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Financial Innovation, Climate Change and the GATS: The Case of Renewable Energy Certificates

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Abstract

Energy has come to the forefront of the public debate in the past decade for two main reasons: the first relates to the lack of a secure, continuous and unconditional energy supply in the *demandeurs*, mostly developed and transition economies, which are still dependent on non-renewable carbon-based fossil fuels. The second reason is that uncontrolled production, distribution and use of conventional energy may lead to environmental degradation and global warming. Renewable energy certificates (RECs) are instruments that allow countries to promote energy generation from renewables and can be part of domestic policies aimed at climate change mitigation and adaptation. Since RECs can be traded in secondary markets, this paper discusses issues raised by the nature of and the trade in RECs which can be of concern for the General Agreement on Trade in Services (GATS) and the multilateral regulation of trade in financial services, notably in the case where World Trade Organization (WTO) Members undertook sweeping commitments in financial services which equally apply to trade in RECs.

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Key words: climate change; renewable energy sources; green certificates; trading services; energy-related financial services; financial innovation; World Trade Organization (WTO); General Agreement on Trade in Services (GATS)

JEL-codes: F13; F15; F18; F21; F53; G18; G21; G24; G28; K32; K33; Q27; Q28; Q48.

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Introductory Remarks

Energy constitutes the biggest business in the world economy, with a turnover of approximately US$ 1,7-2 trillion on an annual basis[1] with energy demand mounting.[2] More obviously than ever before, the quest for sufficient and diversified energy supplies which will ensure economic sustainability and energy security has become part and parcel of foreign policy. In most cases, such energy security is achieved through the import of energy produced from conventional energy sources. However, several studies have unequivocally highlighted the deleterious effects that production, distribution and use of fossil fuels may have on the environment and the urgent need to introduce low-carbon emitting energy technologies and develop renewable, sustainable energy resources.[3]

Recognizing that these negative externalities go beyond national borders[4] and thus put at risk global commons,[5] several multilateral instruments were adopted to achieve climate change mitigation in the last two decades.[6] The United Nations Framework Convention on Climate Change (UNFCCC) in 1992[7] and the ensuing adoption of the Kyoto Protocol in 1997[8] are the most prominent instruments to date that have attempted to tackle the negative impact of anthropogenic emissions of carbon dioxide and other gases on the atmosphere. Quite modestly, the UNFCCC aims to stabilise

[1] UNCTAD, 'Energy Services in International Trade: Development Implications', TD/B/COM.1/EM.16/2, 18 June 2001, 3.
[2] Energy demand will rise by 50% the next 20 years, with over 70% of this increase stemming from developing countries. International Energy Agency, *World Energy Outlook 2007*, p. 4.
[3] See Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2007: Synthesis Report* (2007), pp. 36-41.
[4] N. Stern, *The Economics of Climate Change – The Stern Review* (2006), at 27 *et seq*.
[5] Note that WTO Members early identified the need for multilateral cooperation to address environmental concerns. Report (1996) of the Committee on Trade and Environment, WT/CTE/1, 12 November 1996, para. 171, Section VII of the Report of the General Council to the 1996 Ministerial Conference, WT/MIN(96)/2, 1996.
[6] Freestone, 'The UN Framework Convention on Climate Change, the Kyoto Protocol, and the Kyoto Mechanisms' in D. Freestone and C. Streck (eds), *Legal Aspects of Implementing the Kyoto Protocol Mechanisms: Making Kyoto Work* (2005), at 3.
[7] According to the Convention, climate change refers to a change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods. See UNFCCC, Art. 1:2.
[8] UNFCCC, 'Kyoto Protocol to the United Nations Framework Convention on Climate Change', FCCC/CP/1997/L.7/Add.1, reprinted in 37 International Legal Materials (1998) 22. The Kyoto Protocol was adopted in March 1998 by 186 countries (Decision 1/CP.3) and entered into force on 16 February 2005.

greenhouse gas (GHG) emissions at a level that prevents any anthropogenic interference with the climate system.[9] The Kyoto Protocol to the UNFCCC is however more ambitious in that it sets up the framework for the first ever global, market-based scheme aimed at reducing emissions through trading of emission rights. In this respect, industrialised countries have agreed on binding and enforceable obligations and emission reduction commitments.[10] More recently, in Bali, countries recognized that a new international agreement which enables and supports long-term (i.e. beyond the year 2012) co-operative action is warranted for a smooth transition to a low-carbon and sustainable economy.[11] Acknowledging the conflicts that the co-existence of the UNFCCC and the multilateral trading system may bring about, the Convention provides in its Article 3:5 that actions to tackle climate change, notably taken at the unilateral level 'should not constitute a means of arbitrary or unjustifiable discrimination or a disguised restriction on international trade'.[12]

When it comes to climate change mitigation and adaptation, the recent erosion of state power has led to the indispensable involvement of the private sector in the implementation of mechanisms and projects addressing energy and climate change- or environment-related issues.[13] In recent years, several innovative market-based schemes that allow trading of units, rights, credits, allowances or certificates have appeared. For our purposes, a distinction should be made between, on the one side, schemes allowing the trading of emission rights or allowances such as the Kyoto Protocol or the EU Emissions Trading Directive[14] and aiming at the reduction of

[9] UNFCCC, Art. 2.
[10] These countries are listed in Annex I of the UNFCCC. It bears mention that the UNFCCC is based on the principle of common but differentiated responsibilities and respective capabilities. See UNFCCC, Art. 3:1.
[11] See UNFCCC, 'Bali Action Plan', Decision 1/CP.13.
[12] For an interpretation of these concepts that mirror the wording of the *chapeaux* of Article XX GATT and XIV GATS, see Cottier, Delimatsis and Diebold, 'Article XIV GATS' in R. Wolfrum, P.-T. Stoll and C. Feinäugle (eds), *WTO – Trade in Services*, Max Planck Commentaries on World Trade Law (2008), at 321-326.
[13] See United Nations Environment Programme (UNEP), *Global Environmental Outlook (GEO 4) – Environment for Development* (2007), p. 483.
[14] Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC [2003] OJ L 275/32, as amended by the Directive 2004/101/EC. In January 2008, as part of its 'Climate Action and Renewable Energy Package', the Commission put forward a proposal for amending the EU ETS Directive to improve and extent its scope. See European Commission, 'Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable energy sources', COM(2008) 19 final, 2008.

GHG emissions, and, on the other side, schemes that set up the framework for the trade of renewable energy (or 'green') credits or certificates[15] and which aim at the promotion of energy production from renewable energy sources (RES).

Because RECs are tradable on the financial markets, a question that inevitably arises relates to the applicability to such transactions of the GATS and the Financial Services Annex as well as of the commitments that WTO Members undertook in their Schedules. Section I provides a brief overview of the international regulation of trade in financial services under the GATS. The mechanics of trading in 'green' certificates and their relationship with emissions trading under the Kyoto Protocol will be analysed in Section II. Section III deals with the alleged dichotomy between trading in emission allowances and trading in RECs. In Section IV, an attempt is made to classify certificates as financial instruments which come under the definition of financial services in the Financial Services Annex to the GATS. Section V concludes by arguing for the complementarity of emissions trading systems with REC trading systems.

I. GATS and Financial Services

The GATS is the first multilateral, legally enforceable agreement dealing with trade and investment in services.[16] Whereas services and trade were considered as a paradoxical combination for decades or even centuries starting with Adam Smith,[17] trade in services, despite the lack of exact data, represents an important part of global trade representing more than 20% of it. All developed economies are now regarded as 'services economies', while developing country economies are increasingly dependent on the performance of the domestic service sector.

Importantly, the GATS also includes a first inventory of regulations relating to international trade in financial services. The financial sector is among the

[15] RECs are also known as green tags, renewable energy credits, tradable green certificates, or, in the US, as Renewable Portfolio Standards. In the EU, RECs are known as Guarantees of Origin.
[16] For a first introduction to the GATS see, among others, Sauvé, 'Assessing the General Agreement on Trade in Services – Half-full or Half-Empty?' 29(4) *Journal of World Trade* (1995) 125.
[17] P. Delimatsis, *International Trade in Services and Domestic Regulations – Necessity, Transparency, and Regulatory Diversity* (2007), at 8.

infrastructural backbones of any modern economy.[18] A growing body of empirical studies demonstrates a strong positive link between the expansion of financial services and long-term economic growth.[19] Indeed, financial services have economy-wide externalities. In addition, financial services are essential inputs in economic development. All branches of economic activity depend on access to financial services. In that sense, financial services are far more important than their direct share in the economy implies.[20] Market-oriented economists insist on avoiding governmental interference except when it comes to 'market failure'.[21] Therefore, governments interfere with financial markets extensively to reduce systemic risk and enhance the safety and soundness of the financial system.[22] Since the financial sector is often considered *sui generis* in that it encompasses certain services which have 'public goods' characteristics and, in turn, public goods provide a set of market failure possibilities, it seems, in principle, that governmental intervention is justifiable.[23] However, economic research has demonstrated that, in fact, the services sectors that are regulated the most such as the financial sector are the ones that possess growth-generating characteristics.[24]

Trade in financial services trade has experienced rapid growth in recent years. Technological progress in communications, the spread of information technology and electronic data processing, the internet-based supply of financial services and the unprecedented levels of multilateral trade liberalisation through the GATT negotiating rounds have given a fillip to the expansion of such trade, particularly in a

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[18] WTO, 'Economic Effects of Services Liberalisation: Overview of Empirical Studies', S/C/W/26/Add.1, 1998.

[19] Eschenbach, Francois, and Schuknecht, 'Financial Sector Openness and Economic Growth' in: S. Claessens and M. Jansen (eds.), *The Internationalisation of Financial Services: Issues and Lessons for Developing Countries* (2000), at 103; also Mattoo, Randeep and Subramanian, 'Measuring Services Trade Liberalization and Its Impact on Economic Growth: An Illustration' 21 *Journal of Economic Integration* (2006) 64.

[20] Kono *et al*, 'Opening markets in financial services and the role of the GATS', WTO Special Studies No 1, 1997, at 7; also Das, 'Trade in Financial Services and the Role of the GATS: Against the Backdrop of the Asian Financial Crises' 32(6) *Journal of World Trade* (1998) 83.

[21] White, 'Competition versus harmonization – An overview of international regulation of financial services' in C.E. Barfield (ed), *International Financial Markets: Harmonization versus Competition* (1996), at 12.

[22] Also G.P. Gilligan, *Regulating the Financial Services Sector* (1999), at 37.

[23] WTO, Council for Trade in Services, 'Financial Services', S/C/W/72, 1998, at 9. For an approach that underscores that financial services have become less special due to technological advances and changing industry structures, see Claessens, 'Regulatory Reform and Trade Liberalization in Financial Services' in A. Mattoo and P. Sauvé (eds), *Domestic Regulation and Service Trade Liberalization* (2003), at 130, 131, 135. According to Claessens, this change would imply that prudential regulations may no longer be necessary under certain circumstances and should be replaced by competition rules.

[24] Mattoo *et al*, above note 19.

cross-border manner (Mode 1 in the GATS parlance). Additionally, the boundaries between financial and non-financial institutions are becoming increasingly blurred, as non-banks, such as telecommunication companies, utilities or retail chains, have entered the retail financial markets and provide several types of financial services. Technological advances also allowed remote trading. The supply of trading services is no longer bound to occur in any physical exchange and thus the need for local markets is diminishing. This has also led to new industry structures, notably in those categories of financial services such as brokerage, trading systems or retail banking that could be unbundled and commoditized easily, offering appealing initial profit margins. The offer of innovative products due to less stringent regulations in those categories of financial services has also been their main characteristic. All these factors have coalesced to increase the significance of the financial sector for the economy overall and ameliorate the conduct of business in this sector in terms of costs and efficiency.

When the agenda for the Uruguay Round was negotiated in the mid-1980s, it was the US financial services industry that put pressure on its government for the creation of multilateral canons regulating trade in financial and other services.[25] Although negotiated intensively during the Uruguay Round, financial services negotiations were extended after the end of the Uruguay Round, mainly owing to strong pressure by the financial services industry in the US, which was seeking substantial improvements in the scheduled commitments under the threat of inscribing broad most-favoured-nation (MFN) exemptions in this sector.[26] After an interim agreement in 1995,[27] the negotiations were ultimately concluded in December 1997 through the adoption of the Fifth Protocol, thereby resulting in the full integration of financial services into the GATS.[28] The substantially improved Schedules of Commitments agreed upon in December 1997 were incorporated into the GATS by means of the

[25] Also Bhagwati, 'Splintering and Disembodiment of Services and Developing Nations' 7(2) *The World Economy* (1984) 133, at 140.
[26] Wang, 'Most-Favoured-Nation treatment under the GATS – And its application in financial services' 30(1) *Journal of World Trade* (1996) 91, at 113; and C. Arup, *The New World Trade Organisation Agreements: Globalising Law through Services and Intellectual Property*, 2000, at 134.
[27] Key, 'Financial Services in the Uruguay Round and the WTO', G-30 Occasional Paper No 54 (1997), at 4.
[28] WTO, 'Fifth Protocol to the General Agreement on Trade in Services', S/L/45, 1997. Also W. Dobson and P. Jacquet, *Financial Services Liberalization in the WTO* (1998), at 80; and Sorsa, 'The GATS Agreement on Financial Services – A Modest Start to Multilateral Liberalisation', IMF Working Paper, WP/97/55, 1997.

Fifth Protocol, which entered into force in March 1999, four years after the establishment of the WTO and only a few months before the beginning of the new Round of services negotiations as foreseen in Article XIX GATS. For WTO Members that participated in the 1997 negotiations but accepted the Fifth Protocol after March 1999, commitments entered into force upon acceptance.[29] The Protocol initially remained open for acceptance until 15 July 1999 and has been reopened for acceptance several times. By the conclusion of the negotiations, over 100 WTO Members had made legally binding commitments in financial services, the second highest number after tourism. All developed countries undertook commitments in all sub-sectors of financial services, whereas developing economies opted for scheduling commitments relating to insurance and banking services rather than to capital market-related services.

Nevertheless, it is commonplace that the financial services commitments undertaken did nothing else than locking in the status quo in most markets during that period.[30] Restrictions on the number of suppliers, the legal form of commercial presence, or the participation of foreign equity remained even after the end of the extended negotiations. The picture was even worse with respect to liberalization of financial services trade through Mode 1.

In scheduling commitments in the financial sector, several Members, mostly OECD countries, used the Understanding on Commitments in Financial Services (hereinafter the 'Understanding'),[31] an optional, auxiliary text containing a 'formula' approach for scheduling commitments.[32] The Understanding provides an *à la carte* approach to scheduling which deviates from the approach provided in Part III of the

[29] Note, however, that commitments may not have been implemented yet in the absence of formal ratification of the Protocol according to the domestic legal order. This is, for instance, the case of Brazil.

[30] See Roy, Marchetti and Lim, 'The race towards preferential trade agreements in services : How much market access is really achieved ?' in M. Panizzon, N. Pohl and P. Sauvé (eds), *GATS and the Regulation of International Trade in Services – World Trade Forum* (2008), p. 87.

[31] Wilkinson, 'The Uruguay Round and Financial Services' in J. Bourgeois, F. Berrod and E.G. Fournier (eds), *The Uruguay Round Results: A European Lawyer's Perspective* (1995), at 415. For the negotiating history that preceded the adoption of the Understanding, see WTO, Committee on Specific Commitments, 'Additional Commitments under Article XVIII of the GATS', S/CSC/W/34, 2002, at 18.

[32] Key, 'Financial Services' in P.F.J. Macrory, A.E. Appleton and M.G. Plummer (eds), *The World Trade Organization: Legal, Economic and Political Analysis*, Volume I (2005), p. 985. Note that, from a legal point of view, the Understanding is a unique WTO document, as it was included in the Final Act of the Uruguay Round but, contrary to the Financial Services Annex, does *not* form an integral part of the GATS.

GATS. With its predetermined set of commitments it has led to higher levels of liberalisation in the sector and was incorporated into the Schedules of Commitments of around 30 Members (counting the EC 15 as one) on an MFN basis. The Understanding provides for the binding of the status quo, it adopts a negative-list approach to scheduling commitments, and embodies a standstill commitment as well as broad liberalisation commitments relating to market access, national treatment, public procurement, and the offer of new financial services.[33] The Understanding does not seek to establish a hierarchy between this document and Part III of the GATS. According to its introductory paragraph, the Understanding '*does not prejudice the right of any Member to schedule its specific commitments in accordance with the approach under part III*' of the GATS, i.e. a given Member is free to add any limitations on market access and/or national treatment even if it undertook commitments in the financial sector based on the Understanding.

Thus, depending on the method of scheduling commitments in the financial sector, WTO Members can be divided into two groups: The first group of countries undertook specific commitments under Part III of the GATS, whereas countries of the second group, developed for the most part, voluntarily assumed bolder liberalisation obligations as set out in the Understanding. Due to their more competitive financial service capacity and their ability to explore new markets through further liberalisation of that sector, several countries found the approach that the Understanding offered more interesting.[34] This is another illustration of the GATS variable geometry. At the insistence of the overwhelming majority of Members, those that had not made commitments under the Understanding would nevertheless benefit from the greater financial services liberalisation on which the limited number of Members adopting the Understanding agreed.[35] This peculiar constellation, however, allowed for free-riding behaviour.

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[33] Paragraph B.7 and D.3 of the Understanding. The purpose of this provision, which was strongly supported by the U.S. financial services industry, is to allow innovative products introduced by financial institutions in their home countries – and approved by the competent home-country authorities – also to be introduced by their offices in the host countries even if these services are not yet supplied in these jurisdictions.

[34] Of course, the insistence of the financial industry on achieving tangible results also explains the breadth of the commitments undertaken. Also Sauvé and Steinfatt, 'Financial Services and the WTO: What Next?' in R.E. Litan, P. Masson and M. Pomerleano (eds), *Open Doors: Foreign Participation in Financial Systems in Developing Countries* (2001), pp. 352-353.

[35] WTO Members also benefited from extensive negotiations among Japan, the EC and the US that led to the scheduling of additional commitments regarding financial services. Also Woodrow, 'The 1997

According to the Financial Services Annex, financial services include any service of a financial nature provided by a financial service supplier, including all insurance and insurance-related services (eg., direct insurance, insurance intermediation), as well as all banking and other financial services (eg., deposit taking, lending, asset management and trading).[36] The list of financial services is extensive but non-exhaustive. The classification used in paragraph 5 is fairly broad and flexible. It is no coincidence that Members consider this list to be relevant to the current services negotiations and they are encouraged to use this list rather than the W/120 one.[37]

In turn, financial service suppliers are defined as natural or juridical persons who supply financial services.[38] Importantly, those juridical or natural persons who are not yet providing financial services in the territory of the prospective host country or even in the territory of the Member where they reside are also considered as financial service suppliers, and thus benefit from the rights that flow from the GATS. Arguably, the GATS drafters intended to regard as financial service suppliers also those suppliers that are at the exploratory stage of a prospective commercial presence.[39]

The Financial Services Annex stipulates that only private entities can fall under the term 'financial service supplier'. In general, credit institutions, financial conglomerates, brokerage firms, insurance firms and non-bank financial intermediaries provide financial services, covering a wide range of different activities. Nevertheless, private entities that perform functions usually carried out by central banks or monetary authorities are considered as public authorities when exercising those functions, and thus fall outside the scope of the Financial Services Annex. If the private entities in question fulfil these criteria, then they would arguably be regarded as supplying a service 'in the exercise of governmental

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World Trade Organization Accord on Financial Services: Its Impact and Implications for the World Insurance Industry' 25(1)*The Geneva Papers on Risk and Insurance* (2000), at 78.

[36] Financial Services Annex, para. 5(a).

[37] WTO, Council for Trade in Services (Special Session) and Committee on Trade in Financial Services, 'Liberalization of Financial Services', Communication from Australia *et al.*, TN/S/W/43, S/FIN/W/43, 2005, p. 2.

[38] Financial Services Annex, para. 5(b).

[39] Also Dobson and Jacquet, above note 28, p. 100.

authority', that is, neither on a commercial basis nor in competition with one or more service suppliers.[40]

II. RECs: Definition, scope, context, mechanics

RECs are an important tool not only for the development of clean energy technologies to combat climate change, but also in the attempt to diversify a country's energy supply and thereby ensure energy security.[41] Eligible RES can be, *inter alia*, wind power, biomass, biodiesel, solar power, wave power and small-scale hydropower.[42] Nevertheless, the sources that are eligible vary depending on the priorities regarding domestic energy policy and renewables, on consumer preferences, and/or the geographical idiosyncrasies of a given country. Currently, countries such as Sweden, Belgium, the Netherlands, Italy, the United Kingdom, and also the US (albeit not at a national level), Japan and Australia have implemented mandatory or voluntary schemes[43] that promote energy supply from RES through the use of a system based on the issuance and trading of RECs.[44] A number of utilities from several European countries have also developed and tested a harmonised voluntary pan-European scheme with tradable certificates, the so-called RECS (Renewable Electricity Certificate System also known as European Energy Certificate System).

As implied earlier, a REC system is usually based on a government's decision to use a renewable energy quota obligation as the support mechanism for the use of renewable electricity. This quota obligation is administered by a system of tradable RECs. The possession of a specific number of RECs confirms that a supplier or distribution company has complied with the minimum share obligation. Once a year the RECs are redeemed and the competent authority verifies the compliance of the

[40] Art. I:3(c) GATS.
[41] RECs should be distinguished from White Certificates, which are issued to comply with energy *efficiency* obligations imposed on suppliers. The issuance of a White Certificate confirms that the requested energy savings were made.
[42] Large-scale hydropower is considered as non-sustainable.
[43] For an analysis of these schemes, see Baron and Serret, 'Renewable energy certificates: trading instruments for the promotion of renewable energy' in OECD (ed), *Implementing Domestic Tradeable Permits – Recent Developments and Future Challenges* (2002), at 111.
[44] In 2007, 12 EU MS had in place a system based on RECs as part of their renewable energy promotion policy. See REN21, 'Renewables 2007: Global Status Report', p. 23.

producers and distributors with their obligations. In the case of non-compliance, the producer or distributor responsible will be fined.

A RES generator benefits from two different sources of income: the first stems from vending the physical electricity produced on the grid at the market price, while the second is associated with the number of 'green' certificates that it sells and corresponds to the renewable energy produced. The possession of a REC is a piece of evidence that entitles its holder to receive production support, which consists of the additional income generated through the sale of the green certificate. This second source of income can be seen as a reward for the environmental benefits that renewable energy technologies generate vis-à-vis conventional energy sources.[45] The objective is that, in the medium or long run, renewable energy will be able to compete with traditional sources without public support, for example, in the form of tax breaks, direct subsidies and payments etc. In this regard, it should be noted that one of the reasons that renewable energy has difficulties in competing with conventional energy sources at present is that the latter are subsidised directly or indirectly, and sometimes heavily. Furthermore, the current market prices of fossil fuels and nuclear power do not internalise the negative externalities generated.[46]

A REC is typically created when one MWh of electricity is produced from a qualified RES. In this respect, a REC is also an accounting tool which proves that the amount of energy from RES was indeed produced. More specifically, RECs are intangible, tradable financial assets reflecting the commodity created by unbundling the environmental attributes of one MWh of electricity from a RES.[47] They take the form of electronic records administered through software that allows the issuance, tracking and registration of RECs, which are deposited and withdrawn in a central electronic registry of accounts of RES generators. Since RECs can be unbundled from the underlying physical electricity and traded independently in their electronic

[45] Morthorst, 'The development of a green certificate market' 28 *Energy Policy* (2000) 1085, at 1086.
[46] Menanteau, Finon and Lamy, 'Prices versus quantities: choosing policies for promoting the development of renewable energy' 31 *Energy Policy* (2003) 799, at 800-801.
[47] Gillenwater, 'Redefining RECs (Part 1): Untangling attributes and offsets' 36 *Energy Policy* (2008) 2109. Of course, RECs can also be sold bundled with the underlying physical electricity. Such a requirement may be in place in order to promote local promotion and generation of RES. See Holt and Wiser, 'The Treatment of Renewable Energy Certificates, Emissions Allowances, and Green Power Programs in State Renewables Portfolio Standards' (2007), p. 3, available at: http://eetd.lbl.gov/ea/ems/reports/62574.pdf (accessed June 2008).

form, they allow electricity suppliers, distribution companies or even consumers,[48] depending on the relevant legislation in force by the national system at issue, to purchase only the environmental attributes of electricity that was produced elsewhere.[49] They also allow financial service suppliers to act as intermediaries for the finalization of such purchases.

The electricity generated will be sold as regular electricity. This means that the generation of renewable energy may be located on the other side of the national territory or even in another country, but the 'green' attributes can still be sold anywhere provided that the countries involved mutually recognise their tradable certificate systems so that certificates issued abroad can be used to comply with the domestic minimum share obligation. Then, cross-border trade of certificates appears to be feasible. In the end, the renewable energy is produced somewhere on the globe and therefore the positive impact on the environment will occur.

RECs can be bought in order to comply with the imposed demand, that is, the minimum quota obligation relating to renewables that the government has stipulated, but they can also be bought, for instance, by environmental groups, to support the development of RES. Individual companies can also buy RECs in an attempt to strengthen their environmental-friendly profile. RECs can also be part of industry-driven, voluntary environmental-friendly markets that aim to promote RES e.g. in the context of companies' corporate social responsibility (CSR) programs. Finally, RECs can be imported in order for the importing country to meet its national renewable energy targets. For instance, pursuant to the EU Renewables Directive,[50] aside from the overall EU target of 21% of electricity generation stemming from RES, each EU

[48] Even when consumers are called upon to consume a minimum amount of renewable-based electricity, it will more often than not be the distribution companies/retail suppliers which will be liable for the compliance (or lack thereof) of their consumers with the obligation to consume a given percentage of electricity from RES. This compliance will be evidenced by the submission of the corresponding number of RECs. Also Morthorst, above note 45, 1088.

[49] A REC will more often than not include the following information: a unique ID number; information about the producer; the date of issuance and the period of production that led to the issuance of this REC; unit and amount; the location and capacity of the plant; the RES used; its expiration date, if applicable; the support received for the production of renewable energy; and the environmental benefit, that is, how much pollution has been avoided due to the use of renewables in the production of electricity. This information allows double counting to be avoided and offers protection against erroneous guarantees of origin. All this information should be supplied and verified by the national issuing body, which is sometimes the national energy regulator itself.

[50] Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market [2001] OJ L 283/33, as adapted by the Directive 2006/108/EC relating to the accession of Bulgaria and Romania.

Member State (MS) has committed to meeting individual national targets to this end. Importation of RES-E produced in another MS would be possible in order for the importing MS to meet its national target. In this case a guarantee of origin, i.e. a proof of the green nature of the electricity, would ensure the avoidance of double counting of the energy produced. In this respect, the directive calls for the establishment at the national level of the necessary mechanisms for the issue and mutual recognition of guarantees of origin regarding electricity generated in another MS.[51]

The price at which these certificates are bought and sold represents the premium value that markets place on 'green' energy. Prices may depend on the location of the facility producing the certificates; the type of RES and the power created; the supply and demand situation (for instance, inelastic demand together with unstable production of electricity due to weather conditions); the level of penalties for non-compliance; or even whether the certificate will be used by the purchaser to comply with a renewables minimum share obligation.[52] Research shows that prices of RECs can fluctuate significantly, especially when the minimum share (quota) is set too high.[53] This insecurity may deter potential investors from entering the market of renewables.[54] This, in turn, would lead to a small number of participants and an ensuing lack of liquidity, i.e. thin trading. Price volatility can be neutralised through the use of derivatives, eg. futures with long-term contracts that would estimate the profitability of the projects at issue, or by allowing borrowing and banking. Allowing borrowing and banking, however, presupposes that the validity of the certificates will not expire at the end of the year, but will last for a longer period. This would allow the transfer of certificates to the coming years in case of excess supply or in the presence of speculations for higher prices in the future for such certificates (banking)[55] or the acquisition of more certificates than a producer, distribution

[51] Ibid, Article 5.
[52] Indeed, compliance markets offer better options for REC trading than voluntary markets.
[53] Meyer, 'European schemes for promoting renewables in liberalized markets' 31 *Energy Policy* (2003) 665, at 669.
[54] Mitchell, Bauknecht and Connor, 'Effectiveness through risk reduction: a comparison of the renewable obligation in England and Wales and the feed-in system in Germany' 34 *Energy Policy* (2006) 297.
[55] In the case of emissions trading, this possibility is called 'pooling'. Under this option, operators can pool their emission allowances and name a trustee who will bear the responsibility to distribute sufficient amounts of allowances in case one of the participating operators fails to comply with its obligations. See, for instance, Art. 28 of the EU Emissions trading Directive, above note 11.

company or consumer actually needs when the price is low so that they are able to cover renewables obligations in the future (borrowing).[56] For this, it is also necessary that the REC system has a significant lifespan.

Another way of avoiding unpredictable fluctuations is the adoption of minimum and maximum prices for certificates by the regulator.[57] While maximum prices (ceilings) would be necessary to avoid abuses in case of a shortage of RECs, minimum prices (floors) are equally – if not more – important at this initial stage of RES development for the short-term viability of the projects entailing renewables. It goes without saying that it is for the governments that establish a REC system to create sufficient demand, for instance, by imposing a minimum purchase obligation on the consumers.[58] Increasing environmental awareness of consumers is also expected to create additional demand for electricity generated from RES and thus aid the development of new renewable resources. In addition, the fact that the certificates issued can be traded either bilaterally or through the already established financial markets may lead to cost-efficient production of renewable energy by the generators that use renewables technology. Finally, the size of a market is also decisive. Bigger markets can counterbalance the shortage of liquidity, narrow spreads and allow for a more cost-efficient development of renewable energy plants with optimal allocation of available resources for the highest possible production of energy.[59] Therefore, several countries, notably in Europe, are looking at the possibility of linking their REC system with similar systems in other countries. For such linkage to be successful, careful monitoring is needed to avoid double counting and ensure the issuance of reliable guarantees of origin. In the medium- or long run, regional markets or even an international market for RECs could emerge.

Setting the conditions for a well-functioning exchange of RECs can imply high administrative costs.[60] It would involve the creation of a mechanism that certifies that the producers generate energy from RES and issues certificates, and thereafter

[56] Morthorst, above note 45, 1093.
[57] Menanteau *et al*, above note 46, 810.
[58] Governments also have the necessary tools to promote the diversity of RES.
[59] Morthorst, above note 45, 1089; also Verhaegen, Meeus and Belmans, 'Towards an International Certificate System – The Stimulating Example of Belgium' in K. Deketelaere, J.E. Milne, L. Kreiser and H. Ashiabor (eds), *Critical Issues in Environmental Taxation: International and Comparative Perspectives*, Volume IV (2005), at 459.
[60] European Commission, 'The support of electricity from renewable energy sources', Communication from the Commission, COM(2005)627 final, 2005, 5.

monitors and controls these processes; the establishment of a registry where certificates would be stored electronically and attributed a unique ID number; careful accounting and auditing to avoid, *inter alia*, double counting; and a surveillance mechanism that would lead to the imposition of penalties whenever the obligations of the RES producers vis-à-vis minimum energy generation from RES were not met. Other drawbacks of REC systems may include the lack of fair competition when different technologies (for instance, wind and solar energy) compete on the same market and benefit from the same support or that such systems, due to their inherent complexity and the high transaction costs, may discourage small-scale producers of renewables.[61]

III. The Dichotomy Between Emission Trading and Trading in RECs

The Kyoto Protocol, in its Article 17,[62] provides the framework for the first global scheme of trading of emission rights for use in the fight against the global warming potential of GHG emissions.[63] For the countries that ratified the Kyoto Protocol, there is a set of legally binding emission limits and commitments to reduce GHG emissions. Instead of opting for command-and-control regulation and having recourse to mere tax measures in order to achieve their commitments, several countries that ratified the Protocol adopted a market-based mechanism that would allow buying and selling of emissions allowances (Kyoto Units),[64] the so-called emissions trading scheme (ETS). The Protocol allows the reduction of emissions abroad and hence Parties can meet their commitments through the transfer or

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[61] Agnolucci, 'The effect of financial constraints, technological progress and long-term contracts on tradable green certificates' 35 *Energy Policy* (2007) 3347, at 3348.

[62] Article 17 of the Kyoto Protocol reads:

> The Conference of the Parties shall define the relevant principles, modalities, rules and guidelines, in particular for verification, reporting and accountability for emissions trading. The Parties included in Annex B may participate in emissions trading for the purposes of fulfilling their commitments under Article 3. Any such trading shall be supplemental to domestic actions for the purpose of meeting quantified emission limitation and reduction commitments under that Article.

[63] For a comprehensive analysis of the Article 17 mechanism, see de Witt Wijnen, 'Emissions Trading under Article 17 of the Kyoto Protocol' in D. Freestone and C. Streck (eds), *Legal Aspects of Implementing the Kyoto Protocol Mechanisms: Making Kyoto Work* (2005), at 403.

[64] Ibid., p. 407; also Wemaere and Streck, 'Legal Ownership and Nature of Kyoto Units and EU Allowances' in D. Freestone and C. Streck (eds), *Legal Aspects of Implementing the Kyoto Protocol Mechanisms: Making Kyoto Work* (2005), p. 44.

acquisition of Kyoto Units worldwide.[65] Each Kyoto Unit, that is, each entitlement to emit, represents one metric tonne of CO_2 equivalent.[66]

When compared to command-and-control instruments, emissions trading appears to be a fairly cost-effective mechanism for reducing emissions. At the EU level, it was demonstrated that emissions trading can reduce the cost of meeting the Kyoto commitments that the EU has undertaken by 35 per cent, representing a benefit of €1,3 billion per year until 2012. In the EU alone, the total size of the emissions trading market is estimated at €5–10 billion per year.[67] Hence, services related to emissions trading, such as brokerage, accounting or verification is a new but very promising and lucrative services sector (or sub-sector of financial services, as will be discussed below). Again, for the time being, it appears that only large consulting firms and financial institutions from developed countries have the financial savvy to supply such services and frame deals among entities wishing to buy and sell emission rights and thus, business opportunities are not yet evenly distributed between developed and developing countries. Nevertheless, developing countries are expected to achieve sustainable development notably through the CDM. The current lack of expertise when it comes to emissions trading markets inevitably hampers the achievement of this goal.[68]

Whether trading in RECs can be compatible with an emission trading scheme is a matter that can raise a lot of controversy at first blush.[69] Interaction between the two systems would rather take two different forms: First, interaction would mean that the

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[65] Trading is also allowed in the other two GHG reduction systems of the Kyoto Protocol, that is, the Joint Implementation (JI) and the Clean Development Mechanism (CDM). According to the UNFCCC, Annex I parties (developed countries, for the most part) can invest in mitigation activities in other countries and thus generate emission reduction credits that can be used for the purpose of complying with their obligations. In 2007, almost two-thirds of the transacted volume in the CDM market stemmed from carbon contracts from clean energy (i.e. energy efficiency and renewable energy) projects. See Capoor and Ambrosi, above note 72, p. 29. This element also proves that, depending on the circumstances, RECs can also be considered when certified emission reductions are calculated.

[66] CO_2 equivalent is the universal unit of measurement used to indicate the global warming potential of each of the six GHGs. It is used to evaluate the impacts of releasing (or avoiding the release of) different GHGs. The six gases and corresponding GWPs are: carbon dioxide (1); methane (21); nitrous oxide (310); halocarbons (HFC) (140 to 11,700); and sulphur hexafluoride (23,900).

[67] Dornau, 'The Emissions Trading Scheme of the European Union' in D. Freestone and C. Streck (eds), *Legal Aspects of Implementing the Kyoto Protocol Mechanisms: Making Kyoto Work* (2005), at 417.

[68] UNCTAD, above note 1, 18.

[69] See NERA Economic Consulting, 'Interactions of the EU ETS with Green and White Certificate Schemes: Summary Report for Policy Makers', Study commissioned by the European Commission DG Environment (2005), p. 19.

two schemes would co-exist. However, interaction could also imply that companies could use the CO_2 reductions that are implicit in a REC in order to comply with the obligations relating to emission reduction. While the first type of interaction would not pose any problems and in fact does occur in several jurisdictions, the second type of interaction is quite controversial and, in theory at least, would inevitably lead to double counting unless a sophisticated monitoring and accounting mechanism is in place.

In the emissions trading schemes, the tradable item is an entitlement to release a certain quantity of GHG emissions into the atmosphere. In a 'green' certificate market where RECs are traded, governments impose on the producers or distribution companies and retail suppliers the obligation that a minimum share of the electricity generated or supplied to the retail consumer (usually expressed as a percentage of the electricity portfolio of a producer or distributor) stems from deployment of RES.[70] Depending on the amount of electricity produced by such sources, producers receive a number of certificates which they can sell to potential buyers who cannot meet their aforementioned obligation. While nowadays fossil fuels account for around 87% of global energy consumption, a 'green' certificate system allows the development of the use of renewables from low-cost sources and the gradual reduction of countries' emissions and dependence on non-renewable fossil fuels. At a policy level, a distinction is drawn between emissions trading and REC schemes: While REC schemes are both climate change mitigation and adaptation instruments, as promotion of renewables forms essential part of both *mitigation* and *adaptation* strategies to climate change, reduction of emissions is the main climate change *mitigation* tool.

Again, this division may not be sustained so easily in practice. Furthermore, this difference does not change the fact that both emissions trading and 'green' certificate schemes essentially aim at the betterment of the environment by avoiding harmful emissions from fossil fuels; directly through setting emission caps in an ETS and indirectly through a REC scheme that promotes energy generation from RES.[71] Another common feature of these two types of trading markets is that their potential

[70] Espey, 'Renewables portfolio standard: a means for trade with electricity from renewable energy sources?' 29 *Energy Policy* (2001) 557, at 560.
[71] Also European Commission, above note 14, p. 4.

is enormous, if developed properly. The future GHG credit trading market, for instance, is expected to grow from US$64 billion in 2007[72] to over US$3 trillion per year by 2020.[73] Regarding the green certificate market, in the US alone, the value of the market is expected to be over US$700 million in 2010.[74]

Arguably, 'green' certificates systems, when designed properly, are compatible and can co-exist with or be integrated into other schemes aiming at climate change mitigation such as emissions trading.[75]

A REC system should be considered as a complement to an ETS. The latter can lead to the reduction of GHG emissions, but not necessarily to the expansion of the use of energy generated by renewables. For such an expansion to occur, the establishment of a system with RECs is necessary. Such a system, when carefully designed and implemented, can stimulate the generation of energy from RES and boost innovation. Viewed from this angle, then, an emissions trading scheme and a system with RECs (or any other support scheme relating to RES) do not appear to be in conflict with one another.

IV. Trade in RECs and the supply of financial services

As noted above, in a system with RECs, the electricity produced and its environmental attributes in the form of a 'green' certificate, that is, its 'greenness', are detached at the point of energy generation from RES and traded individually. Thus, a distinct market for the environmental value of the certificates is created. Such a system is another regulatory instrument that assists a government in achieving its

[72] For the sake of comparison, the value of this market in 2005 was only US$11 billion. See Capoor and Ambrosi, *State and Trends of the Carbon Market 2008*, World Bank (2008), p. 59.
[73] Point Carbon, 'Carbon Market Transactions in 2020: Dominated by Financials?', 2008. This study assumes that by 2020 ETS are operational in the EU, US, Australia, New Zealand, Canada, Japan, Korea, Mexico and Turkey.
[74] Holt and Bird, 'Emerging Markets for Renewable Energy Certificates: Opportunities and Challenges', National Renewable Energy Laboratory (NREL) Technical Report, 2005, p. 2.
[75] Morthorst, 'Interactions of a tradable green certificate market with a tradable permits market' 29 *Energy Policy* (2001), 345-353; and Gillenwater, 'Redefining RECs (Part 2): Untangling certificates and emission rights' 36 *Energy Policy* (2008) 2120; also Baron and Serret, above note 43, p. 131.

national targets for renewable energy. It can also be viewed as an accounting system that serves to certify energy production from renewables.[76]

In the exchange trading of RECs, there are several actors that can participate: producers; distribution companies; NGOs; or, more broadly, entities that have to meet the minimum share obligation and thus need to submit a given number of certificates at the end of a pre-specified period. This latter category can also involve consumers, depending on the regulatory regime at issue. This is a major difference between a REC system and the ETS as set out by the Kyoto Protocol. Under the latter, even if entities are authorized to participate in transfers and acquisitions of emission rights under Article 17 of the Kyoto Protocol, it is the Parties to the Protocol, i.e. the sovereign states, that are responsible for fulfilling their obligations under international law and ensuring that the participation of private entities in the trading of emission rights is in line with the Parties' commitments and consistent with the applicable rules.[77]

For instance, the new emissions trading Directive of the EU[78] provides that transfer of emission allowances can take place (i) between natural or legal persons within the EU; and (ii) between persons established in the EU and persons in countries listed in Annex B to the Kyoto Protocol and which have ratified the Protocol.[79] For this, a previous agreement is required between the Community and the country at issue regarding the mutual recognition of their respective emissions trading schemes.[80] However, the Directive and the emissions trading it introduces are the means for the Community to achieve its emission limitation and reduction commitments stemming from the Kyoto Protocol.

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[76] The 'White and Green' Consortium, 'A qualitative analysis of White, Green Certificates and EU CO_2 allowances – Phase II of the White and Green project', Copernicus Institute, Utrecht University (2004), p. 15.
[77] De Witt Wijnen, above note 63, p. 411.
[78] Directive 2003/87/EC, above note 14.
[79] Thus, US companies are in principle excluded from participating in this scheme. Nevertheless, US parent companies can effectively participate in emissions trading and supply related services, such as brokerage and verification services, through their subsidiaries established in the EU market through the 'single passport' rule. For a discussion of these issues, see Wilder, 'Can Companies or Entities from a Non-Party to the Kyoto Protocol Participate in the Flexible Mechanisms?' in D. Freestone and C. Streck (eds), *Legal Aspects of Implementing the Kyoto Protocol Mechanisms: Making Kyoto Work* (2005), at 257.
[80] Ibid, Arts. 12, 25.

Brokers can also be allowed to participate in the trading of RECs and directly buy or sell RECs on behalf of their clients. As trading of RECs is most likely to occur electronically, the existence of a registry where all participating entities maintain an account is essential. Because of the high level of expertise needed when trading with transferable assets takes place, brokers and traders play a central role in the final shape of any deal, notably when the number of certificates and, *a fortiori*, the amounts of money at stake exceed a certain level. While brokers and financial institutions themselves do not have an obligation regarding emission reduction or minimum quota obligations relating to renewables, they are there to act as intermediaries to close deals between companies that have an obligation to reduce emissions or fulfil a minimum quota obligation regarding energy produced from renewables. As the number of participants in trading grows, the monitoring and control of the trading taking place will become more difficult. On the other hand, a bigger market for RECs can ensure higher levels of liquidity, more reasonable and transparent prices with predictable fluctuations, and low probability of market manipulation.[81] Simple rules for trading and the standardisation of contracts also make the market attractive for many stakeholders and allow small- and medium-sized companies to participate as intermediaries in the trading of RECs. This, along with the creation of common standards regarding the information that a REC should include, could eventually lead to the mutual recognition of different REC systems or the harmonization and standardization of rules on the issuance, registration, verification, auditing and redemption of RECs with a view to creating a global REC system.

Trading of RECs can take place on a bilateral, ad hoc basis (over the counter-OTC). In this case, the amount of RECs traded can be significant. In bilateral trading, the RECs are sometimes sold together with the RE electricity produced. The result of a bilateral trade should be reported to the registry of RECs so that the transfer is registered. This is not necessary when trading occurs through an electronic trading platform or an exchange in real time, e.g. in an electricity trading exchange, as the registry would be connected with the platform and would take account of the transaction directly. Such a platform leads to more transparency and competition,

[81] Agnolucci, above note 61, 3348.

much as securities exchange is set and functions nowadays.[82] These two ways of trading RECs are in competition with one another and are expected to reduce trading costs.

Trading can involve direct purchases of certificates in primary markets, but it can also entail trading with derivatives which have underlying RECs in secondary markets. In the former case, there is a list of intermediary services involved such as brokerage or banking and insurance services. In the latter case, buyers and sellers exchange derivative financial instruments for investment purposes. For instance, transactions can include financial derivatives such as 'call options', according to which a company buys the right, but not the obligation to buy a specific quantity of certificates at a fixed price at a specified future date; or they can involve futures contracts. Both trading options can be attractive for financial service suppliers, as trading takes the form of standard commodity trading where the supply of the related financial services can also occur in a cross-border manner. For the producers, such options are also very appealing, since they allow for a better risk management. Excessive price volatility of RECs is thereby avoided.

As to the entities that will be authorised to be active in the trading with RECs, it is for the government, when designing the trading scheme, to establish clear eligibility criteria for the participating entities. For financial institutions and brokers, such criteria may include prior acquisition of a licence by the competent authority or prudential requirements such as capital adequacy and disclosure requirements or sufficient assets. They may also require the establishment of such entities in the territory of the country where the trading platform is set. It bears mention that, under the EU Directive on Financial Instruments (MiFID), MS are required to allow in their regulated markets, e.g. their power exchange, the participation of 'remote members', that is, entities established in another MS. The directive requires that MS make all the necessary arrangements to facilitate access to and use of their systems by such entities.[83] As the MiFID establishes several requirements relating to

[82] Transparent trading systems are considered to reduce price volatility. See Allen, Hawkins and Sato, 'Electronic trading and its implications for financial systems', in Bank for International Settlements (ed.), *Electronic finance: a new perspective and challenges*, BIS Papers No 7 (2001), p. 44.

[83] Directive 2004/39/EC of the European Parliament and of the Council of 21 April 2004 on markets in financial instruments amending Council Directives 85/611/EEC and 93/6/EEC and Directive 2000/12/EC of the European Parliament and of the Council and repealing Council Directive 93/22/EEC [2004] OJ L 145/1, Arts 31, 33, 42.

brokerage/intermediation services and pre- as well as post-trading and RECs are tradable instruments of a financial nature, it is arguably applicable to trading of RECs.

V. Issues of Sectoral Classification and the Applicability of the GATS

Until recently, energy-related services were supplied by state-owned vertically integrated monopolies either domestically or cross-border.[84] Hence, there was no scope for any trade whatsoever. However, as a result of intensive liberalisation attempts, core energy services (eg transport, transmission, and distribution) were unbundled and are now provided by private entities (sometimes former public monopolies which have been privatised) under conditions of competition in many countries. This trend resulted in a great deal of confusion as to whether specific economic activities related to energy raise questions that should be dealt with under the GATT, the GATS, or both.[85] It has also revealed possible imbalances that may appear due to this 'sorting out' of previously fused activities.

Trade in RECs can raise several issues of relevance to the WTO[86] and more particularly the GATS and the regulation of trade in financial services. Energy or energy-related services is not a separate comprehensive category in the W/120, the Services Sectoral Classification List. The same is true for the United Nations Central Product Classification on which the W/120 is based. Instead, energy-related services, e.g. transport, distribution, construction, engineering, research and development and consultancy are dispersed across several existing sectoral classifications within the W/120. Only three subsectors in the W/120 are energy-specific: pipeline transportation of fuels (under 'transport services'), services incidental to energy distribution and services incidental to mining (under 'business services').[87] Overall,

[84] See WTO, Council for Trade in Services, 'Energy Services', Background Note by the Secretariat, S/C/W/52, 1998, p. 1.
[85] Consistent WTO case-law confirms that the two Agreements are not mutually exclusive. Appellate Body Report, *EC–Bananas III*, WT/DS27/AB/R, DSR 1997:II, 591, para. 221; also Appellate Body Report, *Canada–Autos*, WT/DS142/AB/R, DSR 2000:VI, 2985, paras. 159-166.
[86] See generally Renewable Energy and International Law Project (REIL), 'Post-Hearing Submission to the International Trade Commission: World Trade Law and Renewable Energy: The Case of Non-Tariff Measures', 2005.
[87] WTO, above note 84, p. 3.

Members' commitments in energy-related services were limited at the closure of the Uruguay Round negotiations.[88] Nevertheless, because the final consumption of energy is the outcome of a series of associated activities, market access may be a prerequisite in a considerable number of services sectors for energy service suppliers to provide their services adequately. This argument would call for the creation of a new entry in the Services Classification List that would allow Members to use energy-related services as a cluster and undertake commitments that would be consistent with one another to facilitate the supply of such services. As it stands, the current Classification List allows for inconsistencies and the undertaking of commitments that are difficult to reconcile.

In the absence of an entry that lists energy-related services separately, trading of RECs can be regarded as falling under the provisions of the Financial Services Annex to the GATS. While the certificates are neither 'goods' nor 'services', trading of certificates will involve a series of financial services that financial institutions may supply until a deal for transfer of RECs is concluded, such as brokerage, trust, clearing and settlement. Consultancies and financial institutions can also offer services relating to derivative products trading, such as price hedging instruments that would allow the seller to secure a future income[89] and the buyer to determine his costs. Such risk management services are usually supplied through forwards, swaps, or options in secondary markets. Certificates can also be offered by their owners as collateral against short-term lending.

Under entry number 7 of W/120, and in the Financial Services Annex in a more detailed manner, there are several types of financial services that would allow for trading of RECs to be concluded.[90] In the Services Sectoral Classification List, all financial services that would be involved in trades with RECs are listed under number 7.B f) (Trading). The Financial Services Annex itemises the relevant financial services in a more comprehensive manner. In paragraph 5(a) of the Annex, as noted earlier, financial services are defined in a very broad manner to include 'any

[88] Evans, 'Strengthening WTO Member Commitments in Energy Services: Problems and Prospects' in A. Mattoo and P. Sauvé (eds), *Domestic Regulation and Service Trade Liberalization* (2003), at 174.
[89] For the producer, price hedging allows hedging new investments and hedging the income from already existing plants. Also PriceWaterhouseCoopers, 'Organisation of RE Market and Trading of Green Certificates' (1999), at 73.
[90] Therefore, at first blush at least, it does not seem that services related to trading of RECs would come within the ambit of the category 'new financial services' as defined in the Understanding and described in Section I of this paper.

service of a financial nature'. An illustrative list of the activities falling under this definition follows. Nevertheless, it is worth noting that the list is so detailed and the financial services at issue so broadly described that is hard to visualise an activity that is not already included in the list, notably as far as 'banking and other financial services' are concerned.[91] The trading-related financial services are listed under para. 5(a)(x). For our purposes, RECs would most probably fall under (F). Indeed, the nature of this type of certificates as described earlier leads to the conclusion that they can be categorised as 'financial assets', or at least, fall under the 'catch-all' category of 'other negotiable instruments'. Para. 5(a) (xiii)-(xvi) also encompasses services that will be supplied until a deal is finalised. These include asset management and trust services, settlement and clearing for financial assets, financial information and data processing services, as well as intermediation and other auxiliary services. On the other hand, issuance of certificates would most likely escape the purview of the GATS, as it is typically a task entrusted to public entities within the meaning of paras. 1(b)(iii) and 5(c) of the Financial Services Annex.

For the main obligations of the GATS such as MFN, market access, or national treatment to apply to the transactions relating to trading, Members should have undertaken commitments in the categories of financial services mentioned above (or, in the case of MFN, no MFN exemptions). The level of liberalisation for each Member is reflected in the number of services sectors that are listed in its Schedule of Commitments in conjunction with the number of restrictions that are embodied therein. Thus, the GATS has a variable scope of application, depending on the Member in question. Nevertheless, notably those Members that adopted the Understanding made comprehensive commitments in most categories of financial services that may relate to the trading of RECs and several of them even allow the cross-border supply of such services. Therefore, respecting market access and national treatment will in most cases be required when financial service suppliers seek to supply such services, notably in the case that these suppliers are established in the WTO Member at issue.

In the case of cross-border trade of RECs, there are several issues that need to be clarified. For instance, the delimitation of competences between the supervising authorities of the two countries involved is a thorny issue that calls for regulatory co-

[91] Financial Services Annex, para. 5(v)-(xvi).

operation. Another important issue is the taxability of transfers. Especially in OTC trading, the amounts of money involved can be significant and therefore tax authorities in both countries may be tempted to charge the tax for the transaction in their jurisdiction. Arguably, the price that the seller will get for the REC will be regarded as income and will be taxed accordingly. Because this could be considered as a disincentive to sell and thus could create problems to the proper functioning of a REC market, governments could set a lower tax for such transactions in the context of their strategy to promote renewables. However, if the taxation system does not treat such transactions differently, then the REC price will most likely reflect these charges.

Many of the measures regulating (or hampering) trading in RECs will be a subset of domestic financial services regulation. This means that such measures will often be non-discriminatory and fall under the broader category of prudential regulation measures that ensure the safety and soundness of the system.[92] This would mean that many financial service suppliers may be excluded from providing such services due to fairly demanding (and costly to comply with) requirements relating to available capital, assets, liquidity, or disclosure and reporting. An issue that arises from this conclusion is whether it would be worth envisaging less stringent prudential standards e.g. lower capital or simplified disclosure and reporting requirements, for those companies that deal exclusively with the supply of financial services in these new areas of trading in certificates or emission rights, as in this case the risks for the financial system may not be so straightforward.

Furthermore, granting of licenses may be warranted before any entity is allowed to get involved in trading with RECs. Such licenses could be REC trading-specific, but they can also involve any form of trading services that could exclusively relate to this emerging generation of environment-related products and services. In such cases, the licensing requirements and procedures at issue are typically set by an independent supervisory body, e.g. the national financial services authority. These requirements and procedures would most probably be non-discriminatory and aim to ensure the

[92] Para. 2(a) of the Financial Services Annex provides:

> Notwithstanding any other provision of the Agreement, a Member shall not be prevented from taking measures for prudential reasons, including for the protection of investors, depositors, policy holders or persons to whom a fiduciary duty is owed by a financial service supplier, or to ensure the integrity and stability of the financial system.

quality of the service supplied. In this case, Article VI GATS would come into play, which entails certain transparency and due process requirements.[93]

The multilateral regulation of trade in financial services is, of course, a peculiar case here because there are sector-specific provisions as set out in the Financial Services Annex to the GATS. Thus, the obligations laid down in Article VI and the relevant disciplines that will be adopted at the end of the Doha Round may be in conflict with the prudential 'carve-out', that is, paragraph 2(a) of the Financial Services Annex to the GATS.[94] Arguably, licensing requirements aiming to ensure the solvency and the sustainable operation of the entities in question would come under the purview of the prudential 'carve-out', as they are in place to protect investors/concumers, but also to ensure the operability of the system as a whole. Such requirements, however, would also fall under Article VI and the future disciplines with respect to licensing. Additionally, if a necessity test is adopted at the end of the negotiations on domestic regulation under GATS in line with Article VI:4,[95] then governments imposing such requirements may be called upon to defend the necessity of these requirements.

The wording of paragraph 2(a) suggests that its function is similar to Article XIV GATS, the general exception provision and hence it allows for a considerable margin for manoeuvre to the national regulatory authority when it comes to the adoption and enforcement of such measures. Nonetheless, the second sentence of paragraph 2(a) provides that prudential measures covered under this provision and which are otherwise GATS-inconsistent should not be used as a means of avoiding GATS obligations, i.e. also those obligations deriving from Article VI such as the obligation to establish review mechanisms for adverse administrative decisions laid down in paragraph 2 of Article VI. This would mean that in case a Member adopts a prudential measure pertaining to the regulation of the domestic financial sector that violates Article VI and the future disciplines on domestic regulation, but seeks to justify the measure under the prudential 'carve-out', the WTO adjudicating bodies will apply a two-tier test. First, they will need to rule on the issue whether this

[93] For an analysis of these requirements, see Delimatsis, 'Due Process and "Good" Regulation Embedded in the GATS – Disciplining Regulatory Behaviour in Services through Article VI of the GATS' 10(1) *Journal of International Economic Law* (2007), pp. 13-50.
[94] See above note 92.
[95] For more details on the content and the progress of the legal mandate under Article VI:4, see Delimatsis, 'Determining the Necessity of Domestic Regulations in Services – The Best is Yet to Come', 19(2) *European Journal of International Law* (2008), pp. 365-408.

measure at stake violates any GATS provision, including Article VI (e.g. objectivity, impartiality, public availability). If so, the WTO judiciary will proceed to the second tier of the test to decide as to whether this measure is used by that Member as a means of avoiding the obligations provided for in Article VI or the future domestic regulation disciplines. This test would probably have many similarities to the test of the chapeau of Article XIV in terms of substance, notably this part of the latter test that relates to the decision whether the application of a given measure does not constitute a disguised restriction to trade.[96]

VI. Conclusion

Trade, finance and investment are at the heart of sustainable development and the promotion of renewables. Only in 2007, new investment in clean energy surpassed US$148 billion, a 60% rise when compared to 2006.[97] This amount accounts for 9.4% of global energy infrastructure investment and 1% of global fixed asset investment.[98] With an increase of US$115 billion in annual investment of RES in the period 2004-2007, it can be plausibly argued that a mobilisation of the necessary capital (notably by the private sector)[99] in order to combat global warming is feasible, as long as the policies chosen favour such a development.

Of course, RECs are only one form of environmental commodity aimed at providing an incentive for the production of electricity from RES. There are also other mechanisms to support energy generation from renewables, the most common of which are: feed-in tariffs, tendering systems and tax incentives. Feed-in tariffs, which are in effect a subsidy granted to producers using RES, has the advantage of investment security and fairly unproblematic access to bank financing, notably when coupled with standardised costs for grid connections and short lead times.[100] On the

[96] For an analysis of this test, see Delimatsis, Cottier and Diebold, above note 12.
[97] UNEP, 'Global Trends in Sustainable Energy Investment 2008 – Analysis of Trends and Issues in the Financing of Renewable Energy and Energy Efficiency', 2008.
[98] Ibid, p. 18.
[99] It is worth noting that only 8% of a total of US$250-300 billion of energy subsidies worldwide goes to RES subsidisation. Fossil fuels continue to have the lion's share in these subsidies with a total of approx. US$180-200 billion. See UNFCCC Secretariat Financial and Technical Support Programme, 'Energy Subsidies: Their Magnitude, How they Affect Energy Investment and Greenhouse Gas Emissions, and Prospects for Reform', 2007.
[100] Meyer, above note 53, 667.

other hand, tendering systems seem to have been abandoned in Europe in favour of feed-in tariff-based systems or systems based on 'green' certificates. Tax incentives are typically used as complementary policy tools to policies which aim at the promotion of renewables. As one can infer, there is a lot of learning-by-doing when it comes to the production of renewable energy and the best scheme to promote it. Governments experiment with several schemes or combinations thereof to find out what may fit best with their domestic conditions. The current state of development in the area of RES can only be regarded as unsatisfactory, as renewable energy accounts for a mere 4.6% of global power generation.[101]

The adopted market-based mechanisms such as trade in RECs or emission rights come as a recognition that private sector-driven solutions can contribute to the reduction of harmful anthropogenic emissions and the promotion of energy generation by RES. There are important issues to discuss in the near future. One of them is how it would be possible to link such mechanisms to achieve more environment-friendly and cost-effective results. Another important issue is how to create markets dealing with trade in renewables that crosses national borders. There is a strong case for international trading in RECs and such initiatives have been already launched, albeit on a voluntary basis for the time being. However, the biggest challenge for sustainable energy enterprises seems to be ensuring streamlined financing. Financial innovation becomes even more pressing, as upfront costs for the use of renewables still remain prohibitive. Solar energy, both in developed and developing countries, seems to be the exception to this rule.[102] Market conditions, including entry barriers and the current financial turmoil, have induced consolidation of the industry. Successful raising of capital for small-scale companies and the creation of effective competitive conditions will remain a challenge in this market for the years to come.

With regard to the GATS, the interest for liberalization in energy services is mounting, as liberalisation efforts loom large in the energy sector worldwide and public awareness rises. In this context, Members may be interested to consider in the medium term whether a unified approach regarding energy-related services and trading of related financial instruments (such as RECs or emission rights) makes

[101] UNEP, above note 97, p. 19.
[102] Ibid, pp. 21-23.

sense. A significant argument in favour of this approach would be that, as things now stand with the current classification system, Members may ultimately realise that they have already undertaken commitments in energy-related sectors, eg. in financial services, that they had not intended to liberalize.