

# European Energy Liberalisation and Emissions Trading

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The European energy market is evolving in response to European directives and policies, and national initiatives. Unlike North America, the internal energy market for Europe is developing as requirements for renewable energy and energy efficiency are implemented. Proposals for emissions trading in Europe are occurring in close proximity to energy liberalisation. As a result, energy liberalisation in Europe is likely to be consistent with emissions trading, and include renewable energy and energy efficiency.

European electricity and natural gas markets are being liberalized in accordance with the Internal Market for Electricity Directive, and the Directive for Common Rules for the Internal Market in Gas. Energy liberalisation is also occurring in advance of these directives under national initiatives. Emissions trading regimes and proposals consistent with the Climate Change Convention and the Kyoto Protocol are considered for Europe, Denmark, and the United Kingdom. These emissions trading regimes are reviewed to consider their impact on energy liberalisation in Europe, and within Denmark and the United Kingdom.

## Introduction

European energy liberalisation is underway to develop an internal market for electricity and natural gas. Within this internal market, there is competition between nations and within national markets. Private and state entities engage in the energy markets to realise a profit and to minimise costs. While the article recognises the existence of broader competition and trade issues, it focuses on energy liberalisation, emissions trading, and market issues. The implementation of the Climate Change Convention and the Kyoto Protocol in Europe and the role of emissions trading is briefly examined. This is followed by a discussion of the European energy liberalisation. The Green Paper, *Greenhouse Gas Emissions Trading in the European Union*, is examined

to determine its impact on energy liberalisation. This is followed by an examination of energy markets and emissions trading proposals for Denmark and the United Kingdom. The article concludes with a brief discussion of trends for energy liberalisation and emissions trading in Europe and North America.

## The Climate Change Convention

Under the Kyoto Protocol to the Climate Change Convention, industrialised countries which are Annex 1 parties agreed to reduce their emissions of six greenhouse gases by an average of 5.2 per cent below 1990 levels for the period 2008 to 2012. The Kyoto Protocol provides legally binding targets for these Annex 1 parties, and for the use of various flexibility mechanisms for the transfer and acquisition of 'assigned amounts', 'emission reduction units' and 'certified emissions reductions'. Article 3 of the Kyoto Protocol establishes 'assigned amounts' for all Annex 1 parties, and provides for the transfer and acquisition of assigned amounts among parties. A party is allowed to transfer or acquire any part of an assigned amount from another party in accordance with Art. 6 or 17. The assigned amounts are the basis for the 'cap and trade' mechanism for Annex 1 parties. Article 4 allows Annex 1 parties to co-operate to fulfil their commitments. Article 4 also permits the establishment of 'administrative bubbles' for the transfer of assigned amounts. The European Community can be viewed as one of these administrative bubbles or as a single entity for the purposes of an emissions trading regime, as the European Union and its member states are signatories to the Kyoto Protocol.

Article 17 provides that parties included in Annex B of the Protocol may participate in emissions trading to meet commitments under Art. 3. This participation is in addition to domestic actions under Art. 3. However, a future Conference of the Parties is required to define the rules for emissions trading, and for verification, reporting and accountability. Emissions trading under the Kyoto Protocol is restricted to the parties listed in Annex B of the Protocol. This group consists primarily of northern members of the Organisation for Economic Co-operation and Development, as well as central and eastern European countries and some of the states from the former Soviet Union.

Parties without binding emission reductions and limitation objectives cannot participate in trading.

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Developing countries and industrial countries that do not ratify the Kyoto Protocol, or who are not included in Annex B of the Protocol, cannot participate. At the current time, private parties may participate in emissions trading if their government is listed in Annex B and provides them with an opportunity. Many of the details of emissions trading are not finalised in the Kyoto Protocol, including when trading begins, the definition of the participants and gases that may be traded, the rules and procedures for trading, international institutions, and regulations for monitoring, verification and enforcement of the rules.<sup>2</sup>

In March 2001, the United States indicated that it would withdraw from the Kyoto Protocol. Though President Bush indicated that he believed climate change was occurring, he would not accept any agreement which would impair the US economy. Since that time, there have been statements by the United States that alternative measures will be proposed to address climate change. However, no proposed alternative measures have been circulated internationally. In the months prior to the Bonn discussions in July 2001, the European Union and other countries indicated they would continue to support the Kyoto Protocol.

Despite the silence of the United States at the Bonn discussions, Parties were able to agree on means of proceeding. On 23 July 2001, the 180 members of the United Nations Framework Convention on Climate Change reached preliminary agreement on Kyoto Protocol rules in Bonn. A draft text was issued on 23 July with final text being issued on 24 July (the Bonn Agreement). Key aspects of the Bonn Agreement are briefly discussed, namely the establishment of different funds, the use of carbon sinks, the rules for clean development mechanisms, and the rules for the international emissions trading regime.

The Bonn Agreement provides for a special climate change fund. A second fund for least developed countries will be established to help these countries adapt to climate change, obtain clean technologies, and limit the growth in their emissions. A Kyoto Protocol Adaptation Fund is also established to finance adaptation projects and programmes.

The Bonn Agreement addresses the credit which developed countries may receive toward their Kyoto targets through the use of carbon sinks. Under the Agreement, eligible sink activities, which are deemed to absorb carbon, include re-vegetation and the management of forests, crops and grazing lands. Quotas are set for individual countries, which limit the amount of emissions reductions for Kyoto targets that can be met

2 This discussion of emissions trading and the Climate Change Convention draws upon the Kyoto Protocol; European Commission, Green Paper on Greenhouse Gas Trading within the European Union, COM(2000)87 (8 March 2000); F Missfeldt, 'Flexibility Mechanisms: Which Path to Take after Kyoto (1998) 17(2) RECIEL 128; F Yamin, 'The Kyoto Protocol: Origins, Assessment and Future Challenges' (1998) 17(2) RECIEL 113; F Joshua, 'Can Pollution be Traded?', GLOBE 'Guru Lecture' on International Greenhouse Gas Emissions Trading (23 April 1998); Dr H E Ott, 'Emissions Trading in the Kyoto Protocol- Finished and Unfinished Business' (1998) 3(4) *Linkages Journal* (26 October 1998).

through the use of carbon sinks. The Bonn Agreement also adopted rules for the clean development mechanism (CDM) through which developed countries may invest in projects in developing countries and receive credits for emissions avoided by these projects. Energy efficiency, renewable energy and forest projects may qualify for CDM projects, and an executive board has been set to oversee their implementation. The Bonn Agreement also briefly addresses the international emissions trading regime. Finally, the Agreement states that any of the mechanisms discussed above are supplemental to domestic action, and that domestic action will be a significant element of the effort of each Party to the Agreement.<sup>3</sup>

Under the Kyoto Protocol to the Climate Change Convention, Europe agreed to reduce by 2010 emissions of greenhouse gases to eight per cent below 1990 levels.<sup>4</sup> After internal European re-allocation, the United Kingdom received a 12.5 per cent reduction target and Denmark received a 21 per cent reduction target. In practice and according to recent estimates, Europe will require a 14 per cent reduction in greenhouse gases, in comparison to the situation where no action is taken to implement the Convention. Emissions trading, both internally in the Community and with other industrialised countries, is intended to help Europe and its member countries meet their commitments. Emissions trading, in conjunction with policies and measures, is an integral part of the Community's implementation strategy. The Community has stated that it will need all tools to implement these commitments, and as soon as possible. As a result, there was a strong early European commitment to implement the Climate Change Convention and the Kyoto Protocol.

On 17 May 1999, the EU Council of Ministers agreed to a Community strategy for climate change. Among other matters, the strategy proposed limits on the share of emissions reduction a country may obtain through use of the Kyoto flexibility mechanisms. The proposal for restriction on acquisition and sales has different rules and formulas for buyers and sellers. Additional emissions may be purchased based on the amount of emissions reductions achieved by verifiable domestic policies and measures undertaken after 1992.<sup>5</sup>

These restrictions reflect concern by the European Union that parties might 'buy themselves out of their obligations' instead of implementing domestic action.<sup>6</sup>

3 Press release, 'Governments adopt Bonn agreement on Kyoto Protocol rules' (23 July 2001) from the Framework Convention on Climate Change Secretariat; Decision 5/CP.6: Implementation of the Buenos Aires Plan of Action (24 July 2001).

4 After internal European reallocation, the United Kingdom received a 12.5 per cent reduction target and Denmark received a 21 per cent reduction target.

5 R Baron, M Bosi, A Lanza and J Pershing, 'Energy and Environment Division, International Energy Agency, A Preliminary Analysis of the EU Proposals on the Kyoto Mechanisms' (28 May 1999). See also Communication from the Commission to the Council and the European Parliament, 'Preparing for Implementation of the Kyoto Protocol', COM(1999)230 (5 May 1999).

6 This concern is reflected in Art. 17 of the Kyoto Protocol which specifies that emissions trading is supplemental to domestic action, and in recent wording in the Bonn Agreement or Decision 5/CP.6: Implementation of the Buenos Aires Plan of Action (24 July 2001).

Another issue is significant emission reductions in Russia and the Ukraine due to economic decline, and the concern that these reductions could transform Art.17, weaken the Kyoto targets, and distort the international market for emissions permits. For example, emission permits from Russian and Ukraine could make mitigation efforts by industrialised countries unprofitable compared to the cheaper acquisition of emissions permits from these countries.<sup>7</sup>

The European Community has proposed a limited emissions trading regime by 2005, prior to 2008 under the Kyoto Protocol. This trading regime is proposed in the Green Paper on greenhouse gas trading within the European Union.<sup>8</sup> A Draft Directive has also been discussed but not yet publicly released. The European Commission's Communication, 'EU Policies and Measures to Reduce Greenhouse Gas Emissions: Towards a European Climate Change Programme', discusses some of the complimentary policies and measures being considered to implement the Convention.<sup>9</sup> The European Climate Change Programme is most recently discussed in the *European Climate Change Programme – Long Report* of June 2001. This report identifies some environmental and cost-effective ways, and sectoral approaches, to enable the European Union to meet its targets under the Kyoto Protocol.

It is interesting to consider how policies and measures for climate change affect energy use and energy liberalisation. The Green Paper addressing the European strategy for the security of energy supply discusses the energy supply shortfalls and investment in this sector. This discussion occurs in the twin context of the challenge of climate change and the gradual integration of internal markets for natural gas and electricity.<sup>10</sup> The Communication 'EU Policies and Measures to Reduce Greenhouse Gas Emissions' has guidelines on state aid for environmental protection which will be updated to encourage the use of new market-based incentives. The aim of preventing climate change is also be considered by the European Commission when assessing a country's state aid schemes.<sup>11</sup>

7 F Missfeldt, 'Flexibility Mechanisms: Which Path to Take after Kyoto' (1998) 7(2) RECIEL 128; Dr H E Ott, 'Emissions Trading in the Kyoto Protocol – Finished and Unfinished Business' (1998) 3(4) *Linkages Journal* 4. 'European Climate Change Programme- Long Report' (June 2001) is available at <http://europa.eu.int/comm/environmt/climat/eccp.htm>

8 European Commission, Green Paper on Greenhouse Gas Trading within the European Union, COM(2000)87 (8 March 2000) 4. A Draft Directive following the Green Paper on Greenhouse Gas Trading has been proposed but, as of July 2001, is not released on the EC websites. See also Communication from the Commission to the Council and the European Parliament, 'Preparing for Implementation of the Kyoto Protocol', COM(1999)230 (5 May 1999).

9 Communication from the Commission to the Council and the European Parliament, 'EU Policies and Measures to reduce Greenhouse Gas Emissions: Towards a European Climate Change Programme', COM(2000)88 (8 March 2000).

10 European Commission, Green Paper: Towards a European strategy for the security of energy supply, COM(2000)769 (29 November 2000).

11 Under COM(2000)88 community policies and measures include environmental agreements with car manufacturers on the energy efficiency of passenger cars. Several new initiatives are imminent, such as a proposal for a Directive on the promotion of renewable energy sources in the context of the internal electricity market, proposal for a Directive on complementary fuel

Annex 3 of the Communication provides a list of the proposed common and co-ordinated policies and measures on climate change. Again many measures pertain to energy supply, energy uses by the industrial sector, energy consumption in the domestic and transport sectors, and transport policy and infrastructure. Some policies and measures relevant for energy liberalisation are a further development of the internal electricity and gas market incorporating: environmental considerations; access to the grid for decentralised energy production, increasing the share of renewable energies; increasing the use of combined heat and power generation; promotion of more efficient and cleaner fossil fuel conversion technologies; and energy efficiencies in the electricity and gas supply industries.

Finally, the Commission notes that it is the responsibility of member states to establish their own policies and measures for reducing greenhouse gas emissions. The effectiveness of those individual approaches will be monitored on a continuous basis. Council Decision 99/296/EC for a monitoring mechanism for Community CO<sub>2</sub> and other greenhouse gases will be used for the assessment of policies and measures, but needs to be extended and reinforced to cover the use of flexibility mechanisms.<sup>12</sup>

## European energy liberalisation

European energy liberalisation is occurring as a result of directives and policy papers, and national initiatives. Energy liberalisation is being implemented in the context of initiatives to encourage renewable energy and energy efficiency. These aspects of European energy liberalisation are discussed below.

The European Community is a regional economic integration organisation, and has criteria for trade and competition on a sectoral and regional basis. One of the major goals of the Community is to eliminate barriers between member states. This is accomplished, first, through the prohibition of barriers to trade between member states and, secondly, through the harmonisation of differing national legislation by the adoption of EC legislation.<sup>13</sup> Directives for energy liberalisation are designed to harmonise different national legislation, though some restrictions on trade and competition may be allowed for environmental reasons. European nations

specifications for the year 2005, a Communication on actions relating to the integration of sustainable development in enterprise policy, a revision of the Common Transport Policy, a Green Paper on urban transport, a Strategy for Energy Supply Security, including the environmental impact of all energy sources, an Action Plan for Improved Energy Efficiency in the Community and an Action Plan for Renewable Energy.

12 COM(2000)88, 2-5 and Annex 3.

13 FIELD Report and Scoping Papers, Designing Options for Implementing an Emissions Trading Regime for Greenhouse Gases in the EC (7 July 1999), Interim report, 21.

are also parties to other agreements in relation to energy.<sup>14</sup>

The Internal Market for Electricity Directive 96/92/EEC is the first European-wide step to create an open and competitive electricity market, with this Directive being implemented in most states by 20 February 1999. Countries have until this date to bring into force laws, regulations and administrative matters. Belgium and Ireland had an additional year, and Greece has two additional years.<sup>15</sup>

The Directive establishes common rules for generation, transmission and distribution of electricity. Under Art. 11 a country may provide for priority for dispatch for electricity from renewable sources, wastes, and from combined heat and power processes. This allows for provisions that favour environmental friendly energy over other forms of electricity.<sup>16</sup> It is interesting to consider how environmental reasons could be interpreted given countries' emission reduction obligations under the Climate Change Convention, and internal reallocation of these reductions within Europe.

As the Directive was implemented into national laws for 20 February 1999, there is some experience in electricity liberalisation. The United Kingdom implemented market reforms in the 1980s and has a considerable history. Denmark is opening its energy markets along with measures for emissions trading and to ensure renewable energy. Both these markets are described below. Germany has completely opened its electricity market, and Austria will do so beginning in October 2001, though the market is currently open according to the minimum requirements of the Directive. France is only opening its market now, though EDF, the national French monopoly and largest generator in Europe, has been selling into open markets for a considerable period and investing in utilities. The liberalisation of energy markets, with related opening and unbundling, has led to significant decreases in electricity costs for industrial customers, and open markets for smaller consumers.<sup>17</sup>

Directive 98/30/EEC concerning common rules for the internal market in gas addresses liberalisation of natural gas, and states are required to implement it by 10 August 2000.<sup>18</sup> The Directive established common rules on the storage, transmission and supply of natural gas, as well as detailed rules on the organisation and functioning of the natural gas sector. Firms must be operated on a commercial basis, and discrimination for

rights or obligation is prohibited. States may impose public service obligations for security of supply and services, quality and price of gas, and environmental protection. Primary requirements of the Directive are that member states open at least 33 per cent of their gas market to competition by 2008, and that third parties have access to pipelines and other facilities on a non-discriminatory basis. Given the recent nature of this Directive, it is difficult to evaluate the success of its implementation.

In March 1997, the European Commission proposed a common system of taxation of energy products. This proposal required taxes on all energy products, and allowed member states to implement tax reforms to reduce distortions in competition for the internal energy market. This proposal was unsuccessful, and no similar tax proposals have been introduced since that time.<sup>19</sup>

Existing policies and measures are being established at a European and national level to favour environmentally friendly energy, which is likely to be electricity. These policies and measures may be distinct from energy liberalisation and the implementation of the Climate Change Convention, or fulfill multiple purposes. It is important to note that these policies and measures are occurring simultaneously with the development of an internal European energy market. The 1995 White Paper, *An Energy Policy for the European Union*,<sup>20</sup> prioritises security of supply and lowering energy costs, while acknowledging a future role for renewable energies. The Green Paper, *Community Strategy, Energy for the Future: Renewable Sources of Energy*, was published in November 1996, and was followed by a White Paper of the same title in November 1997.<sup>21</sup> This White Paper set a number of goals, including doubling the market share of renewable energy in the Europe to 12 per cent by 2010.

The European Commission is also considering a further Directive to address the interaction between renewable energy and the internal electricity market. In 1999, the European Commission proposed a Draft Directive for electricity from renewable energies based on this White Paper. The first draft Directive was subsequently withdrawn due to lack of agreement. A second draft of the Directive was introduced in May 2000. The draft Directive is entitled 'Proposal for a Directive of the European Parliament and of the Council on the Promotion of Electricity from Renewable Energy Sources in the Internal Electricity Market'. It confirms goals to be achieved for 2010 by the Community and each member state for the market participation of renewable electricity. As the target for renewable energy is 12 per cent, approximately 22 per cent of electricity must come from renewable sources by that date. The

14 The Energy Charter process is sometimes used to refer to the 1991 European Energy Charter, the 1994 Energy Charter Treaty (as amended by the 1998 Trade Amendment) and the 1994 Energy Charter Protocol on Energy Efficiency and Related Environmental Aspects. This began as a European initiative for a specific sector, and has since expanded beyond this geographical scope. See [http://www.encharter.org/The\\_Energy\\_Charter\\_Treaty\\_index.htm](http://www.encharter.org/The_Energy_Charter_Treaty_index.htm).

15 OJ 1997 L27/20 (19 December 1996); and European Commission, Guide to the Electricity Directive.

16 Internal Market for Electricity Directive, Art.11.3.

17 Realm Research Group, *Renewable Electricity and Liberalising Markets*, Phase I: Inception Report (March 1999, ECN-C-99-007); and communication with Kurt Pollak dated 9 July 2000.

18 OJ 1998 204/1.

19 European Commission, *Common System for Taxation of Energy Products* (Brussels, 12 March 1997).

20 COM(95)682.

21 COM(96)576 (19 November 1996) and COM(97)599 (26 November 1997), respectively.

draft Directive discusses different means of achieving this result, either through quota-based systems, using either green certificates or tendering, or fixed-price schemes. Each state may decide how best to support renewable energy, provided they do not interfere with the operation of the internal energy markets.<sup>22</sup>

Countries are proceeding in different manners to implement renewable energy in their energy markets. For example, Germany and the Netherlands have opposing strategies of fixed prices and quota-based systems, respectively. Germany has provided fixed high rates for renewable energies, resulting in wind energy having the highest share of electricity of any European country. These rates have recently been improved with the Renewable Energy Law of 1 April 2000, which provides a range of rates. Previously, there was a five per cent cap for renewable energy at preferred rates, but there is no cap under the new law. This law and predecessor legislation have resulted in significant incremental electricity generated by renewable sources. However, electricity must be generated in Germany to receive these rates. This requirement could be construed as a restriction on trade, though no action has been taken. Arguably, high fixed rates for certain types of electricity may also distort Germany's electricity market and discourage competition in that market.

In contrast, the Netherlands is operating under a voluntary quota system for renewable energy. Subsidies were previously in place, but proved inefficient, inflexible and, in some instances, costly. Instead, the approach now is more voluntary. For example, there is a Greenlabel trading scheme which began in January 1998. Demand is created by parties undertaking voluntary obligations for renewable energy, green electricity sales. Eligible renewable sources receive an energy support payment. There is an issuing body, certificates are redeemed by energy suppliers, and central registration and monitoring is conducted by KEMA.<sup>22a</sup> For 2000, 3.2 per cent of the Netherlands' electricity should be generated from renewable resources.<sup>23</sup>

## European Community proposal for emissions trading

The EC's Green Paper on greenhouse gas emissions trading in the European Union provides a continental perspective for emissions trading. The proposal is reviewed to examine its impact on energy liberalisation. The proposal of the European Community is preliminary,

providing a view of the possible role of the Community for emissions trading. This proposal could also be influenced by national initiatives in countries such as Denmark and the United Kingdom.

There may also be trade or competition law issues in relation to European or national energy liberalisation and emissions trading regimes. These concerns exist as a matter of international or European laws, and multilateral trading agreements. As a result, aspects of energy liberalisation and emissions trading regimes may be contrary to international trade rules. While trade and competition, and the interaction of energy liberalisation and emissions trading, are related issues, this article does not focus on specific trade or competition issues.<sup>24</sup> Another related issue is the role and interaction of states and private entities in the implementation of the Climate Change Convention.

The World Trade Organisation administers multilateral trade agreements, such as the General Agreement on Trades and Tariffs 1994. Members of the World Trade Organisation adhere to these agreements. The European Communities and individual countries are members of the World Trade Organisation, and adhere to these agreements. These multi-lateral trade agreements apply primarily to trades in goods and services. There are issues as to whether aspects of European energy liberalisation or emissions trading regimes, and the national implementation of these regimes, are trades in goods and services. If aspects of energy liberalisation or emissions trading regimes are trades in goods and services, do they unacceptably restrict trade?<sup>25</sup> More generally, there is the issue of the integration of international environmental agreements and trade agreements, and the trade implications of any emissions trading regime implemented under the Climate Change Convention.<sup>26</sup>

The European Community is a regional economic integration organisation with its own criteria for trade and competition.<sup>27</sup> The involvement of private parties in energy liberalisation and emissions trading regime raises issues of state aid and competition, areas where the Community has a distinct role for the prohibition of barriers to trade. National emissions trading regimes should also not create undue barriers to the freedom of establishment in the internal market.<sup>28</sup> The issue of the

<sup>22</sup> European Commission, Proposal for a Directive of the European Parliament and of the Council on the Promotion of Electricity from Renewable Energy Sources in the Internal Electricity Market (May 2000), 1-14.

<sup>22a</sup> KEMA is an independent company that specialises in high-level technical consultancy, and in testing, inspections and certification in the electricity sector, and undertakes research in support of these activities. Its headquarters are in Arnhem, the Netherlands.

<sup>23</sup> Realm Research Group, Renewable Electricity and Liberalising Markets, Phase 1: Inception Report (March 1999, ECN-C-99-007); KEMA, 'The Dutch Greenlabel system', presentation dated 3 July 2000; and communication by Kurt Pollak dated 9 July 2000.

<sup>24</sup> These issues are discussed in the following report and background papers: FIELD Report and Scoping Papers, Designing Options for Implementing an Emissions Trading Regime for Greenhouse Gases in the EC (July 1999).

<sup>25</sup> Oral communication with Prof. Irene McConnell on 18 August 2000. A Pilot Greenhouse Gas Trading System: The Legal Issues (United Nations, Geneva, 1996), 11-12.

<sup>26</sup> J Werksman, 'Greenhouse Gas Emissions Trading and the WTO' (1999) 3(3) RECIEL 251.

<sup>27</sup> FIELD Report and Scoping Papers, n. 24 above, Interim report (7 July 1999), 21.

<sup>28</sup> Articles 43 and 47 of the EC Treaty provide for the principle of freedom of establishment where companies or firms formed in one member state have the right to set up their principle establishment or agencies, branches or subsidiaries in other member states. These entities must comply with the laws of the other states provided they do not contain unjustified discriminatory measures. See European Commission, Green Paper on greenhouse gas trading within the European Union, COM(2000)87 (8 March 2000), 7.

impact of emissions trading on the internal market has already been raised for Denmark.<sup>29</sup> It is also foreseeable that some restrictions on internal trade and competition will be permitted for emissions trading regimes.

In addition to trade and competition issues, there is also the issue of the respective role of state and private entities in the eventual implementation of the Climate Change Convention. This issue includes the equitable and fair allocation of risk and revenue between parties.<sup>30</sup> Depending on the fact situation, which can vary by country and sector, the allocation of a benefit or burden could result in an inequitable benefit or burden to certain sectors and private parties. In some circumstances, this could be viewed as the inequitable appropriation of a benefit that should have remained with a private party, particularly if that party bears the burden of taxes, policies and measures, and emissions trading regimes to implement the Climate Change Convention. There may also be some North American parallels with the concept of a regulatory compact between regulators and regulated entities, and the debate over compensation for stranded assets in the context of energy deregulation.<sup>31</sup> Setting aside trade and competition issues, private parties may be less likely to participate in energy liberalisation and emission trading if these regimes are not viewed as equitable and fair.

On 8 March 2000, the European Community issued its *Green Paper on Greenhouse Gas Trading within the European Union* (the Green Paper).<sup>32</sup> The Green Paper

is briefly discussed to provide an overview of the Community perspective for emissions trading, and the role of national initiatives in Denmark and the United Kingdom. The Green Paper initiates the discussion of the implementation of emissions trading in Europe, but is not a final statement. A draft directive on this matter has been discussed, but not yet issued.

The paper includes a number of observations which are relevant for emissions trading and energy liberalisation. The first observation addresses the role of emissions trading and other policies and measures. Emissions trading is intended to complement and be compatible with other policies and measures. These policies and measures should be the main means of implementing the Convention and would include energy taxes, regulatory or technical standards, and any environmental agreements already in place. The paper observes that possible negative effects on international competitiveness will be minimised if other industrial countries are involved in emissions trading.<sup>33</sup>

The Green Paper states that emissions trading provides incentives to find the lowest cost of achieving emissions reductions. The key economic rationale behind trading is to use market mechanisms to ensure that emissions reductions take place where the cost of reduction is the lowest. Therefore, the wider the scope of the system, the greater the variation in the costs of compliance for individual countries and the greater the potential for lower overall costs. Emissions trading regimes could minimise compliance costs, allow internal reallocation within sectors and among industry participants, and achieve the required reduction.<sup>34</sup> There is also the incidental value, important to private parties, of reducing operating costs and realising a profit.

The Green Paper observes the importance of protecting the internal European market by avoiding the scenario where emissions trading regimes create excessive barriers to trade, restrict the right of establishment of companies, and distort competition. The paper also acknowledges the importance of avoiding incompatibilities between trading regimes and multilateral trade agreements. Several matters are raised as key issues including possible discrimination against 'foreign' ownership and methods of allocation of emissions. Emissions can either be allocated by one-time auctions, periodic auctions, or free of charge to existing parties, the latter allocation being known as 'grandfathering'. Grandfathering raises issues of state aid and the distortion of competition, and may be particularly problematic for new entrants who would be required to purchase allowances.<sup>35</sup>

A discussion of the roles of the European Community for European and national trading schemes is interwoven through the Green Paper. It suggests that a Community-wide approach might be the most

29 An example of the Commission's approval of the Danish scheme for tradable CO<sub>2</sub> emission permits on 29 March 2000, despite the Commission's view that 'free' emissions permits for producers was state aid under Art. 87(1) of the EC Treaty. Denmark is required by the Commission to allocate permits to new entrants to the Danish electricity market based on objective and non-discriminatory criteria to respect the freedom of establishment.

30 For example, how should a country's position under the Climate Change Convention for assigned amounts or emission reduction units be allocated among sectors and private parties within that country. If a country is in a positive position where greenhouse gas emissions are likely to be below the agreed level in relation to 1990 levels due to internal fuel switching, which parties within that country should benefit from that scenario? Should it be the industry or private entities that made structural changes or incurred costs; or the national government as signatory to the Convention? Conversely, which parties should bear the burden if a country's position has worsened since 1990 due to such factors as increased energy production and consumption, and adverse fuel switching.

31 The Fifth Amendment of the US Constitution prohibits government from taking private property by action of law without just compensation and a valid public purpose. Regulatory takings occur when legislation or regulations deprive a property owner of all or some of the economic use or value of that property. The US courts have experienced difficulties dealing with whether a partial deprivation stemming from regulations that deprive an owner of some but not all of the economic value of the property is a partial regulatory taking for which compensation is required. Canadian courts have generally recognised the doctrine of regulatory takings, and provide some degree of compensation when regulatory takings have occurred. References include M Muir, 'The Doctrine of "Regulatory Takings" and Its Potential Application to the Alberta Electrical Industry' (16 April 1998); JK Heyman, 'Regulatory Takings: When is Enough, Enough?' (1995-96) 11(2) *Journal of Natural Resources & Environmental* 325; and the following US cases: *Penn Central Transportation Co. v New York City* 438 US 104 (1978); *First English Evangelical Lutheran Church v County of Los Angeles* 482 US (1987); and *Nollan v California Coastal Commission* 483 US 825 (1987).

32 European Commission, Green Paper on Greenhouse Gas Trading Within the European Union, COM(2000)87 (8 March 2000) The Green paper also referred to two background documents, 'FIELD Final Report: Designing Options for Implementing an Emissions Trading Regime for Greenhouse Gases in the EC' and 'CCAP Working Paper: Design of a Practical Approach to Greenhouse Gas Emissions Trading Combined with Policies and Measures'.

33 European Commission, n. 32 above, 6-7.

34 *Ibid.*, 8, 10 and 13.

35 *Ibid.*, 12 and 18-20.

appropriate. The paper discusses different options including the creation of a co-ordinated European regime where member states have the option to ‘opt-in’ where states can gradually opt into the regime, or an ‘opt-out’ where states can exclude all or some sectors from its application. The possibility of a gradual extension of the regime is also raised, as new member states enter the European Union, or as non-European countries which are part of the European Economic Area participate in the Community regime.<sup>36</sup>

The Green Paper highlights the debate as to whether emission trading regimes will be implemented on a continental basis or a national basis, or in some combined fashion. This discussion affects the nature and type of emissions trading regimes that may be implemented on a national basis. The use of carbon tonnes between countries under distinct national systems could eliminate the need for a common trading system within Europe, and the requirement of identical roles for private and state actors in each member state.<sup>37</sup> However, other types of emissions trading regimes could require more consistent approaches. Irrespective of the approach to emissions trading in Europe, there is the recognition of the necessity of widespread trust in the system. The financial markets must have confidence in national and private trades of assigned amounts and emission reduction units of greenhouse gases. It is also clear that some form of emissions trading regimes will be implemented in some countries in advance of the time frame proposed by the European Community, or under the Climate Change Convention.

### Interaction of European emissions trading proposal with energy liberalisation

Given the emphasis on an internal energy market, a European emissions trading regime is likely to be consistent with energy liberalisation. Impacts on energy liberalisation, as well as trade and competition issues, seem to occur more at the state or regional level where Directives and policies are implemented. An interesting question may be whether there is greater impetus to implement energy liberalisation or emissions trading, and the effect of the timing of each to these initiatives.

Energy liberalisation has progressed from Green Papers to White Papers to implemented Directives. Europe has also been experiencing positive benefits from energy liberalisation at a regional and sectoral level. In contrast, emission trading is at the stage of Green Papers, with a draft directive being proposed but not yet issued. There is no final agreement on the EC’s role for emissions trading, the structure and rules for emissions

trading, or the impact of emissions trading on the upstream energy sector and, more particularly, electricity generation.

An emissions trading regime for Europe will conform to energy liberalisation and will be subject to energy markets, particularly with respect to the upstream energy sector and electricity generation. For example, there may be the situation of decentralised or privatised electricity generation which is subject to national and international pricing constraints. In that instance, energy liberalisation could encourage the implementation of emissions trading and related policies and measures at the point of electricity consumption, rather than generation, as this might avoid distortion of the electricity market and impacts on prices that could otherwise occur.

## Energy liberalisation and emissions trading in Denmark

### Energy liberalisation

Denmark and the United Kingdom have different emissions trading proposals. Unlike the United Kingdom, Denmark is introducing energy liberalisation concurrently with an emissions trading regime for electricity generation and measures to increase renewable energy participation. Unlike other Nordic countries, Denmark has limited hydro resources, and relies on other forms of electricity generation, including coal. Renewable energy was first investigated following the oil crisis in the early 1970s, when the state required utilities to install a certain amount of renewable generation capacity. By the late 1980s, the focus of Denmark’s energy policy had shifted from economics and security of supply to environmental concerns. Renewable energy was focused predominantly upon wind resources but also biomass, so that wind now accounts for six per cent of Denmark’s energy supply.<sup>38</sup>

On 3 March 1999, Denmark’s political parties entered in an Electricity Reform Agreement, which establishes a framework in which consumer protection, environment and the security of supply are protected in a liberalised electricity market. The agreement establishes the organisation and opening of the electricity market. The agreement also provides a framework for CO<sub>2</sub> emissions from the electricity sector, and for developing renewable energy for a period up to the end of 2003. The Electricity Reform Agreement is being implemented by five Acts which were authorised by the Folketinget in May and June 1999: the Electricity Supply Act; the Bill on CO<sub>2</sub> Quotas for Electricity Production; the Bill to Amend the Act on Subsidies for Electricity Production; the Bill to Amend the Act on the Utilization of Renewable Energy Sources; and the Bill to Amend the Heat Supply Act. The Electricity Reform Agreement provides a blueprint for reform of the electricity sector

<sup>36</sup> Ibid., throughout the paper but particularly at 13-16.

<sup>37</sup> This comment on the use of carbon tonnes arose during a discussion with Frank Joshua, formerly of UNCTAD and now at Arthur Andersen, on 17 May 2000.

<sup>38</sup> Realm Research Group, *Renewable Electricity and Liberalising Markets, Phase 1: Inception Report* (March 1999, ECN-C-99-007), 16.

from 1999 to 2003. By the end of 2002, all consumers will be able to choose their electricity supplier. Consumers with an annual consumption in excess of 1 GWh per place of consumption will have choice of supplier for the end of 2000. Electrical companies have been modified to unbundle their monopoly and competition areas.

Electrical distribution companies will continue to function as grid companies, but must unbundle other corporate functions. Grid companies operate the grid and receive a reasonable return on their investment capital. Supply obligation companies and system-responsible companies provide electricity to consumers in a supply area, and are responsible for security of supply, respectively. Supply obligation companies may make a price-regulated profit, while system-supply companies receive a reasonable return on investment. All three types of companies have consumer representatives on their boards. Finally, production and trading companies are run as ordinary commercial companies, subject to some price regulation and restrictions on their ownership of the other three types of companies.

Renewable energy is addressed by a variety of means, including green certificates for electricity produced from renewable energy. Consumers are obliged to purchase an increasing share of electricity from renewable energy, until that level reaches 20 per cent. There are also a variety of regulated prices and price subsidies for renewable electricity, and rules and government guarantees designed to underpin the construction of facilities for renewable energy generation.<sup>39</sup>

### Emissions trading

After internal European reallocation, Denmark received a five per cent target reduction under the Climate Change Convention. Denmark also set a national target of reducing CO<sub>2</sub> emissions by 20 per cent in 2005 compared to 1988. Denmark had made considerable progress in the energy sector in reducing these emissions through energy savings, increased use of combined heat and steam facilities, renewable energy, fuel switching and increased efficiency of power plants. However, this effort was nullified by extra CO<sub>2</sub> emissions from 1994 to 1997 as a result of Danish electricity exports to the Nordic electricity market. These exports came from Danish coal-fired plants as the result of low rainfall in Sweden and Norway. This situation also highlighted issues with CO<sub>2</sub> regulation in an open electricity market, and contributed to the development of Denmark's current approach.<sup>40</sup>

The CO<sub>2</sub> Quotas for Electricity Production Act<sup>41</sup> creates a framework for regulation of CO<sub>2</sub> as

well as reduced emissions from fuels used for electricity production in Denmark. Emissions trading for CO<sub>2</sub> is based on an annual national ceiling of allowable emissions for the electricity sector since that sector is responsible for 40 per cent of the country's total CO<sub>2</sub> emissions. The ceiling is reduced each year, from 22 million tonnes in 2001, and 21 million tonnes in 2002, to 20 million tonnes in 2003. The national quota is allocated free to electricity producers based on historical emissions during the period 1994-98, and covers 70 of the historical emissions of each energy producer. Producers generating electricity through application of CO<sub>2</sub> free methods, such as wind or waste, are exempt from the Act. Electricity producers which produce less than 100,000 tonnes of CO<sub>2</sub> annually are also exempt. This *de minimis* threshold ensures that 90 per cent of total CO<sub>2</sub> emission from electricity production will be included in the permit system, but that only 10 to 15 of the total of 500 electricity producers will be affected by the permit system.<sup>42</sup>

The system of tradable emission permits provides an incentive to reduce electricity production or to use less polluting technology. Excess permits may be sold in a bilateral trade to another producer, for whom it is cheaper to buy permits than pay the fine of DKK 40 or Euro 5.40 per tonne. A producer can also save or bank permits that are not used in one year for the next year. Each year, the quota for the producer is also adjusted taking into account the national quota for the particular year, the transactions made and whether emissions permits have been saved. Revenue from fines is paid into the Danish Treasury, and used for energy saving purposes.<sup>43</sup>

The Act discusses possible impacts of emissions trading on electricity sales in Denmark and exports into the Nordic electricity system. Denmark uses coal for electricity generation, and exchanges electricity with the Nordic mainly hydro electricity-based system. The charge of DKK 40 per tonne CO<sub>2</sub>, where emissions exceeds a company's permits, provides the company with an economic incentive not to exceed the quota for emissions. This quota will be exceeded depending on the price for which Danish companies can sell electricity. System calculations suggest that quotas will be surpassed at a market price greater than DKK .18/kWh. In periods when the electricity price for the Nordic market is low, electricity producers will not be affected by the Act as no sales will occur. In periods where high market prices and sales are likely to occur, the Act will reduce the electricity producers' profits.<sup>44</sup>

On 29 March 2000, the European Commission approved the Danish scheme for tradable CO<sub>2</sub> emission permits. The Commission considered

39 Electricity Reform Agreement between the Danish Government, the Liberal Party, the Conservative Party and the Christian People's Party on legislative reform of the electricity sector, dated 3 March 1999, 2-8.

40 SL Pedersen, 'Danish CO<sub>2</sub> Emissions Trading System' (2000). A draft version of the article was reviewed.

41 Bill on CO<sub>2</sub> Quotas for Electricity Production. This Bill was adopted by the Folketinget on 28 May 1999, and is Act No. 376 as of 2 June 1999.

42 Ibid., Notes to the Bill.

43 Ibid.

44 Ibid.

that giving producers free emissions permits was state aid under Art. 87(1) of the EC Treaty. It approved the state aid on the basis of Art.87(3)(c) since the scheme will contribute to the development of environmental protection. However, approval of the Danish scheme is without prejudice to future decisions on emission trading permits. In order to respect the freedom of establishment, the state was required to allocate permits to new entrants to the Danish electricity market based on objective and non-discriminatory criteria, this criteria also being subject to Commission approval.<sup>45</sup>

### Interaction of emissions trading proposal and energy liberalisation

Viewing the Danish emission trading regime in the context of electricity liberalisation, one could conclude that emissions trading is consistent with liberalisation of generation as both aspects are integrated and implemented simultaneously. The overall system also incorporates measures to encourage renewable energy generation, and applies any revenues from emissions trading to the energy sector. As the regime only governs electricity generation in the upstream sector, energy efficiency is addressed by other measures in the downstream sector. In Denmark, there are electricity surpluses, with depreciated existing coal-fired plants and low electricity prices. New generation, particularly using fossil fuel, is not likely to occur in the near future. Renewable energy generation may be the exception given the level and extent of state support for this type of generation.

Two observations may be made. The first observation concerns whether an emissions trading market has truly been created. Can the emissions trading regime create a market in CO<sub>2</sub> emissions, given the regime establishes a ceiling price of DKK 40 or Euro 5.40 per tonne of CO<sub>2</sub>? Any trades can only occur at or below this price, and within a small group. Given that the regime contemplates the payment of fines as an option when electricity prices are sufficiently high, could the emissions trading regime be viewed as similar to a tax or method of reallocation at times when the market results in high electricity prices? The second observation concerns the degree of interest and participation in the Danish electricity market. Despite changes, how attractive will that market be for any entrants other than renewable generators, given the modified organisation of the electricity market, the variety of regulated prices and price subsidies, and rules and government guarantees designed to underpin the construction of facilities for renewable energy generation.

45 Communication, 'Commission approves CO<sub>2</sub> quotas for electricity sector in Denmark for the period 2001-2003' (Brussels, 29 March 2000).

## Energy liberalisation and emissions trading in the United Kingdom<sup>46</sup>

### Energy liberalisation

The United Kingdom has one of Europe's most open energy markets. Emissions trading regimes have been proposed and are being considered in conjunction with a Climate Change Levy, other policies and measures to implement the Convention, the Kyoto Protocol, and the country's internal energy and environmental goals. Emission trading in the United Kingdom is important as is the nature of its energy markets. The United Kingdom also has a strong commitment to using market instruments for the implementation of environmental goals. As such, its emissions trading model could serve as a model for future regimes within Europe and North America.

The United Kingdom proceeded independently with natural gas and electricity deregulation in the 1980s and early 1990s. The UK electricity sector meets the requirements of the Internal Market for Electricity Directive. Electricity was historically generated by coal, though there was a switch to natural gas as a result of the development of offshore hydrocarbon reserves. The United Kingdom has three distinct electricity systems for the regions of Scotland, Northern Ireland, and England and Wales. Each region has three major generators. Distribution companies own and manage the distribution system. Generators and suppliers have a right of access to transmission and distribution. Power pools and customer choices exist. In 2000, the Government eliminated a mandatory pool system for buying and selling electricity, and instead permitted buying and selling in different pools and exchanges and bilateral transactions.<sup>47</sup>

The UK's natural gas sector is open to competition, and meets most of the requirements of Directive 98/30/EEC concerning common rules for the internal market in gas. Broadly speaking, all of the UK gas market is open to competition since 1998, and not the 33 per cent required by the Directive. Third party access exists for pipelines and other facilities with provisions for non-discrimination.<sup>48</sup>

The United Kingdom illustrates some of the dilemmas for competitive markets and energy efficiency.

46 This discussion for the United Kingdom draws upon a recent article by the author, 'The United Kingdom and emissions trading for greenhouse gases', published in the *EcoBulletin* (Canadian Bar Association, Summer 2001). Special thanks also go to Matthew Rees and Chris Staples.

47 Meetings with parties in the United Kingdom in May 2000 and further communications. Realm Research Group, *Renewable Electricity and Liberalising Markets, Phase 1: Inception Report* (March 1999, ECN-C-99-007), 20-21. The Utilities Act 2000, and predecessor and related legislation, have required these changes.

48 UK Department of Trade and Industry, *Consultation Document: Implementation of Directive 98/30/EC of the European Parliament and the Council of 22 June 1998 Concerning Common Rules for the Internal Market in Gas* (May 2000).

In the past, government, rather than utilities, had sponsored limited energy efficiency programs prior to restructuring. Initially, government believed that market forces would meet future demands for energy efficiency. However, the market did not meet these needs. Three years after restructuring, the Government took a more direct approach. Utilities were then required to promote energy efficiency to meet the region's environmental obligations under the 1992 Rio Convention Accord.<sup>49</sup>

The United Kingdom has embarked on measures to increase the participation of renewable energy and energy efficiency. Renewable energy was promoted in 1990 through the creation of the Non-Fossil Fuel Obligation (NFFO) and the imposition of a Fossil Fuel Levy on domestic energy consumption.<sup>50</sup> The NFFO has now been replaced by the Renewable Fuel Obligation under which electricity suppliers are required to purchase a portion of their energy requirements from generators of renewable energy. Distributors purchasing electricity from renewable energy sources get certificates as evidence of their purchase. To the extent that they exceed their target, they can trade the excess, by either selling it to other distributors, or by converting their certificates to tradable CO<sub>2</sub> permits in the emissions trading scheme.

The United Kingdom has other initiatives for renewable energy and energy efficiency. These include energy efficiency commitments, the Energy Efficiency Fund, enhanced capital allowances for energy efficient investments, as well as continuing past programs such as energy efficiency best practices programmes.<sup>51</sup> Policy initiatives include requirements that electricity suppliers increase electricity from renewable resources to 10 per cent by 2010, subject to acceptable costs; that electricity from combined heat and power, or co-generation, doubles by that time; and that the fuel efficiency of new cars increases by 25 per cent by 2008-9 in accordance with environmental agreements with car manufacturers.<sup>52</sup>

### Emissions trading proposal

The United Kingdom was in a relatively good position for greenhouse gas emissions in the early 1990s as the switch from coal-fired generation to natural gas-fired generation led to emissions reductions in the first half of the decade. After internal European reallocation, the United Kingdom received a 12.5 per cent target reduction under the Climate Change Convention. The United Kingdom set a domestic target of a 20 per cent decrease in CO<sub>2</sub> levels below 1990 levels by 2010. The UK's climate change policy stems largely from Lord Marshall's report of November 1998, and is composed of interrelated measures.

These policy measures include the introduction of an energy tax known as the Climate Change Levy, with 80 per cent discounts from the tax for designated energy intensive companies that enter into agreements with government to improve energy efficiency, and proposed emissions trading regimes. To soften the impact, government proposed an emissions trading regime. Other policies include a requirement to introduce energy efficiency measures under the new integrated pollution prevention and control (IPPC) regime, which is being phased in to replace the previous system of industrial emissions regulation.

Under the Climate Change Levy, companies that have processes designated as part A processes under the IPPC regime, or the regime that replaces it, may opt for an absolute emissions cap, or a cap based on tonnes per unit of throughput. Companies may use emissions trading to meet their commitment, though their ability to trade can take place outside the proposed emissions trading regime. The Climate Change Levy applies to industrial and commercial users of energy, and covers primary and secondary fuel for lighting and heating; and power for industry, commerce, agriculture and public administration. The Levy is imposed on energy supplied to industrial and commercial consumers, with differential rates imposed for electricity, coal, coal and hydrocarbon derivatives, natural gas and liquefied petroleum gas. The Levy is expected to raise £1 billion, which will be circulated back into business as a reduction in employers' National Insurance Contributions and enhanced capital allowances for certain energy efficient investments. There are exemptions to the Levy for new renewable energy and certain combined heat and power plants, and significant discounts for energy intensive sectors which sign energy efficiency agreements meeting government criteria.

Two emissions trading proposals have circulated in the United Kingdom. The first proposal was the September 1999 report of the International Petroleum Exchange,<sup>53</sup> which proposal was then superceded by a proposal of the Emissions Trading Group. This trading scheme was the result of intensive industry negotiations involving government and private parties, and resulted in proposals that can be characterised as complex, inclusive and voluntary.<sup>54</sup>

In November 2000, the Department of the Environment, Transport and the Regions (DETR) introduced a consultation document, entitled *A Greenhouse Gas Emissions Trading Scheme for the United Kingdom*, which was open for comment for a brief period. This trading scheme was primarily based on the recommendations of the UK Emissions Trading Group, which first introduced its emissions trading scheme in May 2000.

49 E Holt, *Energy Efficiency in a Restructured UK Electric Industry* (August 1995).

50 Realm Research Group, n. 47 above.

51 Department of the Environment, Transport and the Regions, *Energy Measures under the Climate Change Levy Package* (1999).

52 Department of the Environment, Transport and the Regions, *Climate Change: Draft UK Programme Summary* (2000).

53 International Petroleum Exchange, with the assistance of Envirospire and Margaree Consultants, *Design of a UK Greenhouse Gas Emissions Trading System: A Report by the IPE* (September 1999).

54 Emissions Trading Group, *Outline Proposal for UK Emissions Trading* (May 2000).

On 3 May 2001, the DETR announced the establishment of the Climate Change Projects Office, and released three documents: 'Draft Framework Document for the UK Emissions Trading Scheme'; 'Incentives Bidding Mechanism: Options for a mechanism to allocate incentives funding and set emissions reductions targets in the UK Emissions Trading Scheme'; and 'Analysis of Responses to Consultation Document: A Greenhouse Gas Emissions Trading Scheme for the United Kingdom'. The Department announced that the draft framework reflects the views of business through the recommendations of the UK Emissions Trading Group and responses to the consultation document. The working document was introduced in May 2001 to provide businesses with details of the scheme and to prepare potential participants for entry into this market. The Government will finalise the framework in response to comments. A final version was scheduled to be released in July 2001, but has not been yet issued. Trading itself is scheduled to begin in April 2002.

The proposed UK emissions trading regime will apply to all companies operating in the United Kingdom which agree to binding greenhouse gas limits. The regime will be overseen by an Emissions Trading Authority, and will include different types of participants. Participants include those which agree to absolute annual emission limits, and those which accept an output-related emissions target, both under a negotiated agreement. Other participants are firms which deliver specific emission reductions projects, and firms which accept an absolute cap on their emissions in return for a financial incentive via the incentive bidding mechanism discussed below. Parties in the first and second category receive permits for CO<sub>2</sub> tonnes equivalent, which would be equal to either an annual emissions limit, or savings on emissions occurring under the agreement, respectively. The targets will either comprise only CO<sub>2</sub>, or all six greenhouse gases under the Kyoto Protocol. Projects in the United Kingdom or abroad that generate emissions reductions will be allowed to generate credits which could meet their obligations or be traded in the market. At this time, the regime does not apply to electricity generation, although these generators could supply credits from approved projects.

The incentive bidding mechanism is one means for companies to participate in the voluntary UK emissions trading regime, another way being through the Climate Change Agreement negotiated as part of the Climate Change Levy package. Through the incentive bidding mechanism, companies can choose to make emissions reductions (tonnes of CO<sub>2</sub> equivalent) in return for government incentive payments (pounds per tonne). Emissions reductions that are paid for from the fund will form company emissions reduction targets. Companies will be able to meet their targets by either reducing their emissions or buying emissions permits from other participants in the trading regime. Companies will also be able to sell or bank emissions permits if they reduce further than their targets. Bidding by companies will take place in autumn 2001 under an unspecified bidding mechanism. The first emissions reduction targets for

firms will apply in 2002 and annually to 2006, with incentive moneys being paid yearly to companies. The UK Government has agreed to contribute £43 million per year before tax, or £215 million five-year period.

In a complex regime, timing is all. The UK emissions trading scheme is scheduled to begin in April 2002. The Government would like the scheme to complement and provide flexibility for other policy-related instruments. As such, the scheme must be considered in conjunction with the Climate Change Levy, and the policies and measures for renewable energy and energy efficiency. The Climate Change Levy allows reductions in tax for designated energy intensive companies which enter into emissions trading (discussed above).

Government has proposed trading of renewable energy obligation certificates. If individual suppliers over-achieve their obligations, they will be able to convert this to the CO<sub>2</sub> equivalent and sell it to the emissions trading regime. The energy efficiency commitment is an obligation on licensed electricity or gas suppliers to encourage or assist consumers to take up energy efficiency measures. Government is proposing to allow these suppliers to trade between themselves. There is a separate market from emissions trading for sales of compliance between distributors. However, increases in efficiency additional to the level of the commitments are eligible for the emissions trading scheme on the basis of CO<sub>2</sub> savings. Suppliers cannot purchase CO<sub>2</sub> permits and convert them to either energy efficiency commitment or renewable energy obligation certificates.

### Interaction of energy liberalisation and emissions trading

Any observations on emissions trading and energy liberalisation in the United Kingdom are tentative, given the proposed nature of the emissions trading regime and delays which have or may occur with its implementation. Participation in the UK's emissions trading regime is voluntary, but the Climate Change Levy provides strong incentives for participation. Renewable energy and energy efficiency are included in the proposed regime, and thus will be incorporated in energy markets. Of particular note are the differing roles under the regime for energy consumers and generators. The Climate Change Levy and energy efficiency commitments focus on consumption. In contrast, renewable obligation certificates focus on generation with a separate trading regime being proposed.

### Comparison between Europe and North America

European energy markets are affected by regulation. Other types of markets may also be dependent upon or created by regulation. Emissions trading is a quintessential example of a market constructed through regulation. National or international markets in greenhouse gas emissions may be created to meet

negotiated limits under an international environmental agreement, where these negotiated limits reflect politics as much as logic and science.

A matter briefly considered here is whether differences between European and North American energy markets make it more difficult to introduce emissions trading regimes under the Kyoto Protocol in one jurisdiction over another, or to introduce emission trading regimes that are consistent with energy liberalisation. Arguably, there is greater political will in Europe than in North America to introduce emissions trading at this time, given the Bonn Agreement and the recent conduct of the United States. However, political will changes over time, and the United States may change its stance and embrace market approaches to ameliorate climate change. The next question may be whether it will be equally easy to introduce emissions trading regimes in each jurisdiction which are consistent with evolving energy markets.

In North America, natural gas and electricity liberalisation or 'deregulation' occurred independently of environmental considerations, the Climate Change Convention and emissions trading. Within the upstream natural gas sector, market participants in North America embraced regulatory initiatives for energy deregulation, and created competitive North American gas markets that resulted in lower energy prices and increased number of producers and marketers. Environmental matters were not directly considered within natural gas deregulation, though it did result in the increased use of natural gas, which is a cleaner fuel. While the North American debate over energy deregulation factors in relation to some environmental issues continues, there is strong resistance in the United States at this time to the implementation of the Kyoto Protocol through emissions trading regimes, or other policies and measures.

Electricity regulation is proceeding more slowly and in a regionally specific manner. Even in the short time it has been occurring, electricity deregulation has resulted in more pricing spikes or highly priced regional markets, such as the electricity markets in California in 2000 and early 2001. There has also been some debate about the sufficiency of electrical transmissions lines, and the best means of constructing additional lines in a deregulated market. Competition exists between oil, natural gas and electricity, which, in turn, lowers energy prices and establishes 'ceilings' and 'floors' for these prices.

Canada and the United States opened their natural gas and electricity markets independently. Regulators in North America now generally have a 'hands-off' approach to economic regulation of these markets. Canada is a federal state where energy is regulated at a federal and provincial level. The National Energy Board and the Alberta Energy and Utilities Board are regulators with jurisdiction over oil and gas pipelines, electric utilities and energy exports. Regulators have approved multi-year negotiated tolling settlements for new and existing pipelines. Market participants rather than regulators tend to determine which competing pipeline and generation facility will proceed. Instead, regulators allocate greater time to addressing environmental, safety,

landowner and public concerns in relation to the construction and operation of new and existing pipelines. Environmental implications of energy consumption are generally considered independently of market regulation, while energy pricing is usually determined by the market.

The Canadian upstream natural gas sector was opened to competition in 1985 as the result of the agreement of both levels of government. Competition resulted in the separation of gas transportation and gas sales on pipelines, and open access for third parties to pipeline capacity. Competition in the Canadian natural gas sector led to increased exports of natural gas into the US market, and the movement of purchases and sales of gas from border points to the producing areas and markets in each country. Competition and markets for industrial and residential gas customers occurred on a more uneven and regional basis, but now exist for most of Canada.

The Canadian electricity market is just developing. Most of Canada is characterised by provincial monopolies for the generation, transmission and distribution of electricity. Given regional surpluses of hydro-electricity, electricity deregulation is being driven in part by a desire to maintain and increase access for electricity exports to US markets. Alberta has the most 'deregulated' electricity market in Canada and is one Canadian model for electricity deregulation.

Alberta has private generation and distribution, an open access transmission system, an independent transmission administrator, and a mandatory power pool for the purchase and sale of electricity. Most electricity is generated by coal-fire, though incremental generation may be gas-fired and associated with industrial process that use the steam or heat. There have been ongoing concerns since deregulation about electricity pricing and economic attractiveness of new generation, and the dominance of certain parties in the electricity sector.

The Alberta Power Pool does not dispatch renewable energy in priority to other electricity. Given renewable energy tends to be more expensive than other forms of electricity and, in the absence of any significant quotas, market participation of renewable energy is primarily determined by consumer preference. Local distribution companies in Calgary and Edmonton have begun offering 'green' electricity. There are a number of voluntary federal energy efficiency programs, but no specific energy efficiency programs for the Alberta electricity market. There are no proposals for a mandatory emissions trading regime to implement the Climate Change Convention, as efforts have focused on pilot programmes and voluntary initiatives such as the Voluntary Challenge and Registry.<sup>55</sup>

<sup>55</sup> This discussion draws from M Muir, '1998 Amendments to the Alberta Electric Utilities Act; The Shape of the Future Market', *Utilities Law Review* (October 1998); and 'Sustainable Energy Development and Use: Competitive Energy Markets and the Role of Renewable Energy and Energy Efficiency', chapter in a book on sustainable development by the Canadian Bar Association (August 2000). It also draws on the International Energy Agency recent publication, *Energy Policies of IEA Countries - Canada -2000 Review* (June 2000).

The upstream natural gas market in the United States was opened to competition by the Federal Energy Regulatory Commission (FERC) in the early 1990s under FERC Order No. 636 and subsequent orders. These FERC orders required interstate natural gas pipeline companies to separate their transportation and merchant functions, and to provide open access transportation to all shippers of natural gas. Parallel developments occurred under state regulation for local gas markets.

On 20 December 1999, the FERC issued Order No. 2000, Final Rule on Regional Transmission Organizations, which is the latest in the series of rulings that began with Order No. 888. The FERC has jurisdiction over transmission access and issues under the Federal Power Act and the Energy Policy Act. In Order No. 888, the FERC sought to facilitate the development of competitive electricity markets by requiring regulated utilities to functionally unbundle their transmission system operations from their wholesale market functions. However, the increase in bulk wholesale transactions resulting from implementation of Order No. 888 led to constraints on the existing transmission system. FERC Order No. 2000 addresses some of these constraints by the creation of regional electricity transmission systems. These regional systems have the following characteristics: independence from market participants; sufficient geographical region; operational authority over the system; and exclusive authority for maintaining short-term reliability.<sup>56</sup>

Local restrictions for electrical transmissions system that affect supply and thus markets have become a greater concern in 2000 and 2001. This has led to debates as to whether electricity transmission systems are more appropriately regulated at a regional or national level. Some markets, particularly those of California and the adjacent states, have been subject to higher electricity prices. These higher prices reflect increased demand and market structures. However, as a result there was a temporary perception of an energy crisis, and some degree of state and national intervention and ‘re-regulation’ of these markets.

Environmental considerations have not been a key consideration in electricity deregulation in the United States, though there are some indications that this may be changing at a state level.<sup>57</sup> Discussions have taken place in relation to the participation of renewable energy and energy efficiency in competitive markets, and the role of regulation in both eliminating market barriers and

facilitating that participation.<sup>58</sup> At a national level, President Bush and the current Republican regime appear to be moving away from focusing on environmental aspects of energy generation and consumption. Instead, President Bush is encouraging the increased production of oil and gas throughout the United States, and may be encouraging generation of low-cost, coal-fired electricity irrespective of the air emissions.

California has one of the most complex and contentious energy markets. Although it was one of the first states to deregulate, it was also one of the first states to impose some form of ‘re-regulation’ in 2001 in response to increasing demand, and fluctuating supply and prices. California also provides the most commercial incentives for renewable energy. Although California had one of the largest and most diverse renewable energy sectors in the world in the 1980s, renewable energy in the state declined in the late 1990s. California’s Renewable Energy Program was established in response to Assembly Bill 1890 and codified in Senate Bill 90. Assembly Bill 1890, which also deregulated the electricity industry, established a new statewide renewables policy by providing \$540 million collected from Southern California Edison, Pacific Gas and Electric Company, and San Diego Gas & Electric over four years beginning in 1998 to support existing, new and emerging renewable technologies from 1998 to 2001. Two potential additional sources of funds are voluntary contributions from customers and contributions from municipal utilities. Assembly Bill 1890 also required the Energy Commission to submit a report to the Legislature outlining allocation and distribution recommendations for those renewables funds. This report,<sup>59</sup> as adopted by the Legislature, became Senate Bill 90 – the administrative guidelines for the Renewable Energy Program. Senate Bill 90 implements the report’s recommendations and creates a Renewable Resource Trust Fund containing four accounts: the Existing Renewable Resources Account, the New Renewable Resources Account, the Emerging Renewable Resources Account (Buy-Down Program), and the Customer-Side Renewable Resources Purchases Account. In sum, the California Renewable Energy Program provides support for existing, new and emerging renewable technologies, and endeavours to develop a market for renewable energy that includes consumer demand. By balancing incentives for renewable energy and generation the program attempts to create a self-sustaining renewable energy industry in California. However, given the recent volatility in the California electricity market, this renewable energy program is taking place against a backdrop of fluctuating electricity demand, supply and pricing.<sup>59</sup>

56 M Caffey-Moquin, ‘Electric Industry Restructuring, Finance, Mergers, and Acquisitions: FERC Order No. 2000’, written remarks from ABA 1999 Year in Review.

57 California is a concrete example. Further, the US House of Representatives Commerce Committee is deliberating proposals for electricity deregulation, and is considering restructuring a bill to limit two pollutants, sulphur dioxide and nitrogen oxide, and may include limits for other pollutants. There has been considerable support for these and further measures from New York State environmental and public interest groups. See *Inside EPA Weekly Report*, Vol. 21, no. 24, 16 June 2000, 1.

58 RH Wiser, ‘The Role of Public Policy in Emerging Green Power Markets: An Analysis of Marketer Preferences’ (Lawrence Berkeley National Laboratory, University of California, August 1999), as well as other reports from this group examining green power, renewable energy and energy efficiency.

59 Policy Report on AB 1890 Renewables Funding, publication number 500-97-002.

When one considers the totality of the North America natural gas and electricity markets, one could say that these markets have not focused extensively on environmental aspects of energy generation and consumption. California has been a limited exception to this rule. As market deregulation was designed to introduce customer choice and greater competition in pricing, it is often difficult for renewable energy to compete, absent specific measures to ensure their participation or consumer preference. Energy efficiency and conservation are not furthered by competitive markets as lower energy prices do not encourage lower energy consumption.

Similarly, North American energy markets were implemented in advance of the Climate Change Convention. Therefore, any emissions trading regimes will be superimposed upon existing energy markets, and may not be an integral part of the design of these energy markets. As a result, emissions trading regimes could initially be inconsistent with the structure and operation of these markets. Given the market-based ideology of North America, there may also be a greater reliance on individual customer choice or consumer preference, instead of regulatory requirements, to implement environment objectives in for energy uses.

European energy markets are only now liberalising in response to the Directives. The internal energy market may also be developing at the same time as national and continental requirements for renewable energy and energy

efficiency are being implemented. Markets for emissions trading are also being considered in close proximity to energy liberalisation and the regulation of these markets. Therefore, there may not be much inconsistency with energy liberalisation and emissions trading in Europe. The more relevant issue may be the terms and conditions of energy and emission trading markets given the various objectives of regulators and market participants. Potential market participants in Europe will consider the terms and conditions of these related markets in deciding whether to participate in energy and emissions trading.

An interesting question may be the manner in which European emissions trading regimes will impact on energy markets. Energy liberalisation requires active market participants for the generation, distribution and sale of energy. Similarly, emissions trading regimes must be sufficiently attractive to encourage the active participation of private parties, administrators and financial markets. A potential challenge may be the design of frameworks for emissions trading that also facilitate active energy markets. Interestingly, North America may have an opposing paradigm. In North America, it could be difficult to introduce emissions trading and measures supporting renewable energy and energy efficiency due to the structure of existing markets and political will. Conversely, in Europe it may be difficult to maintain markets, as emissions trading and related measures supporting renewable energy and energy efficiency affect the commercial operation of these markets.