



**Asia-Pacific
Economic Cooperation**

**Study on Good Regulatory Practices for
Goods and Services Necessary or Desirable
for Climate Change Mitigation and Adaptation**

APEC Policy Support Unit
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1. INTRODUCTION

In recent times, climate change has been identified as a major global threat and one of the main factors to jeopardize the goal of achieving sustainable development worldwide. Discussions on this issue are becoming frequent in several global and regional fora, including APEC.

In 2007, APEC Leaders included climate change for the first time in their working agenda and issued the Sydney APEC's Leaders Declaration on Climate Change, Energy Security and Clean Development, in which they reaffirmed their commitment to work for an enduring global solution for climate change. Leaders stated that the pursuit of climate change policies must avoid introducing barriers to trade and investment.

There is an increasing global concern on the effects of climate change within APEC. The 2008 APEC Leaders' Declaration recognizes that reducing poverty is likely to become more difficult in those developing economies more vulnerable to the adverse effects of climate change and related natural disasters. In addition, it recognizes that climate change could impede economies' abilities to achieve sustainable economic growth.

Because climate change is a global issue, it necessarily requires coordinated global mitigation and adaptation responses. It also follows that the use and development of goods and services necessary or desirable for climate change mitigation and adaptation (CCGS) should not face barriers to their production, development and deployment. As part of a global response, APEC can contribute with initiatives on CCGS which will facilitate their use and maximize the effectiveness in tackling climate change challenges. Addressing border measures is necessary but not sufficient to facilitate the trade in CCGS. There should be concrete initiative to address behind the border or regulatory barriers. A set of good regulatory practices could help meet this objective.

In general, the production and trade of any good is discouraged by rules that go beyond the protection of legitimate public interests, or are subject to over-regulation and weak enforcement systems. This project aims to analyze whether current regulatory practices are able to embrace the concept of CCGS and identify and suggest best practice regulation which will encourage the production and trade of CCGS to ensure they can play an effective role in global responses to climate change.

The study will be divided in four sections. Section 1 will outline the importance of CCGS both from an APEC and global perspective. A brief review of the existing literature covering this point will be undertaken and general trends and patterns in the production and trade of a number of CCGS will be identified¹. Section 2 will analyze whether existing regulatory settings within APEC economies promote the

¹ Since the main focus is on GRP, the selection of particular CCGS included in the project will be guided by the relevance to studying regulatory systems. Discussion about any CCGS in particular is not intended to prejudice in any way the positions taken by APEC member economies in other fora.

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development and use of CCGS or, at least, do not hinder them. Section 3 will identify regulatory settings and other non-tariff measures that may be acting as a deterrent to the production and trade of CCGS. Finally, section 4 makes conclusions regarding approaches that could be taken to regulate CCGS in order to facilitate their use and maximize their contribution and impact in climate change responses. Suggestions to improve current regulatory practices on CCGS and promote their production and trade will also be put forward.

2. OVERVIEW OF THE PRODUCTION AND TRADE OF CCGS

The market size of the CCGS cannot be measured accurately due to several factors. First of all, to decide on which goods and services belong to this category is a difficult task due to the absence of any consensual or standard definition or criteria. Second, the current nomenclatures used to classify goods and services do not separate in certain headings those related to climate change mitigation and adaptation purposes from the rest (“dual use” problem)². Third, the available data in services is inadequate to make a proper estimation on the global market size of the trade in services for climate change mitigation and adaptation, even on an individual economy basis.

Taking into account these problems, it is not a surprise that the most of the existing literature on trade and climate change have not shown numbers on the global production or trade of CCGS. An exception to this is a recent study by the World Bank (2008) which shows the value of global trade of 40 climate-friendly goods, chosen from the list of 153 goods informally submitted by the Friends of the Environmental Goods and Services (EGS) Group for discussion at the World Trade Organization (WTO). This study suggests that their use has increased substantially, since their global trade almost doubled from US\$ 67 billion to US\$ 119 billion between 2002 and 2005³.

Instead, most of the previous studies have concentrated on estimated trade and production of EGS, based mostly on the APEC and OECD lists of environmental goods⁴, as well as the lists submitted by individual economies to WTO⁵.

One of the first studies analyzing the trade of environmental goods was conducted by Bora & Teh (2004)⁶. This study showed that the total exports of environmental goods based on the OECD list totaled US\$ 238.4 billion in 2002; while the APEC list amounted to about US\$ 215.3 billion. In both cases, the annual average growth for the

² A common example is the case of the pipes, in which the ones used in solar hot water systems (related to climate change mitigation) are classified under the same heading than others used in oil and gas transportation. For more details, see International Centre for Trade and Sustainable Development - ICTSD (2008), “Liberalization of Trade in Environmental Goods for Climate Change Mitigation: The Sustainable Development Context”, Background Paper, Geneva, August, pp. 3-4.

³ World Bank (2008), “International Trade and Climate Change: Economic, Legal and Institutional Perspectives”, Washington D.C., pp. 79-80.

⁴ The APEC list refers to the proposal developed during the Early Voluntary Sectoral Liberalization (EVSL) process that was subsequently submitted to the WTO. The OECD list refers to an illustrative group of products identified within the OECD/Eurostat Informal Working Group as guidance to conduct studies referred to market developments in the environmental industry, role of environmental policies and levels of tariff protection, among others. See Steenblik, R. (2005), “Environmental Goods: A Comparison of the APEC and OECD Lists”, OECD Trade and Environment Working Paper No. 2005-04, pp. 3-10.

⁵ Because of the lack of consensus for a common definition or criteria, it is important to clarify that these lists were constructed based on what interested parties individually consider as product or industry suitable to be part of them.

⁶ Bora, B. & R. Teh (2004), “Tariffs and Trade in Environmental Goods”, presentation at the Workshop on Environmental Goods at the WTO Secretariat, Geneva, 11 October.

period 1990-2002 was around 14%, more than twice as much as the growth experienced by total merchandise trade (6%).

Hamwey (2005) conducted a similar study using an APEC+OECD list and found that the corresponding goods increased their world exports from US\$ 234 billion to US\$ 336 billion between 1997 and 2003 and developing economies doubled their performance by going from US\$ 28 billion to US\$ 56 billion during the same period⁷.

More recently, Jha (2008) found that the top ten global exporters of environmental goods based on the list of 153 items submitted by the Friends of the EGS Group to WTO totaled US\$ 401.6 billion in the year 2006⁸. Own calculations based on the same list using UN Comtrade Database found that global exports on these goods went up from US\$ 398.7 billion to US\$ 783.4 billion between 2003 and 2007⁹. This represents an average annual growth of 18.4% during this period.

In terms of the market size, Kennett & Steemblik (2005) mentioned that the revenues originated by the environmental industry were about equally split between goods and services and estimated in approximately US\$ 360 billion in 1990 and US\$ 620 billion in 2005¹⁰. An earlier study by Australia's Department of Foreign Affairs and Trade (2003) quoted a previous forecast by the European Commission in which the market size would be equal to €439 billion (US\$ 628 billion) by 2010¹¹. However, based on the trade growth figures, as noted in the preceding paragraph, the current market size could be already over the initial forecast by the European Commission.

The figures suggest an upward trend in both global production and trade. In fact, these numbers are supported by world statistics in innovation of climate-change mitigation technologies. According to Dechezpretre, et.al (2008), between 1998 and 2003, innovation on these technologies grew at an average annual rate of 9%¹². More interesting, based on the EPO/OECD World Patent Statistical Database, this study showed that the number of inventions on these technologies tripled from 1978 to 2003; while the inventions in all sectors doubled during that period¹³.

Whilst providing some useful statistical estimates, the purpose of the present study is not to conduct a detailed analysis on the production and trade patterns and trends of CCGS. Instead, it will focus on a number of CCGS as "case study" guidance to assist the APEC Committee on Trade and Investment (CTI) in making further progress with respect to developing a framework for good regulatory practices on CCGS.

⁷ Hamwey, R. (2005), "Environmental Goods: Where Do the Dynamic Trade Opportunities for Developing Economies Lie", Cen2eco Working Paper, pp. 9-11.

⁸ Jha, V. (2008), "Environmental Priorities and Trade Policy for Environmental Goods: A Reality Check", ICTSD Trade and Environment Series Issue Paper No. 7, Geneva, p. 20.

⁹ The goods included for this calculation can be found at WTO (2007), "Continued Work Under Paragraph 34 (iii) of the Doha Ministerial Declaration", Committee on Trade and Environment Special Session, JOB(07)/54, Geneva, 27 April, pp. 5-25.

¹⁰ Kennett, M. & R. Steemblik (2005), "Environmental Goods and Services: A Synthesis of Country Studies", OECD Trade and Environment Working Papers 2005/3, OECD Publishing, p. 17.

¹¹ Department of Foreign Affairs and Trade (2003), "Australia's Trade in Environmental Goods and Services", Economic Analytical Unit Working Paper, p.10.

¹² Dechezpretre, A. et.al (2008), "Invention and Transfer of Climate Change Mitigation Technologies on a Global Scale: A Study Drawing on Patent Data". Final Report, Mines Paris Tech, CERNA, AFD, December, p. 3.

¹³ Dechezpretre, A. et.al (2008), op cit, p. 12.

In this sense, we have chosen to include as “case study” guidance goods with different features in addressing climate change mitigation and adaptation:

1. Solar equipment, because it is comprised by energy efficient goods and renewable energy systems.
2. Air pollution mitigation, prevention and control-related goods, for their role in improving air quality and reducing pollution levels.
3. Natural dyes and fibers, as preferred goods to like products in terms of contributing to the reduction of greenhouse gas emissions.
4. Water and wastewater treatment services, since climate change is affecting the provision of water, a critical area for basic living standards and economic activity.

A. SOLAR EQUIPMENT

Among the CCGS selected, solar equipment [stoves, boilers, photovoltaic (PV) cells, among others] has been included in the study for their contribution in energy efficiency and their use of renewable energy systems. In recent years, the demand for solar equipment has increased, in part due to the rising costs of other conventional sources of energy. Table 1.1 shows the increase in the installed capacity to generate power through grid-connected solar PV systems.

Table 1.1
Grid-Connected Solar PV 2003-2008
Megawatts

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | Avg. Growth 2003-08 |
|----------------------------|--------------|--------------|--------------|--------------|--------------|---------------|---------------------|
| European Union | 535 | 1,157 | 2,080 | 3,130 | 4,950 | 9,450 | 77.6% |
| Japan | 620 | 890 | 1,200 | 1,490 | 1,730 | 1,970 | 26.0% |
| USA | 98 | 155 | 220 | 320 | 480 | 730 | 49.4% |
| Korea | 7 | 10 | 15 | 35 | 100 | 350 | 118.7% |
| Rest of the world | - | 10 | 30 | 80 | 250 | 450 | |
| Total | 1,260 | 2,222 | 3,545 | 5,055 | 7,510 | 12,950 | 59.4% |
| Main APEC producers | 725 | 1,055 | 1,435 | 1,845 | 2,310 | 3,050 | 33.3% |

Source: REN21 - Renewables Global Status Report Update 2009, 2007, 2006

According to REN21 (2009), “grid-connected solar photovoltaic (PV) continued to be the fastest growing power generation technology”¹⁴. Table 1.1 shows a ten-fold increase in their existing capacity worldwide. Besides Japan, the United States and Korea, REN21 has identified Australia, Canada and China among the markets in the APEC region with continuous growth¹⁵.

The increasing use of solar energy can also be found in water heating (see table 1.2). The global installed capacity for solar water heating expanded at an average annual rate of 19% between 2003 and 2007. This growth was mainly driven by China, the leading world economy in using solar water heating, whose installed capacity rose by 24%.

¹⁴ REN21 – Renewable Energy Policy Network for the 21st Century (2009), “Renewables Global Status Report: 2009 Update”, Paris: REN21 Secretariat, p. 11.

¹⁵ Ibid.

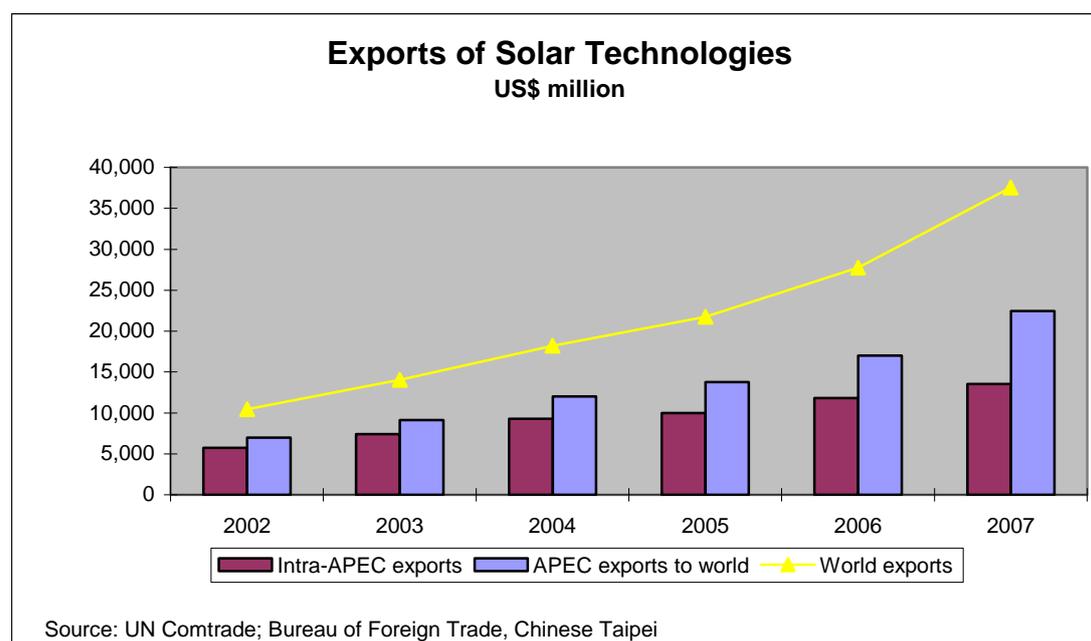
Table 1.2
Solar Hot Water Installed Capacity 2003-2007
Gigawatts-thermal

| | 2003 | 2004 | 2005 | 2006 | 2007 | Avg. Growth 2003-08 |
|----------------------------|-------------|-------------|-------------|--------------|--------------|---------------------|
| China | 35.6 | 45.0 | 54.6 | 67.9 | 84.0 | 24.0% |
| European Union | 9.0 | 10.1 | 11.2 | 13.5 | 15.5 | 14.7% |
| Turkey | 4.3 | 5.1 | 6.3 | 6.6 | 7.1 | 13.6% |
| Japan | 4.5 | 4.7 | 4.9 | 4.7 | 4.9 | 2.3% |
| Israel | 3.3 | 3.4 | 3.7 | 3.8 | 3.5 | 1.6% |
| Brazil | 1.6 | 1.6 | 1.9 | 2.2 | 2.5 | 12.2% |
| USA | 1.6 | 1.7 | 1.8 | 1.8 | 1.7 | 0.8% |
| India | 0.6 | 0.8 | 0.9 | 1.3 | 1.5 | 24.2% |
| Australia | 1.0 | 1.1 | 1.1 | 1.2 | 1.2 | 5.2% |
| Rest of the world | 1.3 | 1.3 | 1.4 | 2.5 | 3.6 | 30.0% |
| Total | 62.7 | 74.8 | 87.9 | 105.5 | 125.5 | 19.0% |
| Main APEC producers | 42.7 | 52.5 | 62.4 | 75.6 | 91.8 | 21.1% |

Source: REN21 - Renewables Global Status Report Update 2009, 2007, 2006

Trade in solar technologies has registered a rapid growth in the last few years (see chart 1.1)¹⁶. Global exports went up at an average rate of 29.2% from 2002 to 2007, reaching US\$ 37.5 billion in year 2007. APEC economies accounted for almost 60% of it (US\$ 22.4 billion). Approximately, 92% of these APEC exports have been explained by seven APEC member economies (Japan; China; the United States; Chinese Taipei; Hong Kong, China; Korea and Malaysia).

Chart 1.1



In terms of solar technology imports, APEC economies imported 45.8% of the global imports in 2007. The main APEC importers were China; the United States; Hong Kong, China; Korea and Japan. These five APEC economies explained approximately 74% of the imports coming to the APEC region.

¹⁶ The calculations included the following goods under the 6-digit HS classification (rev. 2002): 841919, 841950 and 854140.

B. AIR POLLUTION MITIGATION, PREVENTION AND CONTROL-RELATED GOODS

In the past, air pollution was mostly considered a problem affecting urban or industrial areas with harmful effects on health. Currently, recent evidence by Ramanathan & Feng (2009) shows that air pollution is also a problem with global connotations, since it is becoming a factor in climate change by slowing down the hydrological cycle and amplifying the greenhouse warming of the atmosphere¹⁷. In this regard, another group of goods in the present study are related to air pollution mitigation, prevention and control such as air filtering, air purifying equipment and instruments for air quality control.

The market size for these goods is also experiencing a growing path. LoPrinzi (2007) estimated the global air pollution mitigation market size in US\$ 83.5 billion in 2007 and expected to reach over US\$ 138 billion, an annual average growth of 10.6%¹⁸. The same study estimated the size of the air pollution prevention market to rise from US\$ 46 billion to US\$ 75.9 billion at the same period, and the air pollution control to grow at a yearly average rate of 13.9% and to be worth US\$ 36.2 billion by 2012.

Estimations focused on individual markets also provide good evidence on the increasing importance of these goods. The Institute of Clean Air Companies (2009) recently calculated the domestic U.S. market for air pollution control and monitoring technology in about US\$ 4 billion (year 2008) and expected to be worth US\$ 6 billion by 2012¹⁹. Freedonia Group (2007) also estimated that demand in China for air pollution control products was going to rise annually by 18% through 2010 to RMB 67 billion²⁰ (US\$ 9.8 billion). Industry Canada (2009) also reported that manufacturing revenues for industrial and commercial fan and blower and air purification equipment increased from C\$ 377.8 million (US\$ 417.6 million) in 1998 to C\$ 605.3 million (US\$ 669.2 million) in 2007²¹.

Trade in goods for air pollution control has also experienced a rising development in recent times (see chart 1.2)²². Between 2002 and 2007, world exports for these goods increased at an average annual rate of 18.7%, reaching US\$ 63.5 billion. In 2007, APEC economies accounted for 36.6% of the global exports of goods for air pollution control (US\$ 23.3 billion) and the main APEC exporters were the United States,

¹⁷ Ramanathan, V. & Y. Feng (2009), "Air Pollution, Greenhouse Gases and Climate Change: Global and Regional Perspectives", *Atmospheric Environment*, No. 43, pp. 37-50.

¹⁸ LoPrinzi, S. (2007), "Technologies for Air Pollution Monitoring, Prevention & Control", Report IAS001G, BCC Research, March, <http://www.bccresearch.com/report/IAS001G.html>

¹⁹ Institute of Clean Air Companies (2009), "Air Pollution Control Technology Markets Hinge on Establishment of Regulatory Certainty", July 31, <http://www.icac.com/i4a/headlines/headlinedetails.cfm?id=35>

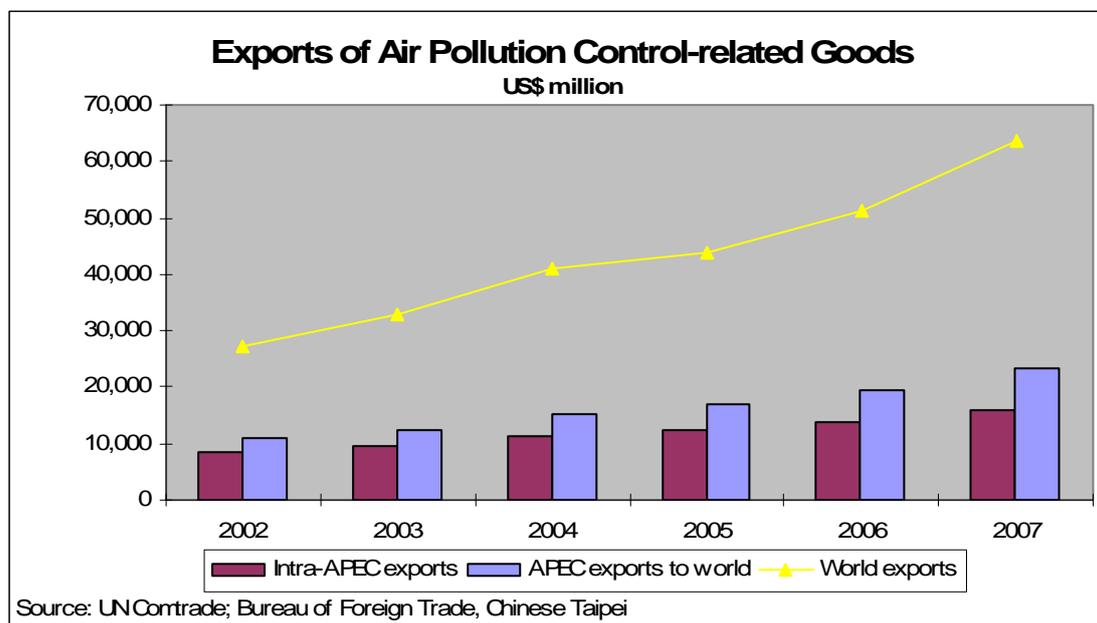
²⁰ Freedonia Group (2007), "Air Pollution Control in China: Industry Study with Forecasts to 2010 & 2015 (brochure)", Study # 2163, April, p.4.

²¹ Industry Canada (2009), "Manufacturing Production: Industrial and Commercial Fan and Blower and Air Purification Equipment Manufacturing (NAICS 333413)", <http://www.ic.gc.ca/cis-sic/cis-sic.nsf/IDE/cis333413prde.html>

²² The calculations included the following goods under the 6-digit HS classification (rev. 2002): 840410, 840420, 841410, 841459, 841480, 841490, 841960, 842139, 842199 and 902710.

Japan, China, Mexico and Canada. It is important to note that around 69% of the APEC exports were destined to the same APEC region (US\$ 16 billion).

Chart 1.2



Regarding imports, APEC economies represented 47.4% of the global imports in 2007. The top APEC importers were the United States; China; Canada; Korea; Japan and Mexico. These six APEC economies were the final destination of approximately 76% of the imports directed to the APEC region.

C. NATURAL DYES AND FIBERS

According to UNCTAD (2008), “international public attention on the problems caused by climate change, material and pollution intensity of economic growth and unsustainable life styles as well as the pressure from new environmental, health and food-safety requirements have heightened the interest on environmentally preferable products(...) The growing consumer demand for environmentally preferable products (EPPs) presents new opportunities for those producers and countries that can produce them in more energy efficient and environmentally friendly ways(...)”²³.

Singh (2005) describes EPPs as “products that, from a life-cycle perspective, cause significantly less “environmental harm” than alternative products that serve the same purpose”²⁴. In this sense, the study is including natural dyes and fibers from animal and vegetable origin, whose impact on climate change mitigation (as opposed to similar products with chemical components) is greater because of their lower emissions of harmful gases during the production and disposal stages.

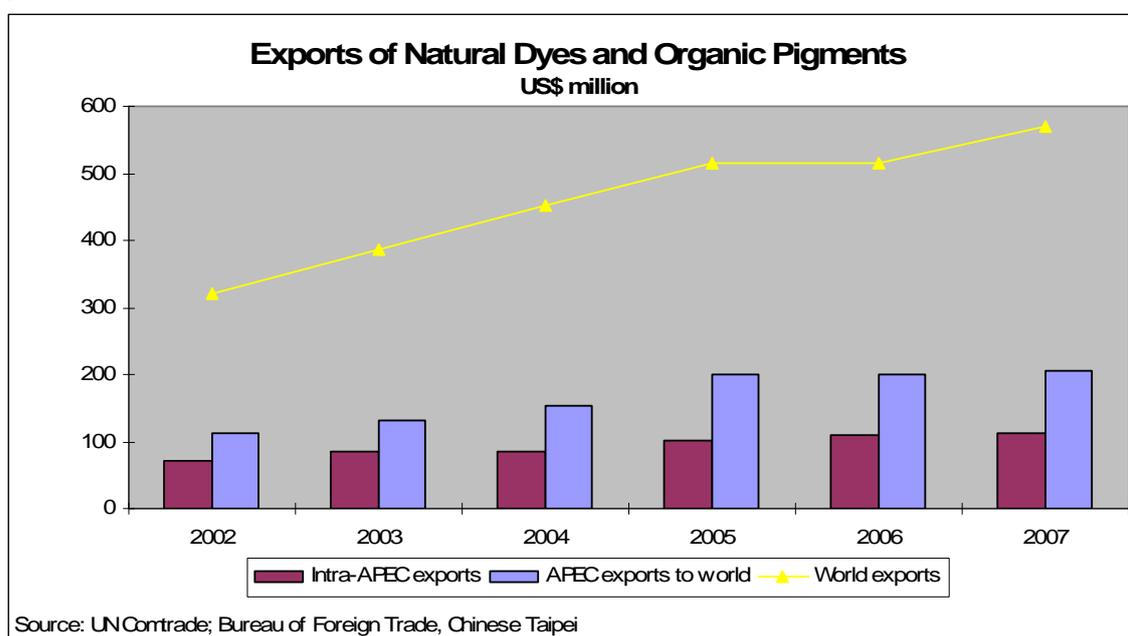
²³ UNCTAD (2008), “Globalization for Development: the international trade perspective”, United Nations: New York and Geneva, p. 64.

²⁴ Singh, S. (2005), “Environmental Goods Negotiations: Issues and options for ensuring win-win outcomes”, International Institute for Sustainable Development, p.3.

The market of natural dyes has been growing in recent years. A recent study by Freedonia Group (2009) indicated that the global demand of natural dyes and organic Pigments was worth US\$ 13.4 billion in 2008 and expected it to grow yearly at 3.9% through to 2013²⁵.

In terms of trade, world exports of natural dyes and organic pigments have been growing steadily during most of the period 2002-2007 (12.3% average annual growth) and registered a value of US\$ 569.5 million in 2007²⁶. Exports from APEC economies have experienced a slightly higher growth rate (12.8%), but remained flat from year 2005 to 2007, around US\$ 200 million (see chart 1.3). The most important APEC exporters are the United States; China; Peru; Japan and Mexico, which all together accounted for 88% of the exported value by APEC in 2007.

Chart 1.3



On the import side, APEC economies accounted for 40.3% (US\$ 276.4 million) of the world imports registered in 2007 (US\$ 684.4 million). The United States; Japan; Mexico; China and Canada were among the main APEC importers in that year, totaling nearly 81% of the imports directed to the APEC region.

Regarding the production of natural fibers, the yearly average production of natural fibers totaled 7.4 million tons over the period 2003-2005²⁷. About 64% of this volume was explained by fibers of vegetable origin (mainly jute, with a 55% of the vegetable fiber share); while 36% corresponded to fibers of animal origin. According to FAO, some APEC economies are listed as main producers in many natural fibers:

- Wool: Australia, China and New Zealand

²⁵ Freedonia Group (2009), "World Dyes & Organic Pigments: Industry Study with Forecasts for 2013 & 2018 (brochure)", Study #2508, May, p.4.

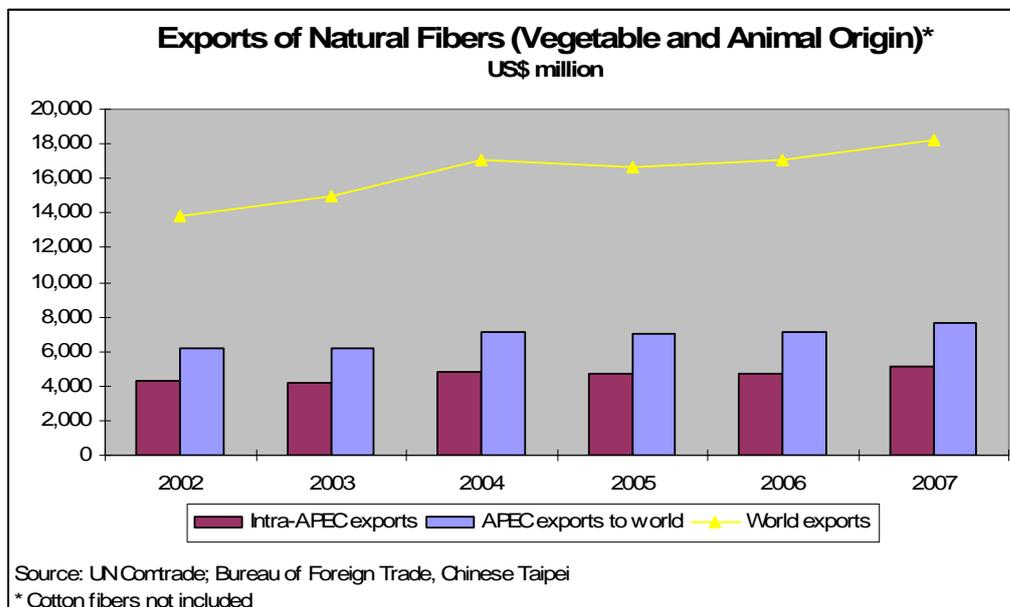
²⁶ Calculations considered the goods included the heading 3203 from the HS classification (rev. 2002).

²⁷ Cotton fibers are not included in the calculation. The numbers are based on information from Moir, B. & A. Plastina (2009), "2009 International Year of Natural Fibers", Cotton Promotion Bulletin, Summer, Vol. 21, http://www.cottonpromotion.org/features/international_year_of_natural_fibers

- Other animal fibers: China; Peru and Chile
- Sisal: Mexico and China
- Coir: Thailand; Malaysia and Indonesia
- Silk: China; Viet Nam and Thailand
- Abaca: Philippines
- Flax fiber: China²⁸

Global exports of natural fibers have increased at a lower annual average rate compared to the other goods included in the study (5.7% for the period 2002-2007)²⁹. As seen in chart 1.4, in the year 2007, world exports reached US\$ 18.2 billion, of which US\$ 7.6 billion originated from APEC member economies (US\$ 5.1 billion was traded within the APEC region). China; Australia, New Zealand; Hong Kong, China; Japan, United States and Chinese Taipei appeared as the main APEC exporters worldwide.

Chart 1.4



APEC economies imported roughly 41.6% of the imports of natural fibers registered worldwide in 2007 (US\$ 7 billion out of US\$ 16.9 billion). China; Hong Kong, China; Japan; United States and Korea were among the main importers, explaining around 86% of the total value imported by the APEC region.

D. WATER AND WASTEWATER TREATMENT

A recent joint report from the Pacific Institute and United Nations Global Compact (2009) has recognized that climate change will affect water scarcity and sustainable supply; impact water quality; and increase water demand in many ways³⁰. The

²⁸ FAO, “Background Note on Natural Fibres”, International Year of Natural Fibres 2009, http://www.fao.org/es/esc/common/ecg/322/en/Background_Note_on_Natural_Fibres.pdf

²⁹ Calculations considered the goods included the chapters 51 and 53 from the HS classification (rev. 2002).

³⁰ Pacific Institute & United Nations Global Compact (2009), “Climate Change and the Global Water Crisis: What Businesses Need to Know and Do”, May, pp. 2-3.

inclusion of water and wastewater treatment services is relevant for the study since their provision represents new ways to manage efficiently water resources and decrease pollution levels in this new global context.

The water and wastewater treatment business is growing rapidly. Growth in this particular sector is becoming more common in both developed and developing economies, as well as the participation of the private sector. JETRO (2009) estimated the market size of world water treatment business, measured by the total amount of investment in water supply and sewerage facilities (plants) and the total cost of operating water supply and sewerage facilities (services), in US\$ 326.6 billion (year 2007) and expected to reach US\$ 628 billion by 2025.³¹

http://www.unglobalcompact.org/docs/issues_doc/Environment/ceo_water_mandate/UNGC-PI_climate-water_whitepaper_FINAL.pdf

³¹ JETRO (2009), “Rapid Growth of the Global Market Treatment Business – Japan’s Public and Private Sectors Join Hands to Develop National Strategy”, Market Report, August, https://www.jetro.go.jp/en/reports/market/pdf/2009_01.pdf

3. REGULATORY PRACTICES ON CCGS

An earlier APEC report defines regulation as “any measure or intervention implemented under government authority that acts to control the behavior of individuals or groups that come within the ambit of that authority”³².

Regulation must be done properly in order to avoid unnecessary barriers to trade and prevent any welfare reduction caused by excessive or bad regulatory measures. In general, regulation is valid and accepted when there are clear objectives related to:

- Protect legitimate public interests such as health, safety, social cohesion and environment;
- Minimize distortions and negative effects from market failure;
- Keep an organized and efficient system

Sometimes, despite having these objectives in mind, regulations after being implemented do not bring the expected outcomes, creating deadweight costs for society. This is a real challenge that policymakers face everyday, since the borderline between what is a good or appropriate from a bad or excessive regulation is a very thin one. Because of that, there has been an increasing interest in recent years to design guidelines for good regulatory practices (GRP).

In this respect, the OECD has done extensive work on this topic and has identified a group of principles that can be used to measure the quality of regulation. ASEAN has also endorsed a guide on GRP with a list of principles. In the same way, WTO has been working on the development of GRP within the Committee on Technical Barriers to Trade.

The following table summarizes the principles identified by these institutions as GRP.^{33 34 35}

³² APEC (2000), “APEC Information Notes on Good Practice for Technical Regulation”, September, p. 3.

³³ The information from OECD has been obtained from Jacobzone, S, C. Choi & C. Miguet (2007), “Indicators of Regulatory Management Systems”, OECD Working Papers on Public Governance, 2007/4, OECD Publishing, p.8; and OECD (1995), “Recommendation of the Council of the OECD on Improving the Quality of Government Regulation”.

³⁴ The information from ASEAN on GRP is available in <http://www.aseansec.org/22487.pdf>

³⁵ The information from WTO is based from the following documents on GRP circulated by interested WTO member economies listed in parenthesis: G/TBT/W/223 (Japan); G/TBT/W/239 (Colombia); G/TBT/W/248 (Mexico); G/TBT/W/254 (European Communities); G/TBT/W/258 (United States); G/TBT/W/264 (Canada) and G/TBT/W/268 (Chile).

Table 1.3
Principles – Good Regulatory Practices

| General Principle | OECD | ASEAN | Main Discussions in WTO |
|--------------------------------------|---|--|--|
| 1. Clear objective | <ul style="list-style-type: none"> Regulation is effective in resolving identified problems, and efficient in that it achieves its goals at minimum cost | <ul style="list-style-type: none"> Serve clearly identified policy objectives, and be effective achieving those objectives | <ul style="list-style-type: none"> Clear regulatory objectives and rationality behind the objectives |
| 2. Transparency | <ul style="list-style-type: none"> Regulation is transparent and accessible Regulation process promote a culture of openness and accountability, including responsiveness to stakeholders inputs. | <ul style="list-style-type: none"> Be transparent to both regulators and those affected by regulations | <ul style="list-style-type: none"> Ensure transparency |
| 3. Consistency | <ul style="list-style-type: none"> New regulation is consistent with other existing regulation Regulation respects legal and constitutional requirements | <ul style="list-style-type: none"> Be consistent with other regulation and policies Have a sound legal and empirical basis | <ul style="list-style-type: none"> Consistency with other regulations and policies |
| 4. Flexibility and review | <ul style="list-style-type: none"> Regulation is flexible and not unduly prescriptive; and is continuously updated and improved | <ul style="list-style-type: none"> Be subject to review to maintain flexibility and adaptability to changes | <ul style="list-style-type: none"> Subject to reviews to maintain flexibility and adaptability to modern needs |
| 5. Produce benefits and minimum cost | <ul style="list-style-type: none"> Regulation is a proportionate response to the identified problem and is the minimum required to achieve objectives, with minimum compliance burdens | <ul style="list-style-type: none"> Produce benefits that justify costs, considering the distribution of effects across society and taking economic, environmental and social effects into account. Minimize costs and market distortions Reference only those parts of a standard that represent minimum requirements to fulfill the desired objectives | <ul style="list-style-type: none"> Benefits should justify costs Minimize costs and market distortions |

| General Principle | OECD | ASEAN | Main Discussions in WTO |
|---------------------------------|---|--|--|
| 6. Clear and simple regulations | <ul style="list-style-type: none"> Regulators should take steps to ensure that the text and structure of the rules are as clear as possible. | <ul style="list-style-type: none"> Be clear, simple and practical for users | <ul style="list-style-type: none"> Clear, simple and practical regulations |
| 7. Harmonization | | <ul style="list-style-type: none"> Be based on international or national standards that are harmonized to international standards, except where legitimate reasons for deviations exist | <ul style="list-style-type: none"> Refer to international standards or international aligned standards where applicable |
| 8. Performance-based preference | | <ul style="list-style-type: none"> Be performance based rather than prescriptive | <ul style="list-style-type: none"> Preference to regulate performance when possible |
| 9. Non-discrimination | | <ul style="list-style-type: none"> Accord equal treatment to products of domestic origin and like products imported from members | <ul style="list-style-type: none"> Standards and regulations should give imported goods and services, regardless of origin, a treatment non less favorable than that granted to like domestic goods |

In general, to analyze regulatory systems is not an easy task, since their structures depend on many factors such as the industry type, domestic market characteristics, policy options, among others. However, these principles mentioned at OECD, ASEAN and WTO can serve as a guidance to analyze if, within the APEC region, GRP promote (or at least, not hinder) the development and use (including production and trade) of the goods and services selected for the purpose of this study.

Some economies have taken into account the principles discussed in international organizations and established clear general procedures to make sure that proper regulations are enacted in the future. A good example within the APEC region is the case of Australia, where clear procedures, applicable to all regulatory proposals, have been established to ensure regulatory quality. In this sense, these procedures guarantee that regulations pursue a legitimate objective and be efficient in all the sectors, including the ones related to CCGS.

Box 1.1 Best Practice Regulation in Australia

The Australian Government endorsed in 2006 six principles of GRP:

- Governments should not address “problems” until a case for action has been clearly established (establishing the nature of the problem and why actions additional to existing measures are needed).
- A range of feasible policy options (including self-regulatory and co-regulatory approaches) need to be identified and their benefits and costs (including compliance costs) assessed within an appropriate framework.
- Only the option that generates the greatest net benefit for the community, taking into account all the impacts, should be adopted.
- Effective guidance should be provided to relevant regulators and regulated parties in order to ensure that the policy intent of the regulation is clear, as well as the expected compliance requirements.
- Mechanisms are needed to ensure that regulation remains relevant and effective over time.
- There needs to be effective consultation with regulated parties at all stage of the regulatory cycle.

The Australia Government has established the Office of Best Practice Regulation (OBPR) to provide a one-stop-shop to assist departments and agencies in delivering the Government’s best practice regulation requirements.

All regulatory proposals are required to undergo a preliminary assessment to establish whether they are likely to involve an impact on business and individuals or the economy. If medium business compliance costs are likely to be involved, a quantitative assessment of the compliance cost should be calculated by using the Business Cost Calculator or an approved equivalent. In the same way, if any proposal is likely to have a significant impact, more detailed analysis should be undertaken and documented in a Regulation Impact Statement.

Sources: Australian Government (2007), “Best Practice Regulation Handbook”, August, pp.2-6. Available at <http://www.finance.gov.au/obpr/docs/handbook.pdf>.

Australian Government (2007), “Users Guide to the Best Practice Regulation Handbook”, August. Available at <http://www.finance.gov.au/obpr/docs/userguide.pdf>

Many of the CCGS correspond to relatively-new technologies aiming to tackle a genuine concern. In this regard, the development process and subsequent use of a new product is not an easy task since the lack of an established market and initial high costs discourage in many occasions the possibility to fund projects associated to them.

In this sense, GRP are critical to develop and promote the use of new products to assist in the efforts on climate change mitigation and adaptation. Governments should play an important role by putting into practice regulations where the compliance costs are reasonable in comparison with the expected benefits.

This fact is very relevant in the case of the solar equipment. According to Steenblik and Kim (2009), the importance of government policy in driving the market for solar energy equipment (including photovoltaic and concentrated solar power systems) cannot be over-stated³⁶. In fact, these authors showed survey results from solar companies, conducted by the Climate Change Business Journal in March 2008, where 70% of the respondents rated government incentives as the “most important” or “very important” market driver for their products, and government requirements for renewable energy represented 29% of the answers for “most important” driver³⁷.

In recent years, some APEC economies driven by concerns on climate change and soaring energy prices are introducing a series of measures to promote the use of solar equipment. For instance: the United States enacted recently *The Emergency Economic Stabilization Act of 2008*, which removed the prohibition against utilities’ use of the investment tax credit, extended the 30% solar investment tax credit for eight years and lifted the cap for residential PV installations³⁸. In the same way, the United States has notified to the WTO Committee of Technical Barriers to Trade the realization of public meetings to discuss and received comments on products for purposes of amending energy conservation standards for certain residential heating products (including HS 8419.19 corresponding to solar water boiler (heater))³⁹.

Also, the use of solar systems has also been promoted by government requirements or incentives included in the construction of new buildings. This scheme has been used more actively outside the APEC region (especially in Europe)⁴⁰. Within the APEC region, New Zealand introduced in 2007 a Solar Water Heating Volume Build Scheme, in which a NZ\$ 500 grant per home is available for builders that commit to install solar water heaters on at least 20 new homes per year⁴¹. This incentive is performance-based since it is granted as long as builders comply with certain energy performance, price and installation standards.

³⁶ Steenblik, R. & J.A. Kim (2009), “Facilitating Trade in Selected Climate Change Mitigation Technologies in the Energy Supply, Buildings and Industry Sectors”, OECD Trade and Environment Working Paper No. 2009-02, p. 31.

³⁷ Ibid.

³⁸ Solar Energy Industries Association (2008), “US Solar Industry Year in Review 2008”, http://www.seia.org/galleries/pdf/2008_Year_in_Review-small.pdf

³⁹ See WTO Notification G/TBT/N/USA/445, 22 January 2009.

⁴⁰ European Solar Thermal Industry Federation (2007), “Best Practice Regulations for Solar Thermal”, ESTIF, Brussels, August.

⁴¹ See <http://www.beehive.govt.nz/speech/launch+solar+water+heating+volume+build+scheme>

Box 1.2 Long-Term Development of the PV system in Japan

Japan is considered as a global pioneer in developing PV systems (using solar cells to convert solar radiation into electric current). As result of the 1973 oil crisis, Japan's Ministry for International Trade and Industry (MITI) launched the *Sunshine Project*, a 25-year project to conduct R&D on alternative energy sources. Under this program, the early governmental support for PV research was important to mobilize resources when the price for OV was very high and the activity quite low.

The development of PV technology was favored again in 1979 as a result of the second oil crisis. PV was one of the areas to get priority within the *Sunshine Project*. In addition, the enactment of the "Alternative Energy Law" provided additional funds by increasing the electricity tax and introducing a "special account" for alternative energy development. Moreover, the establishment of a new body, the New Energy Development Organization (NEDO), boosted the activities regarding research and promotion of alternative sources of energy.

Until the mid-1980s, small scale electronics (such as calculators) was probably the only significant market for PV technologies. This situation changed with a series of regulatory changes and NEDO actions to promote the use of this technology. In this sense, NEDO conducted a project in 1986 to demonstrate that solar PV-grid connected systems could provide stable electricity. Furthermore, the government started to simplify laws and regulations concerning PV installation.

In 1994, a program called the Residential PV Monitoring Program (later switched into the Residential PV Dissemination Program) was started in order to subsidize PV systems in residential homes. This program was successful in terms of "market formation" and helped to reduce the production cost per KW. At the beginning of the 21st Century, Japan's residential PV market was the world largest. Subsidies under this program were gradually lowered over the years and ended in October 2005 when the Japanese market became self-sustained and reached the target cost.

Source: Jelse, K. & H. Johnson (2008), "Increasing the Rate of Solar Cell Diffusion in Japan: Dynamics of the PV Innovation System, 1973-2007", Master's Thesis 2008:14, Division of Environmental System Analysis, Department of Energy and Environmeny, Chalmers University of Technology, Goteborg, Sweden.

In the case of air pollution prevention, mitigation and control-related goods, regulations tackling legitimate problems are strong drivers in promoting their development and use. Problems concerning the air quality in residential and industrial areas have led to the enactment of regulations aiming to improve health standards by reducing the pollution levels. In this sense, these regulations can induce companies to introduce technological devices in their operations (for example: the use of condensers, catalytic converters, filters, among others) to reduce the emission of polluting agents.

In some cases, regulations on air pollution are prescriptive, such as the obligation to use catalytic converters in cars to restrict the emissions of fumes or the restrictions on

circulation⁴². In other cases, regulations are performance-based by setting a cap on emissions in determined industries. In this area, prescriptive regulations seem to be less effective. For instance, the restriction on car circulation has triggered in car owners to buy a second car with different features and be able to use at least one of the cars everyday.

Box 1.3 Air Pollution Regulations in Santiago de Chile

Air pollution has become a public concern in Santiago de Chile for many years. Santiago's economic growth, its location surrounded by mountains and its propensity to thermal inversion (colder air is at ground level because warm air holds it down) in the winter, have contributed to high levels of air pollution.

Multiple measures have been erected to tackle the problem. One of the first measures has been aiming to reduce the pollution caused by cars through the restriction on car usage (from 1986) and the obligation to use catalytic converters in all new cars entering Santiago (from 1992). Subsequently, in 1992, an emission offset trading program was set as a cost-effective way to control emissions of suspended particulates from industrial boilers and furnaces. In this program, existing sources were assigned emission caps. The trading would occur between a source with its emission beyond the cap and another source with emission below the cap. New sources are not assigned caps and need to buy emission rights from companies below the cap.

Also, the Chilean Government introduced in 1997 the Metropolitan Region Air Pollution Clean-up and Prevention Plan, consisting of more than 100 measures and instruments aimed at long-term emission reduction in Santiago from a range of sources (although the emphasis is on industry and transport sectors). The results have been encouraging since stationary sources (such as the industry, which is estimated to have invested around US\$ 30 million between 1998 and 2000 in air pollution emission abatement) have been reducing emissions and reaching annual targets ahead of schedule.

Source: Dufey, A., E. Claro & N. Borregaard (2004), "Identifying Complementary Measures to Ensure the Maximum Realisation of Benefits from the Liberalisation of Trade in Environmental Goods and Services. Case Study: Chile", OECD Trade and Environment Working Paper No. 2004-05, pp 7-9.

With respect to the natural fibers and dyes, since these products are important inputs on the production of textiles and apparel, the regulation affecting the latter have a direct impact on the development and use of natural fibers and dyes. In this sense, health and safety concerns have motivated relevant authorities to propose prescriptive regulation, in line with WTO legislation, to prevent the use of harmful dyes or chemical substances in the production of textiles and apparel⁴³. This kind of

⁴² Restrictions on circulation are usually implemented in large urban areas. Authorities enacting similar measures usually argue that its implementation corresponds to the necessity to limit car numbers to reduce traffic congestion and pollution caused by cars.

⁴³ For example, see WTO Notification G/TBT/N/THA/200, 28 April 2006 and G/TBT/N/NZL/43, 9 April 2008.

regulation could benefit the use of natural fibers and dyes to some extent⁴⁴. According to Twyford-Jones, et.al. (2005), consumers and governments are becoming increasingly concerned about the potentially hazardous chemicals that are used in the production and processing of textiles⁴⁵.

As result of these concerns, some producers have shown interest in being recognized by using eco-friendly inputs and processes. Consequently, voluntary schemes such as eco-labeling are being promoted as a way to allow the potential buyers the identification of goods that complied with eco-friendly standards and create business opportunities. In this sense, it is important to stress the voluntary nature of eco-labeling since it would not force companies to make changes in their production process and incur additional costs in tests to demonstrate that the products meet the standards and therefore, are suited to obtain the eco-label.

Box 1.4. Eco-labeling in the textile industry

According to UNCTAD (2008), producers and exporters from developing economies are facing some problems with eco-labeling because of the lack of clear definitions of basic concepts in terminology used in eco-labeling schemes, insufficient participation of developing economies in setting the criteria and standards, and inadequate assistance to improve environmental performance. Some natural fibers cannot obtain eco-labels due to the use of chemical fertilizers in their production.

Eco-labelling is usually a voluntary practice. However, it is becoming a market requirement since consumers and retailers, mainly in high-income economies, are giving preference to eco-products. In this context, unlabeled products are facing increasing difficulties in competing with eco-labeled products or with products that bear technically-endorsed environmental claims.

Among the actions suggested by UNCTAD to ease these problems on eco-labeling are the establishment of an international and independent scientific panel to determine the scientific basis for the requirements to obtain the eco-label; harmonize eco-label criteria and establishing a mutual recognition of developing economies eco-labels; and increasing technical assistance to improve environmental performance.

Source: UNCTAD (2008), "Training Module on Trade in Textiles and Clothing: the Post-ATC Context", United Nations: New York and Geneva, January, pp. 34-36.

In the field of services, such as the case of water and wastewater treatment sectors, the importance of the regulation tends to go beyond the issues of the protection of legitimate public interests, conformity assessments and quality control via prescriptive or performance-based measures, among others. Many of the infrastructure-related services have a different nature compared to any good, in terms that their providers

⁴⁴ Regulation could benefit as long as it does not affect directly to the production natural fibers and dyes by determining too stringent procedures in their production and subsequent use in the processing of textiles and apparel.

⁴⁵ Twyford-Jones, P., et.at. (2005), "Eco-Range: Market-Oriented Environmental Certification for Rangeland Pastoral Industries", 6 Market Research Report, Australian Government, Rural Industries Research and Development Corporation.

are usually natural monopolies and the original (and/or current) supplier has frequently been a public company run by local or central governments. Moreover, the amounts of capital needed to build or renew a plant are significant enough to have a strong impact in the consumer prices if the market is not regulated. In many occasions, governments do not have the resources to provide the service to all the population or perform investments to maintain or improve the current service. In this sense, price regulation, subsidies, the scope for private sector (and foreign) participation and the role of supervising entities are very important issues in the regulation of infrastructure-related services⁴⁶.

Box 1.5 Development of Wastewater Management in Korea

A combination of government actions and water-pollution incidents that raised public concerns encouraged the development of the water and wastewater treatment industry in Korea in the 1990s. The Water Quality Preservation Act (1990), the Act on Treatment of Sewerage, Excreta and Livestock Wastewater (1991), and Comprehensive Measures for Clean Water Supply for 1993-1997 (1993) laid out the legal framework and government policy regarding water and wastewater treatment.

In 1996, the ten-year Comprehensive Measures for Water Management was launched and since then, additional measures were introduced to protect water resources and improve their management. Purity standards were set regarding water quality and the Water Quality Preservation Act was modified to meet changing environmental conditions and needs.

The developing of wastewater management has also been driven by substantial government expenditure. Between 1993 and 2001, government expenditure on water, wastewater treatment and sewerage was around US\$ 14 billion. The long term plan after launching the ten-year plan in 1996 was to invest about US\$ 25 billion on infrastructure projects to improve water quality.

The government support of the wastewater management has also taken place in terms of engaging in private sector, including foreign firms. On the one hand, privatization of sewage treatment plants began in 1997. On the other hand, the 1998 Foreign Investment Inducement Act made it possible for foreign business to enter the markets. Many of them have participated via partnerships with major Korean contractors or as supplier or subcontractors. In addition, the 1999 Act on Private Capital Inducement on Social Overhead Facilities opened the door for private investment to participate in projects where local governments could not secure enough funding. By the year 2006, 72 out of 150 treatment plants were operated by the private sector

Foreign firms have usually provided technology and equipment in areas where Korean companies lack technological capability. Korea's environmental technology has benefitted through license agreements with foreign firms. Korea's protection and enforcement of intellectual property rights contributed substantially on this issue.

Source: Lee, J. & J. Whang (2006), "Identifying Complementary Measures to Ensure the Maximum

⁴⁶ Geloso Grosso, M. (2007), "Regulatory Principles for Environmental Services and GATS", ICTSD Trade in Services and Sustainable Development Series, International Centre for Trade and Sustainable Development, Geneva, Switzerland.

Realisation of Benefits from the Liberalization of Trade in Environmental Goods and Services. Case Study: Korea”, OECD Trade and Environment Working Paper No. 2004-03, pp. 13-19.

These issues are somewhat interlinked into each other. To prevent any conflict of interest, it is important to guarantee a supervisory body capable to design and enforce measures on an independent way. Price regulation is relevant, since the provision of water is critical for the population, but the suppliers are sometimes willing to charge high (and even unaffordable rates) to take advantage of their monopolistic power or recover, as fast as possible, their upgrading investments. In some cases, subsidies need to be applied to guarantee the provision of an affordable service and expand their coverage among the population.

4. BARRIERS AND IMPEDIMENTS ON PRODUCTION AND TRADE OF CCGS

In general, APEC has made good progress with regards to trade and investment facilitation as reported yearly by member economies in their respective Individual Action Plans (IAPs)⁴⁷. However, additional work needs to be done since several groups of interest are still reporting the existence of certain barriers and impediments within the APEC region, increasing the cost of production and trade of goods and services.

The study has identified a series of non-tariff measures affecting the production and trade of CCGS. In this sense, many of the restrictions identified in the study within the APEC region are general or horizontal, which means that the restriction applies not only to CCGS, but also to goods and services outside the scope of CCGS. In addition, there are other impediments that particularly affect the CCGS selected for the purpose of this report⁴⁸.

Most of these measures are related to customs procedures, technical regulations and quantitative restrictions. Also, some other problems identified are associated with issues concerning intellectual property rights (IPR), subsidies, visa approvals and investment-related restrictions.

A. RESTRICTIVE PRACTICES IN CUSTOMS PROCEDURES

In terms of customs procedures, some of the reported problems are related to the efficiency of the customs system. For example, some customs do not have proper electronic systems and request too many documents in hardcopy version, which increase the time the merchandise stays in the port of entry before being cleared. In the same fashion, companies face sometimes disproportionate delays in customs for minor details (such as formal errors in the declaration), the necessity to have the merchandise examined by representatives from various official institutions for clearance, or even worse, without having information on the real reason of the delay⁴⁹. Users also show their concerns on the capacity of customs officials in some APEC member economies, since their understanding on the application of their domestic regulations or international obligations through mutual agreements seems to be flawed⁵⁰. In this sense, there have been cases in which the interpretation and application of customs procedures has differed in separate port of entries within the

⁴⁷ All the APEC IAPs are available in the following website: <http://www.apec-iap.org/>

⁴⁸ The barriers and impediments mentioned in this section have been identified mostly by examining public databases such as the ASEAN Non-Tariff Measures Database (<http://www.aseansec.org/16355.htm>) and European Commission's Market Access Database (http://madb.europa.eu/madb_barriers/barriers_select.htm); reviewing WTO documents concerning APEC member economies related to the Trade Policy Review process (http://www.wto.org/english/tratop_e/tpr_e/tpr_e.htm) and conversations with representatives from business associations.

⁴⁹ For example, see http://madb.europa.eu/madb_barriers/barriers_details.htm?barrier_id=020033 and http://madb.europa.eu/madb_barriers/barriers_details.htm/barrier_id=085142

⁵⁰ For example, see http://madb.europa.eu/madb_barriers/barriers_details.htm?barrier_id=060008

same economy for similar products. Likewise, problems have been reported in customs valuation matters since the establishment of incorrect values can lead to the payment of higher import duties⁵¹.

Another reported problem consists on the application of the Most-Favored Nation (MFN) treatment. Here, the problem occurs when due to unilateral reductions in the MFN tariff, this tariff rate is lower than the one corresponding to the tariff elimination schedule agreed in a preferential trade arrangement, but the importer is charged with the latter (higher) rate⁵². By following WTO's non-discriminatory principle and MFN clause, the new MFN tariff rate (lower) should be applicable, but it has been known that sometimes customs officials have wrongly charged the higher rate based on the fact that it is the tariff elimination schedule what was agreed in the trade arrangement. With respect to the goods selected in the study, there are some particular customs procedures affecting textiles, including the ones composed by natural fibers. In this sense, to comply with customs formalities, some customs require the submission of a significant number of documents involving confidential information like the detailed description of production methods and materials used in the elaboration of the product⁵³.

Moreover, in occasions, customs clearance for textiles is only done in specific ports of entry and in some places, companies have shown concerns because the proportion of textiles going through "red channels" (physical inspections) seems to be unusually higher in comparison with other products⁵⁴.

B. RESTRICTIVE PRACTICES IN TECHNICAL REGULATIONS

Meeting compulsory technical requirements demanded by a particular economy to allow the commercialization and use of specific manufactured products, represents in some occasions a point of concern, since their nature might not be in line with the pursuit of legitimate public interests and their compliance would increase production and trade costs in a significant manner.

Among the general concerns of interest groups within the APEC region, most of them are related to problems associated to the certification process and the use of regulations not in conformity with the international norms. Some general problems are also present in labeling and language.

To obtain the corresponding certification to demonstrate that the product meets all the technical requirements, the process can be either conducted by:

1. governmental entities;
2. certification agencies duly authorized by a governmental entity; or
3. certification agencies located overseas and authorized unilaterally by a governmental entity or by mutual conformity assessment agreements.

⁵¹ For example, see http://madb.europa.eu/madb_barriers/barriers_details.htm?barrier_id=960005

⁵² Based on conversations with representatives from business associations and government officials.

⁵³ For example, see http://madb.europa.eu/madb_barriers/barriers_details.htm?barrier_id=060081

⁵⁴ Based on conversations with representatives from business associations. A similar concern is also reported on WTO Trade Policy Review Document WT/TPR/M/149/Add.1, 17 August 2005, p.16.

Sometimes companies face additional costs and time in certifying a product. In some cases, products have already been certified in one economy after meeting strict requirements and must go again through a new process in another economy if the latter does not recognize the certification issued in the former economy⁵⁵. In other cases, the companies need to submit excessive documentation and conduct many tests to get the approval, which makes the process time-consuming, burdensome and expensive⁵⁶.

In addition, there are cases in which the product standard in a particular market does not follow international norms or follows an outdated version of them⁵⁷. Therefore, companies face additional costs to develop a new model to meet domestic standards and obtain the proper approval to be commercialized into the market.

In terms of labeling, general problems have arisen when authorities did not accept international practices (such as the use of particular signs and expressions) and local governments demanded companies to include additional information with respect to what was required by the central government⁵⁸.

Also, companies have reported language problems in a sense that technical regulations in some member economies are not available in English, since there is no obligation under WTO rules to publish them in English⁵⁹. In this sense, language acts as a barrier, because any company interested in offering goods and services in a new market will have to face additional costs in translating relevant technical information. Regarding the existence of restrictive practices on technical regulations in the selected CCGS, solar products and air pollution control products are facing complex procedures in some APEC member economies to be declared technically safe for commercialization. On the one hand, some economies do not recognize certification by entities located overseas in several sectors and require that the inspection, sampling, testing and certification be performed by only one official agency⁶⁰, which leads to longer time to obtain approval. On the other hand, there is apparently some discrimination in certain places against imported products, since it seems that only imported products need to be accompanied with a card that guarantees free maintenance after purchase for a limited period of time.⁶¹

A similar discriminatory practice affecting natural fibers has been identified, since some economies require compulsory quality certificates for the natural fiber before being exported, but only foreign buyers need to pay for the issuance of the certificate⁶². Also, natural fibers face burdensome requirements in some economies

⁵⁵ For example, see http://madb.europa.eu/madb_barriers/barriers_details.htm?barrier_id=060003

⁵⁶ For example, see http://madb.europa.eu/madb_barriers/barriers_details.htm?barrier_id=060006

⁵⁷ For example, see WTO Trade Policy Review Document WT/TPR/M/199/Add.1, 28 August 2008, p. 191.

⁵⁸ For example, see http://madb.europa.eu/madb_barriers/barriers_details.htm?barrier_id=970203 and http://madb.europa.eu/madb_barriers/barriers_details.htm?barrier_id=060009

⁵⁹ In this sense, according to Article 2.9 of the WTO Agreement on Technical Barriers to Trade, WTO members are only obliged to notify proposals on technical regulations and conformity assessment procedures to WTO, only if relevant international standards do not exist; these are not in accordance with international standards; or a technical regulation may have significant effects on trade. Copies on the regulations and procedures can be distributed upon request, but there is no obligation to circulate these documents in English version or in the other WTO official languages (French and Spanish).

⁶⁰ For example, see <http://www.aseansec.org/16355.htm>

⁶¹ Ibid.

⁶² For example, see http://madb.europa.eu/madb_barriers/barriers_details.htm?barrier_id=060131

with regards to labeling, which are carefully verified in customs. In order to make the process more expedite, the relevant authorities have authorized “verification units” to perform that task, but a charge per each control for product or family product is applied⁶³.

C. QUANTITATIVE RESTRICTIONS

In general, quantitative restrictions are becoming less common. However, some of them are still applied on the CCGS included in the study.

Among the most common restriction found within the APEC region is the requirement to apply for an import license or certificate of import approval. This practice has mostly affected the natural dyes and fibers. In this case, the importers need to submit documentation, other than those required for customs procedures, to the relevant authorities, before the importation of the goods takes place⁶⁴.

In some cases, the license has the status of “automatic”, which means that the control should be done only for the purpose of collecting relevant statistics or other information on the import transactions. However, the import process entails extra costs due to the time taken and the submission of additional documentation.

Another quantitative restriction found is the application of tariff rate quotas in some natural fibers, in which the amount of these fibers imported into the economy up to a certain level is subject to a zero or low tariff, while the fiber imported over once the quota is met, is charged with a higher tariff⁶⁵.

Quantitative restrictions are also present in the case of the solar equipment, albeit in an indirect manner. One of the most recent technological developments in generating electric energy is through solar power. Nonetheless, the energy sector is considered as strategic and potential investors in the generation of solar power face legal restrictions since some economies restrict or prohibit the generation and supply of electric energy by private entities in favor of public companies⁶⁶. Some exceptions to encourage self-sufficiency in the supply of electric energy are usually allowed for small off-grid solar PV systems, but the scope is limited.

D. ENFORCEMENT OF INTELLECTUAL PROPERTY RIGHTS

Despite the progress shown by APEC member economies in implementing sound systems in defense of intellectual property rights, there are still some impediments within the APEC region that affects the full development of production and trade. For instance, common IPR infringements are associated to the reproduction of goods without holding proper rights; the unauthorized use of brands and the attempts to

⁶³ For example, see http://madb.europa.eu/madb_barriers/barriers_details.htm?barrier_id=060009

⁶⁴ For example, see WTO Trade Policy Review Document WT/TPR/M/184/Add.1, 16 October 2007, p.25.

⁶⁵ For example, see WTO Trade Policy Review Document WT/TPR/M/199/Add.1, 28 August 2008, pp. 168-169.

⁶⁶ For example, see WTO Trade Policy Review Document WT/TPR/M/195/Add.1, 23 April 2008, p. 128.

register models, brands or inventions owned overseas by others⁶⁷. These problems represent significant costs and losses for the legal rights holders and discourage companies to participate in the affected markets.

Part of the problem derives from the fact that enforcement is sometimes not appropriate and/or the deterrents to prevent any infringement of law are very low. In some circumstances, the prison terms are short or do not become effective. Also, the fines for breach of IPR are too benevolent in some APEC economies (reduced fines for guilty pleas or first-time infringement)⁶⁸.

In addition, companies consider that the access to the judiciary system to defend against a clear violation of IPR is sometimes burdensome, especially for SMEs. This problem especially arises when the violation occurs overseas and companies need to use a power of attorney to be represented. In occasions, this procedure can be time-consuming and expensive, as well as the notarization and legalization of evidence to be presented in the judicial process⁶⁹.

Another concern with respect to the IPR enforcement is associated with the number of inspectors with sufficient knowledge to detect fake goods in the points of entry. This problem has been detected in the case of the natural dyes and products made with natural fibers⁷⁰.

E. SUBSIDIES

According to the WTO Agreement on Subsidies and Countervailing Measures, a subsidy exists if three conditions are met: 1) a financial contribution; 2) the contribution is provided by the government or any public body within the territory of the member economy; and 3) a benefit is conferred.

In this sense, most of the subsidies target particular sectors or companies. Nonetheless, the subsidies could be general at times. A relevant example for this paper relates to the existence of dual prices in the energy sector in certain APEC member economies, in which domestic companies pay a lower price compared with similar foreign ones and the government assumes the price difference charged to the former⁷¹. In this case, any domestic producer could benefit from subsidized energy prices and have a cost advantage in comparison with foreign producers.

It has been reported the existence of subsidies in some APEC economies regarding the provision of water and electricity services by traditional sources. In these cases, subsidies keep consumer prices low, but could increase unnecessarily the use of water and electricity and deplete natural resources. Moreover, these subsidies could affect the project bankability of new investments on alternative ways to generate water for

⁶⁷ For example, see WTO Trade Policy Review Document WT/TPR/M/173/Add.1, 16 February 2007, p. 58.

⁶⁸ For example, see WTO Trade Policy Review Document WT/TPR/M/191/Add.1, 1 February 2008, p. 111.

⁶⁹ For example, see http://madb.europa.eu/madb_barriers/barriers_details.htm?barrier_id=095243

⁷⁰ Based on conversations with representatives from business associations and government officials.

⁷¹ For example, see http://madb.europa.eu/madb_barriers/barriers_details.htm?barrier_id=020019

residential or industrial consumption and electricity (for example, through water and wastewater treatment plants and solar electricity grids).

In the case of products made of natural fibers, companies have complained on the unfair situation created by the application of subsidies non-consistent with WTO in some economies. In particular, complains are based on the use of subsidies based in export performance, in which a public body provides direct payments, concessional loans and tax benefits, among others, to producers that met certain export goals⁷².

F. RESTRICTIONS ON THE MOVEMENT OF BUSINESS PERSONS

The execution of investment and provision of services is restricted in some occasions by domestic regulations referred to the temporary entrance of business people, such as investors, business visitors, intra-corporate transferees, professionals and technicians. Depending on the nature of the business projects, companies need to assign particular staff overseas to conduct all the necessary activities to implement and run them efficiently. However, companies are forced to delay the projects or incur in higher costs when problems in the issuance of visas emerge. These problems have been reported in some APEC member economies. On the one hand, they are related to the long time taken by the corresponding government entity to approve a visa application⁷³. On the other hand, applications are turned down because of the existence of small quotas to allocate visas which are quickly filled⁷⁴.

The restrictions on the movement of business people are evident in the commitments assumed by APEC member economies in WTO to open the market referring to the provision of services through the presence of natural persons (Mode 4 of services provision). In this regard, only nine APEC member economies presented commitments in water-related services, but none of them made commitments on market access in Mode 4. Something similar occurs with the revised offers in the current WTO services negotiations for further liberalization of trade in services⁷⁵.

G. INVESTMENT-RELATED RESTRICTIONS

Investment flows also face restrictions within the APEC region. Some of them are general, in terms that they apply to all sectors within an economy; while others are specific for certain sectors, especially in the ones considered as strategic or sensitive. These factors could curb the provision of CCGS by restricting the development and deployment of production plants and services.

According to the commitments on Mode 3 (commercial presence) assumed by the APEC member economies in WTO, general (horizontal) restrictions cover a wide array of measures such as the need for examination and approval from governmental entities for new projects with foreign participation or acquisition of domestic-owned

⁷² For further information, please review the National Council of Textile Organizations' Testimony from 30 October 2007 (<http://www.ncto.org/newsroom/index07.asp>).

⁷³ For example, see http://madb.europa.eu/madb_barriers/barriers_details.htm?barrier_id=095223

⁷⁴ For example, see WTO Trade Policy Review Document WT/TPR/M/200/Add.1, 9 September 2008, pp. 79, 214.

⁷⁵ This comment is based on the existing revised offers at WTO duly derestricted by the corresponding members. For additional information, see http://www.wto.org/english/tratop_e/serv_e/s_negs_e.htm

businesses by foreigners; the restriction in the percentage of capital share to prevent foreigners to keep majority; the restriction to appoint foreigners or non-residents in the Board of Directors or specific positions; the requirement to invest through joint ventures with domestic partners only; no national treatment for foreigners on tax exemptions, subsidies, research and development activities; access to domestic credit for foreign companies subject to stricter rules; and market access restrictions in geographical areas⁷⁶.

Among the CCGS included in the study, specific restrictions affect mostly solar equipment (closely linked with the energy sector) and water treatment and related services. Due to the strategic nature of these sectors, some APEC economies have in practice regulations stating that the participation of foreign capital in these sectors is restricted to a minority stake or simply forbidden.

⁷⁶ For more details on the commitments (and restrictions) in trade in services by WTO members, please visit the WTO Services Database at <http://tsdb.wto.org/default.aspx>

5. POLICY RECOMMENDATIONS AND FINAL REMARKS

The understanding on the main factors triggering climate change and its negative consequences in the world is growing everyday. In this sense, governments are working into the development of initiatives to mitigate the harmful effects of climate change and facilitate the adaptation to the present conditions.

The increasing importance to find coordinated global and regional responses to tackle the problem of climate change has motivated authorities and officials from APEC member economies to discuss this topic within the APEC framework and take a more active role in the pursuit of an enduring solution.

Due to its strong emphasis in trade and investment topics, APEC can take a prominent role in finding ways to promote the development and use of CCGS, as part of the efforts in tackling climate change challenges. Greater awareness on the detrimental effects of climate change among certain groups has increased the use of CCGS. In the last years, the importance of CCGS has grown significantly, as shown in chapter 1, by the upward trend in their production and trade levels.

Regulatory practices have also influenced in promoting the use of certain CCGS. As shown in chapter 2, the cases included in this study show that governments are adjusting their regulatory framework as new challenges associated to climate change emerge. In addition, efforts to implement general sets of principles on GRP at the domestic level or even at the regional or global (multilateral) level, also contribute to the development of clear and fair regulations for CCGS without setting unnecessary barriers to trade, nor high compliance costs to deter the development of CCGS.

However, despite these efforts, additional work needs to be done within the APEC region. As identified in chapter 3, burdensome procedures that translate into unnecessary barriers to trade still affect CCGS. In fact, many of the current restrictive practices do apply not only to CCGS, but also to the rest of goods and services.

Many of these barriers and impediments of general application have been found in customs procedures, technical regulations, intellectual property rights and movement of business persons. In the case of the quantitative restrictions, subsidies and investment-related restrictions, most of them do apply to one of the particular goods or services chosen in this study.

In this respect, it is important that APEC continues its work within the main Committees with the discussion on trade and investment facilitation and the implementation of actions by member economies to improve the existing conditions. In addition, it is imperative to remain working at the sub-group levels and contribute with activities conducive to exchange experiences and provide proper training to government officials in the sectors related to trade and investment facilitation.

To improve the development and use of CCGS, coordinated work is needed among several institutions at the domestic and international levels. In this regard, efforts to

implement best practices in customs, in terms of setting modern physical infrastructure and information systems; processing documentation in advance to the arrival of the merchandise; conducting efficient risk management and training officials in the application of the domestic and international customs regulations will contribute to the reduction of transaction costs for all the goods, including CCGS.

Moreover, it is advisable that institutions in charge of technical regulations take into account the principles on GRP discussed in different international organizations when implementing new standards and regulations concerning CCGS. Technical cooperation among regulatory institutions, including support to the development and application of international standards and regulations, will be important to encourage. In addition, in order to make easier for CCGS to meet technical requirements in domestic markets, these institutions should give favorable consideration to accept as equivalent technical regulations from other member economies, provided that regulations in the other economies produce outcomes equivalent to those produced by domestic regulation. Furthermore, governments should work on the establishment of agreements that facilitate the recognition of conformity assessment procedures conducted by authorized conformity assessment bodies located in other economies. On the use of quantitative restrictions and subsidies, APEC economies should prevent their use in a way that those constitute unnecessary barriers to trade and give an unfair advantage in terms of trade. These tools should only be used to the extent allowed by WTO.

To promote the development and use of CCGS, APEC needs to continue their efforts in providing fair systems with suitable deterrents to prevent breaches in intellectual property rights. Additional emphasis on the enforcement of the law is very much needed in some particular APEC member economies. Also, to promote the use of legal CCGS and allow the transfer of technology to the developing economies, efforts to provide licenses at reasonable prices would help on this purpose.

Finally, efforts by APEC member economies at WTO to push for the conclusion of the Doha Round and improve their services commitments will also contribute to facilitate the development and deployment of production plants and services related to CCGS. So far, the participation of APEC member economies in presenting commitments in modes 3 (commercial presence) and 4 (mobility of business persons) on the provision of services has been very limited.