies and expertise. A study commissioned in 2012 by the Dutch government under the Colombian-Dutch Water Partnership²¹¹ identified the main factors affecting entry to the drinking water and sanitation sector in Colombia. Obstacles cited include the lack of deep knowledge about the applicable institutional framework as well as related business opportunities and partners. Market saturation issues and lack of bilateral co-financing were also underscored in the study.

The main opportunities for foreign economic providers are in the wastewater treatment sector, both to expand the coverage and to modernise existing infrastructure. A Canadian study²¹² specifically mentions that existing treatment plants in Colombia require products and services that increase efficiency, including geographic information systems, supervisory, control and data acquisition systems water flow/level instruments, and micro and macro instrumentation systems. Water filtering and purification equipment is also highlighted. Another recent study mentions water and wastewater treatment plants, water pollution monitoring and control equipment, the provision of drinking water, and water-related consulting and engineering services as the activities offering the brightest commercial prospects for international firms²¹³.

Waste

Most of the municipal waste generated in Colombia is disposed of in open air dumps or landfills. This is due in part to the existing structure of tariffs, which promote this kind of disposal and discourage alternative options.²¹⁴ This situation, combined with financial constraints on municipalities, has led to very low levels of source separation. In addition, only a few municipalities are equipped with recycling facilities.

Informal waste pickers have become one of the main features of the Colombian waste management sector. In Bogotá, there are estimated to be more than 13,000 informal waste pickers (2014).²¹⁵ In such circumstances, waste tends to be collected and processed separately. The Colombian government's objective is to foster the integrated management of waste, which could create business opportunities.

At present, the main waste management companies are Colombian: Grupo Interaseo, with a market share of approximately 25%, Servigenerales (20%), and Grupo Sala (15%), with the exception of Proactiva de Colombia (a Spanish company accounting for 16% of the market).²¹⁶ The few recycling facilities existing in the county are run by private sector providers but the absence of source separation in collection systems seems to threaten their economic viability.

Estimates (from EBI) for the market size of the waste management sector in Colombia are provided in

²⁰⁹ <http://www.globalwaterintel.com/country-profiles/colombia/>

²¹⁰ The main players in this market are Sociedad de Acueducto, Alcantarillado y Aseo de Barranquilla S.A. E.S.P. AAA; Aguas de Cartagena S.A. E.S.P. ACUACAR S.A.; Proactiva de servicios integrales S.A. E.S.P.; Conhydra S.A. E.S.P.; Hydros Mosquera S en C.A.E.S.P. (Source: Antea Group (2012) Colombia: Water sector market survey 2012. Commissioned by the Netherlands.)

²¹¹ <http://www.government.nl/news/2011/07/01/colombia-and-the-netherlands-launch-water-partnership.html>

²¹² Foreign Affairs and International Trade Canada (2010), quoted in Meta Sus (2011) : Opportunities in waste management and biomass in Colombia. For NL EVD Internationaal.

²¹³ International Business Publications (2013) Colombia Business and Investment Opportunities Yearbook, Volume 1 Strategic and Practical Information. Washington DC: USA.

²¹⁴ http://waste.ccac-knowledge.net/sites/default/files/CCAC_images/events_documents/2.%20Case%20Study%20-%20Cali.%20Colombia.pdf

²¹⁵ Van den Berg, S. (2014) Integration of the informal sector in PET bottle collection and recycling: South Africa, Ecuador and Colombia. Available online: http://www.waste.nl/sites/waste.nl/files/informal_sector_and_pet_bottles_final.pdf

²¹⁶ MetaSus (2011) Opportunities in waste management and biomass in Colombia (available online: https://www.b2match.eu/system/holanda/files/metasuk_colombia_marketspecial_090611.pdf?1367683295)

Table 11 below, disaggregated by main segments. As can be seen, this market was worth around USD 620 million in 2010, of which more than half was for the provision of solid waste management services (i.e. collection, processing and disposal of solid waste).

Table 11. Colombian Waste Management Market per industry segment, 2010 (USD million)

Segment	Market size 2010
Waste Management Equipment	125
Solid Waste Management	320
Hazardous Waste Management	52
Resource Recovery ²¹⁷	123
TOTAL	620

Source: Environmental Business International Inc.

Colombian law requires the replacement of open-air dumps for sanitary landfills, and this provides potential opportunities both for specialised consultancy firms as well as for equipment providers (e.g. landfill liners, equipment for biogas extraction), which could contribute to more sustainable waste treatment in the country. This applies to the operation of active landfills as well as to safe landfill closure and soil remediation.²¹⁸

Waste recycling and reuse is also expected to be an expanding market in coming years. In Bogotá alone, municipal investments in recycling facilities and equipment are projected to be of around EUR 114 million or EUR 28.5 million per year.²¹⁹ Another field with potential for growth is waste composting: around 54% of waste generated in Colombia is classified as organic waste²²⁰; however, composting facilities remain scarce.

In light of the above, the most promising business opportunities in Colombia for EU firms operating in the waste management sector are expected to arise in the fields of sustainable landfilling (which involves the provision of both services and equipment), solid waste management equipment, composting equipment, waste separation and recycling²²¹. The provision of municipal services, such as the operation and management of hauling and disposal of solid waste, are also expected to provide opportunities for EU companies.²²²

However, the abovementioned opportunities need to be considered alongside the barriers to the expansion of these markets. In addition to the high levels of informality and the disincentives resulting from existing tariff structures, these barriers notably include:

- Colombia's limited experience in the use of advanced waste processing technologies such as composting and anaerobic digestion, which results in difficulties to access financing
- Fragmentation and volatility of relevant markets, such as those for recyclables and compost
- Lack of clear regulations for the (re-)use of waste by industrial actors (e.g. relating to emission standards).

6.4.3 Summary

In view of the investments in water and sanitation, substantial opportunities for foreign firms in the

²¹⁷ Selling materials recovered and converted from industrial by-products or post-consumer waste

²¹⁸ MetaSus (2011) Opportunities in waste management and biomass in Colombia

²¹⁹ <http://fr.slideshare.net/albertkeesman/opportunities-waste-managementcolombia250412>

²²⁰ World Bank (2012) What a Waste: a Global Review of Solid Waste Management.

²²¹ MetaSus (2011) Opportunities in waste management and biomass in Colombia (available online:

https://www.b2match.eu/system/holanda/files/metabus_colombia_colombia_marketspecial_090611.pdf?1367683295)

²²² International Business Publications (2013) Colombia Business and Investment Opportunities Yearbook, Volume 1 Strategic and Practical Information. Washington DC: USA.

water sector are likely to arise. EU providers appear to be well positioned to provide advanced technologies and expertise in these fields. Business opportunities for EU firms operating in the waste management sector are expected to arise in the fields of municipal services, sustainable landfilling, solid waste management equipment, composting equipment, waste separation and recycling. Waste recycling and reuse is also expected to be an expanding market in coming years.²²³

6.5 BARRIERS TO EXTENDING ECONOMIC CO-OPERATION

Although trade between the EU and Latin America has been expanding, barriers to trade and investment remain. This section focuses on barriers in the environmental market in each of the four countries, in particular non-tariff barriers (NTB) as well as the incentive structure faced by foreign firms considering to invest or establish a commercial activity in the country at hand.

According to the World Bank Group (Doing Business 2015)²²⁴, Mexico and Chile's regulatory environment is relatively conducive to investment and the development of economic activities, also due to relatively streamlined procedural requirements for exporting and importing goods. Brazil is the closest economy to foreign trade and investment amongst the four; while in the case of Colombia, the high ease of doing business contrasts with the existent burdensome procedures in place for trading across borders. Uncertainty with regards to the enforcement of contracts has been listed as a common barrier to trade and investment in all four countries.

Table 12. Doing Business indicators: ranking of the four country cases*

Indicator	Mexico	Chile	Brazil	Colombia
Ease of doing business	39	41	120	34
Trade across borders	40 (81.25)	44 (82.05)	123 (66.11)	93 (72.7)

Note: In the Doing Business Report, economies are ranked on their ease of doing business, from 1–189. A high ease of doing business ranking means the regulatory environment is more conducive to the starting and operation firms. Trade across borders is measured by the time and cost (excluding tariffs) required to complete tasks such as customs clearance and inspections, inland transport and handling, and port and terminal handling for exporting and importing goods.

*Ranking over 189 economies. Text in parenthesis indicates the score over 100.

Source: World Bank; Doing Business 2015

Mexico has put in place relatively streamlined procedural requirements for exporting and importing goods, compared to other Latin American countries, but improvements can still be made. In addition, the following administrative, legal and political barriers have been identified:

- Political uncertainty (in some cases due to political pressures and regulatory capture) which might hamper the planned implementation of projects.²²⁵
- Lengthy and burdensome administrative and tendering procedures.²²⁶
- In case of municipal contracts, relatively frequent late payments due to the poor funding of municipal governments.²²⁷
- Widespread economic informality (e.g. undeclared activities, tax evasion, etc.). These barriers affect the incentive structure applying to EU companies, and could be particularly discouraging for SMEs. In addition, environmental laws and regulations are not always effectively enforced by Mexico's authorities, which might discourage EU companies from

²²³ MetaSus (2011) Opportunities in waste management and biomass in Colombia (available online: https://www.b2match.eu/system/holanda/files/metasus_colombia_marketspecial_090611.pdf?1367683295); <http://fr.slideshare.net/albertkeesman/opportunities-waste-managementcolombia250412>

²²⁴ <http://www.doingbusiness.org/rankings>

²²⁵ Torres (2011) Estudio de Mercado del sector de residuos sólidos urbanos en México.

²²⁶ Another of the measures included in the 2014 Doing Business report is the ease of 'dealing with construction permits' (which can be used as a proxy for administrative efficiency), for which Mexico scored 68.4 points out of 100 (and ranked 108 out of 189 countries). Burdensome administrative and tendering procedures have also been identified by surveys carried out by the Office of the United States Trade Representative (see https://ustr.gov/sites/default/files/Mexico_0.pdf)

²²⁷ Torres (2011) Estudio de Mercado del sector de residuos sólidos urbanos en México.

engaging in the Mexican market due to legal uncertainty.

Chile has also put in place relatively streamlined procedural requirements for exporting and importing goods. However, foreign companies face a range of trade and investment barriers and include the following:

- Complexity of certain administrative procedures, such as the concession of permits and other bureaucratic paperwork²²⁸ which may have implication in terms of transaction costs affecting competition.
- Barriers to entry for new competitors due to the concentration of a large percentage of Chilean businesses within a limited number of individuals and families.²²⁹ This situation may favour incumbents by creating barriers to entry for new competitors.
- For some companies, the protection of intellectual property rights can be a challenge in Chile.²³⁰
- The lack of clarity in the rules and inconsistent enforcement are key problems hampering the demand for EGS.²³¹

Compared to most Latin American countries²³², **Brazil** has relatively high tariffs²³³, a complex customs system²³⁴ and the profusion of local content requirements²³⁵. In addition, factors that might discourage trade and investment by foreign companies in Brazil include the following:

- The time and costs necessary to start up a new business in Brazil are considerably high.²³⁶
- The existence of a complex tax structure, and high and unpredictable tax burdens.²³⁷
- High cost of credit.
- Participating in public sector procurement can be difficult for foreign companies without a Brazilian partner or physical presence in Brazil.²³⁸ Moreover, public tenders require minimum priced bids, a disadvantage for foreign companies with more expensive, higher quality equipment and better technological content.²³⁹
- Logistics pose a particular challenge in Brazil²⁴⁰: as investments in infrastructure have

²²⁸ One of the measures included in the 2014 Doing Business report is the ease of dealing with construction permits, for which Chile scored 76.13 points out of 100 (and ranked 62 out of 189 countries). The US commercial service also identifies delays associated with bureaucratic paperwork and obtaining approvals as one of the market challenges for foreign companies in Chile (US Commercial Service (2013) Doing Business in Chile : Commercial Guide for U.S. companies)

²²⁹ US Commercial Service (2013) Doing Business in Chile : Commercial Guide for U.S. companies

²³⁰ This barrier has been identified by surveys carried out by the Office of the United States Trade Representative (see https://ustr.gov/sites/default/files/Chile_0.pdf)

²³¹ Environmental Business International, Report 3010

²³² See: World Bank (2015) The curious case of Brazil's closedness to trade. Policy Research Working Paper 7228

²³³ European Commission, (2014) 11th Report on potentially trade-restrictive measures identified in the context of the financial and economic crisis.

²³⁴ One of the measures included in the 2014 Doing Business report specifically addresses the ease of trading across borders, as measured by the time and cost (excluding tariffs) required to complete tasks such as customs clearance and inspections, inland transport and handling, and port and terminal handling for exporting and importing goods. In 2014, Brazil scored a total 66.11 points out of 100 (i.e. below the LAC average of 72.47) and ranked 123th for the World as a whole.

²³⁵ The most frequently used mechanisms to implement local content requirements are the following: (1) Tax breaks for companies reaching a certain level of local content; (2) Subsidized financing through BNDES (Brazil Development Bank); (3) Quotas for preferential purchases of locally-manufactured goods in government tenders; (4) self-adopted policy in companies strongly tied to the government (Source: Rothmann Sperling Padovan (2013) Local content requirements in Brazil. Available online:

http://www.hannover.ihk.de/fileadmin/data/Dokumente/Themen/International/Veranstaltunguebersicht/Local_content.pdf)

²³⁶ One of the measures included in the 2014 Doing Business report specifically addresses the ease of starting a business, as measured by the time and cost for an SME to start up and formally operate. In 2014, Brazil scored a total 63.37 points out of 100 (i.e. above the LAC average of 78.29) and ranked 123th for the World as a whole.

²³⁷ US Commercial Service (2014) Doing Business in Brazil: 2014 Country Commercial Guide for U.S. Companies

²³⁸ US Commercial Service (2014) Doing Business in Brazil: 2014 Country Commercial Guide for U.S. Companies

²³⁹ EBI, Report 3010 Global Environmental Market

²⁴⁰ According to the World Bank survey that analyses logistics performance worldwide, in 2014 Brazil ranked 65th over 160 countries and scored 2.94 on a 1-5 scale. (source: <http://data.worldbank.org/indicator/LP.LPI.OVRL.XQ/countries>)

traditionally been oriented to commodity exports and thus subject to the commodity cycles, interconnections between Brazil's regions remain insufficient to date.²⁴¹

In light of the barriers outlined above, successfully accessing the Brazilian market requires detailed ledge of the local business environment. Brazil's business culture relies heavily upon the development of strong personal relationships, and therefore presence in the country is generally necessary in order to effectively operate either through partnerships with Brazilian companies or by establishing subsidiaries in the country.

The **Colombian** market is highly attractive for foreign investors, among other factors due to the ease of getting credit, protecting minority investors and resolving insolvency cases. However, the following factors may be barriers to EU companies entering the Colombian market:

- Relatively high taxation levels.²⁴²
- Lack of transparency, fairness, and truly competitive bidding conditions in many public tenders. Moreover, a commercial presence is required to bid for Colombian government contracts.²⁴³
- Economic needs tests are required for foreign providers who offer professional services even temporarily. Residency requirements restrict trans-border trade of certain professional services.²⁴⁴
- For firms with more than ten employees, no more than 10% of the general workforce and 20% of specialists may be foreign nationals.²⁴⁵
- Liquidity risks sometimes result in late payments.²⁴⁶

Recommendations

To address the different barriers to trade and investment, it is recommended that the EU should work with the different governments in Latin America:

- To continue efforts to further reduce non-tariff barriers to trade, for instance by streamlining customs and administrative procedures, improving contract enforcement, and addressing barriers to entry such as those resulting from ownership concentration in certain sectors of the Latin America economy.
- To remove barriers related to contract enforcement, political uncertainty and administrative procedures.
- To enhance clarity and enforcement of environmental rules, with a view to ensuring a level playing field in EGS sectors as well as to unlocking demand for EGS.
- To enable larger and deeper private sector involvement, in sectors such as solid waste management (including recycling and waste incineration), where EU firms are well placed to provide high-quality and technology intensive services.
- Make use of the Latin America intellectual property rights helpdesk, especially relevant for Chile and MERCOSUR,²⁴⁷ to advise and inform EU companies seeking to enter the environmental market.

²⁴¹ Troyjo, Marcus : "Bureaucratic quagmire is the cost of doing business". Financial Times, December 3rd 2014.

²⁴² In the rankings of the World Bank Group's Doing Business, Colombia scores 59.7 points out of 100 in paying taxes in 2014 (it is ranked 168 out of 189 countries). This indicator addresses the taxes and mandatory contributions that a medium-size company must pay or withhold in a given year, as well as the administrative burden in paying taxes.

²⁴³ US Commercial Service (2014) Doing Business in Colombia: 2014 country commercial guide for U.S. companies.

²⁴⁴ US Commercial Service (2014) Doing Business in Colombia: 2014 country commercial guide for U.S. companies.

²⁴⁵ US Commercial Service (2014) Doing Business in Colombia: 2014 country commercial guide for U.S. companies.

²⁴⁶ Antea Group (2012) Colombia: Water sector market survey 2012. Commissioned by the Kingdom of the Netherlands.

²⁴⁷ <http://www.mercosur-iprhelpdesk.eu/>

7 CONCLUSIONS AND ROAD-AHEAD

7.1 ENVIRONMENTAL MARKETS AND OPPORTUNITIES

The size of environmental markets in Latin America, both in absolute and relative terms, is already substantial, and these markets are anticipated to develop significantly in the coming years. The **water and wastewater sector** is expected to provide the greatest business opportunities for EU companies in the four selected country studies. This sector comprises the supply of equipment used for the delivery and treatment of water and wastewater, as well as the provision of collection and treatment services. Water and wastewater equipment and services constitute not only the largest environmental sector in Brazil, Chile, Colombia and Mexico, but also the sector expected to demand an increase in imported advanced technologies from the EU over the coming years. In addition, the governments identified water-related investments as a key policy priority, crucial to tackle some of their most challenging environmental problems. Ensuring universal access to safe drinking water and sanitation services and bridging the gap between urban and rural areas are key challenges in these countries (particularly in the case of Brazil and Colombia), while significant investments are required in order to ensure adequate wastewater treatment in all four countries. In 2013, this sector was worth around EUR 5.6 billion in Brazil, EUR 2.8 billion in Mexico, EUR 2.2 billion in Chile and EUR 0.6 billion in Colombia.

Waste management and treatment is the second most promising sector for EU firms. In 2013, this segment was worth around EUR 3.5 billion in Brazil, EUR 2 billion in Mexico, EUR 0.5 billion in Chile and EUR 0.4 billion in Colombia.

Other relatively small (compared to the other two) but potential sectors have been identified in the case of Mexico and Chile.

In Mexico, air pollution control equipment could provide opportunities for EU businesses specialized in this field, although it should be recognised that companies from the USA have a dominant market position. In turn, environmental consulting and engineering services are a highly developed and competitive sector in Chile –a country that has been frequently chosen by international consulting and engineering firms as a hub for their operations in Latin America.

Due to data limitations, projections for the volume of EU exports in specific environmental sectors have only been developed for **Mexico and Chile**. According to these projections, the volume of EU water equipment exports to Mexico could range between EUR 113 million and EUR 158 million in 2020, depending on the scenarios (up from approximately EUR 90 million in 2013²⁴⁸); in the case of waste equipment, exports could amount to between EUR 56 million and EUR 100 million (up from EUR 53 million in 2013²⁴⁹); while exports of air quality control equipment could be worth between EUR 80 million and EUR 120 million (up from EUR 60 million in 2012²⁵⁰). In the case of Chile, the total volume of EU exports of water equipment may range between nearly EUR 200 million and EUR 260 million in 2020, up from EUR 120 million in 2012.²⁵¹

The table below presents a number of key numbers developed throughout the study in order to ascertain the economic and environmental benefits that would accrue to the EU from strengthening cooperation with Latin America in the field of environment.

²⁴⁸ In USD, EU water equipment exports to Mexico could be worth between USD 150 million and USD 210 million in 2020, up from approximately USD 120 million in 2012.

²⁴⁹ Approximately USD 70 million.

²⁵⁰ Approximately USD 80 million.

²⁵¹ Approximately USD 160 million.

Table 13. Potential benefits of cooperation in the field of environment in the four focus countries: key numbers*

	Mexico	Chile	Brazil	Colombia
Size of EM 2013	EUR 10.5 billion (USD 13.9 billion)	EUR 3.3 billion (USD 4.4 billion)	EUR 19.4 billion (USD 25.7 billion)	EUR 2.4 billion (USD 3.2 billion)
Size of EM 2013 (% of GDP)	1.1%	1.6%	1.1%	0.8%
Share of LA's EM 2013	24.2%	7.6%	44.7%	5.5%
% EM imports (equipment)	73%	62%	n/a	n/a
EM projected growth 2013-2020 (per year)	5.5%	10.7%	6.4%	7.9%
EM projected size 2020	EUR 15.3 billion (USD 20.3 billion)	EUR 6.7 billion (USD 8.9 billion)	EUR 29.8 billion (USD 39.7 billion)	EUR 4.1 billion (USD 5.4 billion)
Most promising segments (size in 2010)	Water/wastewater (EUR 2.8 billion, USD 3.7 billion)	Water/wastewater (EUR 2.2 billion, USD 2.9 billion)	Water/wastewater (EUR 5.6 billion, USD 7.4 billion)	Water/wastewater (EUR 0.6 billion, USD 0.8 billion)
	Waste (EUR 2.0 billion, USD 2.6 billion)	Waste (EUR 0.5 billion, USD 0.7 billion)	Waste (EUR 3.5 billion, USD 4.6 billion)	Waste (EUR 0.4 billion, USD 0.5 billion)
	Air quality (EUR 0.5 billion, USD 0.6 billion)	Env. Consulting (EUR 0.2 billion, USD 0.2 billion)		
Estimated volume of EU exports in 2020**	Water/wastewater equipment (EUR 113-158 M, USD 150-210 M); Waste equipment (EUR 56-98 M, USD 75 -130 M); Air quality control equipment (EUR 83-120 M, USD 110-160 M)	Water/wastewater equipment (EUR 199-263M, USD 265-350 M)		

Note: See the methodology note (Annex 2) for detailed explanation on the methodology and assumptions used to develop the estimates presented in this table. EM stands for 'environmental markets'.

* Original figures were provided in USD. Values in EUR for 2013 have been calculated using the 2013 annual average exchange rate. In the case of projections for 2020, values in EUR have been calculated using the USD/EUR annual average exchange rate of the past five years (2010-2014)

**Ranges provided refer to the lowest-growth and highest-growth scenarios developed in this study.

Source: Milieu elaboration based on EBI data

7.2 ENVIRONMENTAL BENEFITS

The EU exports a broad range of negative environmental pressures and impacts associated to the consumption of agriculture and forestry commodities. Among those, land conversion, resource use and pollution appear to be the most damaging. Imported soy and soy products (both directly and in embodied form) as well as beef and timber are particularly damaging in this regard, given the threats they pose to Latin America's natural capital and increasingly fragile ecosystems.

7.3 RECOMMENDATIONS

This section presents general recommendations for the achievement of common interests in enhanced co-operation in the field of environment as well as on the environmental benefits. The last subsection presents some country-specific recommendations.

Achievement of common interests and increased efficiency in enhanced co-operation:

- Ensure that the potential of the identified priority sectors is reflected in the context of the different cooperation agreements with the countries concerned and more generally with Latin America. The priority sectors should be adequately reflected in terms of the funding allocations under both the DCI and the EU Partnership Funding Instrument (insofar as it has “Enhancing market access and boosting trade, investment and business opportunities for EU companies” among its objectives).
- Work with the network of chambers of commerce of the EU Member States to promote cooperation and dialogue between EU and Latin American companies and to gather and disseminate relevant information for EU businesses in the water, sanitation and solid waste management sectors seeking to engage in partnerships with local actors, as this is widely regarded as the best option for accessing relevant markets.
- Work with subsidiaries of EU firms located in Latin America to create a platform to facilitate interaction with local SMEs, in order to foster future strategic alliances with local actors (which could significantly enhance market access and give a competitive edge to EU companies).
- Improve the knowledge base of EU businesses (particularly SMEs) about procurement opportunities in Latin America.

Environmental benefits

- From an EU perspective, it is crucial to ensure that imports of agriculture and forestry commodities from Latin American countries are environmentally sustainable. In the context of enhanced cooperation, several measures could be envisioned relating to the development or strengthening of certification schemes.
- Cooperation in the field of environment should help develop sustainable certification schemes or strengthen existing schemes, such as the Green Commodities Programme²⁵² for certain key commodities (cocoa, coffee, beans, soy, beef, sugarcane), so as to reduce the EU’s environmental footprint related to commodity imports.
- Concluding VPAs with key Latin American countries such as Brazil could help address negative environmental impacts linked to imports of commodities produced in illegally cleared areas (Fern Report).
- Cooperation should encourage countries to sign the WTO plurilateral Agreement on Government Procurement (GPA) as well as to join the Green Goods Initiative.²⁵³ This is of particular relevance to Brazil, considering that its import tariffs de facto determine the common external tariff (CET) for MERCOSUR.
- In the context of the European Innovation Partnership (EIP) on Raw Materials, cooperation and dialogue could be increased with producing countries such as Chile and Brazil. Such cooperation should emphasise the mining industry’s role as a key driver for EGS demand in coming years, and seek ways to improve environmental management in extractive industries, which tend to be water- and energy- intensive while also generating mining waste.
- Further efforts should be undertaken to contribute to capacity and institution building in Latin American countries in order to strengthen the implementation of sustainable forest policies, and combat illegal practices. Strengthening the capacities of indigenous and rural communities should be a cornerstone of related cooperation initiatives. Promoting and accelerating the transfer of forest management technologies and methods is also a priority.²⁵⁴

²⁵² http://www.undp.org/ourwork/environmentandenergy/projects_and_initiatives/green-commodities-programme.html

²⁵³ <http://trade.ec.europa.eu/doclib/press/index.cfm?id=1116>

²⁵⁴ Timber Trade Flows within to and From South America. Flujos de Madera en, hacia y desde América del Sur. Service Contract No. 2011/278461. Informe Final, Febrero 2013.

- From a wider perspective, mainstreaming footprint methodologies, such as those currently under development in the EU could become an integral part of EU-Latin America cooperation. This would help enhance understanding of the environmental footprint and its benefits.

Country specific recommendations

Mexico

The following recommendations are aimed at levelling the playing field between USA and EU economic actors through a series of different steps, which include:

- Working with the EU chambers of commerce network to promote cooperation and dialogue between EU and Mexican companies;
- Working with subsidiaries of EU firms located in Mexico to create a platform to facilitate interaction with Mexican SMEs, in order to foster future strategic alliances with local actors (which could significantly enhance market access and give a competitive edge to EU companies);
- Working with EU SMEs in the environmental sector to create a platform to facilitate interaction with local/multinational firms in the environmental sector, in order to foster partnerships.

Chile

The following recommendation aims to enhance the opportunities offered by the environment-related consulting and engineering sector:

- Focus on areas set to expand in the near future, such as advice on compliance with emission standards, environmental permitting, environmental management and auditing, environmental feasibility analysis, and advice and consultancy on water and carbon footprints.

Brazil

The following recommendations aim at enhancing the benefits of increased cooperation with Brazil:

- Capitalise on the EU's position as Brazil's first trading partner to improve the knowledge base of EU businesses (particularly those operating in the water and waste sectors) about procurement opportunities in Brazil; e.g. through the provision of training, supporting materials and advisory services. As suggested by a recent FERN report²⁵⁵, concluding VPAs with countries like Brazil could help address negative environmental impacts linked to imports of commodities produced in illegally cleared areas.
- Work with the Brazilian authorities to ensure a level playing field for EU companies operating in the key sectors analysed in this study. This notably includes efforts to remove competition distorting taxes as well as domestic content requirements.

Colombia

The following recommendations aim at helping to realize the opportunities that exist for Colombia:

- In light of Colombia's private sector involvement in the water supply and sanitation sectors as well as the needs for increasing this involvement in the years to come, it would be useful to use EU-Colombia co-operation to help the country's authorities to further promote private sector

participation in the sector. This may include the dissemination of good practices as well as capacity building and the provision of expertise, e.g. regarding the analysis of key segments, such as wastewater treatment. Support to local authorities and other relevant bodies in the preparation of waste management plans, including the improvement of landfills, should also be considered in that regard as it may result in sizeable market opportunities.

- Capitalise on existing initiatives of the EU and its Member States in the water sector (such as the Colombian-Dutch Water Partnership) to position EU providers for the provision of advanced technologies and expertise in this field; e.g. through the provision of training, supporting materials and advisory activities.

8 ANNEXES

8.1 ANNEX 1: KEY CONCEPTS

For the purpose of this study, **Latin America** is defined as the region comprising the following countries: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela. Data for Latin America and the Caribbean (LAC) region have been presented when more disaggregated data were not available. In those cases, the geographical scope of the data has been defined in footnotes.

Environmental markets are defined as the markets for companies that provide **environmental goods and services (EGS)**²⁵⁶. EGS include goods and services that ‘measure, prevent, limit, minimise or correct environmental damage to water, air and soil, as well as problems related to waste, noise and ecosystems. This includes cleaner technologies, products and services that reduce environmental risk and minimise pollution and resource use’²⁵⁷. There is, however, no internationally-agreed definition for EGS, which can be challenging in terms of defining the perimeter of our analysis and ensuring comparability of results. **Environmentally Preferable Products (EPP)**, for example, can also be considered to be part of environmental markets. EPP are defined as ‘products which cause significantly less environmental harm at some stage of their cycle (production, processing, consumption and waste disposal) than alternative products that serve the same purpose. EPP also refers to the production and sales of products which contribute significantly to the preservation of the environment’²⁵⁸.

An additional challenge to define the scope of environmental markets is the fact that many products included in the above definition of EGS might have multiple possible end uses, i.e. not exclusively environmental. Moreover, environmental goods are not covered by a single chapter of the Harmonised Commodity Description and Coding System (HS)²⁵⁹.

All of the abovementioned factors have hindered international agreement on a list of EGS, which has been one of the main barriers to progress in negotiations on liberalisation of trade in such items at the WTO²⁶⁰. As previously stated, the lack of an internationally-agreed definition and classification of EGS renders data gathering and cross-country comparisons particularly challenging. The market data provided by Environmental Business International Inc. (EBI), a research company that generates strategic market intelligence in the environmental industry, which are the building block for estimates produced in the present report, constitute, to our knowledge, the most comprehensive dataset available to date. Table 14 below presents the classification of the different environmental industry segments used by EBI, as well as their description and typical clients.

²⁵⁶ FTSE defines environmental markets as the markets for ‘companies that provide products and services offering solutions to environmental problems, or that improve the efficiency of natural resource use’ (FTSE (2013) FTSE Environmental Markets Classification System. Available online:

http://www.ftse.com/products/downloads/FTSE_Environmental_Markets_Classification_System.pdf

²⁵⁷ OECD/Eurostat (1999) The environmental goods and services industry. Manual for data collection and analysis. OECD, Paris.

²⁵⁸ UNCTAD (1995), Environmentally Preferable Products (EPPs) as a Trade Opportunity for Developing Countries, UNCTAD/COM/70, Geneva.

²⁵⁹ HS is the international basis for codifying trade and tariffs in goods

²⁶⁰ UNEP, ITC, ICTSD (2012) Trade and Environment Briefings: Trade in Environmental Goods. UCTSD Programme on Global Economic Policy and Institutions, Policy Brief No. 6.

Table 14. Environmental industry subsectors and potential clients

Industry sector	Description	Example of clients
Environmental Equipment		
<i>Water Equipment and Chemicals</i>	Provide equipment, supplies and maintenance in the delivery and treatment of water and wastewater.	Municipalities, All industries
<i>Air Pollution Control Equipment</i>	Produce equipment and technology to control air pollution. Includes vehicle controls.	Utilities, Waste-to-energy industries, Auto industry
<i>Instruments and Information Systems</i>	Produce instrumentation for the analysis of environmental samples. Includes info systems and software.	Analytical services, Government, Regulated companies
<i>Waste Management Equipment</i>	Equipment for handling, storing or transporting solid, liquid or hazardous waste. Includes recycling and remediation equipment.	Municipalities, Generating industries, Solid waste companies
<i>Process and Prevention Technology</i>	Technology for in-process pollution prevention and waste recovery	All industries
Environmental Services		
<i>Solid Waste Management</i>	Collection, processing and disposal of solid waste & commercial collection of recyclables	Municipalities, All industries
<i>Hazardous Waste Management</i>	Collection, processing and disposal of hazardous, medical waste, nuclear waste	Chemical, Petroleum, Government agencies
<i>Environmental Consulting & Engineering (C&E)</i>	Engineering, consulting, design, assessment, permitting, project management, O&M, monitoring, etc.	Industry, Government, Municipalities, Waste Management companies, POTWs
<i>Remediation and Industrial Services</i>	Cleanup of contaminated sites, buildings and environmental cleaning of operating facilities	Government agencies, Property owners, Developers, Industry
<i>Environmental Testing and Analytical Services</i>	Provide testing of “environmental samples” (soil, water, air and some biological tissues)	Regulated industries, Government, Consulting and Engineering, Hazardous waste and remediation contractors
<i>Wastewater Treatment Works</i>	Collection and treatment of residential, commercial and industrial wastewaters. Facilities are commonly known as POTWs or publicly owned treatment works.	Municipalities, Commercial Establishments and All industries
Environmental resources		
<i>Water Utilities</i>	Selling water to end users: Municipal entities and private companies	Consumers, Municipalities, All industries, Institutions
<i>Resource Recovery</i>	Selling materials recovered and converted from industrial by-products or post-consumer waste	Municipalities, Generating industries, Solid waste companies
<i>Clean Energy Power & Systems</i>	Solar, wind, biomass, landfill gas, fuel cells, geothermal, small scale hydro, energy efficiency and DSM	Utilities, all industries and consumers

Source: Environmental Business Information Inc. (available online: <http://ebionline.org/environmental-industry-segments>)

The three main categories in EBI's environmental industry classification relates to, respectively, equipment manufacturers, service providers and utilities. EBI's classification is referred to in this report. Some of its categories' components have however been grouped into wider sectors (e.g. water and wastewater sector, waste management...) in order to account for general sectoral trends related to specific environmental problems.

8.2 ANNEX 2: METHODOLOGICAL NOTE FOR COUNTRY STUDIES

For each country study, the environmental market's size and growth potential is analysed, both overall and per industry segment. The analysis focuses on the following:

- **Current size of the environmental market and its main segments²⁶¹**: the size of the environmental market is compared to the Latin America's environmental market overall, which provides an indication of importance of the country's environmental market in both absolute and relative terms. In the same vein, the size of the different industry segments is analysed (in value terms) in order to identify of the most relevant ones in terms of potential benefits and opportunities.
- **Import demand per industry segment**: the estimated share of demand covered by imports provides an indication of the sector's level of dependency on foreign suppliers.
- **Recent evolution of the environmental market and its main segments**: presents aggregated data on the recent evolution of the environmental market (based on data from EBI for each country). Additionally, EBI data are used to assess recent evolution at the industry segment level.

Based on this analysis the most promising environmental market segments have been shortlisted. The key selection criteria used to identify the key priority sectors are: size in value terms, growth rates in recent years, share of imports in total domestic demand and coherence with top policy priorities in the country at hand.

In order to estimate the scope of potential business opportunities for EU firms in the specific environmental segment, as measured by EU environment-related exports to the country under consideration, a range of scenarios has been developed.

First, two scenarios on potential growth of the sector considered are presented:

- **Business-as-usual sector growth scenario (BAU)²⁶²**: based on growth rates registered for the sector over the previous years, with reference ranges depending on data availability (e.g. Mexico 2008-2012, Chile 2006-2012), as provided by EBI. This scenario assumes that the average annual growth rate for the period 2012-2020 will be the same as that of the reference period.
- **High-growth sector scenario**: based on sectoral data from various sources. Under the high-growth scenario, it is assumed that demand growth for EGS will accelerate relative to the reference period. This assumption reflects the fact that most environmental markets in Latin America are in relatively early stages of development and, therefore, demand for EGS is likely to grow faster. As previously discussed, this has to do with increasing pressures on the environment derived from industrialisation and urbanisation processes which, together with the development of more stringent environmental regulations and the increased policy focus on environmental issues, contribute to increase demand for EGS.

Based on the scenarios for market growth, additional scenarios are developed in order to estimate the share of imports in total demand in coming years (2012-2020)²⁶³. As noted above, it should be borne in mind that the shares of imports reflect only partly the participation of foreign companies in the

²⁶¹ The most recent data available at the industry segment level is from 2012. For this reason, the present report uses 2012 as the year of reference in most of the figures (except for the overall size of the Environmental Market, for which data from 2013 is available).

²⁶² BAU scenario can be defined as the 'baseline scenario that examines the consequences of continuing current trends in population, economy, technology and human behaviour' (EEA, Environmental terminology and discovery service).

²⁶³ The most recent data available for the size of the environmental segments is from 2012. The scenarios are thus developed taking 2012 as the base year.

environmental market of the country under study²⁶⁴ and that, due to data limitations, potential growth of exports from the EU is used as a proxy for potential economic and commercial opportunities.

Therefore, following a similar approach to the one described above, two scenarios on the evolution of EU exports for the specific sector are developed:

- **Business-as-usual EU exports scenario (BAU):** assumes that the current EU share of imports in the particular segment is maintained over the period. This implies that the volume of EU exports will increase proportionally to the expected growth of the market.
- **High-growth EU exports scenario:** assumes that the progressive elimination of non-tariff trade and commercial barriers between the EU and the country at hand is expected to cause an increase in the volume of EU exports that would outpace projected growth rates for the segment under consideration. Our scenarios are based on a World Bank study.²⁶⁵

²⁶⁴ In many cases, particularly in the area of environmental services and resources, local subsidiaries of international companies provide those services. The volume of imports therefore most likely provides an underestimation of the real contribution of foreign companies to the country's environmental market.

²⁶⁵ World Bank (2007) Warming up to trade? Harnessing international trade to support climate change objectives. Environment department, sustainable development network.

8.3 ANNEX 3: GLOSSARY AND KEY DEFINITIONS

Glossary

p.a.	per annum, per year
CAGR	Compound annual growth rate. It is calculated as follows: $CAGR = \left(\frac{\text{End year value}}{\text{Start year value}} \right)^{\frac{1}{\# \text{ of years}}} - 1$
GR	Annual average growth rate (Compound annual growth rate)
EM	Environmental market
EGS	Environmental Goods and Services
EPP	Environmentally Preferable Products, Environmentally Preferable Goods
BAU	Business-as-usual scenario
LA	Latin America

Definitions

Environmental Goods and Services	The environmental goods and services industry consists of activities which produce goods and services to ‘measure, prevent, limit, minimise or correct environmental damage to water, air and soil, as well as problems related to waste, noise and ecosystems. This includes cleaner technologies, products and services that reduce environmental risk and minimise pollution and resource use’. ²⁶⁶
Environmentally Preferable Products (or Environmentally Preferable Goods)	‘Products which cause significantly less environmental harm at some stage of their cycle (production, processing, consumption, waste disposal) than alternative products that serve the same purpose, or products, the production and sales of which contribute significantly to the preservation of the environment’. ²⁶⁷
Business-as-usual scenario	Baseline scenario that examines the consequences of continuing current trends in population, economy, technology and human behaviour.
Size of the market	Sell-side size of the market in monetary terms

²⁶⁶ OECD/Eurostat (1999) The environmental goods and services industry. Manual for data collection and analysis.

²⁶⁷ UNCTAD (1995), Environmentally Preferable Products (EPPs) as a Trade Opportunity for Developing Countries, UNCTAD/COM/70, Geneva.

8.4 ANNEX 4: SUMMARY OF KEY INDICATORS

Table 15 : Overview of key indicators

Countries	Pop. 2013 (millions)	Exp. av. annual population growth 2010-50	GDP 2013 (2005 USD bn)	GDP/capita 2013 (2005 USD)	Exp. av. annual GDP growth 2013-19	Total trade 2012 (current USD bn)	Ranking EU trading partners 2013 (LA, (Global))		EM 2013 (USD bn)	EM growth 2013-20	Env. Stringency 2012	Agreements with the EU			
							Type	In force since				Content	Advanced/ Level of ambition		
Argentina	41.4	0.6%	331.3	7,994	-0.5% ²⁶⁸	179.7	4	(35)	3.2	3.0%	3.3	-	-	-	-
Bolivia	10.7	1.2%	14.1	1,323	5.0%	21.9	14	(100)	0.5	7.0%	3.0	-	-	-	-
Brazil	200.4	0.4%	1,166.7	5,823	2.1%	586.5	1	(9)	25.7	6.4%	4.1	SP	2011	Water management, infrastructure Chemicals, marine protection (UN) Forest management Biodiversity	**
Chile	17.6	0.5%	171.4	9,728	3.7%	180.8	3	(34)	4.4	10.7%	3.6	AA	2005	Contamination Degradation natural resource, ecosystems Rational use of natural resources	*
Colombia	48.3	0.8%	211.5	4,376	4.6%	133.8	5	(42)	3.2	7.9%	3.0	TA	2013	Management of fish resources Biodiversity Trade and sustainable dev. Forest products	**
Costa Rica	4.9	0.7%	28.4	5,839	4.1%	27.4	8	(59)	-	-	4.3	AA (SICA)	2013	See SICA	****
Ecuador	15.7	1.1%	57.5	3,653	4.5%	54.3	9	(61)	1.1	5.9%	3.3	TA	pending	See Colombia	**
El Salvador	6.3	0.3%	19.4	3,063	1.9%	16.5	16	(122)	-	-	-	AA (SICA)	2013	See SICA	****
Guatemala	15.5	2.0%	36.2	2,341	3.5%	30.8	13	(95)	-	-	-	AA (SICA)	2013	See SICA	****
Honduras	8.1	1.4%	12.8	1,577	3.0%	16.9	15	(104)	-	-	-	AA (SICA)	2013	See SICA	****
Mexico	122.3	0.7%	1,042.1	8,519	3.5%	789.4	2	(17)	13.9	5.5%	4.0	(AA), SP	2008	Water management Land conservation	***

²⁶⁸ Estimates for Argentina correspond to 2014-2015

														Forest management Fisheries conservation Waste management Biodiversity Sustainable development	
Nicaragua	6.1	0.9%	8.3	1,367	4.0%	12.4	17	(138)	-	-	-	AA (SICA)	2013	See SICA	****
Panama	3.9	1.1%	29.9	7,740	6.3%	57.8	10	(68)	-	-	3.8	AA (SICA)	2013	See SICA	****
Paraguay	6.8	1.2%	13.0	1,918	4.4%	24.6	12	(90)	-	-	3.7	-	-	-	-
Peru	30.4	0.9%	123.5	4,066	5.1%	98.1	6	(48)	2.6	8.0%	3.5	TA	2013	See Colombia	**
Uruguay	3.4	0.2%	26.6	7,809	3.1%	27.8	11	(72)	-	-	3.3	-	-	-	-
Venezuela	30.4	0.9%	194.7	6,402	-0.3%	177.0	7	(50)	1.8	2.0%	3.0	-	-	-	-
Regional Blocs															
MERCOSUR	282.4	0.5%	1,732.4	6,134	-	995.7	-	-	-	-	-	FTA Negot.	-	-	-
ANDEAN	105.1	0.9%	406.6	3,868	-	308.0	-	-	-	-	-	-	-	-	-
SICA	45.1	1.4%	117.0	2,597	-	163.8	-	-	-	-	-	AA	2013 ²⁶⁹	Protection of hydro/marine resources/wetlands Pollution fresh & marine waters, air, soil Waste Mngmt, sewage, chemicals Biodiversity, Forest management Natural resources/ ecosystems/ land management Sustainable development	****

Sources: Population forecasts data from the United Nations Population Division, World Population Prospects 2012 Revision; current GDP data from World Bank, World Development Indicators; GDP growth forecasts from IMF, World Economic Outlook 2014; data on EU trade from Eurostat-Comext; data on Agreements from European Commission, DG Trade.

Note: GDP and GDP per capita 2013 in constant 2005 USD billion. AA=Association Agreement; SP= Strategic Partnership; TA= Trade Agreement; EM= Environmental Markets. The category 'Advanced' presents the level of prominence of environmental cooperation and sustainable development in the overall agreement as well as the level of detail and ambition reflected for these components. It should be noted that the level of ambition and prominence of environmental matters and sustainable development partly depends of the age of the cooperation instrument. The criteria for the awarded stars are as follows:

* Environmental protection and sustainable development mentioned in few articles of the agreement

** Environmental protection and sustainable development mentioned in several articles of the agreement

*** Environmental protection and sustainable development mentioned in several articles of the agreement, identifying specific measures and priority areas

**** Environmental protection and sustainable development are part of the overarching priority objectives of the agreement, and mentioned in several articles of the agreement, identifying specific measures and priority areas

²⁶⁹ The Agreement between the EU and Central America is provisionally applied with all partners pending final ratification in each of the signatory countries.

8.5 ANNEX 5: EU AGREEMENTS WITH THE LATIN AMERICAN REGION AND LATIN AMERICAN COUNTRIES: ASSOCIATION AGREEMENTS, STRATEGIC PARTNERSHIPS, AND TRADE AGREEMENTS

Table 16. EU Association agreements and Strategic Partnerships with Latin American countries

Country	Association Agreements	Strategic Partnership
Chile	Negotiations concluded in 2002; entered into force in 2005	
Mexico	Negotiations concluded in 1997; entered into force in 2000.	Established in 2008
Central America (Costa Rica, el Salvador, Guatemala, Honduras, Nicaragua, Panama)	Negotiations concluded in 2010; signed in 2012; progressive application depending on country	
Brazil		Established in 2007

Source: European Commission

Table 17. EU Trade Agreements with Latin America regional blocs

Country	Current Status	Next Steps
Andean Community (Colombia and Peru)	Negotiations finalised in 2010. Trade provisions of the agreement provisionally applied with Peru (March 2013) and with Colombia (August 2013). Ecuador acceded to the agreement in July 2014. (ratification pending)	Contacts are maintained to explore a possibility to integrate Bolivia into the trade agreement.
Mercosur	Negotiations suspended in 2004, and re-launched in May 2010 ²⁷⁰ . Parties agreed, on January 2013, to exchange market access offers on goods and services by the end of 2013.	Work on the finalisation of the offers is ongoing on both sides and an agreement on a new date for the exchange of offers is pending.

Source: European Commission (2014) *Overview of FTA and other trade negotiations* (http://trade.ec.europa.eu/doclib/docs/2006/december/tradoc_118238.pdf)

²⁷⁰ The objective has been to negotiate a comprehensive FTA covering not only trade in industrial and agricultural goods but also other areas such as services, government procurement, intellectual property, customs and trade facilitation as well as removal of technical barriers to trade.

8.6 ANNEX 6: ENVIRONMENT-RELATED COMPONENTS OF COOPERATION AGREEMENTS BETWEEN THE EU AND LA

Table 18. Environment-related components of cooperation agreements between the EU and Latin America

	Water infrastructure and management	Pollution control	Marine protection	Waste management	Biodiversity	Other environmental issues
Strategic Partnerships						
Brazil ²⁷¹	<ul style="list-style-type: none"> Strengthen cooperation in field of water resources, incl. supply and basic sanitation, reinforcement of institutions on all levels to ensure better planning. 	<ul style="list-style-type: none"> Strengthened implementation of chemicals conventions, including POPs, PIC, Basel and SAICM Support international efforts aimed at addressing mercury pollution 	<ul style="list-style-type: none"> Develop cooperation possibilities in relation to maritime transport, focusing on infrastructure, safety, etc. Protection of marine biodiversity as part of the objective to implement CBD Work under UN on conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction. 		<ul style="list-style-type: none"> Promote sustainable forest management on all levels and exchange of experience on forest law enforcement Shared commitment to implement CBD, including National Biodiversity Strategies and Action Plans and work programmes on specific topics Implementation of Nagoya Protocol on access to genetic resources and Cartagena Protocol on Biosafety Exchange experience on mobilisation of resources for biodiversity protection, including from private sector Training and CB for conservation and sustainable management of natural ecosystems. 	<ul style="list-style-type: none"> Strengthened scientific cooperation between JRC and Ministry of Science on natural disaster prevention and crisis management, sustainable management of natural resources, biotechnology and nanotechnology Exchange of best practices on sustainable tourism Explore opportunities for cooperation on sustainable development of Amazon Region Promotion of green economy

²⁷¹ EU-Brazil Joint Statement and Joint Action Plan

	Water infrastructure and management	Pollution control	Marine protection	Waste management	Biodiversity	Other environmental issues
Mexico ²⁷²	<ul style="list-style-type: none"> Implementation of triangular cooperation projects in relation to environment: water management, land conservation and forest development) in the LAC region 	<ul style="list-style-type: none"> Cooperate to strengthen capabilities to achieve requirements of international chemicals conventions: on final disposal of hazardous waste and POPs, establishment of national registries and databases of chemical safety, safe management and destruction of ODS, implementation of SAICM 	<ul style="list-style-type: none"> Improving fisheries conservation measures 	<ul style="list-style-type: none"> Implementation of emission-reduction projects: landfill for waste management (as part of climate change plan) 	<ul style="list-style-type: none"> Implementation of emission-reduction projects: sustainable management of forests (as part of climate change plan) with a view to achieve co-benefits between biodiversity conservation and climate change mitigation Several cooperation measures in relation to biodiversity conservation: evaluation of ecosystem services, generating knowledge and policies on ecosystem-based approach and co-benefits between biodiversity and climate change policies, exchange of information on biodiversity strategies and measures, promotion of inventories, etc. 	<ul style="list-style-type: none"> Cooperation for strengthening International Environmental Governance (IED) under UN. Cooperation for implementation of the sustainable development outcomes of Rio 2012 Transfer to a green economy Strengthened scientific cooperation between JRC and National Ecology Institute
Association Agreements						
Chile ²⁷³	/	<ul style="list-style-type: none"> Aim of cooperation on environment: prevention of contamination 	/	/	<ul style="list-style-type: none"> Aim of cooperation on environment: prevention of degradation of natural resources and ecosystems 	<ul style="list-style-type: none"> Aim of cooperation on environment: rational use of natural resources (sustainable development). The

²⁷² Mexico- European Union Strategic Partnership Joint Executive Plan, Comillas 16 May 2010, 9820/10.

²⁷³ Agreement establishing an association between the European Community and its Member States, of the one part, and the Republic of Chile, of the other part, 18 November 2002, Article 28

Water infrastructure and management	Pollution control	Marine protection	Waste management	Biodiversity	Other environmental issues
					<p>Agreement identifies the types of measures that will be developed in this context, including the environmental impact of economic activities, policy development, education and research.</p>
<p>Mexico²⁷⁴ /</p>	/	/	/	<ul style="list-style-type: none"> ■ Aim of cooperation on environment: prevention of degradation of natural resources and ecosystems 	<ul style="list-style-type: none"> ■ Aim of cooperation on environment: sustainable management of natural resources, exchange of information and experience on environmental information, strengthen environmental management, etc. ■ Consider environmental protection in other cooperation measures implemented under the agreement
<p>Central America²⁷⁵</p> <ul style="list-style-type: none"> ■ Dialogue shall be aimed specifically at the protection of hydro and marine resources, basins and wetlands ■ Cooperation shall 	<ul style="list-style-type: none"> ■ Cooperation shall focus on the fights against pollution of fresh and marine waters, air and soil, through the sound management of 	<ul style="list-style-type: none"> ■ Dialogue shall be aimed specifically at the protection of hydro and marine resources ■ Cooperation shall focus on the fights 	<ul style="list-style-type: none"> ■ Cooperation shall focus on the fights against pollution of fresh and marine waters, air and soil, through the 	<ul style="list-style-type: none"> ■ Dialogue shall be aimed specifically at biodiversity conservation, protection and sustainable management of forests ■ Cooperation shall focus 	<ul style="list-style-type: none"> ■ Promote a dialogue in the areas of environment and sustainable development, including the reform of environmental governance and the sustainable use of natural

²⁷⁴ Economic Partnership, Political Coordination and Cooperation Agreement between the European Community and its Member States, of the one part, and the United Mexican States, of the other part, 2000.

²⁷⁵ Agreement establishing an association between the European Union and its Member States, on the one hand, and Central America on the other, 2006, in particular Article 50.

Water infrastructure and management	Pollution control	Marine protection	Waste management	Biodiversity	Other environmental issues
<p>focus on the fights against pollution of fresh and marine waters, air and soil, through the sound management of waste, sewage waters, chemicals and other dangerous substances and materials.</p>	<p>waste, sewage waters, chemicals and other dangerous substances and materials.</p>	<p>against pollution of fresh and marine waters, air and soil, through the sound management of waste, sewage waters, chemicals and other dangerous substances and materials.</p>	<p>sound management of waste, sewage waters, chemicals and other dangerous substances and materials.</p>	<p>on protection and sustainable management of natural resources and ecosystems, including forests and fisheries</p> <ul style="list-style-type: none"> ■ Cooperation on global issues such as desertification, biodiversity conservation, etc. 	<ul style="list-style-type: none"> ■ Dialogue aims at exchanging information and encouraging joint initiatives. Article 50 lists the specific measures and initiatives that can be developed including mainstreaming of environmental considerations, transfer of technology, etc. ■ Cooperation for the management of natural disasters. ■ Technical assistance, training and capacity building will particularly be provided for certain areas, including environmental protection ■ Industrial cooperation shall promote the modernisation and restructuring of Central American industry and individual sectors, aiming to strengthen the private sector under conditions which promote environmental protection.

Water infrastructure and management	Pollution control	Marine protection	Waste management	Biodiversity	Other environmental issues
Trade Agreements					
Peru and Colombia²⁷⁶		<ul style="list-style-type: none"> ■ Cooperation for the conservation and sustainable management of fish resources 		<ul style="list-style-type: none"> ■ Detailed cooperation requirements in relation to biological diversity, the recognition of protected areas, the development of practices aiming at fostering appropriate economic returns from conservation and sustainability measures, etc. ■ Specific requirements for the trade in forest products, including compliance with CITES, verification measures of the legal origin of timber products, voluntary mechanisms for forest certification, etc. 	<ul style="list-style-type: none"> ■ As a TA, the Agreement focuses on free trade in goods, services, freedom of establishment, etc. Title IX is entitled 'Trade and sustainable development'. It aims to promote dialogue and cooperation between parties to strengthen the relationship between trade and labour and environmental policies and practices, to strengthen compliance with environmental legislation, and to strengthen the role of trade and trade policy in the promotion of the conservation and sustainable use of biological diversity and natural resources. The Title sets out detailed requirements to achieve these objectives.

Source: Milieu elaboration

²⁷⁶ Trade agreement between the European Union and its Member States, of the one part, and Colombia and Peru, of the other part, OJ L 354, 21 December 2012, <http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L:2012:354:TOC>. Negotiations with Ecuador continued and resulted in the accession of Ecuador to the Trade Agreement with Colombia and Peru in July 2014. The accession agreement with Ecuador is currently subject to ratification procedures and has thus not yet entered into force.

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