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Emissions Trading

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Traditionally, trading platforms are mainly established for securities. Particularly in Switzerland, the capital markets, which serve as a medium for the trade of securities, are playing – as described by ROLF WATTER¹ – an important economic role for the prosperity of a country. In the meantime, however, it has been acknowledged that other «goods», such as scarce resources, are also suitable for being traded on a specific (electronic) platform. Environmental challenges can be tackled by creating a multi-sector and multi-country emissions trading scheme².

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¹ See RALPH MALACRIDA/ROLF WATTER, *Swiss Corporate Finance and Capital Markets – Legal Aspects*, Basel 2001, 9, 11.

² Already a large number of edited volumes and monographs are published on emissions trading schemes; see, for example, DAVID FREESTONE/CHARLOTTE STRECK (eds.), *Legal Aspects of Implementing the Kyoto Protocol Mechanisms: Making Kyoto Work*, Oxford 2005; MARIAN PEETERS/KURT DEKETELAERE (eds.), *EU Climate Change Policy*, Cheltenham/Northampton Mass. 2006; BERND HANSJÜRGENS (ed.), *Emissions Trading for Climate Policy – US and European Perspectives*, Cambridge 2005; DEBORAH STOWELL, *Climate Trading – Development of Greenhouse Gas Markets*, New York 2005; THOMAS H. TIETENBERG, *Emissions Trading – Principles and Practice*, 2nd ed. Washington DC 2006.

The reason for such an approach lies in the perception that the use of the environment should not be free of charge. As a consequence, economic incentives are provided for enterprises inducing them to minimize negative externalities (so-called internalisation)³.

I. Background

A. Climate Change

The fact that the global climate is changing can be considered as undisputed, in particular after the Peace Nobel Prize 2007 has been awarded to the Intergovernmental Panel on Climate Change (IPPC) and the former US Vice-President AL GORE honouring their efforts regarding climate change⁴. The Intergovernmental Panel on Climate Change, the UN scientific body responsible for climate change science, forecasts a substantial rise of temperatures, which is leading to widespread negative impacts on economies around the world⁵. Some analyses indicate that CO₂ levels will be at their highest level in 20 million years⁶.

Human activities, mainly the burning of fossil fuels for generating power, producing heat and transporting goods, are responsible for the increase of temperatures. These activities cause carbon dioxide emissions and other so-called greenhouse gases. The International Energy Agency (IEA) forecasts an increase of these gases of more than 50% within the coming 20 years, unless political changes take place⁷. Rising temperatures are causing Arctic ice to melt, glaciers to retreat and ocean levels to rise; the latter threatens the inhabitants of low-lying islands and coastal areas worldwide. Further consequences are heavier rainfalls and increased occurrences of hurricanes, floods, and droughts⁸. In order to miti-

³ Vgl. TIMO HOHMUTH, Emissionshandel und deutsches Anlagenrecht, Köln/Berlin/München 2006, 3 ss.

⁴ See The Economist, 2 June 2007, A special report on business and climate change.

⁵ For the permanently updated information see <http://unfccc.int/2860.php>; the newest extensive report of the IPPC was published on November 17, 2007 (<http://www.ipcc.ch>); see also BRETT ORLANDO/CHRISTIAN EHRAT/ALESSANDRO FACCOLI, CO₂ Emissions Trading, in: ROLF H. WEBER (Hrsg.), Stromhandel, Zürich 2007, 65, 66.

⁶ See among others STOWELL (Fn 2), 3 ss.

⁷ This estimation corresponds to the fact that energy constitutes the biggest business in the world economy with energy consumption mounting (see UNCTAD, Energy Services in International Trade: Development Implications, TD/B.COM, 1/EM.16/2, 18 June 2001, 3).

⁸ See ROBERT HOWSE/ANTONIA ELIASON, Domestic and International Strategies to Address Climate Change: An Overview of the WTO Legal Issues, Conference Paper, World Trade Institute

gate the negative effects of climate change, global greenhouse gas emissions have to be significantly reduced.

B. Kyoto Protocol

The approaches leading to a reduction of greenhouse gas emissions have been intensely discussed in international fora; nevertheless, the effectiveness of certain measures with respect to the reduction of emissions as well as their expected economic implications have to be continuously elaborated⁹. On the international level, a first step towards a common understanding has been reached by the adoption of the UN Framework Convention on Climate Change (UNFCCC), which was established based on the assumption that the historical contributions and responsibilities of States represent the problems of climate change¹⁰.

Subsequently, the Kyoto Protocol specified the general objectives of the UNFCCC¹¹. The Kyoto Protocol was adopted on 11th December 1997 and came into force on 16th February 2005¹². The aim of the Protocol is to mitigate the effects of climate change by requiring mandatory emissions limitations (mainly) from developed countries¹³. By now, 175 countries have ratified the Kyoto Protocol, including Russia, China and India¹⁴; however, the United States are notable exceptions thereof. The Kyoto Protocol addresses six greenhouse gases (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride). In accordance with the Protocol, the developed countries (as listed in Annex I) agreed to reduce carbon dioxide emissions to a level being lower than the respective level in 1990; additionally, specific individual targets are set for

(Berne), *International Trade on a Warming Globe: The Role of the WTO in the Climate Change Debate*, 21/22 September 2007, part I; ORLANDO/EHRAT/FACCOLI (Fn 5), 66.

⁹ For a further elaboration of a possibly cost effective framework on the basis of mathematical formulas, including the aspects of transaction costs, administrative costs, and the role of technical change, see TIETENBERG (Fn 2), 25 ss.

¹⁰ A historical background analysis in detail is given by DAVID FREESTONE, *The UN Framework Convention on Climate Change, the Kyoto Protocol and the Kyoto Mechanisms*, in: FREESTONE/STRECK (Fn 2), 3 ss; STOWELL (Fn 2), 18 ss; MARC PALLEMAERTS/RHIANNON WILLIAMS, *Climate change: The international and European policy framework*, in: PETERS/DEKETELAERE (Fn 2), 22, 27 ss.

¹¹ FCCP/CP/1997/L.7/Add.1; 1771 UNTS 107 (reprinted in 37 *International Legal Materials* 22 [1998]); see also FREESTONE (Fn 10), 4/5.

¹² http://unfccc.int/kyoto_protocol/background/items/3145.php.

¹³ http://unfccc.int/kyoto_protocol/items/2830.php.

¹⁴ The countries being bound to reduce their emissions are listed in Annex I to the Kyoto Protocol. So far, China and India are not obliged to reduce their emissions under the terms of the Kyoto Protocol.

each country¹⁵. Two commitment periods are foreseen in the Protocol: the first ended in 2007 and the second is running from 2008–2012. Countries failing to meet their emissions targets in the first commitment period have to compensate the missed difference in the second commitment period with an additional 30% penalty. Switzerland and the European Union for its Member States have committed to reduce their emissions by 8%¹⁶. The Kyoto Protocol was scientifically and politically discussed during the Bali Conference of December 2007 leading to the adoption of the Bali Action Plan¹⁷.

The Kyoto Protocol provides for several measures which are envisaged to combat climate change. The most innovative, but not entirely new approach consists in the establishment of a framework for a trading scheme, as stated in Article 17 of the Kyoto Protocol¹⁸; thereby, the understanding of the contracting States consisted in the assumption that market oriented mechanisms would create incentives for making use of the environment in an efficient manner and thereby would facilitate the achievement of the aimed climate targets. Credits or allowances embody the right to emit specific amounts of CO₂; the total amount of credits is limited to a total sum of allowed emissions. If enterprises are interested to increase their emissions, they have the option of buying more credits from entities that do not need all of their allotted credits, because they pollute less. As a result, this trade burdens the polluters with additional costs, on the one hand, and rewards those entities which reduced emissions, on the other hand¹⁹. Furthermore, a trading scheme could also take into consideration appropriate rules for new entrants²⁰.

When focussing on the wording of Article 17 of the Kyoto Protocol, the interpretation that a direct transfer of credits between two enterprises is intended («transfer and/or acquire») seems to be plausible; however, the Parties of the Conference in Marrakesh (taking place from 29th October to 10th November 2001) clarified with paragraph 2 of Decision 18/CP.7 that the realization of an actual trading scheme is envisaged²¹. Consequently, a trading platform as an intermedi-

¹⁵ See STOWELL (Fn 2), 37 ss; PALLEMAERTS/WILLIAMS (Fn 10), 37 ss.

¹⁶ ORLANDO/EHRAT/FACCOLI (Fn 5), 67; KURT DEKETELAERE/MARJAN PEETERS, Key challenges of EU climate change policy: measures and compliance, in: PEETERS/DEKETELAERE (Fn 2), 3, 4.

¹⁷ See http://unfccc.int/meetings/cop_13/items/4049txt.php.

¹⁸ For further details see RUTGER DE WITT WIJNEN, Emissions Trading under Article 17 of the Kyoto Protocol, in: FREESTONE/STRECK (Fn 2), 403 ss; STOWELL (Fn 2), 51 ss.

¹⁹ See hereinafter III. A. (p. 485/486).

²⁰ See to this aspect FRANK GAGELMANN, Innovation effects of tradable emission allowance schemes: The treatment of new entrants and shutdowns, UFZ-Discussion Papers 4/2006, Berlin 2006, 13 ss.

²¹ For more details see DE WITT WIJNEN (Fn 18), 410; to the relevant factors allowing to build markets with emissions certificates see STOWELL (Fn 2), 82 ss.

ary medium has to be established. Thus, contracts are not concluded on a bilateral basis as one could deduce from a literal interpretation of Article 17 of the Kyoto Protocol, but through an electronic trading platform in real time sequence.

II. Importance of Market Mechanisms

A. Structuring a Trading Market

The emissions trading scheme foreseen in Article 17 of the Kyoto Protocol will only be successful, if the necessary legal framework adequately takes into account certain conditions of trading platforms in general; insofar, experiences can be drawn from the capital markets. The following factors for the structuring of an emissions trading scheme seem to be important²²:

- The trading platform should facilitate the execution of transactions to the largest extent possible.
- Equal treatment is an important aspect of any trading scheme; equal treatment can be supported by the introduction of standards and general accounting/audit rules.
- Capital markets show that rules of conduct can have a preventive effect (for example the obligation of information, diligence and loyalty); these rules of conduct exceed the meaning of purely organizational rules.
- A key element of every trading scheme is transparency²³: (i) Due to the modern information technologies and the full computerization of stock exchanges, it is possible to re-establish all transactions (data-tracks) and to eliminate disparities between pricing in different markets. (ii) Market participants should be obliged to observe certain transparency obligations and to disclose holdings of emissions certificates. (iii) Any kind of market manipulation has to be regarded as illegal.

The introduction of market mechanisms by Article 17 of the Kyoto Protocol constitutes a new concept of approaching environmental issues²⁴, notwithstanding the

²² See ROLF H. WEBER, Structuring a Modern Capital Market: The Swiss Example, in: SAY GOO/DOUGLAS ARNER/ZHONGFEI ZHOU (eds.), *International Financial Sector Reform – Standard Setting and Infrastructure Development*, London/The Hague/New York 2002, 303, 324/5.

²³ WEBER (Fn 22), 325.

²⁴ An emissions trading scheme is not the only legal instrument to influence the environmental behavior; other instruments include for example property rights, emissions taxes, input or output charges, user fees, tariff schemes, deposit refund systems, subsidies, technology standards,

fact that the United States introduced emissions trading²⁵ to a limited and partly different extent in the 1970s under the Clean Air Act²⁶. Four elements characterize the emissions trading according to Article 17 of the Kyoto Protocol, namely (1) the right to emit (2) a specified substance (3) of a certain quantity (4) over a defined period of time²⁷:

(1) The trading scheme is based on the assumption that a right is needed to be admitted for transactional exchanges; in this context, the identity of the emitter may be the decisive criterion. National legislators have the possibilities to determine those industries or installations that are exempted from emissions restrictions.

(2) The emission right has to relate to a certain substance or a certain group of substances; in particular, the mentioned six greenhouse gases may be addressed²⁸.

(3) The right to emit needs to be issued in respect of a certain quantity of emissions; thereby, the overall quantities have to correspond to the respective targets to be achieved by the concerned country.

(4) Emission rights can only be granted for a determined period of time.

The above described aspects specify the commitments of the national governments according to the Kyoto Protocol; the commitments may be achieved by taking domestic measures and/or by making use of the trading mechanisms of the Kyoto Protocol.

In respect of the authorization to use the emissions trading scheme, paragraph 2 of Decision 18/CP.7 lists the following requirements²⁹:

- The State has to be a party to the Kyoto Protocol;
- The amount of tolerable emissions assigned to the State has to be calculated and recorded;
- The State has to introduce a national system for the estimation of anthropogenic emissions by sources;

emission limits, bans, liability rules, information disclosure rules, fines, etc.; see THOMAS STERNER/HENRIK HAMMAR, *Designing instruments for climate policy*, in: HANSJÜRGENS (Fn 2), 17, 22.

²⁵ To the establishment and the functions of trading instruments see HOHMUTH (Fn 3), 46 ss with further references.

²⁶ For more details to the early trading schemes in the United States see GEORGE PRING, *A decade of emissions trading in the USA: Experiences and observations for the EU*, in PETERS/DEKETELAERE (Fn 2), 188 ss.

²⁷ See DE WITT WIJNEN (Fn 18), 403/4 and 407/8.

²⁸ For the greenhouse gases see above I. B. (p. 478).

²⁹ See DE WITT WIJNEN (Fn 18), 411; STOWELL (Fn 2), 40.

- The State must sustain a national registry;
- Annually, the State is obliged to present the most recent required inventory;
- The State has to submit the supplementary information on assigned amounts³⁰.

In order to ease applications within the trading scheme, the UNFCCC Secretariat supports the signatory countries and facilitates the calculation of the assigned amounts.

B. Introduction of Flexible Mechanisms

Innovative elements of the Kyoto Protocol may be seen in the three flexible investment mechanisms which provide for cost effective emissions reductions³¹. Since greenhouse gases obviously pollute world-wide, the actual location reducing emissions is not directly relevant³².

The three flexible mechanisms are³³:

- *Clean Development Mechanism (CDM)*: The CDM enables developing countries to strive for emissions reduction projects and transferring the resulting carbon credits to industrialized countries in order to facilitate the industrialized countries fulfilling the commitments under the Kyoto Protocol³⁴; after having verified the reductions of emissions (ex post), credits are issued; the term used is Certified Emission Reductions (CERs)³⁵.
- *Joint Implementation (JI)*: The JI is – similarly to the CDM – a transferring scheme mainly serving the countries in Central and Eastern Europe to under-

³⁰ These requirements have to be implemented in accordance with the relevant provisions of the Kyoto Protocol.

³¹ The concept of these mechanisms consists in the underlying idea that those investments should be (financially) supported which cause the least environmental damages.

³² To this aspect see below III. C. (p. 488/489).

³³ See also ORLANDO/EHRAT/FACCOLI (Fn 5), 67/8; various contributions to these flexible mechanisms are contained in the volume, edited by FREESTONE/STRECK (Fn 2), 107 ss and 175 ss.

³⁴ To the CDM in more detail see STOWELL (Fn 2), 64 ss; NATHALIE EDDY, Public Participation in CDM and JI Projects, in: FREESTONE/STRECK (Fn 2), 71 ss; MARIA NETTO/KAI-UWE BARANI SCHMIDT, CDM Project Cycle and the Role of the UNFCCC Secretariat, in FREESTONE/STRECK (Fn 2), 175 ss.

³⁵ To the problem of properly evaluating CDM Projects see AXEL MICHAELOWA, Untergräbt der Clean Development Mechanism den internationalen Klimaschutz?, Die Volkswirtschaft 9/2007, 20–23; CHRISTIAN MICHELSEN/ALMUT KIRCHNER, CO₂-Emissionshandel, Joint Implementation (JI) and Clean Development Mechanism (CDM), Prognos AG, Dezember 2006.

take projects; after verification of the reductions (ex post), credits are issued under the name of Emission Reduction Units (ERUs)³⁶.

- *International Emissions Trading* (IET): Since – as mentioned – each country disposes of a number of allowances corresponding to its reduction targets, an exchange mechanism should be established which allows countries with surplus allowances to transfer them to countries with a shortfall in allowances³⁷.

However, the implementation of the emissions trading scheme in conjunction with the development issues has not remained unchallenged as the experience in the EU scheme has shown³⁸.

C. Emissions Trading and the Legal Framework of the WTO

The emissions trading scheme has to comply with the framework of the international liberalization of the markets. Thus, international trade rules as implemented in the context of the WTO have to be taken into account. In the process of preparing the Kyoto Protocol, the WTO was not involved in addressing the international trade concerns. By now, the WTO has not determined whether the emissions trading markets fall under its auspices³⁹. However, under the assumption that WTO law covers everything that can be traded, the further question that needs to be addressed is whether trade in emissions certificates concerns goods under the GATT or services under the GATS⁴⁰; in the latter case, it would also have to be decided which sectoral classification is applicable (financial, energy or environmental services)⁴¹.

³⁶ To the JI in more detail see STOWELL (Fn 2), 55 ss; EDDY (Fn 32), 71 ss; CHARLOTTE STRECK, Joint Implementation: History, Requirements, and Challenges, in: FREESTONE/STRECK (Fn 2), 107 ss.

³⁷ To the implementation of the trading scheme in Europe see below III. (p. 484 ss).

³⁸ See below III. B. (p. 487).

³⁹ See HOWSE/ELIASON (Fn 8), part II. B; SIKINA JINNAH, Emissions trading under the Kyoto Protocol: NAFTA and WTO Concerns, 15 Geo. Int'l Env'tl. L. Rev. 709 ss (2002–2003); however, see now the speech of WTO Director-General PASCAL LAMY at the World Energy Congress in Rome in November 2007, http://www.wto.org/english/news_e/ssp1_e/ssp/80_e.htm.

⁴⁰ The differentiation is important since the regulatory regime of the GATT and of the GATS are not identical in various respects; see ROLF H. WEBER, Information Technology Markets – Asia's Opportunity to Revitalize the WTO, Hong Kong Law Journal 37 (2007) 185, 189 ss.

⁴¹ See PANAGIOTIS DELIMATIS/DESPINA MAVROMATI, GATS, Financial Services and Trade in Renewable Energy Certificates (RECs) – Just an Other Market Based Solution to cope with the Tragedy of Commons, Conference Paper, World Trade Institute (Berne), International Trade on a Warming Globe: The Role of the WTO in the Climate Change Debate, 21/22 September 2007, part I.

In the EC-Banana-Case, the Appellate Body was of the opinion that one regulatory scheme may affect trade in both aspects, goods and services⁴². Consequently, the provisions concerning the trade in goods as well as in services could be applicable. Energy is usually traded in measurable units⁴³; furthermore, the pricing of energy is quite transparent in the concerned market. These facts tend to the conclusion that the application of the GATT could be preferred⁴⁴. However, emissions trading credits are bought and sold through brokers and through (electronic) exchanges; furthermore, the trade is performed by means of swaps, derivatives, futures contracts and options which is typical for financial services⁴⁵.

The (in-)coherence between trade liberalization on the one hand and environmental protection on the other has been and remains a prevailing issue on the international agenda⁴⁶.

If the establishment of an emissions trading scheme should cause a trade restriction or a preferential treatment of certain enterprises, the question arises whether such impediment can be justified under the specific conditions relating to environmental conservation and protection (Art. XX(b) and (g) GATT as well as Art. XIV(b) GATS)⁴⁷. Environmental considerations can be a valid objection of national policy, provided that such measures do not exercise a discriminatory function in terms of the chapeau of Article XX, as the Appellate Body particularly confirmed in the Tuna/Dolphin II-Case⁴⁸, the US-Shrimp Case⁴⁹ as well as the

⁴² European Communities – Regime for the Importation, Sale and Distribution of Bananas (WT/DS27/AB/R), Report of the Appellate Body, 9 September 1997, 221 and 222.

⁴³ See ROLF H. WEBER/VALÉRIE ENGAMMARE, Reconciling Governmental Interests and Competitive International Electricity and Gas Markets, 4 Oil, Gas & Energy Intelligence, Issue 1, May 2006, 3; PHILIP-XÉNOPHON PIERROS/SABINA NÜESCH, Trade in Electricity: Spot on, Journal of World Trade 34 (2000), 118.

⁴⁴ WEBER/ENGAMMARE (Fn 43), 4.

⁴⁵ DELIMATIS/MAVROMATI (Fn 41), part I.

⁴⁶ For a general and thorough overview see FARIBORZ ZELLI, The World Trade Organization: Free Trade and Its Environmental Impacts, in KHI V. THAI/DIANNE RAHM/JERRELL D. COGGBURN (eds.), Handbook of Globalization and the Environment, Boca Ration/London/New York 2007. 177–216.

⁴⁷ JINNAH (Fn 39), 717/718; ZELLI (Fn 46), 186; GAVIN GOH, The World Trade Organization, Kyoto and Energy Tax Adjustments at the Border, Journal of World Trade 38 (2004), 413–422.

⁴⁸ United States – Restrictions on Imports of Tuna (WT/DS29/R), Report of the Panel, 16 June 1994. Art. XX(b) and (g) GATT were already subject to revision by the GATT Panel in the Tuna/Dolphin I Case; however, the Panel interpreted Art. XX very narrowly, deciding that the parties could not justify import bans by referring to an extrajudicial protection of the global commons, but only by protecting resources under their national jurisdiction (United States – Restrictions on Imports of Tuna [WT/DS21/R], Report of the Panel, 3 September 1991, 5.24–5.29, 5.31–5.34).

⁴⁹ United States – Import Prohibition of Certain Shrimp and Shrimp Products (WT/DS58/AB/R), Report of the Appellate Body, 12 October 1998; for a general overview see VARAMON RAMANG-

EC-Asbestos Case⁵⁰. Measures aimed at the conservation of clean air in particular were found to fall within the scope of measures relating to Art. XX(g) GATT in the US-Gasoline Case⁵¹.

The compatibility of WTO law with the Kyoto Protocol as a specific Multilateral Environmental Agreement (MEA) needs further consideration on the international level⁵². As a matter of principle, the prevailing approach should promote the mutual supportiveness of these different legal systems, since the overall objective of both regimes is the same, namely the promotion of wellbeing⁵³.

III. EU Emissions Trading Scheme

A. Legal Framework

In 2005, the European Union (EU) launched the world's first large greenhouse gas emissions trading system⁵⁴. This EU Emissions Trading Scheme (EU ETS) is based on the Directive 2003/87⁵⁵, amended by the Linking Directive 2004/101⁵⁶,

KURA, Thai Shrimp, Sea Turtles, Mangrove Forests and the WTO: Innovative Environmental Protection Under the International Trade Regime, *The Georgetown Int'l Env'tl. Law Review* 15 (2003), 677 ss.

⁵⁰ European Communities – Measures Affecting Asbestos and Asbestos-Containing Products (WT/DS135/AB/R), Report of the Appellate Body, 12 March 2001.

⁵¹ United States – Standards for Reformulated and Conventional Gasoline (WT/DS2/AB/R), Report of the Appellate Body, 29 April 1996.

⁵² ZELLI (Fn 46), 193/194, 196–198 with further references.

⁵³ WTO Committee on Trade and Environment, Submission by Switzerland: The Relationship between the Provisions of the Multilateral Trading System and Multilateral Environmental Agreements (MEAs) (WT/CTE/W/139), 8 June 2000. Already para. 2.19 of Agenda 21 of the 1992 Rio Earth Summit emphasized the need for mutual supportiveness between trade and environmental policies; see also the Preamble of the Marrakesh Agreement.

⁵⁴ For general overviews describing the EU Emissions Trading Scheme see ROBERT DORNAU, *The Emissions Trading Scheme of the European Union*, in: FREESTONE/STRECK (Fn 2), 417 ss; JÜRGEN LEFEVERE, *Linking Emissions Trading Schemes: The EU ETS and the «Linking Directive»*, in: FREESTONE/STRECK (Fn 2), 511 ss; HOHMUTH (Fn 3), 52 ss; see also the numerous contributions contained in the volume, edited by HANSJÜRGENS (Fn 2), 135 ss, and in the volume, edited by PEETERS/DEKETELAERE (Fn 2), 69 ss.

⁵⁵ 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, OJ 2003 L 275 of 25 October 2003, 32–46.

⁵⁶ Directive 2004/101/EC of the European Parliament and of the Council of 27 October 2004 amending Directive 2003/87/EC establishing a scheme for greenhouse gas emission allowance

and envisages to significantly contributing to the targets required by the Kyoto Protocol. The Directive obliges each Member State to impose caps on emissions of CO₂ from installations above certain production capacities or output thresholds in the following sectors⁵⁷: (i) Energy activities; (ii) production and processing of ferrous metals; (iii) mineral industry (for example cement, glass, or ceramic production); (iv) pulp, paper or board production⁵⁸. Other industries, such as the aviation market, have not yet been included. During the first period, only CO₂ emissions were regulated; as from 2008 onwards, Member States will have the right to unilaterally include additional sectors, subject to the approval by the EU Commission⁵⁹.

The Directive requires Member States to ensure that the operators of installations, falling under the scope of the EU ETS, hold a greenhouse gas emissions permit which specifies monitoring and reporting requirements⁶⁰; furthermore, the permit should include an obligation to surrender a number of allowances equal to the total verified emissions of the installations in the previous calendar year⁶¹. Allowance means a right to emit one tonne of carbon dioxide equivalent during a specified period. In case an operator carries out several activities falling under the same covered sectors, the capacity of such activities are added together. In order to improve the flexibility for the enterprises, the Directive allows for banking and borrowing of allowances between the years of one commitment period⁶².

A key element of the implementation of the EU ETS is the establishment of the National Allocation Plan (NAP); the NAP contains a list of all covered installations and the quantities of allowances which are intended to be allocated to these installations for the commitment period⁶³. The NAP represents the basis for the industry to efficiently plan the emissions reductions. The allocation process obviously has a large impact on the supply and demand within the respective market;

trading within the Community, in respect of the Kyoto Protocol's project mechanisms, OJ 2004 L 338 of 13 November 2004, 18–23.

⁵⁷ DORNAU (Fn 54), 419.

⁵⁸ In general to the legal framework of the EU regulations see MICHAEL RODI, Legal Aspects of the European Emissions Trading Scheme, in: HANSJÜRGENS (Fn 2), 177 ss.

⁵⁹ To the different allocation rules see below III. B. (p. 487)

⁶⁰ DORNAU (Fn 54), 422/3; to the measuring and monitoring under the Kyoto Protocol in general see STOWELL (Fn 2), 42 ss.

⁶¹ ORLANDO/EHRAT/FACCOLI (Fn 5), 68; DORNAU (Fn 54), 423/4.

⁶² The Directive also allows a pooling of emissions allowances making it possible that several operators appoint a trustee, being responsible to surrender sufficient amounts of allowances to each operator; for further details see DORNAU (Fn 54), 427/8.

⁶³ DORNAU (Fn 54), 423/4.

thus, a fair allocation is of utmost importance⁶⁴. If an entity receives fewer allowances than it is entitled to, it becomes a buyer of allowances in the market which leads to additional costs⁶⁵. The Directive does not contain many guiding rules serving as criteria for the allocation; aspects which need to be taken into account are in particular the following⁶⁶:

- *Method of allocation*: The majority of allowances have to be allocated free of charge in the first period; however, the granting of allowances for free could lead to wrong incentives.
- *Kyoto commitments*: The quantities of allowances have to be consistent with the targets of the Kyoto Protocol.
- *Reduction potential*: The quantities of allowances should correspond to the (technological) potential of the covered activities in the emissions reduction scheme.
- *Non-discrimination between companies or sectors*: The compliance with the non-discrimination principle is a prominent requirement under the WTO and EU law.
- *Treatment of new entrants*: The NAP has to provide for information on how new entrants are able to participate in the EU ETS; furthermore, rules should be set forth to give guidance on how unallocated allowances can be transferred to new entrants.
- *Early action*: From a fairness point of view, it is important to create transparency to what extent early action is taken into account.

In principle, countries not belonging to the European Union⁶⁷ are excluded from the participation in the EU ETS; this exclusion, however, might cause legal problems in the light of the most-favoured-nation principle in WTO law⁶⁸, but, so far, the EU ETS legal framework has not been formally challenged by countries outside the EU.

⁶⁴ To some problems in the initial allocation see TIETENBURG (Fn 2), 127 ss; BETTINA SCHMITT-RADY, A level playing field? Initial allocation of allowances in Member States, in: PEETERS/DEKETELAERE (Fn 2), 59, 83 ss.

⁶⁵ To some problems in connection with the not always coherent framework see LUDWIG KRÄMER, Some reflections on the EU mix of instruments on climate change, in: PEETERS/DEKETELAERE (Fn 2), 279, 285 ss.

⁶⁶ DORNAU (Fn 54), 424/5.

⁶⁷ For the special case of Switzerland see below IV. (p. 490).

⁶⁸ For more details see HOWSE/ELIASON (Fn 8), part II. B.

B. Pricing Mechanisms

During the first phase having elapsed at the end of 2007, the EU Member States were obliged to allocate 95% of the allowances without charging the enterprises therefore; during the second phase from 2008–2012, still 90% of the allowances have to be assigned free of charge. This auction basis is unusual, since bidders normally have to pay a price for a good; furthermore, the prerogatives do not fully comply with free market mechanisms⁶⁹.

As so far experienced with the EU pricing mechanism, the price of the EU Allowances (EUAs) more or less constantly increased up to its peak level in April 2006, however, afterwards the price crashed from around Euro 30 per tonne CO₂ to Euro 10 per tonne within a month in spring 2006⁷⁰. The reason for this price drop must be seen in the fact that many EU Member States had given their industries very generous emissions caps which had led to the situation that there was no need for them to reduce their emissions; thus, many observers are calling for far stricter CO₂ emissions caps in the second phase⁷¹.

If price mechanisms do not fully optimize market conditions, the question arises whether the legislator should avoid fluctuations of prices by adopting minimum and/or maximum targets. Maximum prices (ceilings) could avoid abuses; minimum prices (floors) are often important at the initial stage of establishing a trading scheme in order to safeguard the short-term viability of the project⁷².

The already gained experiences from the emissions trading scheme in the EU show that the conditions for the market mechanisms should be improved; the «free of charge» allocation of certificates and the missing anticipation of the price evolution jeopardize the viability of the system. The first period until the end of 2007 should be considered as a «learning by doing period»⁷³ leading to revisions and extensions of the EU ETS.

⁶⁹ To the grandfathering problems see SCHMITT-RADY (Fn 64), 87 ss.

⁷⁰ ORLANDO/EHRAT/FACCOLI (Fn 5), 69.

⁷¹ ORLANDO/EHRAT/FACCOLI (Fn 5), 69.

⁷² To the general advantages and disadvantages of minimum and maximum price regulations see ROLF H. WEBER, *Wirtschaftsregulierung in wettbewerbspolitischen Ausnahmebereichen*, Baden-Baden 1986, 370 ss.

⁷³ DORNAU (Fn 54), 430.

C. Link to the Mechanisms of the Kyoto Protocol

As mentioned, an important element of the EU ETS is its link to the CDM and the JI mechanism of the Kyoto Protocol⁷⁴. Installations covered by the EU ETS may use their credits granted by these mechanisms, namely CERs and the ERUs, in order to comply with their caps under the scheme up to a specific percentage⁷⁵.

This linking possibility is the key element stimulating the demand for CERs/ERUs⁷⁶; indeed, the volume weighted average price of CERs transacted almost doubled in 2006. The importance of the linking possibility, based on the European demands, is further underlined by the wish of the Japanese government for additional credits⁷⁷. Nevertheless, it should not be ignored that an emissions trading scheme can hardly be made fully compatible with an investment mechanism. Trading as such is designed to realize a standardized, transaction-oriented and usually fast exchange of goods; investments rather intend to cause a stable and relatively long-lasting relation envisaging to have an impact on future developments. Thus, due consideration has to be paid to the different market factors in the two different approaches⁷⁸.

Experience in the EU also revealed a price difference between CERs and EUAs⁷⁹. The reason for the higher prices of EUAs lies in the possibility of having these certificates transacted and delivered immediately after their allocation by governments; in contrast, CERs have first to be generated by project activities, monitored, and then verified and certified by an independent third party, prior to their possible issuance and delivery to a buyer. Consequently, CERs possess a higher risk which leads to a discount on their pricing; the degree of the risk depends on the project type, the host country, and the counterparty⁸⁰.

As a result of the linking with EU ETS, several European financial institutions decided to establish procurement vehicles which serve as purchasers of CERs/

⁷⁴ See above II. B. (p. 479 ss).

⁷⁵ For more details see LEFEVERE (Fn 54), 511 ss; CHRISTIAN MICHELSEN/ALMUT KIRCHNER, CO₂-Emissionshandel, Joint Implementation (JI) und Clean Development Mechanism (CDM), December 2006, http://www.bfe.admin.ch/php/modules/publikationen/stream.php?extlang=de&name=de_250529914.pdf.

⁷⁶ See ORLANDO/EHRAT/FACCOLI (Fn 5), 72/3; see also JAVIER DE CENDRA DE LARRAGÁN, Linking the project based mechanisms with the EU ETS: the present state of affairs and the challenges ahead, in: PEETERS/DEKETELAERE (Fn 2), 98 ss.

⁷⁷ ORLANDO/EHRAT/FACCOLI (Fn 5), 73.

⁷⁸ See also LEFEVERE (Fn 54), 522 ss.

⁷⁹ ORLANDO/EHRAT/FACCOLI (Fn 5), 71/2.

⁸⁰ ORLANDO/EHRAT/FACCOLI (Fn 5), 72.

ERUs directly from project developers in the market; subsequently, these certificates are sold to emitters under the EU ETS⁸¹.

Generally, it is assumed that certain reductions in emissions through CDM projects do occur; however, it is also argued that CDM projects primarily succeeded in accomplishing political goals, for example the integration of countries such as China and India in the climate change discussions, without actually reducing emissions to a substantial extent; furthermore, certain emissions reductions might have been achieved through CDM projects from other sectors, i.e. they are not derived from the carbon or the energy sector⁸².

D. Future Developments

Notwithstanding the fact that the success of the emissions trading scheme in the given framework is subject to controversial discussions⁸³, most political authorities express the opinion that this trading mechanism should be prolonged in order to combat the climate change. The EU authorities have already announced that a phase 3 of the EU ETS, starting in 2013, will be initiated. Thereby, it is envisaged to include further sectors of the economy, particularly aviation. In addition, the pricing schemes will be re-evaluated⁸⁴.

International negotiations on the future of the Kyoto Protocol are ongoing; however, decisions will most likely not be taken until 2009, when the results from the first phase will have been evaluated and judged⁸⁵. From a political point of view, efforts are made to convince the United States to join the international framework of the Kyoto Protocol in order to globally reduce emissions⁸⁶; furthermore, the integration of the so-called «Big 5» emitters, namely the rapidly

⁸¹ See LEFEVERE (Fn 54), 525 ss.

⁸² See MICHAELOWA (Fn 35), 20.

⁸³ See *The Economist*, Lightly carbonated – European companies are not taking full advantage of Carbon markets, 4 August 2007, 53/4; DELIMATIS/MAVROMATI (Fn 41), part I.

⁸⁴ Lessons can also be drawn from national policies (for example in the United States) implementing trading schemes; see for example ROBERT N. STAVINS, A U.S. Cap-and-Trade System to Address Global Climate Change, KSG Working Paper No. RWP07-052, available at <http://ssrn.com/abstract=1026353>.

⁸⁵ During the Bali Conference in December 2007 the delegates not only approved the Bali Action Plan (see Fn 17 above), but also the Bali roadmap which charts the course for a new negotiating process to be concluded by 2009 that will ultimately lead to a post-2012 international agreement on climate change.

⁸⁶ Australia as the other important «missing» nation (apart from the United States) has ratified the Kyoto Protocol shortly before the Bali Conference.

industrializing countries of China, India, Brazil, South Africa and Mexico, is on the agenda.

IV. Switzerland and Outlook

From January 2008 onwards, Swiss enterprises⁸⁷ have to pay a CO₂ tax (0.03 Swiss Francs per liter heating oil) or invest in measures which lead to a reduction of CO₂ on the international level. The Federal Office for the Environment (FOEN)⁸⁸ is preparing an emissions trading platform called «Swiss-Flex» which allocates emissions rights without charges⁸⁹. Enterprises causing more CO₂ than permitted by the allocation scheme have the possibility of acquiring credits on the national or international market; a «clean» enterprise is also permitted to sell its emission rights⁹⁰. Currently, the problem is that the Swiss platform cannot be linked to international platforms, since – notwithstanding its desirability⁹¹ – the EU is reluctant to negotiate a binding agreement due to political reasons. Swiss enterprises and the FOEN are very critical in view of this development⁹²; however, the EU Commission seems to be interested to link the emissions trading issue with other negotiation issues. Not at least due to this problem the two Swiss Federal Ministers LEUENBERGER and LEUTHARD try to explore (not fully coherent) possibilities for an internationalization of different trading schemes.

The possibility of trading goods on an efficient and cost-oriented platform contributes to the prosperity of the concerned economy. The problems of the climate change are substantial and far-reaching; by now, political interventions have been rare and not very successful in combating climate change. Consequently, the introduction of market elements seems to be promising in the realization of a more convincing climate policy.

⁸⁷ See JOSEF JANSSEN, EU-Emissionshandel aus der Sicht eines Schweizer Energiehändlers, *Die Volkswirtschaft* 9/2007, 9 ss.

⁸⁸ Switzerland is the third largest contributor to the special fund of the World Bank financing the CDM-projects (see MICHAELOWA [Fn 35], 20).

⁸⁹ For further details see ANDREA BURKHARDT, Startschuss zum Emissionshandel in der Schweiz, *Die Volkswirtschaft* 9/2007, 7/8.

⁹⁰ BURKHARDT (Fn 89), 8.

⁹¹ See DAMARIS AEPPLI, Soll der schweizerische Emissionshandel mit dem europäischen verknüpft werden, *Die Volkswirtschaft* 9/2007, 12–14.

⁹² See the reports in *Tages Anzeiger* of 16 August, 2007, 4, and *HandelsZeitung* Nr. 37 of 12–18 September, 2007, 16.

In order to provide for an effective regime to approach and eventually slow down the proceeding climate change, a lot of work still needs to be done. The current legal frameworks require further development to ensure that the promising concept of emissions trading will not result in the mere selling of indulgencies.