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Promoting trade and investment in low-carbon goods and services

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Note by the secretariat

Summary

While it is widely recognized that climate change will have an impact on trade and investment, both of which form the engine of economic development and growth, an international consensus on reducing the greenhouse gas emissions responsible for climate change has proven elusive so far. While it is recognized that there are costs associated with climate change mitigation and adaptation measures, expansion of trade and investment in climate-smart goods, technologies and services could contribute to a triple-win solution where trade, climate and development all benefit. The present document describes opportunities to promote trade and investment in those goods and services in the region. A policy framework is put forward that could help in capturing such opportunities. A strong case is made for regional cooperation and a regional partnership or agreement is suggested on the mitigation of and adaptation to climate change, including a regional trade and investment agreement in this area. It is proposed that ESCAP could take the lead in such an initiative.

In its deliberations on the issues discussed in the present document, the Committee may wish provide the secretariat with guidance on the role it should adopt in addressing these issues.

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I. Introduction

1. The present document is based on a chapter in the forthcoming *Asia-Pacific Trade and Investment Report 2011*.¹ It explores the linkages between trade, investment and climate change and makes the case for expanding trade and investment in climate-smart goods, technologies and services which would contribute to climate change mitigation and adaptation. In particular, the document makes the case for regional cooperation in promoting trade and investment in low-carbon climate-smart goods, services and technologies and a role in this regard for the Economic and Social Commission for Asia and the Pacific (ESCAP).

II. Trade, investment and climate change: linkages, impacts and the concerns of developing countries

2. The linkages between trade, investment and environmental issues, with particular focus on the impact of trade and trade liberalization on climate change, have been explored comprehensively in the literature.² It is generally acknowledged that trade and investment contribute to greenhouse gas (GHG) emissions as the production and transportation processes associated with trade and investment depend excessively on fossil fuels, which contain high percentages of carbon and are the principal contributors to GHG emissions. However, the carbon intensity of trade is not always higher than that of local production (see para. 5 below). In addition, trade and investment are essential for economic development and growth and for enabling countries to achieve the Millennium Development Goals, in particular Goal 1 on reducing poverty. A reduction in or elimination of trade and investment would therefore not be a practical solution to the problems

¹ ST/ESCAP/2596.

² For a comprehensive overview of these issues, see, for instance, World Trade Organization (WTO) and United Nations Environmental Programme (UNEP). *Trade and Climate Change: WTO-UNEP Report* (Geneva: WTO, 2009). Available online from: www.wto.org/english/res_e/booksp_e/trade_climate_change_e.pdf.

associated with their carbon intensity. When production and transportation can take place on the basis of renewable energy sources and technologies, trade and investment will become major solutions to the problems posed by climate change. In particular, investment is needed to develop and commercialize viable and cost-efficient low-carbon or climate-smart goods and technologies, while trade and aid for trade are needed to make these products and technologies widely available to all countries, including least developed countries. Under such a scenario, a triple win could be achieved for trade, environment and development.

3. Some of the world's fastest-growing economies are in the Asia-Pacific region. Their growth has been triggered and sustained by high levels of trade and investment.³ These economies are also among the largest carbon emitters in the world. According to the most recently available data from the Climate Analysis Indicators Tool (CAIT) of the World Resources Institute, GHG emissions from the region have grown faster than the global average.⁴ China surpassed the United States of America in becoming the world's largest emitter of GHGs in 2005, the latest year for which data are available for all greenhouse gases emitted by 185 countries and areas.⁵ India was ranked fifth and Indonesia twelfth in terms of their emissions. However, if the measures are taken in terms of equivalent carbon dioxide (CO₂e) per capita, China would rank No. 71 in the world and India No. 123. In 2007, these ranks were 66 and 122 respectively.⁶ It is also worth noting that the carbon dioxide emission intensities (the level of CO₂ emissions per economic output or CO₂/GDP) dropped for most Asian economies in the period 1992-2006 as their economies grew faster than their emissions of carbon dioxide. Energy, agriculture, and land-use change and forestry were the largest sectors contributing to GHG emissions, accounting for 64 per cent, 14 per cent and 11 per cent, respectively, of all GHG emissions from the ESCAP region in 2005.

4. Generally, while the main concern of developed countries in climate change negotiations is the cost-effectiveness of mitigation measures, for developing countries the main concerns are equity, the costs of climate change adaptation and technology transfer. For that reason, any international treaty on climate change should have clear provisions on equitable cost sharing, technology transfer and aid. In the meantime, negotiations on climate change continue but the outlook for a successful outcome any time soon seems bleak. However, nothing prevents countries from taking mitigation measures at least voluntarily at the national and regional levels. While such measures may not be sufficient in the long run, they would constitute a meaningful beginning to address seriously the problem of climate change. There is at least consensus that the "business-as-usual" scenario is not acceptable.

³ *Asia-Pacific Trade and Investment Report 2009: Trade-led Recovery and Beyond* (United Nations publication, Sales No. E.09.II.F.19).

⁴ <http://cait.wri.org>.

⁵ Sources of GHG emissions include land-use change and international bunkers; they cover the six most common GHGs: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbon gases (HFC), perfluorocarbons (PFC) and sulphur hexafluoride (SF₆). The 185 countries and areas in the CAIT 8.0 database include the European Union as a whole and Taiwan Province of China.

⁶ While GHG emission data are available only for 2005, CAIT 8.0 furnishes data on carbon dioxide emissions for 2007.

III. Opportunities for trade and investment in climate-smart goods and services

A. Opportunities for trade

5. There is a misperception that a good imported would always have a larger carbon footprint than when the same type of good would be produced at home because of the transportation factor. However, the carbon intensity of a good produced at home may be higher than that of an imported good. Thus, an ESCAP study⁷ revealed that, by using so-called emission intensity indices of exports and imports,⁸ China, Indonesia and Viet Nam were found to have imported commodities produced overseas involving lower levels of emissions than if they had been produced locally, while the reverse holds true for Bangladesh, India and Thailand. Similarly, Bangladesh, China, India, Indonesia, Thailand and Viet Nam exported commodities which were locally produced but with more emissions than would have been the case if those commodities had been produced locally in the destination countries. It is therefore important to make a detailed carbon-intensity analysis of the trade structure of each country and make adaptations based on the results of such an analysis. In other words, the concept of traditional comparative advantage needs to be refined to include a measurement of the carbon footprint in order to ensure that such comparative advantage is sustainable.

6. It follows, therefore, that not all trade is damaging in the context of climate change. However, among the most important voluntary measures that countries could implement are policies to promote trade and investment in climate-smart goods and technologies, in particular renewable energy technologies, and climate-smart services. Such goods and technologies are climate-smart in that they not only contribute to reductions in GHG emissions but also have no harmful environmental effects. Based on an analysis of a list of 64 such goods and technologies, ESCAP research has revealed that global and regional trade in climate-smart goods is rising although it still represents only about 3 per cent of total global and regional trade.⁹ The Asia-Pacific region is emerging as the most dynamic region in the world with regard to trade in climate-smart goods, with China and Japan being the top two exporting countries. In 2008, the ESCAP region accounted for 31.9 per cent of the global trade in climate-smart goods and technologies. The value of exports and imports of such goods and technologies tripled during the period 2002-2008. Intraregional trade in climate-smart goods in Asia and the Pacific is about 50 per cent of the region's total trade in these goods.

⁷ Truong P. Truong and Mia Mikic, "Trade and climate change – development of the emission intensity indices", ARTNeT Alerts on Emerging Policy Challenges, No. 6 (August 2010). Available from: www.unescap.org/tid/artnet/pub/alert6.pdf.

⁸ The values of these indices range from zero to infinite, but the important benchmark is a value equal to 1. For example, if the emission intensity index of an import is larger than 1, emissions embodied in goods produced overseas and transported to a destination are larger than the emissions that would have been caused by local production in that destination of the same number of goods. The index value of 1 indicates that emissions associated with imports of goods are the same as those associated with local production replacing trade.

⁹ ESCAP (forthcoming), *Trade, Investment and Climate Change in Asia and the Pacific: Working together towards a Triple Win Outcome*.

7. Analysis by ESCAP using trade indices, such as the competitiveness index, the revealed comparative advantage index and the regional orientation index,¹⁰ and analysis of prevailing applied tariffs in selected countries of the region on climate-smart technologies based on the ESCAP list¹¹ revealed that there are considerable opportunities to expand international and regional trade and investment in climate-smart goods and technologies. Based on revealed comparative advantage analysis alone, it appears that China; Hong Kong, China; and Japan have emerged as the region's most competitive economies in terms of climate-smart goods and technologies. Owing to the strong positions of these economies, the revealed comparative advantage index of the ESCAP region as a whole remains just above 1, indicating that the region has a comparative advantage in climate-smart goods and technologies. An analysis of the regional orientation index indicates that there is potential also for intraregional trade in climate-smart goods and technologies. Tariffs on the import of such goods and technologies have come down in many cases, although some countries with high emissions and comparative advantages in these goods maintain relatively high tariffs.

8. However, simple gravity model analysis reveals that tariffs play a minor role in explaining trade in climate-smart goods and technologies. A higher level of income in any given country seems to be associated more with a higher level of imports of climate-smart goods and technologies than the tariff level. In addition, non-tariff barriers, such as standards, appear to be a major impediment to trade in such goods and technologies. Gravity analysis further reveals that, based on 2008 data, the estimated export potential of climate-smart goods in the Asia-Pacific region was worth between \$30 billion and \$35 billion in that year. If Asian and Pacific economies had been able to utilize this potential, their exports of climate-smart goods and technologies would have been higher by nearly \$7.34 billion. With increasing awareness of climate change and rising trade in these goods and technologies, an increase in trade in climate-smart services would also follow although data on such trade are not readily available and, hence, it is more difficult to analyse such trade.

B. Opportunities for investment

9. It is difficult to measure the extent of investment in climate-smart goods and technologies. Figures for foreign direct investment (FDI) in such goods and technologies are particularly difficult to assess. However, with the current focus on renewable energy technologies, it appears that the Asia-Pacific region is emerging as a global leader in overall investment. In sharp contrast to the decline in investment in North America and Europe, and in spite of the economic downturn, investment in sustainable energy in the Asian and Pacific region increased by 37 per cent in 2009. This compares with drops of 33 per cent in North America and 16 per cent in Europe. Most investments in sustainable energy in the region and all investment growth were in China – where such investments grew by 53 per cent, from \$22 billion in 2008 to \$33.7 billion in 2009. Such rapid growth has made China the clear leader in sustainable energy investments both globally and

¹⁰ For a definition of these indices, see: www.unescap.org/tid/artnet/artnet_app/iti_aptiad.aspx.

¹¹ The following categories of climate-smart technologies were used: solar photovoltaic (PV) systems, wind power, clean coal, efficient lighting and other such technologies.

regionally; China accounts for 28 per cent of all investments in sustainable energy worldwide and 83 per cent of such investments in the Asian and Pacific region. Other countries in the region lag far behind, with India as a distant second, having made investments worth \$2.7 billion in 2009, which represents 2.3 per cent of such investments globally and 6.6 per cent of those made in the Asian and Pacific region. In addition to taking the overall lead globally in making sustainable energy investments, China became the clear leader in wind-energy investments, accounting for 40 per cent of such investments worldwide in 2009.

10. While these figures look impressive, they fall far short of what is required to prevent global temperatures from rising by 2°C before the end of the century, which is the level of temperature increase at which climate change can still be managed. It has been estimated that reducing emissions to the required level will require additional global investments of over \$1 trillion annually over the period 2010-2050. About half of this figure is expected to be required for the ESCAP region: approximately \$600 billion per year over and above current investment levels. China is expected to make more than half the mitigation-related investments needed in the region, followed by India at about 17 per cent and the rest of the developing countries as a whole accounting for a similar percentage.

11. According to estimates by the International Energy Agency, close to 50 per cent of the required investments during the period 2010-2050 will be in the transport sector, followed by buildings at 27 per cent, and power generation, transmission and distribution combined at 21 per cent.¹² Efficiency investments – primarily related to end-use efficiency – will form the majority of all energy-related investments, followed by renewables. Finally, in the services sector, the market for energy efficiency services should be expanding significantly, for example in consulting services for all the above-mentioned sectors, including process improvements in industry.

12. While these investment needs imply large costs and thus a financing challenge for Governments, the private sector and consumers, they simultaneously present huge business opportunities. The exact extent of these business opportunities will naturally depend on the level of ambition of policymakers, the policy mix chosen and the degree of enforcement.

IV. Policies to promote trade and investment in climate-smart goods and services

13. In view of the opportunities for expanded trade and investment in climate-smart goods and technologies, Governments have a role to play in formulating and implementing policies which are conducive to such trade and investment. Most climate change-related policies are not trade or investment policies; nevertheless, most have an impact on trade and investment. Such policies may therefore be subject to international trade rules, in particular those contained in the multilateral trade agreements under the World Trade Organization. In particular, some countries have imposed or are considering imposing “carbon border taxes” or “border tax adjustments” to ensure a level playing field between imports and national products, thereby preventing national companies with a relatively high carbon footprint to leave the country to seek “carbon havens” in countries

¹² International Energy Agency, *Energy Technology Perspectives 2010: Scenarios and Strategies to 2050* (Paris: OECD/IEA, 2010).

with less strict regulations, a process known as “carbon leakage”. However, apart from the difficulties associated with such taxes, research has shown that “carbon leakage” is either non-existent or very small.¹³

14. It is a difficult task to design national policies that actually create incentives for mitigation and adaptation. Such policies can be structured as regulatory measures (including regulations, standards and labelling) and economic incentives (including taxes, tradable permits and subsidies). Many of these policies are trade or investment policies or have implications for trade and investment. In practice, it is therefore very difficult to make clear distinctions. The main point is that the mitigation of climate change requires a comprehensive approach combining various policies which need to be consistent and carefully coordinated at the national and regional levels and which conform to international trade rules and do not result in hidden protectionism or in unduly distorting trade.

15. Policies which can be distinguished for the purpose of mitigating and adapting to climate change consist of general policies on nationally appropriate mitigation actions and national adaptation programmes of action (for least developed countries only) as provided for under the United Nations Framework Convention on Climate Change,¹⁴ a comprehensive national-level legal framework for low-carbon growth, and the possible adoption of national-level emission trading systems (also known as “cap-and-trade”). Policies targeting particular sectors, including policies aimed at reducing emissions from deforestation and forest degradation, would also fall into this category. Other general policies include public procurement systems favouring low-carbon suppliers. Such policies should be coupled with financial policies, that is, policies which tax the use of products high in carbon and subsidize the use of products low in carbon. For that reason, fossil fuel subsidies should be reduced or eliminated in many countries in a phased manner in order to limit negative impacts on the poor, while active financial support should be given to investment in and production and use of climate-smart goods and technologies. Specific policies to promote the use of renewable energy also need to be implemented, such as feed-in tariffs and renewable portfolio standards, which have already been adopted in various Asian developing countries. Trade and investment policies should be mainstreamed into general strategies for climate change mitigation and adaptation.

16. While the imposition of trade barriers against products perceived to have a large carbon footprint may run afoul of international trade rules, trade policies can and should be adopted which promote trade in climate-smart goods, technologies and services. For that reason, obstacles to such trade both at and behind the border need to be removed. As the negotiations on the liberalization of environmental goods and services are stalled at the multilateral level, unilateral liberalization or liberalization under regional and bilateral trade agreements would seem to be the next best solution.

¹³ For instance, see Organization for Economic Cooperation and Development, *The Economics of Climate Change Mitigation: Policies and Options for Global Action Beyond 2012* (Paris: OECD, 2009), and Peter Wooders and Aaron Cosbey. “Climate-linked tariffs and subsidies: economic aspects (competitiveness & leakage)”. Background paper of the Thinking Ahead on International Trade (TAIT) – 2nd Conference on Climate Change, Trade and Competitiveness: Issues for the WTO, Geneva, 16-18 June 2010.

¹⁴ United Nations, *Treaty Series*, vol. 1771, No. 30822.

Negotiations on the liberalization of trade in climate-smart goods, technologies and services are generally hampered by a lack of consensus on the definition of an environmental or climate-smart good or service and on the modalities for reducing barriers to such trade. However, at the bilateral or subregional level, chances are higher that such a consensus could be forged. In the meantime, countries could adopt various trade and transport facilitation measures, such as paperless trade in all goods and adoption of single windows, which would help in reducing carbon emissions associated with trade.

17. Investment policies play an important role in both promoting domestic and foreign direct investment in the production of climate-smart goods and technologies and the provision of climate-smart services. Transnational corporations are at the forefront of developing climate-smart technologies; therefore, it is essential to have a conducive and enabling environment for such investments.¹⁵ Such an environment includes an enabling regulatory framework, appropriate infrastructure and the availability of local expertise, incentives or privileges for climate-smart investment and an appropriate level of protection for intellectual property rights. Investment promotion agencies could engage in specific targeting of climate-smart investment. At the same time, the capacity of domestic small and medium-sized enterprises in the area of climate-smart goods and technologies should be enhanced so that they can evolve into acceptable suppliers for low-carbon transnational corporations and integrate into low-carbon value chains effectively. Countries should also ensure that any regional or bilateral trade agreements or international investment agreements to which they are a party do not unduly undermine their policy space to pursue low-carbon growth but instead are conducive to such growth.

18. Climate-smart standards and labels play an important role in promoting trade and investment in climate-smart goods and technologies. While it is recognized that standards may be a formidable non-tariff barrier to trade in such goods and technologies, they also force enterprises to make products which conform to market expectations and contribute to the reduction of GHG emissions. Important standards include energy and fuel efficiency standards, minimum energy performance standards, carbon emission standards and labels informing consumers about the carbon footprint of certain products, and “green” building codes. Various countries already have national-level label schemes, such as the Eco Mark programme in Japan, the Korea Eco-Label programme in the Republic of Korea and the Green Label scheme in Singapore. Notwithstanding the importance of such standards and labels, they should be used in conformity with international trade rules and not as a tool for protectionism. Countries should also strive towards the harmonization and mutual recognition of such standards, at least at the subregional and regional levels.

19. The issue of technology transfer is of the utmost importance to the mitigation of and adaptation to climate change and is closely related to trade and investment. It has been pointed out that, in many cases, climate-smart technologies already exist but require further development and commercialization. Developing countries need to enhance their capacity to

¹⁵ For a comprehensive overview of issues related to FDI in low-carbon goods, see *World Investment Report 2010: Investing in a Low-carbon Economy* (United Nations publication, Sales No. E.10.II.D.2).

develop such technologies and obtain and absorb technologies appropriate to their level of development. Technology transfer is a complicated process often associated with attracting FDI, but transfer is not automatic and various barriers have to be overcome. Barriers can be divided into the following categories: institutional and legal (including intellectual property rights), political, technological, economic, information-related, financial and cultural. Protection of intellectual property rights does not seem to matter much in least developed countries. However, it is understood that an excessive level of such protection is not conducive to the effective transfer of technology of any kind in most cases; hence, a proper balance needs to be sought between the needs of the recipient country and those of the technology supplier. One solution is to agree on additional flexibilities in the international intellectual property rights-related trading rules, that is, the Agreement on Trade-Related Aspects of Intellectual Property Rights,¹⁶ or TRIPS, of the World Trade Organization, although there is no consensus on this issue.

20. The need for technology transfer and financial assistance has dominated global talks on climate change. In the light of the capacity constraints faced by developing countries, financial assistance, in particular, is essential, either as part of wider aid-for-trade initiatives or in addition to such initiatives. Various global and regional funds already exist but may not be sufficient to satisfy such needs. It is proposed, therefore, that regional cooperation initiatives could incorporate modalities for technology transfer and financial assistance from the more advanced developing economies of the region to the less developed economies as part of a wider regional partnership, as discussed below.

V. Regional cooperation and the role of ESCAP

21. While national-level actions and policies to mitigate climate change are important, climate change is tackled most effectively through international cooperation. In the absence of a consensus at the international level, there may be a better chance of achieving a consensus at the regional or subregional levels. Although various voluntary schemes related to the mitigation of climate change already exist in the context of subregional organizations, such as the Asia-Pacific Economic Cooperation, the Association of Southeast Asian Nations, the Pacific Islands Forum and the South Asian Association for Regional Cooperation, a region-wide approach is still lacking. Given the cross-border nature of GHG emissions, regional cooperation is indispensable. Therefore, a regional trade and investment cooperation partnership/agreement for mitigation of and adaptation to climate change may be called for. At the core of this partnership would be a regional trade and investment agreement on mitigation of climate change. The regional partnership/agreement would include measures for: (a) the liberalization and joint promotion of climate-smart trade and investment; (b) the adoption of regional climate-smart sectoral and industry standards and labels; (c) exploration of the feasibility of a regional carbon tax and a regional emission trading system; (d) the provision of modalities for the effective joint development and transfer of climate-smart technologies; (e) the joint promotion and targeting of climate-smart FDI; (f) development of the required supportive legal, institutional and physical infrastructure and

¹⁶ See *Legal Instruments Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations, done at Marrakesh on 15 April 1994* (GATT Secretariat Publication, Sales No. GATT/1994-7).

expertise; and (g) establishment of a regional financial support mechanism for climate-smart small and medium-sized enterprises and climate-smart growth in general, tapping at least part of the huge international reserves of selected countries.

22. Among all regional institutions, ESCAP is well-placed to pursue the conclusion of such a partnership/agreement. The secretariat has already taken various initiatives to support trade and investment in climate-smart goods, technologies and services. As part of a wider low-carbon ESCAP project funded by the Republic of Korea, the secretariat undertook research and organized the Regional Symposium on Low-Carbon Economy: Trade, Investment and Climate Change, which was held in Bali, Indonesia, on 13 and 14 October 2010. At that meeting, it was agreed that trade and investment in climate-smart goods and technologies could play an important role in mitigating climate change and that barriers to such trade and investment needed to be removed. It was emphasized that measures to mitigate climate change should not undermine national development and economic growth targets but be in accordance with each country's capacity.

VI. Issues for consideration by the Committee

23. The Committee may wish to deliberate on the following issues:

(a) The need for and level of appropriate action at the national level to mitigate and adapt to climate change and the implications of such actions on trade and investment;

(b) The role of trade and investment in mitigating and adapting to climate change, with particular focus on promoting trade and investment in climate-smart goods, technologies and services;

(c) The transfer of appropriate technology and financial resources to developing countries in order to convert challenges associated with climate change mitigation and adaptation measures into opportunities;

(d) The modalities for regional cooperation in trade and investment in climate-smart goods, technologies and services;

(e) The need for aid for trade in climate-smart goods, technologies and services;

(f) The role of ESCAP in addressing these issues and forging a regional partnership/agreement for the mitigation of and adaptation to climate change, with particular reference to the conclusion of a regional trade and investment agreement in this area.

24. The Committee may also wish to deliberate on the issues discussed in the present document, particularly on the role of the secretariat in addressing those issues.