



# Carbon Market Intelligence Report Issue #2

Prepared for PCF*plus* Research by EcoSecurities Ltd.

Harvard Square  
206 W. Bonita Avenue  
Claremont CA 91711  
[www.ecosecurities.com](http://www.ecosecurities.com)

PCF*plus* Report 6

Washington DC, October 2001

*The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the view of the World Bank, its Executive Directors, or the countries they represent.*

## **PCFplus**

PCFplus is a research, training, and outreach program designed to complement the Prototype Carbon Fund (PCF). While an important goal of the PCF is to disseminate its experience, PCF objectives and resources restrict its research and outreach activities to those directly associated with project implementation. PCFplus is intended to assist PCF stakeholders (staff, participants and host countries), and the international community at large in understanding the complex issues related to the implementation of markets for project-based greenhouse gas emission reductions under the Clean Development Mechanism (CDM) and Joint Implementation (JI), with a view to reducing transaction costs and risks of doing business in the emerging GHG market.

The research component of PCFplus brings a unique set of strengths to the climate change research arena. Most importantly, it will be able to draw on and elucidate the lessons of PCF's pioneering activities. Its location in the World Bank enables it also to link with a wide range of climate-related programs, including the National Strategy Studies on JI/CDM, Bank-administered GEF projects in the climate area, and the broad range of Bank projects and studies involving energy and land use. PCFplus Research is administered by the Bank's Research Group, providing extensive in-house expertise in environmental economics, public finance, and development economics, and ensuring analytical rigor.

For more information, please visit our website [www.prototypecarbonfund.org](http://www.prototypecarbonfund.org)  
(press PCFplus button, then Research Program link)

Completed PCFplus Research studies (available online):

- 1 – Preliminary Validation Manual
- 2 – Could carbon financing appreciably accelerate the diffusion of Solar Home Systems?
- 3 – Regulating the CDM using a Commodity Market Model
- 4 – Review and Analysis of the Emerging Greenhouse Gas Market
- 5 – Regulatory Drivers of the Carbon Market – Market Intelligence Issue #1

# Executive Summary

In the following pages EcoSecurities continues exploring the issues addressed in our first report, which encompass:

- **Interpretation of Bonn agreements and discussion of international developments following the COP-6.5 negotiations;**
- **Discussion of emissions reduction profiles of Annex I states;**
- **Evaluation of the US GHG policy developments after its withdrawal from the Kyoto process; and**
- **Review of several national policy developments affecting the shape of the emerging carbon markets.**

In the second report, we additionally focus on the US greenhouse gas and renewable energy policies, with the primary attention paid to the State programs. This information can be viewed in Appendix I.

While reviewing achievements of Bonn negotiations (section 1), we stress that lower-than-previously-expected carbon prices are expected to facilitate initial carbon transactions. The immediate international price of carbon is speculated to be ‘well under \$10’, although no *detailed* econometric estimates of precise price ranges were found in the post-COP-6.5 literature.<sup>1</sup>

Next, although EcoSecurities feels that Bonn agreement may lead to relative relaxation of Kyoto’s environmental standards, we assert that it constitutes a significant progress towards Kyoto ratification as it has *institutionalized* key procedures and processes pertaining to the establishment of international emissions trading. To substantiate our generally-optimistic review of Bonn’s outcomes, we cite several interesting international policy developments, which prove that COP-6.5 was a much-needed impetus for Kyoto ratification. Among others, we review New Zealand’s statement about the likelihood of ratification of the Protocol in the Fall of 2002, Norway’s July’s declaration against the use of carbon sinks in meeting its domestic emissions reduction obligations, Mexico’s announcement of the readiness to ratify Kyoto regardless of the American position on the issue, Canada’s support for Kyoto ratification by the end of 2002 and a number of other encouraging policy statements made by key officials from developing nations.

Given that for any state greenhouse gas policies/market developments emerge as a result of Kyoto-stipulated greenhouse gas liabilities, we next outline GHG emissions profiles for a large number of Annex I jurisdictions. These profiles are discussed in substantial detail in Section 2. This section permits the reader to understand relative national emissions positions before proceeding to the analysis of greenhouse gas policy platforms and energy markets, which we will review in our third (forthcoming) report.

---

<sup>1</sup> One exception to this statement is the October 2001 article appearing in Volume 7 of *Joint Implementation Quarterly* (JIQ), where Jürg Grütter reviewed several price forecasts assuming the US withdrawal from the Kyoto Protocol. His model also assumes zero-cost sinks rate, zero transaction costs and 100% implementation rate of the CDM. In this article the *average* non-monopoly scenario price of carbon (for global trading) is US\$7/tCE for the first commitment period, with the market size (volume traded) approaching 100/300-599 MTCE. For details see: Jürg Grütter, 2001. “The GHG Market After Bonn.” JIQ, October 2001, 7-3, p.9.

In Section 2 we find that Germany and the United Kingdom have demonstrated visible progress in reducing national levels of greenhouse gas emissions. Arguably, these achievements are due to the “co-occurrence” of several factors. Namely, one could argue that German noticeable performance is due to the retirement of a great number of outdated East-German enterprises, while British achievements may be attributed to fuel substitution towards less carbon-intensive natural gas. Although true, these arguments nevertheless neglect the fact that both Germany and Britain have deliberately created a set of *national incentives* facilitating the above shifts in the energy production/infrastructure, which were not carried to the same degree in other nations regardless of favorable circumstances.

However, the overall Annex B emissions reduction picture is far from ‘black-and-white’’: there are different ‘shades’ of emissions reduction performance between the GHG reduction ‘laggards’ and ‘leaders’ mentioned above. We would like to single out Sweden, Norway, and – to the lesser extent – Finland, Italy and New Zealand as states that *appear* to have substantial potential for meeting their national Kyoto/EU commitment targets with the *minimal degree* of more stringent emissions reduction policies.

While we do not provide a detailed review of emissions profiles of Greece, Portugal and Spain (which will be given in the forthcoming report #3), we note that emissions positions of Greece and Portugal look promising in terms of national potential to meet the respective EU “Bubble” quotas. At the same time, Australia, Austria, Belgium, Canada, France, Japan and – to a smaller extent – Denmark and the Netherlands seem to be in less advantageous position when one compares the historical level of their 1998 GHG emissions to the national emissions reduction objectives.

In sum, by analyzing the emissions reduction position of Annex I states, we came to the following picture reflecting the directions/quantities of short-term carbon transaction flows:

**Table ES.1. International GHG<sup>2</sup> Transactions, Expected Flow for Fall 2001 (MMTCE):**

Country	Buyer or Seller	Current position of country with regard to its Kyoto commitment	Current position of EU countries with regard to their EU 'Bubble' targets
Australia	Buyer	+ 8.55 <sup>3</sup>	
Austria	Buyer	+ 2.48	+ 3.51
Belgium	Buyer	+ 2.32	+ 5.05
Canada	Buyer	+ 31.91	
Denmark	Buyer	+ 3.16	+ 5.62
Finland	Buyer/seller (?)	+ 1.64	+ 0.24 <sup>4</sup>
France	Buyer	+ 13.33	+ 1.43 <sup>3</sup>
Germany	<b>Seller</b>	- 25.89	+ 16.43 <sup>5</sup>
Greece**	Buyer	+ 6.75	+ 0.24 <sup>6</sup>
Italy	Buyer	+ 17.19	+ 15.08
Japan	Buyer	+ 47.92	
Netherlands	Buyer	+ 9.19	+ 3.41
New Zealand	Buyer/seller (?)	+ 0.53 <sup>7</sup>	
Norway	Buyer/seller (?)	+ 1.81 <sup>6</sup>	
Portugal**	Buyer/seller (?)	+ 1.39	-1.69 <sup>8</sup>
Spain**	Buyer	+ 22.53	+ 3.59
Sweden	Buyer/seller (?)	+ 1.75 <sup>6</sup>	- 0.52 <sup>9</sup>
Switzerland	Buyer/seller (?)	+ 1.16	
United Kingdom	<b>Seller</b>	- 3.05	+ 5.86 <sup>10</sup>
United States *	Buyer	+ 281.55	
<b>TOTAL/excessive GHG emissions (US not counted)</b>	--	<b>(World-wide) + 144.67</b>	<b>(EU) + 58.25</b>

**Notes:**

\* we report the US data for comparative purposes regardless of its withdrawal from the Protocol

\*\* The detailed analysis of emissions profiles for South European states will be given in Report 3, where we will cover Greece, Portugal and Spain.

**Source:** EcoSecurities, own calculations and PCF Plus Report of June 2001.

<sup>2</sup> The gases analyzed for this table include CO<sub>2</sub>, N<sub>2</sub>O and CH<sub>4</sub>.

<sup>3</sup> (+) represents a buyer of international carbon credits, while (-) denotes a seller

<sup>4</sup> Could be in compliance with the EU target by the first commitment period

<sup>5</sup> On the EU level Germany is a buyer

<sup>6</sup> Could be in compliance with the EU quota if retains the current rate of emissions

<sup>7</sup> Could be in compliance with Kyoto if retains the current rate of emissions

<sup>8</sup> With respect to the EU quota, Portugal could be considered a net seller of emissions credits

<sup>9</sup> Sweden is already in compliance with its EU quota

<sup>10</sup> on the EU target the UK is a carbon credit buyer.

We next turn to reviewing national greenhouse gas policies, programs and initiatives in the United States (Section 3). We continue to believe that the US is searching for national greenhouse gas position and has made some progress in the direction of finding a solution to the GHG emissions problem *outside* the Kyoto framework, at least before the September 11 attacks on the Pentagon and the World Trade Center.

EcoSecurities dedicates a separate section to analyzing the federal policy initiatives (the aforementioned Section 3), where we find that:

- Regardless of a relative scale-down a series of climate change programs developed by the previous US Administration (especially the USIJI), the Bush Administration is mandated to continue a vast spectrum of energy efficiency/conservation policies, among which the *Energy Star*<sup>11</sup> has graduated to being a North-America-wide success;
- The US executive branch continues to work on an alternative GHG policy proposal, which was originally *expected* to be made public at COP-7. At this juncture it remains unclear when the US climate change plans will be publicized. However, from the available information we conclude that, in general, the draft proposal is not substantially different from the previous US policy commitments in that it continues to rely primarily on the private-sector initiatives. What is different is the treatment of limited public funding. Where such funding is proposed, it is designated for R&D related to GHG abatement technologies/processes and/or for strengthening scientific investigation of the global warming causes. The policy draft also suggests extensive cooperation with developing countries (particularly with respect to carbon sinks projects).
- In the summer of 2001, during both *pre-* and *post-*Bonn periods, the US Legislative branch initiated a plethora of national regulations proposing a system of fiscal and regulatory incentives supporting carbon sequestration and development of GHG-abatement technologies. While these initiatives are pending Senatorial review, EcoSecurities pledges to inform the reader on the progress of national carbon legislation in the subsequent reports. It is important to stress the sheer magnitude of the legislative effort and its timing, all of which signal that the US Senate is taking a pro-active position in advancing the national GHG abatement policy. This is the most promising sign from the US for the forthcoming international negotiations.

Upon informing the reader on the key policy initiatives occupying the agenda of the US decision-makers, in Section 4 we elucidate the most substantial GHG policies/programs taking place elsewhere in the European Union and North America. We will review the Asian Annex B in the forthcoming report.

Considering that national greenhouse gas programs and emissions trading initiatives would have a direct impact on the development of the global carbon market, in Section 4 we review the final emissions trading scheme approved by the UK policy-makers on July 14 and discuss the basic structure of the German emissions trading proposal. We further review several carbon-reduction programs announced in Canada, Switzerland and Poland. We also stress the importance of the EU emissions trading and biofuels dialogues

---

<sup>11</sup> *Energy Star* is a national energy efficiency program promoting reduction of residential and commercial energy intensity through a variety of measures supporting energy-efficient appliances and tools. Among others, these measures include: labeling of energy-efficient products, promotion of various energy-efficient technologies, computation of energy-saving targets for businesses and various forms of residential construction assistance.

as they establish the foundation for the construction of the continent-wide emissions trading structure and expand the existing GHG reduction programs.

In carrying out the above analysis we emphasize that finalization of the British national emissions trading scheme is likely to be a catalyst for the development of the regional emissions trading market, which is already widely discussed by the EU Commission. The fact that Polish government decided to impose strict Renewable Portfolio Standard requirements on national electricity generators signals that benefits of reducing greenhouse gas emissions have caught up with *the future* members of the European Union. While the continent-wide emissions trading scheme is still under tenacious discussion, we report a minimal but *continuous* emissions reduction progress.

In sum, our Second report represents a generic extension of our first product. Similar to the first report published in June 2001, we analyzed and compared national GHG emissions profiles. We also examined the newest policy debates surrounding creation of national greenhouse gas programs. In this report we went a bit further and introduced the reader to the detailed analysis of the US state policy initiatives and to the diverse environment of American climate change policy-making. We again refer the reader to Appendix I to review all state-specific initiatives.

In our third report (which is expected in January 2002) we will review the key political-economic developments affecting developments of carbon markets in Annex I jurisdictions after COP-7 and will explore volunteer GHG-reduction actions undertaken by individual companies across the globe. We will also complete our analysis of national emissions reduction profiles by reviewing historical and projected GHG emissions in the Asian Annex B. We will also review the most recent developments of European and Asian Annex B energy markets.

In conclusion of this Executive Summary, we would like to stress that Appendix II contains a short methodological note accompanying our analysis of national GHG emissions profiles, which is given in Section 2 and expanded in subsequent Appendix III, which contains more detailed revisions of emissions profiles of several states.



# Table of Contents

<b>Section 1</b>	<b>10</b>
<i>Outlook on International Developments: Summer 2001</i>	<b>10</b>
<b>A.I. Bonn Agreement – Key Provisions</b>	<b>10</b>
Generic issues	10
The Clean Development Mechanism	10
Joint Implementation	11
<b>A.II. Reaction to Bonn Agreement: a Sell-Out Damaging the Environment or a Brilliant Political Compromise Opening Doors for Kyoto Ratification?</b>	<b>12</b>
A.II.1. Impact on International Carbon Price and Environmental Implications	12
A.II.2. Problems with the Language of Compliance Mechanisms	13
A.II.3. Are the Decisions of COP-6.5 Likely to be Implemented?	14
A.II.4. To Sum Up: Where We See the Benefits of Bonn	15
<b>A.III. A Discussion of Potential US Strategies</b>	<b>15</b>
<b>A. IV. International Community Before Morocco: Immediate Prospects of Kyoto Ratification</b>	<b>19</b>
<b>A. V. In Sum...</b>	<b>20</b>
<b>Section 2</b>	<b>21</b>
<i>Summary of Emissions Profiles, Annex B (1) States</i>	<b>21</b>
<b>B.I. General Structure of this Section</b>	<b>21</b>
<b>B.II. Summary of GHG Emissions Positions</b>	<b>22</b>
<b>B.III. Hypothesized Directions of International Carbon Transactions</b>	<b>24</b>
<b>Section 3</b>	<b>26</b>
<i>United States: In the Absence of a National GHG Policy</i>	<b>26</b>
<b>C.1. A Snapshot of the US Greenhouse Gas Emissions Position</b>	<b>27</b>
<b>C.2. Brief Review of the National Policy before the Bush Administration</b>	<b>27</b>
Early Action: Climate Change Research and the National Climate Change Plan	27
USII	28
<b>C.3. New Initiatives of Bush Administration</b>	<b>29</b>
<b>C.4. Activities at the National Legislative Level</b>	<b>30</b>
S.556: “Clean Power Act of 2001”	31
S.1255 : “Carbon Sequestration and Reporting Act”	31
S. 765: “Carbon Sequestration Investment Tax Credit Act”	32
S.769: “International Carbon Conservation Tax Credit Act”	32
S.785 : “Carbon Conservation Incentive Act”	32
S.1293 : “Climate Change Tax Amendments of 2001”	33
S.1294 : “Climate Change Risk Management Act of 2001”	33

S.1008 : “Climate Change Strategy and Technology Innovation Act of 2001”.	33
<b>C.5. Conclusion</b>	<b>34</b>
<b>Section 4</b>	<b>36</b>
<i>Summer 2001: Major Policy Trends Affecting Carbon Market Developments</i>	36
<b>D.I. European Commission Emissions Trading Draft Directive</b>	<b>36</b>
<b>D.II. On August 14 the United Kingdom officially announced the final structure of domestic emissions trading system</b>	<b>37</b>
<b>D.III. Germany: How Likely is the Domestic Emissions Trading System?</b>	<b>39</b>
<b>D.IV. Selected Policy Trends Across Annex B</b>	<b>41</b>
<b>Appendix I</b>	<b>44</b>
<i>State-Level Climate Change Policy</i>	44
<b>Climate Action Plans</b>	<b>44</b>
<i>States with EPA-registered Global Warming State Action Plans</i>	45
<b>A.I. Selected State Greenhouse Gas Programs</b>	<b>46</b>
A.I.I. California	46
A. I. 2. Illinois	47
A.I.3. Massachusetts	48
A.I.4. New Jersey	49
A.I.4. Oregon	52
A. I.5. Washington State	55
<b>II. STATE RENEWABLE ENERGY POLICIES</b>	<b>57</b>
Arizona’s Renewable Portfolio Standards	58
Proposed California Renewable Portfolio Standard	59
Connecticut’s Renewable Portfolio Standard	60
Iowa’s Renewable Energy Mandate Law	60
Massachusetts Renewable Portfolio Standard	61
Maine Renewable Portfolio Standard	62
Minnesota Renewable Portfolio Standard	62
Minnesota: Xcel Renewable Energy Mandate	63
Nevada’s Renewable Portfolio Standard	63
New Jersey Renewable Portfolio Standard	64
New Mexico Renewable Portfolio Standard	65
Pennsylvania Renewable Portfolio Standard	65
Texas Renewable Portfolio Standard	65
Wisconsin Renewable Portfolio Standard	67
In sum	67
<b>III. Other Initiatives: the Urgent Need to Focus on Transportation</b>	<b>68</b>
<b>IV. Greenhouse Gas Inventorying Initiatives Beyond California</b>	<b>69</b>
<b>V. The North-Eastern States GHG Reduction Initiative</b>	<b>73</b>

<b>VI. Conclusion</b>	<b>74</b>
<b><i>Appendix II</i></b>	<b>76</b>
<b><i>Methodological Note to Section B/Appendix III</i></b>	<b>76</b>
<b><i>Appendix III</i></b>	<b>77</b>
<b><i>Greenhouse Gas Emissions Position for Selected Annex B States</i></b>	<b>77</b>
<b>Appendix III.1. AUSTRIA</b>	<b>77</b>
<b>Appendix III.2. BELGIUM</b>	<b>79</b>
<b>Appendix III.3. CANADA</b>	<b>81</b>
<b>Appendix III.4. FINLAND</b>	<b>83</b>
<b>Appendix III.5. ITALY</b>	<b>85</b>
<b>Appendix III.6. NETHERLANDS</b>	<b>88</b>
<b>Appendix III.7. NEW ZEALAND</b>	<b>91</b>
<b>Appendix III.8. SWITZERLAND</b>	<b>93</b>

# Section 1

## **Outlook on International Developments: Summer 2001**

The agreement at resumed COP6 in Bonn was regarded as a significant step facilitating ratification of the Kyoto Protocol. On the following pages we outline the key components of the accord achieved at COP-6.5 and attempt to briefly evaluate its strengths and weaknesses. We further review issues to be addressed at the forthcoming Marrakesh COP-7 meeting and discuss the state of national readiness to ratify Kyoto. Considering that the US position over Kyoto is not likely to change in the immediate future, we conclude this section with a brief analysis of political developments taking place on this issue in the US.

### ***A.I. Bonn Agreement – Key Provisions***

Key points of the Bonn agreement with regard to flexibility mechanisms can be summarized as follows:

#### **Generic issues**

- Supplementarity – use of flexible mechanisms is supplemental to domestic action, which shall constitute a significant element of each Party's effort to meet its target.
- Adaptation levy – will be applicable only to CDM;

#### **International emissions trading**

Agreements were reached in the following areas:

- Liability – each Party has to retain a reserve of credits for a given commitment period, which should not drop below 90% of national assigned amount, or five times its latest GHG inventory, whichever is lowest.
- Trading among legal entities – Parties to the Protocol may authorize companies (legal entities) to take part in international emissions trading under the condition that such participation can take place only when the authorizing Party is in compliance with its emissions reduction obligations.

#### **The Clean Development Mechanism**

Agreements reached on the following:

- Prompt start – the current scheme of CDM gives GHG reduction projects initiated from 2000 a prompt emissions reduction credit;
- The composition of the Executive Board (the entity overseeing the operation of this mechanism) – will consist of four members from developed countries, and six from developing countries. The actual members are to be elected at COP7 in Marrakesh.
- Small Scale Projects – small-scale projects will benefit from simplified modalities and procedures reducing project transaction costs. Specific procedures applicable to small scale projects will be developed by the CDM Executive Board.<sup>12</sup>

---

<sup>12</sup>Small-scale projects are defined as:

- Nuclear – Parties are to “refrain” from using nuclear facilities for credit generation.
- Sinks – afforestation and reforestation projects were declared CDM-eligible during the first commitment period, up to a cap set at 1% of base year emissions.
- Baselines – the general principles/methodologies for baselines were agreed upon. Project participants should select from among the following approaches found appropriate for the CDM activity, and they have to justify the appropriateness of their selection:
  - Existing actual or historical emissions, as applicable; or
  - Emissions from a technology that represents an economically attractive course of action, taking into account barriers to investment; or
  - The average emissions of similar project activities undertaken in the previous 5 years in similar social, economic, environmental and technological circumstances;
- Crediting periods - project participants can choose between a seven-year crediting period that can be renewed two times on the basis of updated data, or a ten-year crediting period with no option of renewal.

### **Joint Implementation**

With respect to Joint Implementation, participants of Bonn agreement decided to adopt a “two-track” approach for JI, which includes:

- The first track will be open to any JI host-Party, which has complied with all emissions monitoring and reporting requirements stipulated in the Protocol. Under the first track, projects and verification of emission reductions will be administered by the Parties involved without engagement of any third-party authority.
- The second track would apply when the host Party does not comply with its monitoring and/or reporting requirements. Such projects should be verified independently, under the oversight of a Supervisory Committee, although the details for this institution still have to be developed.

Similar to regulations governing CDM, new JI regulations state that JI credits cannot be generated from nuclear facilities.

A number of issues remain to be resolved at the upcoming COP-7 meeting in Marrakesh. Among them are the following:

- Fungibility and transferability– are various emission reduction credits (CERs, ERUs, AAUs) freely interchangeable and can CDM-generated emissions reduction credits be traded in a secondary market;
- Mechanisms eligibility – in Bonn an agreement was reached that Parties to the Protocol should comply with their methodological and reporting requirements prior to trading. However, there was no detailed agreement on which reporting requirements are considered relevant for the first commitment period;
- The commitment period reserve – the technical details of how to compute and maintain the commitment period reserve remain under discussion;
- National registries and transaction procedures – details on national GHG registries were not discussed in Bonn, but will be addressed at COP7;

- 
- (i) Renewable energy projects with a maximum output capacity equivalent of up to 15 MW (or an appropriate equivalent);
  - (ii) Energy efficiency improvement projects which reduce energy consumption, on the supply and/or demand side, by up to the equivalent of 15 GW/h per year; or
  - (iii) Other emissions reduction projects, which both reduce emissions and directly emit less than 15 Kt of ktCO<sub>2</sub>e annually.

- CDM governance – voting procedures and funding arrangements for the Executive Board;
- Joint Implementation “second track” -- the rules for implementing the “second-track” JI projects under the Supervisory Committee will require further elaboration. Agreement is needed on the standards independent auditors must meet as well as on guidance in setting baselines and monitoring plans for second-track JI.

## ***A.II. Reaction to Bonn Agreement: a Sell-Out Damaging the Environment or a Brilliant Political Compromise Opening Doors for Kyoto Ratification?***

### **A.II.1. Impact on International Carbon Price and Environmental Implications**

The key argument both praising and condemning the agreement points to the fact that the post-Bonn Kyoto market is characterized by rather low market prices as the US withdrawal has left this market with potential oversupply. Why so? – What makes carbon price expectations lower is the combination of:

- (i) the content of the Bonn compromise, and in particular the combination of a larger share of domestic sinks relative to the pre-Bonn expectations, absence of the quota on purchases on the carbon market in the name of “supplementarity” and very limited provisions governing non-compliance.
- (ii) the fact that the US is likely to remain outside of the Protocol, thus drastically reducing the demand for ERs.

The US position has the *primary* effect of the international price of carbon and corresponding development of carbon markets. The United States represents roughly half of the world’s total demand for carbon credits. The relative expansion of the volume of sinks has a secondary effect on the suppression of the international price of carbon.

Lower than expected costs of Kyoto implementation may be simultaneously a curse and a blessing. From the environmental standpoint, EcoSecurities may interpret this as weakening the environmental integrity of the Kyoto Protocol because Parties can rely on the increased sinks capacity instead of reducing consumption of fossil fuels in energy-intensive sectors.

At the same time, in preparation of this report, EcoSecurities did not come across any well-documented model/study elucidating the precise environmental impact of COP-6.5. This is not surprising since rigorous empirical analysis may consume several months of extensive modeling – therefore, we will search for such empirical work in the course of preparation of our next report.

In addition, the argument of weakened environmental integrity may be correct mainly with respect to leaving the US out of the game as the biggest polluter. However, we later demonstrate that even in its current international isolation Americans discuss the possibility of creating regional emissions trading instruments, which opens opportunities for their later integration in the system of international emissions trading. Specifically, section III leads the reader through a number of rather detailed legislative proposals advanced in the summer 2001, which cover forestry/agriculture-related carbon sequestration initiatives, fiscal incentives for renewables and financial support for R&D in carbon reduction technologies, among other instruments. Therefore, the extent of the

environmental damage as a result of COP-6.5 relaxations and the US withdrawal from the Protocol is not clear at this juncture and all arguments pertaining to this matter need detailed clarification.

With respect to European countries, the above argument of ‘environmental impotence’ of Bonn’s agreement due to multiple loopholes (such as the increased permissible volume of reductions from sinks) is not *necessarily* correct. Actual European progress in reducing GHG emissions through renewable energy and clean-up technology investments is not solely conditioned upon markets: it is dependent on the governmental actions and political will as well. To give one example: shortly after the conclusion of the Bonn agreement, Norway stated that it will *not* use the ‘loophole of sinks’ to meet its Kyoto obligations. It further declared extension of previous national actions targeting emissions reduction from its energy-intensive industry.

As another example, governments across European and North American jurisdictions have been actively adopting ‘green electricity standards’ (Renewable Portfolio Standards) long before Bonn, in an environment of the highest uncertainty about the outcome of Kyoto negotiations. In North America these actions were prompted by the need to find the cheapest means of expanding electricity production, where wind power began to play a prominent role. In several European states these actions were catalyzed by the desire to reduce dependency on imported fossil fuels.

Criticism of Bonn’s achievements with respect to the actual emissions reduction potential ignores the fact that greenhouse gas policies are intrinsically intertwined with national electricity markets as well as with programs targeting industrial development, trade, transportation and even social welfare. Specifically, should there be an integrated planning of greenhouse gas policies in conjuncture with transportation, industrial development and trade, there could be a visible national reduction of GHG emissions regardless of relatively ‘relaxed’ environmental standards in the COP-6.5 decisions.

For example, to recall the same example of Norway: Annex B states could be interested in acquiring a competitive edge in carbon sequestration technology, as Norway did in the 1990s under the heavy promotional support from the Norwegian government. Again, such achievements in emissions reduction would require a political will and well-coordinated actions on the *level of individual states* and not at the level of the international community, which serves as a catalyst for soliciting domestic initiatives.

In sum, EcoSecurities cannot authoritatively support the argument that environmental impact of COP-6.5 decisions will constitute the most minimal level of emissions reduction. We are looking for further substantiation of such assertion and will keep our reader informed of such discussions.

### **A.II.2. Problems with the Language of Compliance Mechanisms**

EcoSecurities feels that the language of compliance mechanisms related to penalties for non-compliance may result in some difficulties with the implementation of the Kyoto’s emissions reduction commitments – although this, again, depends on the specific disposition of national policy-makers and their ability to control for various adverse environmental affects.

Specifically, the original language of Kyoto called for “reparation of damage to the environment” due to non-compliance, with the stipulation that payments be made to “repair damage to the environment”. The Bonn agreement merely specifies that: “...the consequences of non-compliance to be applied by the enforcement branch shall be aimed at the restoration of compliance to ensure environmental integrity, and shall provide for an incentive to comply.” Since this “incentive to comply” is not defined, it is not clear how damage to the environment can be ameliorated (*if* ameliorated at all). Nevertheless, we remain optimistic that this aspect will be clarified over time as the actual mechanisms of emissions reductions develop and mature.

It should be noted that some environmental interests defended the outcome of Bonn meeting regardless of its limitations because setting up a compulsory framework was perceived to be more important relative to ensuring large-scale reduction of greenhouse gas emissions. For instance, Reinhard Loske, the environment spokesman for the German Greens Party of Environment Minister Jurgen Trittin in an interview to the NDR radio acknowledged that one has to distinguish between substance and process, where ...” we already knew the Kyoto Protocol is at best a very small step forward [in terms of substance]. But *what mattered was the process*, creating a framework where governments would be judged by their peers in an annual court of public opinion at UN meetings....”<sup>13</sup>

### **A.II.3. Are the Decisions of COP-6.5 Likely to be Implemented?**

One cannot help questioning whether Bonn’s recommendations will be transformed into legally binding instruments maintaining the minimal level of environmental protection agreed upon at COP-6.5. Regardless of the fact that Bonn’s regulations represent simply guidance and recommendations for subsequent actions until the ratification of Kyoto Protocol<sup>14</sup>, under the conventions of international law, participants to the agreement are under the obligation to adhere to the agreements of COP recommendations, unless such participants officially declare a withdrawal from the negotiation process, which was the route undertaken by the United States. Bonn’s recommendations constitute a part of the conventional legal process establishing rules and delineating boundaries of international emissions trading market, and they do not differ from any previous agreements preceding an official ratification of any international instrument.

Any attempt on the part of a single Party to revert to renegotiating more economically favorable terms would throw the whole agreement in disarray thus leading to the collapse of the Protocol, which appears to be non-permissible (politically) for Japan and the European Union. Second, under the practice of international law, until the official ratification of Kyoto by the required number of Parties, their signatures are considered binding unless any Party officially declares its withdrawal. As mentioned above, the withdrawal from the Protocol on the part of any pivotal Party is not likely – therefore, the COP-6.5 agreement participants are highly likely to observe the terms of COP-6.5 agreement *until the point of Kyoto ratification*.

That said, the remaining legally-confusing situation is the fact that the United States has withdrawn from the Protocol, but remains a Party to the UNFCCC process. Still, the US

---

<sup>13</sup> Text of the interview is taken from *Reuters News Service*, July 26, 2001 (interview in Bonn).

<sup>14</sup> COP can only make recommendations with respect to Kyoto rules and regulations until the actual ratification of the Protocol since the instruments stipulated in Bonn discussions do not technically exist until Kyoto comes into force.

intends to remain a party to the UNFCCC process, which opens the doors for its potential re-integration into Kyoto negotiations.

However, for now the US may be left out not only from the system of international emissions trading (for which it could partially compensate by regional trading with Latin American partners, as shown below), but it also appears to be outside of the *funding obligations* for supporting climate change actions in developing countries. To rectify this shortfall, the Bonn agreement inserted a section on "Funding Under The Convention". This non-Protocol section appears to create two parallel but distinct UN climate change programs. However, Bonn agreement did not have the time to specify how these programs are expected to work together. As presently written in Bonn agreement, the U.S. funding under the Convention would flow to activities under the Protocol, which is contrary to the U.S. decision not to support the Treaty. So far the Bush Administration has been silent on this point.

#### **A.II.4. To Sum Up: Where We See the Benefits of Bonn**

Bonn agreement has led to the emergence of a clear reference price and the *long-term* commitment to emissions reduction on the international level. This represents a major step forward for all participants of Kyoto negotiation and the international community as a whole because Bonn embodies the leap towards *international institutionalization* of the international emissions trading markets. While the UK has developed a national emissions trading system and the European Union has been long on the way to creating a region-wide emissions trading system *before Bonn*, the international community as a whole lacked sustained efforts in emissions reductions. COP-6.5 created an incentive to undertake such efforts. The Bonn agreement will drive the private sector to gradually re-evaluate its energy production and use, looking at longer-term investments with an eye to minimizing future emissions reduction costs. Therefore, we consider Bonn a significant *step forward* as it cleared the way for subsequent development of detailed market-facilitating mechanisms.

At the same time, EcoSecurities believes that *with ratification now more probable*, governments are likely to begin actively supporting policies facilitating the achievement of emissions reduction targets, including promotion of renewable energy, further improvement of industrial energy efficiency, support for new transportation technologies and so on. COP-6.5 cleared the way for the *least-cost* implementation of these instruments due to a heavier reliance on multiple market mechanisms relative to what was foreseen in the original Kyoto agreement. This makes meeting Kyoto targets more commercially attractive for the private sector while more politically pressing for the public sector.

#### ***A.III. A Discussion of Potential US Strategies***

Is it likely that the United States will rejoin the Kyoto Process? – We believe it is possible, but not under the current Administration and not before Rio+10 meeting in Johannesburg. Most plausibly, the active reintegration into the Kyoto Protocol would take place closer to the launch of negotiations on the second commitment period after 2004.

In Section III we provide a detailed analysis of a great number of emissions reduction initiatives emerging in the United States contrary to the continuing anti-Kyoto position of the Bush Administration. For this reason, here we mainly focus on several *international* greenhouse gas proposals advanced by the US in May –July 2001, all of which represent a clear indication that the US does not intend to remain in international isolation.

Section III reviews a set of American executive proposals, which focus on:

- extension of funding for climate change research;
- support for R&D (subsidies and/or other instruments, which remain under discussion);
- projects related to reforestation and extensive use of sinks; and
- exploration of opportunities for wide engagement of developing countries in various projects related to GHG emissions reduction.

In the same section, we address a broad range of legislative initiatives covering carbon sequestration, GHG emissions from power plants, carbon investment tax credits and climate change risk management. We also inform the reader that a detailed discussion of spate-specific carbon policies is presented in Appendix I.

We also would like to remind all interested specialists that EcoSecurities has already elucidated key federal policies in Appendix I to our first report, published by the PCF*Plus* in June 2001. Information covered in our first report describes a wide range of federal policies pertaining to climate change regulations immediately *after COP-6* in The Hague.

We now return to discussing the most recent international initiatives considered by the United States.<sup>15</sup> Before the Bonn meeting, the USEPA Administrator Christine Todd Whitman stressed on a number of occasions that the US would not have an alternative emissions reduction plan before mid-July. She underlined that the US Administration would be ready to offer a detailed proposal later this year for reducing US emissions *other* than carbon dioxide from power plants and factories. However, she indicated that the US began exploring plans with Canada and Mexico (in the framework of previous NAFTA agreements) to jointly curb levels of greenhouse gas emissions.

Specifically, she suggested a NAFTA-based greenhouse gas regulatory regime during June 28 talks with Mexican and Canadian top environmental officials in Guadalajara (Mexico). However, until this date there is no follow up of this initiative, although Mexico expressed readiness to cooperate on this issue (in addition to declaring its intention to ratify Kyoto Protocol, which may present some legal problems with respect to the above US initiative).

In a parallel development, at the beginning of July President Bush and Costa Rica President Miguel Angel Rodriguez considered a greenhouse gas emissions trading system

---

<sup>15</sup> In lie of the New York/Pentagon attack on September 11, the US national policy priorities have focused on the security issues. EcoSecurities has received information that all discussions of international and domestic carbon initiatives have been put on hold until October 6 or a later date. We do not have any additional information about the likelihood of acceptance/rejection of all initiatives we discuss below. We cannot confirm the approximate time of resumption of Congressional discussions of climate change initiatives. We could not obtain information on whether the executive branch will undertake any actions clarifying its climate change position before COP-7. We will keep the reader informed on all developments in our Third report.

between two countries. Angel, anticipating an access of credits because of carbon sequestration by Costa Rica's vast forests, expressed hope that payment from the US for pollution credits would come in the form of debt relief. However, this plan would be operational totally outside of the Kyoto Protocol. To date, the consequences of this discussion were not revealed.

Finally, the US Administration announced a US\$13 million funding for a set of reforestation projects in El Salvador. The projects are funded directly by the US Department of Treasury and no details are available about any agreement on transfer of greenhouse gas reduction credits from these reforestation activities.

In sum, there appears to be a very modest but continuous movement towards exploring *regional* opportunities for emissions reduction/trading market. It is unlikely, however, that these moves will materialize into some form of a far-reaching agreement before COP-7 in Marrakesh.

At the same time, on the *wider* international arena the US Administration has continued to hold a steady pro-private sector position, which appears to be non-supportive of any immediate climate change initiative. Therefore, we would like to stress that *regional cooperation* in climate change issues, which *specifically involves developing countries*, appears to be taking priority on the climate change agenda of the US administration relative to any international commitments, which are not engaging developing countries.

Representative of the continued opposition to engagement into global commitments is the US Administration's refusal to endorse the G-8 program for phasing out fossil fuel subsidies and increasing public funding for renewable energy technologies. President Bush declined to support the G-8 Genoa proposal thus placing the program in halt since all G-8 programs have to be endorsed by complete consensus, and proposals are not generally adopted if any member of the group objects. Arguably, the US refused endorsing this call since the G-8 proposal focused on increasing *public* funding for renewables, which the current Administration believes to be inefficient relative to leveraging the private sector efforts.

In addition, the US President proposal to cut international funds, which would assist developing countries in combating global warming. Namely, on June 29 the President asked Congress for nearly \$4 billion to address climate change, roughly the same as the sum appropriated for these purposes the last year. At the same time, Bush proposed reducing assistance to other countries by \$41 million from last year's \$165 million. He called for shifting more responsibility to private industry, seeing international corporations as major donor-entities.<sup>16</sup>

Where does this leave the US with respect to the continuation of international negotiations? – Publicly available reports point to the fact that Administration would likely present fresh proposals for revising a global warming treaty when the United States

---

<sup>16</sup> Specific proposal and figures are contained in a June 29 report that President Bush sent to House Speaker Dennis Hastert and Senator Robert C. Byrd, D-W.Va., the Senate President pro Tempore (the report was obtained and distributed by the *Associated Press* at the beginning of July).

meets again with other environmental ministers in Morocco.<sup>17</sup> However, the events following the September 11 attack on the World Trade Center and the Pentagon mean that this timeframe could be unrealistic.

The administration remains pressured by the growing congressional criticism of President Bush's handling of the issue. At the beginning of August the Senate Foreign Relations Committee voted 19 to 0 to urge Bush to return to the bargaining table with specific proposals for a new binding international global warming treaty. On August 22 the White House announced that it came up with a series of specific research initiatives and programs to propose COP-7 in Marrakesh as a 'reconciliation' position.<sup>18</sup> However, it remains unlikely that the US will re-join the Protocol until COP-7 or any time shortly afterwards since there remains a substantial domestic opposition to such a move on the part of various groups of energy-intensive industries. Specifically, even the August 22 plan does not contain any provisions to limit energy consumption or aggressively promote the use of renewables with public funding.

In conclusion, a reader should be reminded that a number of international players continue to push the United States to re-enter the Protocol within the shortest possible time-horizon. Namely, at the beginning of August Japan and Australia expressed readiness and willingness to push forward with their efforts to bring the United States back to Kyoto for the pact to regain its previous environmental and economic effectiveness. With the view of bringing the United States back into the Treaty during the Bush presidency, Australia is lobbying against the annual gathering of Pacific Island states passing a resolution highly critical of the US current position. By implication, such a resolution would represent a negative evaluation of the Australian position relative to the US concerns. Such resolution would make it more difficult for the US to re-enter the Protocol for obvious political reasons.

However, we again remind the reader that regardless of the continuing international pressure, the post-September 11 international policy agenda has markedly shifted towards the reduction of the threat of international terrorist activities. In lieu of this, Japan has postponed its meeting with the US Administration, which was expected to explore

---

<sup>17</sup> Again, we stress that since September 11 EcoSecurities could not obtain any information on whether the US would postpone developing a national climate change strategy until the post-Marrakesh period.

<sup>18</sup> The new approach involves three main directions. The first one is a commitment of hundreds of millions of dollars to study the disputable causes of climate change. The second area of activity represents a research effort to discover new technologies to reduce or sequester emissions of the main greenhouse gases - carbon dioxide and methane. And the last effort will target the expansion of programs to help developing nations devise strategies to combat global warming, such as the conservation or reforestation of tropical jungles.

Targeted for intensive research are technologies that would significantly reduce GHG emissions. One concept cited by the White House is the notion of streaming captured carbon dioxide into depleted oil or natural-gas wells, which could then be sealed permanently.

However, this plan will do virtually nothing to limit energy consumption, the direct source of most GHG emissions. The Administration still believes that at a time when the nation's economy is weakening, an energy tax or any other measure restricting energy consumption would be politically unacceptable and fiscally unadvisable.

additional avenues for bringing the United States back to the Kyoto negotiation table. EcoSecurities was not able to obtain any information on a tentative timeframe within which the United States would be able to refine its climate change position.

To summarize the US international position with respect to participation in international greenhouse gas commitments, we do not foresee any change in the US international policy until the conclusion of this Administration's term. However, we anticipate development of a multi-tier *regional* and *domestic* emissions reduction markets with active development of sink/reforestation programs and other low-cost projects, where the initiative on project development and implementation will be delegated to private sector and/or State institutions.

#### ***A. IV. International Community Before Morocco: Immediate Prospects of Kyoto Ratification***

In the progress of Bonn meeting as well as shortly after it there have been a series of national announcements expressing readiness to proceed with the soonest ratification of Kyoto:

- At the beginning of August Japan environmental officials said they began preparing to ratify the Kyoto pact even without U.S. participation and despite Tokyo's official indecision over whether to endorse the agreement. At the same time, Japan and the United States agreed to hold ministerial-level talks late September on issues concerning possibilities of Kyoto ratification on the part of Japan and opportunities for cooperation in developing carbon-sequestering technologies. The talks were to be the second of their kind, following a July 13 meeting held before the resumed sixth session of COP6. However, as noted before and in several other places in this report, after September 11 these talks were postponed indefinitely;
- On numerous occasions various New Zealand officials stated that the country would be ready to ratify Kyoto by September 2002;
- On July 23-25 Canada expressed readiness to ratify the Protocol in 2002. Canadian Prime Minister Jean Chretien said he was proud of what he called the key role Canada had played in the talks and declared that he was "...confident that the agreement reached this weekend in Bonn opens the way for Canada's ratification of the Kyoto Protocol next year, *following full consultations with the provinces, the territories, stakeholders and other Canadians...*"<sup>19</sup>.

We also remind the reader that Danish Parliament has already adopted a decision to ratify the Protocol, although no specific timeframe for Kyoto ratification was revealed.

In addition, a number of non-capped developing countries expressed interest in the soonest Kyoto Ratification:

- On July 16 Mexico announced that it would ratify Kyoto Protocol. With this decision, Mexico is poised to press its negotiation ally, the United States, to expedite developing a position with respect to this matter;

---

<sup>19</sup> The text of the speech is taken from Reuters News Service, July 24, 2001 (reported in Canada: "Canada Hopes to Ratify Kyoto Protocol Next Year"). The full statement could be found at: <http://www.planetark.org/dailynewsstory.cfm?newsid=11718>

- On July 25 a group of Thai environmental officials stated that Thailand will be ready to ratify Kyoto after the agreement on Protocol was reached. Saksit Tridech, secretary-general of the Office of Environmental Policy and Planning (OEPP), said that the OEPP, as a national focal point for the UN Framework Convention on Climate Change, would take steps to ensure the country ratifies the protocol shortly after COP-7; and
- On June 22 The Argentine House of Representatives approved the ratification of the Protocol.

Noticeably, there is more support for the soonest ratification of the Protocol on the part of developing economies relative to the Annex I group. However, we expect that the forthcoming clarification of Kyoto structure and institutions at Marrakesh will catalyze the ratification plans and efforts in the European Community.

#### ***A. V. In Sum...***

Given the above, we conclude that Bonn's agreement was a rather tangible step toward Kyoto ratification because it represents a substantial step towards institutionalization of the basic instruments and bodies governing international emissions trading and created an incentive to develop, integrate and systematize a set of *national* policies reducing GHG emissions. We further believe that Bonn has created an environment where – for a number of political reasons – *it could be beneficial* for the US to launch a set of national GHG reduction policies leading to its entrance into *regional* emissions trading markets. In addition, Canadian and Mexican support for *the soonest* ratification of Kyoto could put additional pressure on the US to re-integrate into the climate change process.

However, we do not foresee this reintegration under the current American Executive. Therefore, we repeat our conclusion from the first report published in June 2001: watch for development of a multi-tier emissions trading market with substantially lower price of carbon mitigation but a higher diversity of market-based policy instruments.

## Section 2

### Summary of Emissions Profiles, Annex B (1) States

#### *B.I. General Structure of this Section*

Appendix II (Section 2) to Report I contains detailed information on GHG emissions in the UK, Denmark, and the United States. In addition, National emissions profiles for Australia, France, Germany, Japan, Norway and Sweden were included in Appendix III (Report I).

This section has to be read in conjunction with Appendix III, where we complete the review of national GHG positions until the year 2000 for the remainder of Annex I (B) states. In Appendix III we analyze the following countries:

1. Austria;
2. Belgium;
3. Canada;
4. Finland;
5. Italy;<sup>20</sup>
6. Netherlands;
7. New Zealand; and
8. Switzerland.

In this report we chose not to present *detailed* emissions profiles for Greece, Spain and Portugal in the same group with the other Annex B nations because under the European “Bubble” agreement (Luxembourg, 1998) these countries are allowed to increase their respective GHG emissions in conjuncture with accelerating economic development (which the EU is trying to encourage)<sup>21</sup>. The detailed review of South European emission profiles will be given in the forthcoming Report III.

In line with the objectives of our first report (June 2001), the goal of this section is to bring together the multi-national emissions data to compare the actual level of GHG emissions and emissions projections for Annex I economies. This exercise will help the reader to observe which Annex I state are likely to be the major players in the international emissions market on the “buyers” and “sellers” sides.

The section below will elucidate the comparative 1998 GHG emissions positions of all aforementioned states with respect to:

- national emissions projections for the years 2000 and 2010;
- respective EU emissions reduction obligations (the agreed percentage of GHG emissions reduction under the “EU Bubble”); and
- Kyoto commitment for 2008-2012.

---

<sup>20</sup> Ireland is omitted due to the smaller economy size – it is not likely to be a ‘heavy-weight’ buyer or seller of emissions credits on the international market. The same applies to Luxembourg. Finally, we do not focus on emissions profiles of the EU candidates – such as Estonia, Slovakia, Slovenia, or on the states currently being admitted into the European Unions (such as Hungary and Poland). Review of East European emissions profiles will be presented in the Third Report.

<sup>21</sup> Specifically, according to the 1998 Luxembourg agreement on the EU “Bubble”, Portugal is allowed the highest emissions increase of 27% relative to the 1990 baseline; Greece – a 25% emissions surge and Spain – a 15% increase.

For the detailed analysis of emissions profiles of Austria, Belgium, Canada, Finland, Italy, Netherlands, New Zealand and Switzerland the reader is referred back to Appendix III.

EcoSecurities is careful to stress that our assertions about the progress of selected Annex I states with respect to meeting their national GHG reduction commitments may *not* be useful for the time of commencement of the first Kyoto commitment period since they are made in the mid-2001, while the real Kyoto obligations do not come into force until 2008 at the earliest. Thus, our statements are useful for preliminary evaluation of national *proximity* to meeting Kyoto/EU obligations. They should not be used as a basis for analyzing the *national ability* to meet Kyoto commitments – their goal is to indicate how close the countries came to meeting such obligations (or how far have they departed from meeting them).

In sum, after an exhaustive comparison of all states explored in Reports I and II, we conclude that only United Kingdom and Germany would be in the position to sell international carbon credits if international transactions were to be launched by the end of 2001. However, a number of states – such as Norway, Sweden, Denmark, the Netherlands and Italy – are close to meeting their internal emissions reduction obligations, although we cannot predict whether they would be in compliance with Kyoto obligations closer to 2008-2012.

## ***B.II. Summary of GHG Emissions Positions***

As follows from our previous report and the exercise presented on the above pages, the majority of Annex I states appear likely to overshoot their national greenhouse gas emissions targets. To substantiate this argument, we summarize findings presented in our first report and the above discussions of emissions reduction data in Table B.II.1 below:

**Table B.II.1. Summary of GHG Emissions Reduction Position, Annex I states, 1998 (Relative to National Projections and Kyoto/EU Targets, MMTCE)<sup>22</sup>**

	<b>1990 GHG emission levels (base)</b>	<b>2008-2012 Kyoto target (% reduction, emissions levels in 2008-2012)</b>	<b>“EU Bubble/ Umbrella” Target (% reduction, emissions in 2008-2012)</b>	<b>1998 GHG emissions (UNFCCC historic data)</b>	<b>National projection (expected emissions levels) 2000<sup>23</sup></b>	<b>National Projection (expected emissions levels) 2010</b>
<b>I</b>	<b>V</b>	<b>VI</b>	<b>VI</b>	<b>IV</b>	<b>II</b>	<b>VIII</b>
<b>Australia</b>	114.0	+8% = 123.1		131.7	111.8	127.9
<b>Austria</b>	20.6	-8% = 18.9	-13% = 17.9	21.4	17.3	18.1* or 15.8**
<b>Belgium</b>	37.2	-8% = 37.1	-7.5% = 34.4	39.5	29.1*** or 31.8*	34.3* or 30.6**

<sup>22</sup> Again, analysis of emissions position of Greece, Portugal and Spain will be presented in Report #3.

<sup>23</sup> Since these data are reported from the National Communications, they originally come in CE or CO2 equivalents, which we converted into MMTCE.

<b>Canada</b>	164.2	94% = 154.4		186.3	166.2	182.2
<b>Denmark (!)</b>	19.0	-8% = 17.4	-21% = 15.0	20.6	19.5	16.6
<b>Finland (!)</b>	20.5	-8% = 18.8	0% = 20.5	20.7	25.3	28.9
<b>France</b>	148.8	-8% = 136.9	0% = 148.8	150.2	136.7* <sup>24</sup> or 124.8**	161.3* or 135.0**
<b>I</b>	<b>V</b>	<b>VI</b>	<b>VI</b>	<b>IV</b>	<b>II</b>	<b>VIII</b>
<b>Germany</b>	326.9	-8% = 300.8	-21 % = 258.3	274.9	314.0* or 295.9**	N/A <sup>25</sup>
<b>Italy (!)</b>	141.0	-8% = 129.75	-6.5% = 131.9	146.9	152.8	167.5
<b>Japan</b>	320.1	-6% = 300.96		(data for 1997) 348.88	365	388.6
<b>Netherlands (!)</b>	56.904	-8% = 52.354	-6% = 53.494	61.546	(CO <sub>2</sub> only) 46.3*- 53.7* <sup>26</sup> or 45.7**	(CO <sub>2</sub> only) 51.2* or 46.3**
<b>New Zealand (!)</b>	19.7	0% = 19.739		20.3	16.7 <sup>27</sup>	19.0
<b>Norway (!)</b>	12.8	+1% = 12.92		14.73	16.4*	17.3
<b>Sweden (!)</b>	18.9	-8% = 17.40	+4% = 19.67	19.15	18.9*	20.1
<b>Switzerland</b>	14.4	-8% = 13.3		14.4	14.3* or 13.5**	14.3* or 13.1**
<b>United Kingdom (!)</b>	198.1	-8% = 182.3	-12.5% = 173.4	179.2	180.7	183.3
<b>United States</b>	1624.9	-7% = 1511.2		1792.70	1646.0	1836.0

*Notes:* \* BAU projections

\*\* -- denotes emissions projections computed for scenarios with aggressive domestic GHG abatement policies.

Nations marked by the (!) sign represent states, which have come closest to approaching their national emissions reduction targets and Kyoto/EU quotas.

*Source:* EcoSecurities, PCF-Plus Report #1, June 2001.

The ultimate question of interest for any reader is who, again, is seen as the carbon credit buyer and who would become a seller in the short-term emerging market. Table B.III.1.

<sup>24</sup> For CO<sub>2</sub> emissions projections, EcoSecurities computed the total GHG projection from the French “high case” scenario – for details, see National Communication at [www.unfccc.org](http://www.unfccc.org), p.p. 95-100.

<sup>25</sup> Data are presented for CH<sub>4</sub> and N<sub>2</sub>O only (Second National Communication, p. 212).

<sup>26</sup> Range between 46.3 and 53.7 MMTCE for the “Trend” (approximate BAU) scenario.

<sup>27</sup> In computing the overall value of 2000 and 2010 national GHG emissions projections, EcoSecurities did *not* take into the account the volume of N<sub>2</sub>O emissions, which we judge to have been reported incorrectly in the UNFCCC database.

in the following sub-section illustrates that only two countries appear to be in the position of carbon credit sellers in the current international market:

- United Kingdom; and
- Germany,

which places all the remaining states in the carbon credit ‘buyer club’.

However, Norway, Sweden, the Netherlands, Finland, Denmark, New Zealand and Italy all appear to be close to the national projections of GHG emissions. More interestingly, if judged by the EU “Bubble” agreement, Sweden would be in the position to sell its surplus carbon quota and Norway could catch up with its neighbor shortly as its national emissions record reveal a lower volume of GHG discharge relative to national projections. Further, if judged by national emissions projections, the rate of Italian GHG emissions reduction would permit the nation to become a net carbon seller closer to the commencement of the first commitment period.

### ***B.III. Hypothesized Directions of International Carbon Transactions***

To supplement emissions position reports for the US, UK, Denmark, Japan, France, Germany and Scandinavian states – all of which were included in Appendices to our previous report -- Appendix III provides the reader with a series of brief reviews of emissions profiles for the remainder of Annex I (B) (with the exception of South European countries, which, as we mentioned before, will be reviewed in Report III). Again, cross-national comparison of emissions positions revealed that only Germany and the United Kingdom would be in the position to offer international carbon credits for sale in a short-horizon international carbon trading regime.

Having analyzed the above information, we conclude that the immediate flow of international carbon transactions looks as follows:

**Table B.III.1. International GHG<sup>28</sup> Transactions, Expected Flow for Fall 2001 (MMTCE):<sup>29</sup>**

Country	Buyer or Seller	Current position of country with regard to its Kyoto commitment,	Current position of EU countries with regard to their EU ‘Bubble’ targets
Australia	Buyer	+ 8.55 <sup>30</sup>	
Austria	Buyer	+ 2.48	+ 3.51
Belgium	Buyer	+ 2.32	+ 5.05
Canada	Buyer	+ 31.91	
Denmark	Buyer	+ 3.16	+ 5.62
Finland	Buyer/seller (?)	+ 1.64	+ 0.24 <sup>31</sup>
France	Buyer	+ 13.33	+ 1.43 <sup>3</sup>
Germany	<b>Seller</b>	- 25.89	+ 16.43 <sup>32</sup>

<sup>28</sup> The gases analyzed for this table include CO<sub>2</sub>, N<sub>2</sub>O and CH<sub>4</sub>.

<sup>29</sup> This table has already been presented for reader’s review in the Executive Summary to this Report (see pages 3-4).

<sup>30</sup> (+) represents a buyer of international carbon credits, while (-) denotes a seller

<sup>31</sup> Could be in compliance with the EU target by the first commitment period

<sup>32</sup> On the EU level Germany is a buyer

<b>Greece**</b>	Buyer	+ 6.75	+ 0.24 <sup>33</sup>
<b>Italy</b>	Buyer	+ 17.19	+ 15.08
<b>Japan</b>	Buyer	+ 47.92	
<b>Netherlands</b>	Buyer	+ 9.19	+ 3.41
<b>New Zealand</b>	Buyer/seller (?)	+ 0.53 <sup>34</sup>	
<b>Norway</b>	Buyer/seller (?)	+ 1.81 <sup>6</sup>	
<b>Portugal**</b>	Buyer/seller (?)	+ 1.39	-1.69 <sup>35</sup>
<b>Spain**</b>	Buyer	+ 22.53	+ 3.59
<b>Sweden</b>	Buyer/seller (?)	+ 1.75 <sup>6</sup>	- 0.52 <sup>36</sup>
<b>Switzerland</b>	Buyer/seller (?)	+ 1.16	
<b>United Kingdom</b>	<b>Seller</b>	- 3.05	+ 5.86 <sup>37</sup>
<b>United States *</b>	Buyer	+ 281.55	
<b>TOTAL/excessive GHG emissions (US not counted)</b>	--	<b>(World-wide) + 144.67</b>	<b>(EU) + 58.25</b>

**Notes:**

\* we report the US data for comparative purposes regardless of its withdrawal from the Protocol

\*\* The detailed analysis of emissions profiles for South European states will be given in Report 3, where we will cover Greece, Portugal and Spain.

**Source:** EcoSecurities, own calculations and PCF Plus Report of June 2001.

<sup>33</sup> Could be in compliance with the EU quota if retains the current rate of emissions

<sup>34</sup> Could be in compliance with Kyoto if retains the current rate of emissions

<sup>35</sup> With respect to the EU quota, Portugal could be considered a net seller of emissions credits

<sup>36</sup> Sweden is already in compliance with its EU quota

<sup>37</sup> on the EU target the UK is a carbon credit buyer.

## Section 3

### United States: In the Absence of a National GHG Policy

In the following section we continue our discussion of the national climate change policy in the United States. In our previous report (June 2001), we had presented the position of the US administration on climate change negotiations after COP6 (Report #1, Appendix I). In the current issue, we complement this analysis by both presenting the pre-COP6 US Climate Change Action Plan and surveying *in depth* post-COP-6.5 developments.

In this analysis, we make the following points:

- First, we recall it would be incorrect to claim that the United States have never had a national plan of greenhouse gas abatement. As shown below, the Clinton Administration attempted to develop a rather comprehensive approach to this matter, although it never went quite as far as adopting a national GHG emissions reduction standard (s). Clinton's policies were focused on corporate voluntary commitments and energy savings efforts (Section D2);
- Second, although no unified federal policy is in place, we review a number of pending legislative policy proposals, which have the capacity to form the backbone of the future national climate change program under the Bush Administration. The premise is higher than ever on voluntary commitments and market-based cost-reduction policy tools (Sections D3 and D4).
- Third, from an administrative point of view, every one of the fifty sub-national jurisdictions in the US retains substantial executive and legislative powers with respect to environmental and energy policy-making. Therefore, the analysis of American climate change policies would be incomplete unless we address *state-specific policy* developments since it is these policy initiatives that frequently serve as an impetus for the subsequent discussion at the national level. We focus on the most advanced state programs for the sake of clarity and parsimony of presentation as the list of state programs potentially affecting greenhouse gas emissions keeps mushrooming as we are preparing this report.

American State GHG policies are conventionally conceptualized in the States' *Climate Change Action Plans*, which represent key guidelines for subsequent state actions. In general, in these plans States attempt to create tightly-integrated programs, which embrace (among others):

- State Greenhouse Gas inventorying process;
- Assistance to private entities in the establishment of enterprise-specific GHG inventory and (*volunteer*) emissions reduction targets;
- Mandatory utility-related GHG emissions caps;
- Forestry-related carbon sequestration and carbon crediting programs;
- Transportation-related GHG control incentives, such as carpooling and telecommuting tax deductions;
- Creation of GHG reduction bodies, such as the Oregon Climate Trust or GHG inventorying initiatives;
- Fiscal incentives aimed at the increased production of renewable energy, such as tax deductions for wind, geothermal, solar and fuel cell electricity generation;
- Mandatory Renewable Electricity Generation/Consumption Targets; and a set of other measures.

For a detailed discussion of State-specific GHG policies and associated renewable energy initiatives we advise the reader to proceed to Appendix I.

### ***C.1. A Snapshot of the US Greenhouse Gas Emissions Position***

*Appendix I to Report I (June 2001) provides an in-depth review of the national emissions position for the United States. Therefore, on these pages we focus on the key emissions projections referring the reader to the detailed analysis in our June report.*

According to the US Energy Information Administration (US EIA), in 1998 the core share of US GHG emissions comes from the industrial and transportation sectors:

**Table C.1.1:**

<b>US CO2 Emissions Breakdown by Sector</b>	
Industry	32.4%
Transportation	31.8%
Residential	19.2%
Commercial	15.7%
<i>Source:</i> US Energy Information Administration: Table H: "World Carbon Dioxide Emissions from the Consumption and Flaring of Fossil Fuel, 1989 to 1998" (12/30/99).	

**Table C.1.2.** GHG Historical Emissions & Emissions Projections, United States (1990-2010 projection), in MMT

<b>Emissions Data</b>	<b>1990</b>	<b>1996</b>	<b>2010</b>
CO2 Emissions (MMTCO <sub>2</sub> )	5,998	6,538	7,134
Kyoto Commitment	5,578 (-7%)	5,578 (-15%)	5,578 (-22%)
Projected Shortfall	420	960	1,556

*Source:* U.S. Energy Information Administration, 1999.

According to the 1997 US National Communication to the UNFCCC, GHG emissions are projected to rise at a decreasing rate between 1990 and 2020, 12% between 1990 and 2000, 11% between 2000 and 2010 and by only 9.5% between 2010 and 2020.

However, recently released US DOE data for the 1999 US GHG emissions places total emissions at 1,832.6 MMTCE, which would result in an emissions increase (from 1990-1999) of over 20%, well above the previously estimated rate of 12%. Therefore, the emissions projections shown below (The 1st National Communication) represent substantially lowered estimates through 2020, considering the recent data inconsistencies. Thus, in our opinion, the US GHG emissions projections remain contradictory.

### ***C.2. Brief Review of the National Policy before the Bush Administration***

#### **Early Action: Climate Change Research and the National Climate Change Plan**

The US Global Change Research Program (USGCRP) was established by Congress in 1990 to coordinate the resources and research activities of a dozen of federal agencies,

including the U.S. participation in international research initiatives supporting programs such as the World Climate Research Program, the International Geosphere-Biosphere Program, and the Human Dimensions Program. Funding for this development has grown each year with the total appropriation for 1994 reaching \$1.1 billion. However, the initial research efforts were not focused on global climate change but rather embraced all of "global change" phenomena with only minimal attention dedicated to the specific climate change issues.

In 1993, the Clinton administration issued the Climate Change Action Plan (CCAP), calling for GHG emissions reduction to 1990 levels by the year 2000 through cost-effective domestic actions. The CCAP included the following "foundation actions" to help lower domestic GHG emissions:

- The **Climate Challenge Program**, a joint initiative of the US Department of Energy (DOE) and electric utility sector, which established a flexible framework for emission reduction activities undertaken by electric utilities;
- The **Climate-Wise Program**, designed as an umbrella program to support the implementation of other CCAP actions, which focused on facilitating the development of cost-effective emission reduction projects in the private sector.

One of the major components of the federal Climate Change Action plan is the "**Energy Star Program**". It consists of multiple fiscal incentives leading to production of non-energy-intensive computers, home appliances, heating and air-conditioning systems. Thus, the target of this program is *non-industrial energy conservation*. The "Energy Star" program remains successfully functioning in the United States during the Bush Administration—in fact, the majority of state jurisdictions are currently assigning specific weatherization<sup>38</sup> funds, which require installation of "Energy Star" illumination and other energy-saving productions in many public facilities and residences.

The Clinton's national plan also addressed the longer-term policies of the federal government, which, before the arrival of the Bush administration, included a *substantial reliance on international emissions trading*.

Overall, by the mid-1990s the federal administration projected that the National Climate Change Action Plan would lead the U.S. to the following GHG position by the year 2000:

- 76 MMTCE *annual* emissions reduction;
- \$10 billion in annual energy savings for commercial and residential electricity users;
- 167 MMTCE emissions reduction by 2010.

## **USIJI**

During the years of the Clinton Administration, the United States Initiative for Joint Implementation (USIJI) was established as a pilot program developed under the National Climate Change Action Plan to gain experience in evaluating investments in international emissions reduction. In October 2000, before 2000 Presidential elections, the USIJI

---

<sup>38</sup> The term 'weatherization' stands for actions increasing residential energy efficiency – for example, door and window insulation and replacement of residential appliances for the most energy-efficient ones are the examples of weatherization projects.

boasted 167 joint implementation projects around the world, including Africa, Latin America, and countries in transition, including the Russian Federation. This represented nearly a 50% increase since 1996.

The short-term faith of the US IJI is not clear: since April 2001 there has been no information about the extension of financial support to this initiative or whether it would be continued in the near future.

### ***C.3. New Initiatives of Bush Administration***

In the United States three branches of government have effective decision-making power: Legislative Branch (the Congress), Executive Branch (the President and subordinate to him administrative/bureaucratic units/agencies) and Judiciary Branch (the Supreme Court). As the Executive Branch is constitutionally granted the powers to represent the country on the international arena and to approve all decisions of the Congress, it is important to consider all Executive initiatives pertaining to the climate change issue.

As we stressed in our previous report, in the United States the prerogative of international decision-making belongs to the Executive Branch. Therefore, we focus below on the most recent policy proposals advanced by the Bush administration. However, since the Legislative Branch has an implicit veto power over the Executive decisions, we later proceed to outlining the most recent developments in the US Congress, which would allow the reader to assess the scope of legislative activity in the United States.

***Before proceeding to the detailed outline of most recent developments, we would like to remind the reader that Report 1, Appendix I contain the most detailed information on the federal policies pertaining to climate change regulations immediately after COP-6. The same Appendix provides a detailed review of national energy structure.***

After wreaking havoc in international climate change negotiations with its denial to support further negotiations surrounding ratification of the Kyoto Protocol, on August 22 the US administration advanced a set of *preliminary* GHG policy proposals, which are likely to be refined before COP-7 in Marrakesh, Morocco.

At this juncture EcoSecurities would like to emphasize there that this plan remains in its embryonic phase as no substantial progress was publicly reported with regards to the Presidents climate change proposals after September 11 attacks on the Pentagon and the World Trade Center.

Although these proposals are still preliminary, they cover three areas:

- commitment of hundreds of millions of dollars (the final number is not available at this time) to study the causes of climate change;
- research on new technologies able to reduce the emissions or sequester the main greenhouse gases; and
- expansion of programs to help developing countries to devise GHG strategies, such as the conservation or reforestation of tropical forests (although it is not clear whether the final focus of this policy would be on 'sinks').

From the standpoint of technological development, the major bulk of funding is planned for technologies that would *radically* reduce carbon emissions or sequester carbon

dioxide in safe storage. One example of such technology is the capture of carbon dioxide into depleted oil or natural gas wells, which could then be sealed permanently. Norwegian energy company STATOIL has successfully experimented sealing carbon dioxide in the ocean floor at its off-shore oil platforms, but the US would need to invest substantial resources to research the Norwegian and other relevant experiences related to the utilization of this technology for the American underground storage conditions.

Unfortunately, the President's draft plan contains no specific provisions to limit energy consumption, which remains the direct source of most national greenhouse gas emissions. The Bush Administration has argued that at a time when the nation's economy is weakening, a stiff tax energy consumption or any other fiscal instrument inducing energy rationing would be politically unacceptable and economically questionable.

Regardless of whether the US Administration decides to present the refined version of the above plan at the Marrakesh meeting, it is, most likely, not going to have any immediate effect on the structure and specifics of the Bonn agreement achieved this past July.

#### ***C.4. Activities at the National Legislative Level***

The powers of the US Congress are crucial since by assembling the majority vote of both chambers it has the power to over-ride Presidential veto of any given Bill (law). Therefore, we cannot overemphasize the importance of Congressional climate change initiatives, especially since they markedly counter-balance the official position of the Executive Branch. Specifically, although the Congress cannot 'force' the President to return to the Kyoto negotiation process, it has the power to pass a set of laws, which would effectively create an alternative GHG abatement regime within the country as well as internationally.

While there has been a substantial legislative effort toward constructing a comprehensive national climate change policy since 1993, most legislation remains under review by Senate and House Committees. Such initiatives include substantial efforts to curb greenhouse gases in the areas of renewable energy, carbon sequestration, transportation measures and energy efficiency. Among these policies are the following bills:

##### **Greenhouse Gases:**

[S.556](#): "Clean Power Act of 2001" Also known as "Four Pollutant Bill"

##### **Carbon Sequestration:**

[S.1255](#): "Carbon Sequestration and Reporting Act"

[S.765](#): "Carbon Sequestration Investment Tax Credit Act"

[S.769](#): "International Carbon Conservation Tax Credit Act"

[S.785](#): "Carbon Conservation Incentive Act"

##### **Climate Change:**

[S.1294](#): "Climate Change Risk Management Act of 2001"

[S.1008](#): "Climate Change Strategy and Technology Innovation Act of 2001".

##### **Voluntary (Emission) Reduction Incentives:**

[S.1293](#): "Climate Change Tax Amendments of 2001"

##### **Energy Bill:**

[H.R. 4](#): “SAFE Act of 2001: Securing America's Future Energy Act of 2001”

**Alternative Vehicles:**

[S.760](#): “Cleaner Efficient Automobiles Resulting from Advanced Car Technologies (CLEAR ACT)”

**Renewable Fuels:**

[S. 1058](#): “Biodiesel Renewable Fuels Act”

[S.1006](#): “Renewable Fuels for Energy Security Act of 2001”

**Renewable Energy:**

[S. 388](#) and [S. 389](#): “National Energy Security Act of 2001”

[H.R. 2324](#), [H.R.2478](#): “Renewable Energy and Energy Efficiency Act of 2001”

We now review the context of the key legislation directly pertaining to carbon dioxide emissions, which we listed under the rubrics of “Greenhouse Gases”, “Climate Change”, “Carbon Sequestration”, and Voluntary Emissions Reduction Incentives. We do not pay detailed attention to the remainder of the Bills since they do not address GHG abatement issues *directly*.

**S.556: “Clean Power Act of 2001”**

The bill was introduced by Senator Jeffords<sup>39</sup> (I, VT) in March 2001. After a number of readings it was referred to the Committee on Environment and Public Works, where it currently awaits further approval/action. It represents an Amendment to the Clean Air Act, requiring the U.S. Environmental Protection Agency to promulgate regulations to achieve specified reductions in emissions of sulfur dioxide, nitrogen oxide, **carbon dioxide** and mercury from power plants. All electric generation facilities with a nameplate capacity of 15 megawatts or greater that use fossil fuels to generate electricity for sale would be affected by this legislation if it were adopted. It approved by the Senate and House, the Bill would become effective by January 1, 2007.

**S.1255 : “Carbon Sequestration and Reporting Act”**

This Bill was introduced by Senator Ron Wyden (D, OR) in the summer of 2001. This draft law proposes to amend the existing *Energy Policy Act* to provide for the establishment of the US Carbon Advisory Council. This national body would serve as an advisory board on developing guidelines for greenhouse gas sequestration by soil- and forest management actions (including supervising all the necessary GHG inventorying procedures involved). It would also assess the potential effects and effectiveness of carbon sequestration measures.

The Bill further proposes to amend the *Global Climate Change Prevention Act* of 1990 to authorize the US Department of Agriculture to enter into cooperative agreements for forest carbon activities on private, state or Indian lands. It envisions that the US Secretary

---

<sup>39</sup> Formerly Republican. “I” stands for “Independent”, “D” denotes a Democrat and “R” represents a “Republican”. The second abbreviation in the brackets stands for the name of the state where a Senator/Representative come from.

of Agriculture would provide states with assistance to establish revolving loan programs for forest carbon activities in non-industrial (private) forests.

Finally, it directs the Secretary of Agriculture to establish a US carbon sequestration program, which would include conservation reserve- and wetlands reserve lands. The Department of Agriculture would also become responsible for carbon monitoring programs under the Bill.

The last action on this Bill occurred on July 27, 2001: the Bill is successfully moving through the House.<sup>40</sup>

### **S. 765: “Carbon Sequestration Investment Tax Credit Act”**

Senator Brownback (R, KS) introduced the draft Bill on April 24, 2001. The draft calls for the Internal Revenue Service (the US tax collection agency) to amend the existing tax code to provide for carbon sequestration investment tax credit, among other proposals. After Bill introduction, no major actions occurred: the Bill still has to clear the Senate Committee.

### **S.769: “International Carbon Conservation Tax Credit Act”**

On the same April 24, Senator Brownback (R, KS) introduced the international carbon conservation tax credit initiative, which calls for the establishment of an international carbon sequestration program under the supervision of an administrative panel (still to be designed) within the US Department of Commerce. No actions on the Bill have yet occurred within the Senate Committee.

And, finally:

### **S.785 : “Carbon Conservation Incentive Act”**

This Bill echoes provisions of S1255 in that it requires the US Department of Agriculture to create a national carbon sequestration program to encourage owners and operators of agricultural land to enroll in state-sponsored programs increasing carbon sequestration. The Bill was presented on April 26, 2001 by Senator Brownback (R, KS). No action has occurred on the draft law after it was referred to the Senate Committee.

Before proceeding to outline the most recent legislative proposals in the domain of climate change, we would like to remind the reader that the United States tend to prefer to achieve the majority of greenhouse gas emissions from industrial sector through *voluntary actions*:

---

<sup>40</sup> Expressed differently, the Bill is still considered in a responsible House Committee.

### **S.1293 : “Climate Change Tax Amendments of 2001”**

On August 1, 2001 Senator Craig (R, ID) has sponsored a Bill, which would amend the existing internal Revenue Code (the US tax regulation law) to provide incentives for the voluntary reduction, avoidance and sequestration of greenhouse gas emissions. tax credits advancing the global climate change science and national technology development and deployment were especially encouraged. Similar to other legislation advanced in the summer of 2001, the Bill is awaiting first hearings in the Senate Committee.

The cluster of *most recent* climate change Congressional draft laws includes the *Climate Change Risk Management* draft law and *Climate Change Strategy and Technology Innovation Act*, both of which were introduced in June-August 2001. Therefore, they represent the most recent legislative initiatives of the US Senate, indicating the growing interest of the national Legislature to more decisive actions in the domain of climate change:

### **S.1294 : “Climate Change Risk Management Act of 2001”**

Sponsored by Senator Murkowski (R, AK), the Bill calls for the establishment of a new national policy mitigating the risk of climate change. The law proposes to strengthen provisions in the *Energy Policy Act* of 1992 and the *Federal Non-nuclear Energy Research and Development Act* of 1974 with respect to accounting for potential climate change. The Bill has been referred to the Senate Committee.

### **S.1008 : “Climate Change Strategy and Technology Innovation Act of 2001”.**

The draft law calls for the amendment of the existing *Energy Policy Act* of 1992 to develop the United States Climate Change Response Strategy with the goal of stabilization of greenhouse gas concentrations in the atmosphere at a level preventing dangerous effects on the climate system. The bill addresses strategies necessary for the minimization of adverse economic and social impacts arising from development and implementation of climate change strategies.

The draft law invites the establishment of a research and development program that would focus on radical technological breakthroughs promising significant progress toward the goal of stabilizing greenhouse gas concentration. Finally, it proposes to establish a National Office of Climate Change Response within the Executive Office of the President.

This legislative proposal has received the most scrutinizing attention from both the US and international media. Senator Robert Byrd (D, WV), who sponsored the law, became the center of Senatorial discussions surrounding the issue of national climate change strategy. Interestingly, in selected areas the policy proposals of President Bush, which we mentioned above, closely echoed the provisions of the draft law S.1008. Namely, President Bush has echoed the S.1008 by placing the premise on allocating the core attention to the development of the break-through technologies.

The Bill is currently awaiting further actions within the Senate Committee of Governmental Affairs.

**All above bills share interesting traits:**

- They were proposed between April 2001 and August 2001 -- that is *after* President Bush declared the official withdrawal from Kyoto Protocol;
- They are all pending further Senatorial action, which means that they are not likely to become law within the next six months--to a year (depending on the speed within which a given bill passes through both Congressional chambers and contingent upon President Bush not vetoing any one of these legislative pieces). The September 11 attacks on the World Trade Center and the Pentagon are likely to further slow down the process of Congressional deliberations on the climate change legislation. Although we remain optimistic about the passage of most of these laws, EcoSecurities cannot provide even approximate estimates of the timing it would take to pass these proposals into laws;<sup>41</sup>
- They are not touching the sore area of mandatory emissions reduction requirements for national energy-intensive sectors;
- They are not (yet) focusing on the transportation sector, although it is a key contributor to US emissions (although an alternative vehicle Bill S760 promises some changes, the problem of skyrocketing gasoline consumption is not addressed) <sup>42</sup>. We estimate that transportation-specific legislative proposals would be less politically-sensitive than pushing for mandatory industrial GHG abatement ; and
- They emphasize fiscal mechanisms and forestry-related actions (carbon sequestration) versus energy-specific initiatives and command-and-control programs.

Given the current distribution of power within the Senate and the current official stand of the US Administration, EcoSecurities does not envision any substantial changes in the above direction of Congressional activities – at least, not until the COP-7 in Marrakesh.

***C.5. Conclusion***

Taken together, the above initiatives complement each other and are not far from defining a new comprehensive national greenhouse gas strategy. But we reiterate these are initiatives *do not yet represent laws*: in other words, the United States still does not have a coordinated national climate change plan after its withdrawal from the Kyoto Protocol and suspension of some national activities embedded in the CCAP of the Clinton Administration (such as the USIIJ).

Nevertheless, we remain optimistic that by COP-7 the President will present a *refined* national emissions reduction plan based on the points outlines in the previous section

---

<sup>41</sup> The reader should also remember that all Congressional Bills have to be signed into law by the President; in case President Bush vetoes any one of the aforementioned legislations, additional time would be required to mobilize Senators and/or Representatives to sponsor these Bills in their adjusted form and to re-assemble Congressional Committees to decide whether every given Bill is ‘worth’ re-introduction for the second round of deliberation.

<sup>42</sup> A series of fuel content regulations were recently proposed by President Bush. It appears that transportation initiatives are gradually shifting into the Executive domain ( at least, for the time being).

since, as the list of pending Bills shows, the Administration is under an increasing pressure from bi-partisan Congressional leaders to take action. However, the extent to which specific policy proposals can be polished and discussed with the key political stakeholders remains under question since the US decision-makers will remain pre-occupied with national security for years to come. Realistically, it may not be productive or/and advisable to expect a full-fledged elaborate climate change proposal from the US Administration at COP-7 in Marrakesh due to the aforementioned constraint.

## Section 4

### **Summer 2001: Major Policy Trends Affecting Carbon Market Developments**

We now turn on to a brief update of the key greenhouse gas abatement policies in the remainder of Annex B, with the exception of Asian-Pacific countries, which will be examined in our next report. We begin with the discussion of the EU-level progress on creating the region-wide emissions trading structure. We then elaborate on the recently launched UK domestic emissions trading system. We further address national German discussions of national emissions trading system since this country represents the largest West-European economy with a well-integrated set of national GHG policies.

Lastly, we point to a few emerging regional trends, which encompass East European greenhouse gas reduction initiatives and a number of new national climate change plans. These trends are not *directly* connected to emerging national emissions trading systems, but they have a latent effect on the international price of carbon since they reflect proliferation of green electricity markets and introduction of new carbon reduction policies.

#### ***D.I. European Commission Emissions Trading Draft Directive***

At the end of June the European Commission circulated an internal draft directive establishing a flexible-trading scheme for carbon dioxide emissions in the EU. If the directive becomes legislation, the EU-wide carbon-trading regime would come into force on January 1, 2005. After operating for three years, it would be reviewed for necessary policy adjustments.

The EU's Environmental Agency originally hoped to launch the review process in July 2001, shortly after circulating the draft document. However, on June 29 it announced that it had postponed discussions of the draft law, which began in early October.

Under the EU GHG emissions reduction plan, the EU-wide emissions-trading scheme remains the key part of the EU-wide policy to achieve its greenhouse gas emissions target.

The draft directive covers carbon dioxide emissions; it does not include any other GHG. Its provisions include the EU emission-allowance allocation scheme, a list of industries affected by emissions reduction requirements and trading regulations, stipulation of credit banking, description of compliance enforcement mechanisms and other issues.

Specifically, the draft directive states that companies exceeding their emissions allowances would be subject to fines (the exact level of fines is discussed below). However, companies would be able to bank allowances from one year to the next, which would make it easier for them to meet their obligations. It is further envisioned that the European private sector would provide the infrastructure for trading. In other words, no central governing body would organize carbon transactions.

Trading would first be restricted to a number of selected economic sectors, such as oil refineries, coke ovens, smelters, cement kilns, iron and steel furnaces, and any power

plant with a thermal capacity of over 20 megawatts. Chemical plants and waste incinerators would be excluded from the first stage of trading.

In the summer of 2001 the EU estimated that 5,000 installations — responsible for 40% of total CO<sub>2</sub> emissions -- would fall under the plan. However, by mid-October 2001, with the commencement of the proposal revision period, EcoSecurities was informed that the EU had relaxing its previous emissions trading requirements.

Specifically, on October 9 the EU Commission announced that under the reviewed emissions trading procedures member-states could *exempt* the most adversely affected facilities from CO<sub>2</sub> trading obligations (such exemption would be valid for the first three years starting with the date of commencement of the EU emissions trading system). The revised EU proposal also stipulated that the fine for exceeding emission allowances would also be halved -- from the originally proposed US \$180/ton of CO<sub>2</sub> to US\$45.6/ton CO<sub>2</sub> through 2008 and US \$91.2/ton thereafter. Under the new provisions member states would be able to decide how to distribute a pre-determined quantity of carbon emission permits and what each sectoral quota would be.

The October suggestions retained the key elements of Commissioner Margot Wallstrom's first carbon trading plan, which limits the trading scheme to power plants, oil refineries, metal production sites, and the cement, glass, ceramics, and pulp and paper sectors.

The EU directorate expressed its hopes to agree on the new proposal by the end of October to submit it for formal adoption before COP-7 in Marrakesh. However, on October 17 the EU Commission announced that it was not able to agree on all sections of the EU emissions trading proposal and would not be able to submit the document for the consideration of the COP-7 delegates. Environment Commissioner Margaret Wallstrom's spokeswoman said that the Commission simply ran out of time to finalize the document, which would also bind the European Union to ratify the Kyoto Protocol.<sup>43</sup>

## ***D.II. On August 14 the United Kingdom officially announced the final structure of domestic emissions trading system***

In our previous report we have presented the key points of the British national emissions trading system. We update this presentation on the basis of the scheme, which was finally approved on August 14, 2001. The actual trading is expected to start in April 2002.

In terms of objectives, British Environment Minister Michael Meacher stated that the national emissions trading scheme should enable the UK to meet 10%<sup>44</sup> of its internationally agreed greenhouse cuts. Under the internal EU burden sharing, the UK has

---

<sup>43</sup> Reuters, October 18, 2001: <http://www.planetark.org/dailynewsstory.cfm/newsid/12869/story.htm>. However, EcoSecurities feels obliged to also report an opinion that the EU package had been sabotaged by the interests of the EU industries that will be forced to cut polluting emissions.

<sup>44</sup> This number refers to 10% of the total emissions reduction obligation relative to the GHG emissions level in the year 1990; in other words, emissions trading would permit to achieve the 10% of the Kyoto obligation. For details see BBC report from August 14 entitled: "Greenhouse Gas Trade Go Ahead in the UK"; the article could be viewed at: [http://news.bbc.co.uk/1/hi/english/sci/tech/newsid\\_1490000/1490845.stm](http://news.bbc.co.uk/1/hi/english/sci/tech/newsid_1490000/1490845.stm).

pledged a reduction of 12.5% (relative to the 1990 levels) in emissions of six greenhouse gases by 2010.<sup>45</sup>

As described in our previous report, the scheme is considered voluntary. The British government emphasized it did not want to impose any mandatory emissions reduction caps on national industries at this time, before the EU-wide initiative is distilled and launched.

The UK government is providing up to £215 m (equivalent to net (post-tax)-£30 m annually) over five years from 2003-4 onward to provide the incentive payments for companies to join the scheme.<sup>46</sup> The Government insists that incentives are necessary to induce large-scale participation in the scheme.

Three types of companies are eligible for participation in the U.K. scheme. First are companies of each of the 48 sectors, which have (or are still in the process of)<sup>47</sup> negotiated (-ing) voluntary emissions reduction agreements with the UK government ("Climate Change Agreement" (CCA)) companies (see report of the *Pointcarbon* from July 27, 2001).<sup>48</sup> Second, entities not included in these sectors can still undertake measures and obtain funding from a pot of about £150 million (those are called "incentive companies"). Last, multinationals operating in the UK can also enter the system by negotiating an agreement with the national authorities.

Emissions allowances will be allocated in 2002 by auction, with firms bidding on the basis of the level of reduction they believe they can achieve. Penalties for those who fail to comply will include withdrawal of the incentives, payment of penalty interest, and a reduction in the following year's allowances.

The trading scheme was well received by business leaders. For example, Digby Jones, director-general of the Confederation of British Industry, called it "good news for business and for the environment". The Conservative Party environment spokesman, Archie Norman MP, called the scheme "an important first step". But he said it called into question the government's climate change levy, which continued "to impose an uncompetitive burden on industry".<sup>49</sup>

To avoid the double-burden of the British Climate Change Levy, several energy-intensive sectors agreed to meet carbon emission reduction targets before the last details of the trading program were finalized. As mentioned before, they represent the core of the British emissions trading scheme referred to as the "Climate Change Agreement" (CCA) companies. These companies will receive an *80 percent reduction* in the levy. The industry sectors involved in these volunteer agreements, which include cement, steel, composite wood-based board and animal feed, have until 2010 to make their emissions

---

<sup>45</sup> The UK also has a domestic commitment advanced by the Labor Party, which calls for emissions reduction in the volume of 20 % (relative to the 1990 level). Under the original Kyoto obligation the UK was required to reduce 8% of its 1990 GHG emissions (see UNFCCC website for details on the Kyoto obligations).

<sup>46</sup> BBC, August 14, 2001: "Greenhouse Gas Trade Go Ahead in the UK".  
[http://news.bbc.co.uk/1/hi/english/sci/tech/newsid\\_1490000/1490845.stm](http://news.bbc.co.uk/1/hi/english/sci/tech/newsid_1490000/1490845.stm).

<sup>47</sup> EcoSecurities found out that by August 2001 only 15 UK sectors have finalized the aforementioned

<sup>48</sup> [http://www.pointcarbon.com/article\\_view.php?id=1484](http://www.pointcarbon.com/article_view.php?id=1484)

<sup>49</sup> BBC, August 14, 2001.

cuts. According to the UK Environment Minister, their commitments represent cuts in carbon emissions of approximately 600,000 tons of CO<sub>2</sub> per year by 2010.

The trading system will require domestic legislation. The Environment Minister Meacher said he believes this would go through parliament as early as possible and industry hoped the domestic scheme will be up and running by April 2002.

During COP6.5, Steve Drummond, Managing Director of CO<sub>2</sub>e.com predicted that initial price of emissions trading transactions on the UK market should hold around £10/ton CO<sub>2</sub><sup>50</sup>, although he was cautious about the ability of this price to remain at such a high level. He mentioned that by 2008, with the advance of international emissions trading, the price was likely to drop to maximum £4/ton, if not lower.

In September 2001 the UK domestic trading system has registered its first large-scale deal. The chemicals group Dupont sold 10,000 year-2002 greenhouse gas emissions allowances to MIECO, a unit of Japanese trading company Marubeni Corporation. The deal was arranged on a forward basis because the UK emissions trading scheme does not officially start until April next year.<sup>51</sup>

With the US having written itself out of the Kyoto protocol, EcoSecurities believes that London has the potential to quickly become the dominant force within the forthcoming regional as well as international emissions trading systems after the approval of British domestic emissions trading scheme. Again, it represents the world's first truly multi-sector emissions reduction flexibility mechanism since the Danish system covers only national utilities. For this reason we would like to stress again its significance; EcoSecurities will closely trace subsequent developments of this program in its next reports.

### ***D.III. Germany: How Likely is the Domestic Emissions Trading System?***

Germany has one of the most ambitious national target within the EU: its objective to cut its emissions by 21 percent compared to 1990 levels represents a major part of the total EU commitment to Kyoto. It is for this reason that EcoSecurities chooses to evaluate the German discussion of instituting a national emissions trading system.

Currently German government is exploring opportunities to launch a national trading system in line with EU's proposed scheme (see D.I above). Originally it was hoped that the national emissions trading proposal would materialize in September 2001, and its structure would echo the key provisions of the EU emissions trading proposal.

However, Germany will not present the aforementioned initiative by the specified time since its industry is not ready to accept the stringent national emissions reduction targets in the way structured by the EU. The industry is arguing against the current scheme because it would single out the energy-intensive sectors while letting aside light industry and transportation. The energy-intensive industry is also opposing the proposed auctioning of German emissions permits, arguing that an auction is going to be equivalent to a CO<sub>2</sub> tax, alongside the existing eco-tax and 'green' energy surcharges. For example,

---

<sup>50</sup> "UK May Take Lead in Carbon Trading", the Guardian, July 24, 2001. The full text of this article is available at: <http://www.guardianunlimited.co.uk/globalwarming/story/0,7369,526574,00.html>

<sup>51</sup> Reuters, September 24, 2001.

Henning Rentz, head of RWE's corporate environmental affairs stated: "These burdens already account for more than 45 percent of the retail power price to household customers and we cannot imagine an emissions trading system on top of all this..."<sup>52</sup>

At the same time, the idea of German emissions trading has received a substantial boost on September 18, when German state-owned credit institution KfW announced its plans to introduce two funds to encourage carbon dioxide (CO<sub>2</sub>) emissions trading to help the country meet its target to cut 45 million tons a year of the greenhouse gas emission by 2010. "The traditional environmental and political support instruments alone are no longer enough to be able to counter global climate change," KfW's economics expert Klaus Oppermann told Reuters.<sup>53</sup> "One of the most interesting further instruments to use is trading in emissions credits and rights," he added. As of October 20, KfW has not yet put a time-frame on the introduction of the funds, which is expected by the end of 2001.

In the proposed two-fund system, the first fund will help companies finance environmental projects in developing countries as part of the Kyoto-suggested Clean Development Mechanism (CDM). Companies will be able to pay back the financing for CDM projects by submitting the credits obtained for CO<sub>2</sub> reductions to the fund for sale to other firms. The role of the government in the fund will be to provide a *guarantee* for the investment. The actual project financing will be drawn from capital markets.

A second fund would aim to encourage small to medium sized firms to take part in emissions trading in a Europe-wide company cap and trade system, which the EU plans to launch in 2005. While the scheme is expected to be mandatory for larger firms, other instruments are still considered for smaller companies, such as a climate change levy. Therefore, smaller firms would be excluded the planned German cap and trade scheme because of the administrative costs. However, by opting into the fund, these small/medium-scale companies can avoid the levy by paying its equivalent in exchange for emissions rights, allocated according to their historical emissions levels.

At this juncture EcoSecurities did not find specific information guaranteeing that German national government will come up with a coherent national emissions trading plan by COP-7. Neither were we able to find the exact timeframe for the adoption of the national emissions trading system. Within the short time-horizon, the core of German greenhouse gas policy will remain focused on CHP policies and on aggressive support for wind, solar and biofuel renewable power. In fact, in mid-August, after four months of intensive negotiations with industrial representatives, Germany's economic and environmental ministries reached an agreement on the final details of the law promoting the use of CHP generation.<sup>54</sup>

---

<sup>52</sup> The citation is taken from an interview printed by *Reuters* on July 4, 2001. The full text and related opinion can be found at: <http://www.planetark.org/dailynewsstory.cfm?newsid=11426>

<sup>53</sup> Planetark, September 19, 2001: <http://www.planetark.org/dailynewsstory.cfm/newsid/12443/story.htm>

<sup>54</sup> In this draft law the ministers agreed that the CHP law is expected to come into force in 2002.

CHP uses excess energy from power generation to heat buildings, thereby increasing overall energy efficiency. The technology produces fewer emissions than do conventional power stations. The CHP scheme calls for extra payments to CHP operators of initially three pfennigs per kilowatt hour (pf/kWh), which will be borne by all consumers across the supply chain. Consumers will pay around 0.2 pf/kWh more for their electricity. The law will also provide respective sums of five pf/kWh and 10 pf/kWh in support for CHP plants used for decentralized power supply and those that use fuel cells. Total investment in CHP is expected to total around eight billion marks (\$3.67 billion). The scheme is expected

#### ***D.IV. Selected Policy Trends Across Annex B***

The last sub-section is focused on the developments taking place in summer/September 2001. These events are not *directly* related to emissions trading but they potentially affect the international demand for carbon and our expectations for the scope of international carbon transactions in the near future:

- On July 5 the *Polish Power Exchange* launched a green electricity futures market to capitalize on a new set of regulations, which force Polish-owned utilities to mix power derived from fossil fuels with electricity produced from renewables. Under recently adopted Polish law, electricity distributors are indeed required to get at least 2.4 percent of the year 2001 total power volumes from renewables. The minimum quota set for the green power's share in total electricity turnover will increase to 2.5 percent next year (2002) and then will gradually rise to 7.5 percent by 2010.<sup>55</sup> The Green Electricity futures market is opening the 'playing field' for utilities, which have to buy green energy and need to trade it, despite the fact that it is more than twice as expensive as conventional power.

This development constitutes a prominent move on the part of East European environmental and energy authorities since it promotes development of renewables in a country heavily reliant on coal power; in 2001 around 94% of Polish electricity were generated from coal.<sup>56</sup> Therefore, such measure will be reducing a *substantial* volume of greenhouse gas emissions per unit of electricity consumed. Again, the importance of Polish renewable developments in general and of the renewable standard in particular is connected to the heavy carbon-intensity of this East European economy.

- In June 2001 the Canadian federal government pledged to cut greenhouse gas emissions from all public operations. "As the country's largest enterprise, we have an obligation to show strong, visible leadership in reducing emissions," Natural Resources Minister Ralph Goodale said.<sup>57</sup> The Canadian government committed itself to purchasing 20 per cent of its electricity from renewable sources to reduce public-sector greenhouse gas emissions by 31 percent below its 1990 levels until 2010. In addition, the Canadian government pledged to improve the energy efficiency in its premises, replace its 23,000 vehicles for less energy-intensive ones and buy more "green power" at a cost of C\$44.2 million (US\$29 million). These measures now constitute a part of Canada's C\$1.1 billion program to fight climate change over the next five years.
- Switzerland's long-planned carbon dioxide (CO<sub>2</sub>) reduction program was launched on July 2, 2001 by president and environment minister Moritz Leuenberger. Under the terms of the Kyoto protocol Switzerland has signed up to cut emissions of the six Kyoto targeted greenhouse gases by 8%.

The program's overall aim is to achieve a 12% reduction in Swiss CO<sub>2</sub> emissions by 2010 relative to the 1990 levels. Sector-specific targets have also been set for reducing emissions from heating oils (15%) and motor fuels (8%).

---

to remain operational until 2010. Again, the aggressive promotion of CHP in Germany is due to the ability of German energy-users to substantially limit GHG emissions by reducing the consumption of fossil fuels by introducing CHP on the territory of the former East Germany.

<sup>55</sup> For the detailed announcement see:

<http://www.planetark.org/dailynewsstory.cfm?newsid=11444&newsDate=5-Jul-2001>

<sup>56</sup> "Polish Power Exchange Launches Green Futures Markets", Reuters, July 5, 2001.

<sup>57</sup> Citing according to the text published by Reuters, June 6, 2001.

The Swiss program 'borrows' from the British experience in the sense that it sets up different instruments for energy-intensive and non-energy-intensive industries.

First, non-energy intensive and small companies are encouraged to take voluntary emissions reductions commitments, either individually or in groups. Those who achieve their objectives will face a lower rate of a CO2 tax, which is discussed to come into force after 2004.<sup>58</sup>

Second, energy-intensive and/or large firms will be encouraged to sign binding emissions reduction contracts with the government, a system similar to the one introduced in the UK. Switzerland defines large/energy-intensive firms as those with annual CO2 emissions of 250,000 tons and higher. Second-cluster firms meeting their binding targets will be exempt from the CO2 tax and will be allowed to sell emission credits should they achieve greater than required GHG reduction.

In addition, the Swiss government expects CO2 savings/reductions from residential sector to contribute significantly to the 12% national target. Currently the Swiss Parliament is working on the law outlining residential greenhouse gas reduction programs. Therefore, the Swiss greenhouse gas reduction program promises to be one of the most comprehensive in Western Europe.

In August the European Commission announced that it was working on the recommendations for boosting the biofuels industry. The recommendations, produced by Commissioner Loyala de Palacio's transport and energy Directorate, were to represent the EU framework for tax incentives and obligations on member states to achieve mandatory minimum biofuels market shares.

This initiative is aimed at both reducing greenhouse gas emissions and increasing energy security. Under the biofuels tax proposal, the Directorate expects to amend the 1992 fuel excise duty directive to permit the EU member states to introduce biofuel tax breaks of up to 50%, where biofuel includes such commodities as biodiesel and agricultural ethanol. Under the current proposal, member states would also have to ensure that biofuels represent at least 2 percent of petrol and diesel sold by 2005, rising to 5.75 percent by 2010.

The Directorate predicts that a shift to biodiesel would prevent up to 2.5 of the 3.2 tons of carbon dioxide released for every 1,000 liters of conventional diesel fuel. The proposal is still undergoing internal consultation. It was expected to be formally unveiled in September. However, EcoSecurities was not able to locate information about the final status of this initiative.

In conclusion, we would like to stress that EcoSecurities sees *a continuing* progress towards mitigating greenhouse gas emissions at national level both in North America and Europe (Asian carbon policy developments will be reviewed in the next report). If this

---

<sup>58</sup> The idea of Swiss CO2 tax was first entertained in February 2001, when Switzerland adopted a new *Energy-Switzerland* program aimed at the reduction of GHG emissions. The new program followed the expiration of the ten-year Energy 2000 program. Voluntary measures were seen as the foundation for this program. If sufficient progress is not demonstrated by 2004 using voluntary measures, Swiss Environmental Minister Leuenberger stressed that a tax on CO2 could be imposed instead. The fate of the CO2 tax remains undetermined because in the summer of 2001 the Swiss Parliament has rejected an overarching energy consumption tax, which has had to assist the nation in the reduction of GHG emissions. The Swiss energy taxation policies will be placed on the national referendum agenda in December of 2001. Therefore, EcoSecurities advises the reader to watch for additional developments in this policy area.

trend of comprehensive domestic abatement programs goes forward, expectations of the demand for ERs from international flexibility mechanisms (trading, JI or CDM) *may* have to be revised downward.

## Appendix I

### State-Level Climate Change Policy

In Appendix I we introduce the reader to the Climate Change Action Plans, which represent key guidelines for subsequent state actions. We later review the details of climate change initiatives within each State, which include (but are not limited to):

- Greenhouse Gas Inventories;
- Utility-related GHG emissions caps initiatives;
- Forestry-related carbon sequestration programs;
- Transportation-related GHG control ordinances;
- Launch of GHG reduction project-facilitating bodies, such as the Oregon Climate Trust; and
- Fiscal incentives aimed at the increased production of renewable energy, and a set of other measures;

We further turn to the so-called *Renewable Portfolio Standards (RPS)*, which establish quotas on State's production of renewable electricity. As such quotas induce the reduction of GHG emissions, we feel that RPS should be of substantial interest to the PCF participants.

To facilitate implementation of the above PRS, States encourage the broadest utilization of market-based mechanisms. Specifically, power producers and large-scale energy users are prompted to engage in what is called "Green Certificates Trading" (trading of *CERCs*), where 'green certificates' represent a positive environmental externality of green electricity production. We elaborate on this definition in substantial length in the RPS section of this Appendix. At this point we invite the reader to pay special attention to the discussion of green certificate trading provisions within the description of States' Renewable Portfolio Standards.

We also emphasize the importance of the first cross-border GHG reduction initiative that a group of Northeastern states adopted together with five Canadian provinces at the end of August. In lieu of this action, in conclusion we emphasize our hope that this initiative will serve as a strong impetus for all subsequent regional GHG reduction policies still to take place across the United States.

#### *Climate Action Plans*

Legislative authority in the US is divided between two major jurisdictions: federal and state. While federal legislation is critical in determining national standards and *international* positions on climate change, the distribution of political power within the US suggests that policy developments within individual states can be more relevant than those made on the national level. Constitutionally, States are delegated all decision-making powers, which do not fall into the Federal jurisdiction. Subsequently, States frequently represent 'laboratories of innovative programs' later considered and adopted on the federal level. We say that States frequently 'test' policies later reviewed and enacted in Washington.

Given the above, *details* of climate change initiatives remain the responsibility of the States. Therefore, State-specific programs, projects and actions should be of primary importance to any climate change specialist interested in comprehending the current

political-economic situation *within* the United States pertaining to the climate change problem.

Of the fifty states, the following currently have global warming State Action Plans registered with the Environmental Protection Agency (EPA):

**TABLE Appendix I.1: List of Climate Change Action Plans**

<b>States with EPA-registered Global Warming State Action Plans (as of January 2001)</b>		
Alabama	Massachusetts*	Oregon
California	Minnesota*	Pennsylvania
Colorado	Missouri*	Tennessee
Delaware	Montana	Utah
Hawaii	New Hampshire*	Vermont
Illinois	New Jersey	Washington
Iowa	New Mexico*	Wisconsin
Kentucky	New York*	
Maine	North Carolina	

**Source: USEPA, June 2001**

\* = *plan in progress*

The above Climate Change Action Plans represent the organizational phase of State-based policy process: they set up the agenda for the subsequent legislative and executive actions within each jurisdiction. In this capacity, the Climate Change Action Plans represent detailed programs of States' actions, which still have to be implemented.

Actions have begun on nineteen of the 25 Action Plans and the other six are in progress of being finalized (data for Spring 2001). This section focuses on six representative States that characterize the wide spectrum of perspectives and legislative proposals: California, Illinois, Massachusetts, New Jersey, Oregon and Washington.

- **California**, the nation's second largest state with a diverse economy and a climate change agenda heavily focused on achieving emissions reduction through voluntary actions and renewable energy regulations;
- **Illinois**, a Great Lakes State with a large energy-intensive industrial sector;
- **Massachusetts**, a Northeastern State, which is the only jurisdiction that regulates carbon dioxide emissions from its oldest power plants;
- **New Jersey**, a Northeastern State with a unique agreement with the Dutch *Ministry of Housing, Spatial Planning and Environment* to develop a prototype system of GHG trading and the only State in the federation to assume a voluntary GHG emissions reduction cap;
- **Oregon**, a heavily forested timber State in the Pacific Northwest with a unique 'Climate Trust' and a sophisticated web of policies covering reduction of carbon emissions from energy generation as well as forestry-based carbon sequestration; and

- **Washington**, a North-Western State, which unsuccessfully attempted to pass a far reaching GHG reduction legislation and remains strongly committed to deep GHG emission reductions; and

## ***A.I. Selected State Greenhouse Gas Programs***

### **A.I.I. California**

California has been a consistent leader in addressing climate change issues with what we regard as one of the most comprehensive and innovative GHG policies in the nation so far. We believe that the diversity of California GHG initiatives is surpassed only by the highly integrated and broad set of GHG programs adopted recently in Oregon (see the section on Oregon below). California offers a comprehensive GHG state action plan with a focus on commercial energy efficiency, renewable electricity generation and alternative fuel vehicles program.

#### **Senate Bill 1771—September 2000**

*Creates the California Climate Action Registry*

In September 2000, the *California Climate Change Registry* legislation was signed into law by Governor Gray Davis. This legislation commits the state to support private and public emission reduction actions that generate credits acceptable against future federal or international GHG emissions standards. The main goal of the Registry is to support the industrial GHG ‘inventorization’ and reporting. The California Action Registry provides guidelines to individual business entities assisting them to establish:

- Emissions baselines against which any future federal greenhouse gas emission reduction requirements may be applied,
- Programs to encourage voluntary actions to increase energy efficiency and reduce greenhouse gas emissions, and
- A recording mechanism for voluntary greenhouse gas emissions reductions undertaken after 1990.

Essentially, Senate Bill 1771<sup>59</sup> commits the state of California to create verified emission reduction credits in relation to future national and international standards. To assure that the credits will be recognized at the national and international levels, the bill will adopt international GHG standard sectoral measurement guidelines (currently being developed by the World Resources Institute and the World Business Council for Sustainable Development) scheduled for release in 2001.<sup>60</sup> Under this Bill the emission base year can be set for any year after 1990 for which a corporation has verifiable and transparent energy consumption data. Emissions will be measured in absolute tons of carbon in order to assure national and international comparability.

Under SB 1771, state owned operations (that account for 15% of State GDP) can also receive credits for emissions reductions associated with efficiency improvement measures once an emissions base year is established.

---

<sup>59</sup> Refer to the following website for any legislative details: <http://www.leginfo.ca.gov/>

<sup>60</sup> Refer to the following website for details: <http://www.igc.org/wri/meb/ghgprotocol2.html> (Greenhouse Gas Protocol Initiative)

## **Other Climate Change Programs (California)**

California has enacted numerous policies designed to promote the development and use of renewable technologies through tax credits and grants. Specifically, the state has developed a set of policies promoting renewable energy production or reduction of energy use through fuel- or emission taxes.

California is aggressively pursuing measures to expand development and use of low emission vehicles. Transportation programs with the intent of reducing emissions include:

- Low-and-zero emission auto sales;
- Trip reduction ordinances;<sup>61</sup> and
- Extension of public transportation.

California has also established the **Renewable Resource Trust**, which is used to support existing and emerging renewable energy technologies through rebates. The Trust is expected to collect \$540 million from investor-owned utilities. Municipal utilities and individual customers may also contribute to this fund.

Last, the role of the California APX (Automated Power Exchange) *renewable energy trading* system is worth noting. APX *Green Power Markets* allow renewable electricity to be traded first as wholesale energy at normal market prices, and second as green certificates (or 'green tickets') in one-megawatt-hour increments. Each green certificate represents the premium value of one MW/h hour of certified renewable power generation, where this amount exceeds the commodity price of the energy delivered into the transmission grid. It is important to stress, that APX is *not* a governmental institution or law but represents a product of private market initiative and burgeoning national electricity trading.

### **A. I. 2. Illinois**

#### ***Climate Change Policy and Institutional Framework***

In 1991 a *Task Force on Global Climate Change* was created in Illinois to "monitor national policy and to study and make recommendations for state policies and programs regarding climate change" (HJR 81). Key issues identified by the task force include:

- To implement energy efficiency and conservation programs and to assist Illinois companies in meeting their federal climate change emissions reduction commitments;
- To expand the state's rural and urban tree planting and forest management assistance programs as cost-effective measures to expand Illinois' greenhouse gas sink capacity;
- To test the cost-effectiveness of joint implementation for long-term emissions reduction and support the U.S. Initiative on Joint Implementation.

In addition, Illinois was one of the first US states to conduct a baseline greenhouse gas inventory in 1993.

---

<sup>61</sup> Programs encouraging carpooling, telecommuting, use of public transportation, etc.

## Climate Change Programs

Illinois developed a climate action plan in the mid-1990's. The primary focus of this plan was centered on economically feasible carbon policies such as the construction of energy-efficient housing, efficiency of appliances and lighting as well as forestry measures. Illinois stressed cost-sensitive GHG abating policies. Specifically, the aforementioned Illinois Task Force insisted on the 'no-regrets' strategy of emissions reduction, which would provide a combination of climate-change –related and other environmental benefits. Emission reductions in the industry sector are *not* included in this package.

In addition, the city of Chicago (population 1990: 2,783,726)<sup>62</sup> is taking major steps to curb climate change. For instance, Chicago is adapting a major part of its water transit system to a cleaner biodiesel fuel.

Illinois is a home to the first voluntary emissions trading system in the United States: the Chicago Climate Exchange (CCX). Due to the voluntary and *private* nature of this program, we review the CCX in the forthcoming report III (expected in January 2002).

### **A.I.3. Massachusetts**

Massachusetts supports the general premise of emissions trading, but it does not have a requirement for GHG inventorying for private entities, which postpones rapid development of GHG trading system within the state. A number of State's policies are tangent to achieving the goal of GHG reduction – such as energy efficiency and renewables programs – but EcoSecurities found one interesting policy action directly attributable to the reduction of GHG emissions – regulation of CO2 emissions from 'new' and 'old' power plants.

#### ***Regulation of Carbon Emissions from New Power Facilities***

In 1999<sup>63</sup> Massachusetts adopted a regulation strikingly similar to the Oregon's law<sup>64</sup> controlling carbon dioxide emissions from the *newly* constructed power generators. Specifically, the Massachusetts order required all 'new' power facilities built after 1997 to offset or mitigate their CO2 emissions. Relative to Oregon, which requires carbon mitigation strategy and funding to be in place *before* any facility construction work is permitted, Massachusetts power facility developers have to *first* construct a plant and only upon completion of the project to allocate carbon dioxide reduction funds into the State instrument similar to the Oregon Climate Trust (which is described below). Under the regulation the respective power developer and the State of Massachusetts are to jointly decide how to invest those money into carbon offsets. The emissions standard of the new plants is currently 3,004 kg CE/MW/h.

---

<sup>62</sup> <http://encarta.msn.com/index/conciseindex/63/063CF000.htm?z=1&pg=2&br=1>

<sup>63</sup> Because this regulation is not an Assembly-passed legislation, we were not able to confirm the exact date of its entry into force. However, the law was operational in 1999 and remains into force in September-October 2001.

<sup>64</sup> For the details on this Oregon Legislation see the section on the Oregon State initiatives below.

The regulation remained relatively toothless since no large-scale facility construction took place in the state in the late 1990s. EcoSecurities speculates that it is for this reason that Massachusetts Governor decided to institute carbon dioxide regulations for older power facilities, which were created in the Spring of 2001.

In April 2001 Massachusetts established a new regulation for its six oldest and dirtiest power plants, requiring reduced emissions linked to air pollution, acid rain and global warming. The new regulation, which took effect in June 2001, calls for the reductions in nitrogen oxides, sulfur dioxide, carbon dioxide and mercury at the six plants, bringing them in line with emission standards for 'new' plants (i.e., plants constructed after 1997).

The regulation caps CO<sub>2</sub> emissions and creates emissions standard of 3,004 kg CE/MW/h (1,800 pounds /CO<sub>2</sub>/MW/h) for each of the 'old' facilities covered under the law. For the six utilities affected by this regulation, this standard represents a reduction of 10% below the current average CO<sub>2</sub> emissions rate (as measured by the averaged 1997-99 output). The standard can be met by increasing efficiency of a power plant or by purchasing credits from other CO<sub>2</sub> programs.

The regulations will also eliminate the use of "averaging," under which companies with more than one plant can have a polluting facility in one community because they operate a clean facility in another part of the state.

Taken together the above regulations will make Massachusetts the *only* state in the U.S. to limit carbon dioxide emissions from the older *and* newly constructed power-generation facilities. This represents the reason for which EcoSecurities decided to inform the reader about Massachusetts' climate change policies.

#### **A.I.4. New Jersey**

*"New Jersey has set an ambitious goal to not only curb greenhouse gas emissions, but to reduce them. Our target for 2005 is a 3.5 percent reduction below the 1990 levels. It's a goal to which we are firmly committed, and one that we're relying on the support of private businesses to help us meet. In addition, working in partnership with The Netherlands, we are developing prototypes to carry out an emissions credit trading pilot."*<sup>65</sup>

#### ***General Approach: State Climate Change Action Plan***

Until now, New Jersey remains the only state in the nation to volunteer the GHG reduction cap. As shown in the above quote, New Jersey's target is a 3.5% reduction<sup>66</sup> by 2005 relative to the 1990 levels.

Specifically, New Jersey's Climate Action plan calls for the reduction of GHG emissions by about 20 million tons (from the projected 151 million tons in 2005 to the goal of 131 million tons by that date)<sup>67</sup> through initiatives in *five* areas: energy conservation, pollution

---

<sup>65</sup> <http://www.state.nj.us/dep/dsr/gcc/gcc.htm>

<sup>66</sup> EcoSecurities was not able to obtain information on how the State of New Jersey projected transportation-related emissions reductions: whether the state based emissions projections on the gasoline consumption or on the number of registered vehicles.

<sup>67</sup> [http://www.state.nj.us/dep/newsrel/releases/00\\_0030.htm](http://www.state.nj.us/dep/newsrel/releases/00_0030.htm)

prevention, innovative technologies, recycling and solid waste management and natural resource protection.

In the strive to reduce residential industrial and transportation-related GHG emissions, New Jersey planned to focus on the following areas (among several others):

- greater use of mass transit and alternative fuel vehicles (AFVs);
- development of more efficient commercial and residential heating/cooling systems;
- use of fuel cells in industrial/commercial settings;
- tree planting/afforestation; and
- reducing inefficient industrial energy use. One research demonstrated that in New Jersey, 21 percent of energy designated for use in industrial activities is wasted due to inefficient processes (data for 2000).<sup>68</sup>

### **Specific Programs and Initiatives**

New Jersey's GHG reduction programs are highly integrated with other environmental initiatives administered under the State's sustainable development plan. Currently the State is developing a set of comprehensive GHG reduction programs, among which we would like to emphasize the following:

- In 2000 the New Jersey State Department of Community Affairs has issued its first awards under New Jersey's *Sustainable Development/Affordable Housing Pilot Program*. The US\$17 million program, provides low- and moderate-income housing that meets strict energy and environmental standards;
- New Jersey is promoting energy efficiency through the *Open Market Emission Trading Program* (see the detailed description below) and requiring power suppliers in the forthcoming deregulated electricity market to disclose energy efficiency information;
- In 1999 the state established three private sector environmental monitoring strategies, which currently remain under discussion (still in the pilot phase). Individual corporate inventorying and GHG emissions reduction could become a part of these programs, which are called *Silver Track*, *Silver Track II* and *Gold Track* (all programs are administered by the New Jersey Department of Environmental Protection).<sup>69</sup>

### ***Open Market Emissions Trading Program***

Among the initiatives described above, the most interesting progress was made on the Open Market Emissions Trading Program, which was originally developed in 1996 and finalized by June 2000.

We believe selected sections of this administrative regulation<sup>70</sup> would be of interest to a reader because the New Jersey emissions trading system represents the most advanced government-structured emissions trading program currently in place in the United States (we remind the reader that Chicago Climate Exchange is in the advanced stage of designing the *private/voluntary* emissions trading program; we will review that program in the forthcoming report):<sup>71</sup>

---

<sup>68</sup> [http://www.state.nj.us/dep/newsrel/releases/00\\_0030.htm](http://www.state.nj.us/dep/newsrel/releases/00_0030.htm)

<sup>69</sup> <http://www.state.nj.us/dep/special/silver/>

<sup>70</sup> New Jersey State Department of Environmental Protection/New Jersey Administrative Code: Title VI, Chapter 27, Sub-Chapter 30, p.p. 1-76. For the details consult with the New Jersey Register.

<sup>71</sup> <http://www.state.nj.us/dep/aqm/njac-30.pdf>

## **GENERATION OF GHG EMISSIONS REDUCTION CREDITS:**

- The regulation established a DER (discreet emissions reduction [credit]). DERs represent a tradable commodity;
- Only a whole number of DER credits may be generated, verified, transferred, voluntarily retired, used, found invalid, or cancelled. Credits can be generated by any legal entity, which is the owner or an operation of the source of GHG emissions;
- For the purpose of DER generation, GHG emissions reduction has to be proven to be *below* a given baseline; all emissions reductions have to be real, surplus and properly quantified (according to the State-established standards);
- GHG credits cannot be merged with other emissions reduction credits, such as Volatile Organic Compounds (VOC) credits.
- Credits are valid for one year;
- The baseline emissions are set at the level of *adjusted historic emissions* ('grandfathering') or at the level of the combined adjusted historical emissions and 'allowable emissions'. The State established a formula for computing adjusted historic emissions and 'allowable emissions';
- GHG emissions reduction achieved prior to June 6, 2000 cannot be used for DER generation;

## **INVENTORYING/BANKING/VERIFICATION OF CREDITS:**

- DERs can be banked in a DER *State Registry*;
- To exercise a DER transaction, the transferee has to submit a Notice of Transfer to the DER State registry;
- Credits are to be verified by a certified engineer/accountant within the State of New Jersey or by a specialist with corresponding qualifications in another state for the *out-of-state* credits;
- Out-of-State credits will be accepted if New Jersey has an agreement related to the credit transfer with the jurisdiction in question;
- Verifiers are to be independent from credit generators;
- The Department of Environmental Protection reserves the right to cancel a DER credit not satisfying all State-specified requirements.

The credit trading program with respect to carbon dioxide and other greenhouse gases remains under consideration. EcoSecurities was not able to obtain specific information on when the program design will be complete.<sup>72</sup> As mentioned above, the New Jersey DEP has entered into an agreement with the Ministry of Housing, Spatial Planning and the Environment, the Netherlands, to collaborate on the design of the prototype GHG emissions trading system.<sup>73</sup>

### ***Other Developments of Interest: New Jersey***

Of interest are selected developments in transportation sector, among which EcoSecurities would like to emphasize the State biodiesel initiative and the fuel-cells initiative. Under the biodiesel R&D program, vegetable oil and other natural agricultural

---

<sup>72</sup> The state law is currently complete with respect to VOC and NOx DERs/trading.

<sup>73</sup> The agreement also covers joint development of GHG reduction technologies. In July 2001 it was reported that this agreement with the Netherlands remained operational, although EcoSecurities could not obtain detailed information on its progress.

products are being researched as potential substitutes or additives to the 'conventional' gasoline.

New Jersey's Department of Transportation is incorporating fuel cell technology into lighting for highway signs and communication devices. The "*Power Commute*" program also involves a partnership between the State government and business to encourage the use of public transit. The program is set up to transfer an unspecified number of private sector employees from private cars into electric vehicles driving such employees from train/bus stations into their offices. The State is also actively expanding its renewable cars fleet, which in 2001 included electric, propane and compressed natural gas vehicles.

Finally, the State Department of Treasury made lighting and variable drive retrofits to 35 state buildings in the capital area. This "*Green Lights*" initiative has resulted in the utility savings of \$19 million (1999) and subsequent reduction of carbon dioxide emissions. The State is trying to utilize the renewable power potential of the largest in the word geothermal pump system to reduce fossil fuel consumption for water heating and delivery.

#### **A.I.4. Oregon**

##### ***Climate Change Policy and Institutional Framework***

The Oregon Department of Energy (ODOE) began studying climate change in 1988, chairing a 12-agency task force that analyzed the potential impact of global warming in Oregon and made recommendations on how the state should reduce GHG emissions.

##### **Legislation**

The Oregon Progress Board, an independent state planning and oversight entity created by the Legislature in 1989, mandated stabilization of Oregon's CO<sub>2</sub> emissions at the levels of 1990. The benchmark is a reference point for government agencies, nonprofit organizations, businesses, and citizen groups within the State. It gives various state agencies a way of measuring progress in achieving the state's goals.

In 1993, Governor Barbara Roberts signed an executive order creating the *State Energy Initiative*, "20 X 2000." It directed Oregon state government to reduce its energy use in facilities and transportation by 20 percent by 2000. However, this initiative was abandoned around 1995 (with the new State Administration coming to power in 1994) after the realization that the 20% emissions reduction target was economically-unrealistic.

In addition to the Oregon Department of Energy (ODOE), several private entities contribute to the formulation and implementation of climate change policies. For example, the state's strategy relies on successful demand-side management and achievement of renewable energy goals, which are developed by electric utilities in their integrated resource plans. For instance, Portland General Electric, PacifiCorp and the Bonneville Power Administration (BPA) and its customer utilities all offer efficiency

programs to their customers in addition to implementing the 'in-house' energy-efficiency initiatives.<sup>74</sup>

Since the mid-1990s, new initiatives have been developed in Oregon. At the center of these policies was the House Bill 3283 (1997), which established what we regard as the first meaningful measure in the U.S. to control carbon dioxide emissions

HB 3283 key provisions include<sup>75</sup>:

- New state utilities must meet a CO<sub>2</sub> emissions standard of 1.17 kg/CE/kW/h (0.7 lbs. CO<sub>2</sub>/kW/h) by implementing offset projects directly or through a third party by paying a certain market price per ton of CO<sub>2</sub> to a *non-profit* organization qualified to address Co<sub>2</sub> emissions; utilities are permitted to implement any technical adjustments necessary to meet their standards directly;
- Oregon offsets count for any projects according in the US, overseas or within the state of Oregon. The Oregon Office of Energy determines the independent evaluation of each project-offset proposals;
- The above standard is revised every 2 years since the goal is to remain 17% below the emissions from the most efficient plant operating within the United States for any given year.
- There are no emissions trading provisions in the Oregon law; the law states that trading will be considered when national caps on emissions are implemented.

The provision of maintaining the emissions standard 17% below the most efficient plant operating in the United States makes Oregon *the most advanced national jurisdiction* with respect to the stringency of greenhouse gas emissions regulations.

### **Oregon's Unique Climate Change Institutions: Oregon Climate Trust**

The *Oregon Climate Trust (OCT)* was established in July 1997 in the wake of HB 3283. The OCT is the only organization qualified under Oregon law to receive payments to fund projects that will reduce carbon dioxide in the atmosphere. Because participation of multiple organizations would complicate the process of developing the carbon offset program, the Oregon Climate Trust is likely to remain the only qualified organization to carry out state carbon offset funding.

The Climate Trust's initial purpose is to purchase CO<sub>2</sub> offsets with funds provided by power plant developers. Over time, the trust hopes to move beyond brokering power plant offsets to serve as a regional provider of offset services and information.

In 1999 the Trust launched its first public education campaign to inform Oregonians about the potential damaging effects of climate change as well as a series of community

---

<sup>74</sup> "Bonneville has been working with wholesale customers for two years to design a way to promote energy conservation and renewable resources. The approach that Bonneville and its customers decided on involves a rate discount that allows utilities and direct service customers spend less on wholesale energy purchases and use those savings to fund local conservation and renewable energy resource activities. Customers decide locally how to spend these funds by choosing from a range of qualifying activities..." For further information on BPA's energy conservation initiatives including the discount program, see: [http://www.bpa.gov/Energy/N/projects/cr\\_discount/](http://www.bpa.gov/Energy/N/projects/cr_discount/)

<sup>75</sup> For details see: <http://www.energy.state.or.us/siting/co2std.htm>

forums around the state carried out in partnership with local community, business, and government leaders.

The first request for proposals for a \$30,000 pilot offset project was issued in the Spring of 1998. OCT uses the money to avoid, sequester, or displace carbon dioxide, and to manage such contracts once put into place. The trust must spend at least 80% of its funds to purchase CO2 offsets. Up to 20% of the offset funds may go to administration, evaluation and monitoring of projects.

The Oregon Climate Trust has already funded a number of greenhouse gas reduction projects in 2000.<sup>76</sup> Currently the Climate Trust is undertaking the final revisions of a series of carbon reduction project proposals submitted for the 2001 RFP, which the Climate Trust announced together with the Seattle City Light.<sup>77</sup>

Independently of centralized state efforts, the city of Portland (population 1990: 437,319)<sup>78</sup> adopted a strategy to reduce metropolitan area CO2 emissions to 80 percent of 1988 levels by 2010.<sup>79</sup> The city's strategy is part of an international effort involving 14 cities.<sup>80</sup> ODOE provided technical and policy analyses to the city from which the Portland Energy Office developed an implementation plan that became a part of the Portland's Energy Policy.

## **Transportation Programs**

In the transportation sector, one original policy being discussed in Oregon is the 'Pay-as-you-Drive' insurance, which has been contemplated since 1995 but has not yet been adopted. The concept behind this proposal is to create the minimum level of vehicle insurance to incorporate the price of fuel in the current insurance rate. Under such scheme, the owners of energy-*inefficient* vehicles will have to pay higher insurance premiums. This proposal could be revenue neutral. It would shift the payment of the insurance premium from once a month or once or twice a year to each time a driver buys gasoline.

The goal of the program is to induce a reduction in the total gasoline use. Supporters of this measure claim it would create an incentive to convert the Oregon's car fleet to one of the cleanest in the nation

Oregon is also promoting telecommuting as an alternative to conventional transportation with the state *Business Energy Tax Credit* offering incentives to businesses to expand their telecommuting equipment.

### ***Most Recent Developments Affecting Greenhouse Gas Emissions in Forestry and Waste Management***

In 2001 Oregon has placed two additional Bills under discussion, which were signed into law in the summer of 2001. Both of them expand the domain of carbon abatement

---

<sup>76</sup> Additional information can be obtained from: <http://www.climatetrust.org/news.html>

<sup>77</sup> See <http://www.climatetrust.org/2001rfp.pdf>

<sup>78</sup> 1990 Census: <http://www.cities21.com/cities/portland.htm>

<sup>79</sup> For details, see: <http://www.cities21.com/aplans/portlap.htm>

<sup>80</sup> For details on this international initiative, see: <http://www.cities21.com/aplans/portlap.htm>

regulations into waste management and forestry thus making Oregon the first State in the nation to address GHG emissions in several pivotal sectors:

- On July 6, 2001 Oregon has adopted a forestry law, creating the accounting/sales system for GHG offsets generated from forestry (comes into effect on January 1, 2002);
- On June 21 Oregon has approved a waste management law, which imposes specific waste reduction standards on GHG from waste (effective immediately, on June 21, 2001).

Specifically:

**Oregon House Bill 2200:**

- Established a forestry carbon offset program and an accounting system, by which Oregon can enter in market agreement with non-federal forest owners to market, register, transfer or sell carbon offsets on behalf of these entities (with State resolving all issues related to ‘baselining’);
- Specified that prices for the transfer or sale of forestry carbon offsets may be *negotiated* on behalf of non-federal forestry owner and must be close to the fair market value; and
- Established that a person or a governmental agency may create a forestry carbon offset by performing, financing or causing in any manner afforestation/reforestation of underproducing lands (silvicultural practices, deferred harvest rotation, etc.).

Currently the state is in the process of developing forestry carbon offset system for registration, transfer and sale of carbon offsets. Meanwhile, the Oregon State Board of Forestry is developing standards related to the creation, marketing and transferring, etc. of forestry credits.

The State is consulting with businesses and other entities on the above rules and regulations.

In addition:

**OR House Bill 3744 (in force):**

- Ordered the State to develop a strategy to reduce GHG emissions resulting from waste generation and management by December 31, 2001; and
- Required that the Oregon Department of Environmental Quality develop the standards for reducing GHG emissions from waste disposal.

To summarize all the above, EcoSecurities would like to stress that currently Oregon undertakes a systemic and broad-range approach to the reduction of GHG emissions from a *range* of economic activities. A major characteristic distinguishing Oregon from other jurisdictions with the US is the functioning of the Oregon Climate Trust, which represents a unique public institution financing a variety of GHG reduction projects both within the US and abroad.

**A. I.5. Washington State**

We next shift to the review of the State of Washington because it attempted to pass a legislation, which would have imposed a GHG emissions reduction standard on *energy-*

*intensive manufacturers*, which would have distinguished this jurisdiction from any other climate change program in the US. While these bold legislative proposals did not become law, climate change activities in the State of Washington are worth paying careful attention for reasons shown below.

Similar to Oregon, Washington has developed a detailed statewide greenhouse gas reduction program with the state Climate Action Plan adopted in 1996. In this plan, transportation and energy-intensive industries are singled out as target areas of emissions reduction.

In line with this plan, in 1999 Washington became the first state to propose in 1999 an Act on Carbon Sequestration as well as a set of measures addressing the development of a carbon storage market. Specifically, Washington House Bill 1229 (1999) proposed to create and fund a Committee responsible for researching state-based carbon-sequestration activities. The same Committee also would have had to create a carbon credit certification plan which presumed establishment of statewide emissions trading system. According to information obtained by EcoSecurities in the summer of 2001, this Bill still remains under consideration in the State Legislature.

In the Spring of 2001 the following State bill was proposed but rejected. We still present its key elements as it is currently being revised for possible later reintroduction. The defeated provision included:

- Establishment of a Climate Center responsible for developing the state GHG strategy. The Climate Center would have become an independent, non-profit organization with the mission to serve as a central clearing house for all climate change activities in the state;
- Requirement for several economic sectors (including electricity production and transportation) to accept greenhouse gas emissions reduction regulations effective January 1, 2002 (with the exception of agriculture, aluminum, cement, forestry, natural gas for heating and solid waste which would have remained exempt from the above provisions until 2006)
- The opportunity (given to emitters) to either secure their own emissions mitigation projects or remit the costs of mitigation to the hypothetical Washington Climate Center to secure GHG offsets; and
- Permission to support GHG mitigation projects outside of the State of Washington, but for the purpose of meeting the requirements of this law, only mitigation undertaken in Washington could be considered;

What emerges from the revision of on-going legislative debate in the state of Washington is a two-dimensional approach to greenhouse gas abatement, where the carbon sequestration dimension enjoys a relatively higher degree of support relative to the policy requiring direct GHG abatement from energy-intensive sectors. However, from a number of reports obtained from confidential sources EcoSecurities interviewed in preparation of this review, we concluded that the state of Washington is likely to reintroduce a version of the GHG abatement bill reviewed above in the next session – although in its a substantially ‘trimmed’ version. Washington thus still remains one of the front-runners in the greenhouse gas abatement policy arena.

Noticeably, Seattle City Light -- the municipal utility of the largest city in Washington, has joined the Oregon Climate Trust in this year’s carbon offset RFP. According to the joint announcement of the OCT and the Seattle City Light, the utility is going to fund a

selected number of greenhouse gas offsetting projects. This would make it a large-scale buyer of carbon reduction units upon completion of selected projects.<sup>81</sup>

In addition, in July 2001 the Mayor of Seattle has announced that his city was willing to undertake substantial voluntary GHG reductions through initiation and implementation of market-based carbon reduction projects.

## ***II. STATE RENEWABLE ENERGY POLICIES***

Though many states have adopted Climate Action Plans that include policies such as energy efficiency, alternative vehicles and fuel efficiency, they are not the only means that states can use to combat global climate change. Market-based strategies requiring increased usage of renewable energy are also an effective means of lowering greenhouse gas emissions.<sup>82</sup>

It is for this reason that EcoSecurities has placed so much emphasis upon the state initiatives to encourage and mandate the use of renewable energy. Twelve states have adopted Renewable Portfolio Standards, which we review immediately below.

### **The Renewable Energy Portfolio Standard**

The Renewable Portfolio Standard (RPS) is a market-based strategy for increasing the percentage of renewables in total generating capacity. Essentially, the RPS requires all electricity suppliers (IOU's, municipal utilities, power retailers, rural cooperatives) to purchase a percentage of their electricity from renewable sources. Usually, the policy sets the requirement of renewable capacity at the current average state level in the first year of implementation, and then gradually increases the percentage required over the life of the policy (usually at least 5 years). For example, in Arizona, the RPS requires all electricity retailers to supply at least 0.2% of total retail sales, increasing by 0.2% per year through 2012.<sup>83</sup>

In addition, some states are initiating green electricity trading schemes that represent cost-effective mechanisms of implementing RPS by implicitly reducing the costs of implementing such standards. Under green electricity trading schemes electric suppliers can generate their own renewable energy, purchase renewable energy from competitive bidders or purchase credits (for renewable energy) in kWh denominations.

Markets for Renewable Energy Credits (RECs) operate similarly to the Emission Reduction Credits. Theoretically, an electric utility could generate all of its electricity from fossil fuel (non-renewable) sources, and then purchase RECs from renewable energy generators (who would have sold their electricity elsewhere).

The RPS essentially imposes “artificial” (public) demand for green power on the market and then allows electricity providers to satisfy that demand as they see fit. In this case,

---

<sup>81</sup> For details on this initiative, see the aforementioned <http://www.climatetrust.org/2001rfp.pdf>

<sup>82</sup> Although there is not specific indication that states adopt renewable energy policies to combat greenhouse gas emissions – usually, GHG emissions reduction is a secondary concern for most renewable energy projects, where security of energy supply occupies the first place.

<sup>83</sup> NREL, 2001. State Renewable Energy News, Winter 2001.

investors and generators make the decisions as to the types of renewables to purchase, whether to self-generate, purchase renewable energy or just purchase RECs. According to the American Wind Energy Association,<sup>84</sup> “ the RPS offers the least-cost and most market-friendly method of ensuring that the renewable energy industries continue to develop despite the changes that restructuring brings. It requires no subsidies or bureaucracy to implement.”<sup>85</sup>

If RPSs gain wide public support, they could become an extremely effective strategy for supporting development of renewables.

## **RPS IN ACTION**

Currently, 12 states have passed legislation to enact a Renewable Portfolio Standard.<sup>86</sup> We will now address each RPS individually:

### **Arizona’s Renewable Portfolio Standards**

In February 2001, the Arizona Corporation Commission adopted an Environmental Portfolio Standard (EPS, which is the same as RPS), which requires regulated utilities to generate a minimum of 0.2 percent of their total retail energy sales from renewable sources in 2001. The percentage will increase each year and top out at 1.1 percent in 2007.

The Arizona RPS covers solar technologies such as solar generation, solar water heating, solar air conditioning, landfill gas generators, wind generators and biomass generators. Solar must make up at least 50 percent of the Environmental Portfolio resources in 2001. The remaining 50 percent can be covered by other environmentally friendly technologies, or by solar hot water and R&D on solar electric resources. Research and development must be limited to 10 percent or less. From 2004 through 2012 the portfolio must be satisfied by 60 percent solar electric power generation with no more than 40 percent solar hot water or other environmentally friendly renewable electricity technologies.

The RPS includes extra credit multipliers to encourage the early installation of above environmentally friendly technologies. Arizona ratepayers will pay a portion of the costs associated with the RPS through an *Environmental Portfolio Surcharge* of \$0.000875 per kilowatt-hour when it takes effect.

Arizona’s Corporation Commission’s Utilities Division will establish an Environmental Portfolio Cost Evaluation Working Group in 2003. The group will assess the costs and benefits of the Portfolio and make recommendations as to whether the portfolio percentages should be increased or adjusted in any other manner.

The Arizona RPS went into effect on May 30, 2001. It covers utilities of all types, including publicly-owned and electric cooperatives. The law is set to expire in 2012.

---

<sup>84</sup> The term RPS is not attributed to the AWEA; it has been widely used in the US renewable energy markets in 1999-2001.

<sup>85</sup> AWEA, 2001. The RPS: Recent Experience.

<sup>86</sup> Arizona, Connecticut, Iowa, Maine, Massachusetts, Minnesota, Nevada, New Jersey, New Mexico, Pennsylvania, Texas, Wisconsin.

## **Proposed California Renewable Portfolio Standard**

In addition to transportation policies and establishment of the Renewable Resource Trust (see the above section on California GHG policies) California is expected to enact a Renewable Portfolio Standard, which would promote development of renewable energy thus affecting the net greenhouse gas emissions from in-state electricity generation. The original RPS proposal was advanced in California in 1996, but it was immediately defeated. Following several confidential leads, we feel that the 1996 defeat was due to a strong opposition from large California utilities.

Current California RPS remains under discussion. Nevertheless, we choose to present its main provisions because it is likely to have a large effect on the state greenhouse gas emissions trends as well as on California's subsequent renewable energy policies. The most important points of the proposed California Renewable Portfolio Standard Bill are the following:

- The San Diego Gas & Electric Company and Pacific Gas & Electric Company are to spend approximately \$63.5 million and \$57.5 million respectively (from January 1, 2002 to December 31, 2011) to accomplish the funding of state operations and development of renewables related to the RPS;
- Eligible renewable sources include: wind, solar, geothermal and biomass;
- State-wide system of green certificate trading will be introduced for the purpose of meeting the standard;
- The time-table for the procurement of new renewable energy resources by retail sellers is set to meet the following schedule:
  - 1% by June 1, 2003;
  - 2% by January 1, 2005;
  - 5% by January 1, 2007;
  - 8% by January 1, 2009; and
  - 10% by January 1, 2020;

In addition to the above provisions, the proposed RPS institutes guidelines for increasing the percentage of retail sales required from eligible new sources if such increase is necessary to produce a minimum percentages of total statewide retail sales from all eligible renewable resources:

- 10% by June 1, 2003;
- 12% by January 1, 2005;
- 15% by January 1, 2009;
- 18% by January 1, 2009; and
- 20% by January 1, 2020.

To control for the high costs associated with the introduction of additional renewable energy, California Energy Commission is required to establish a mechanism to ensure that compliance with the RPS will not result in the incremental procurement costs to the retail sellers that exceed \$0.015 cents per kilowatt hour of eligible renewable resource generation.

As of August 2001 the proposal remained under consideration. Limited Assembly actions were reported with respect to this Bill at the end of August, but EcoSecurities does not have precise information on the likelihood of adoption/rejection of this legislation.<sup>87</sup>

### **Connecticut's Renewable Portfolio Standard**

The Connecticut RPS requires that 0.5% of energy be renewable by July 2000, increasing to 0.75% by July 2002, 1% in 2002, 3% by 2006, and 6% by July 2009. Renewables being considered here are solar, wind sustainable biomass, landfill gas and/or fuel cells. The RPS applies to all utilities within the state.

Resources that qualify as renewable energy sources for the purposes of meeting the above obligations are divided into two classes. Class I renewable energy sources include solar, wind, new sustainable biomass, landfill gas, and fuel cells. Class II renewable sources include trash-to-energy facilities, biomass facilities not included in Class I, and certain approved hydro facilities.

The distinguishable part of the Connecticut law is that it permits green certificate trading to meet the renewable portfolio requirements: an electric supplier may satisfy the requirements of this subsection by participating in a renewable energy trading program approved by the state.

### **Iowa's Renewable Energy Mandate Law**

Iowa's 1983 Alternate Energy Production law requires the state's investor-owned utilities to purchase 105 megawatts (averaged) of electricity from renewable energy projects. Because the law did not include enforcement provisions, the utilities were able to avoid compliance for years. In July 1996, however, the Iowa Utilities Board ordered the utilities to comply with the law. In addition, the new 1997 Iowa Renewable Energy Mandate Law requires that:

- All electric utilities to enter into long-term contracts do the following:
  - a) Purchase or wheel electricity from alternate energy production facilities or small hydro facilities located in the utility's service area under the terms and conditions that the board finds are just and economically reasonable to the electric utilities' ratepayers,
  - b) Provide for the availability of supplemental or backup power to alternate energy production facilities or small hydro facilities on a nondiscriminatory basis and at just and reasonable rates.

---

<sup>87</sup> According to several confidential interviews conducted by EcoSecurities, in its current wording in the summer of 2001 this legislative proposal was heading for defeat since it would place a disproportional financial burden on the San Diego Gas & Electric Company as well as other state utilities. Given the size of financial liabilities attributable to South California Edison and bankruptcy discussions surrounding PG&E since the beginning of 2001, we speculate that California will have to postpone the final decision on the State RPS. Hypothetically, however, the RFP legislation could be temporarily substituted by administrative directives mandating selected utilities to implement specified provisions of the above RPS.

As a host to a large share of national renewable energy and a state with a substantial potential for wind and solar power generation, we believe that California is going to re-address the RPS legislation in the next Assembly session in case the current legislative proposal is discarded.

In sum, Iowa requires investor-owned utilities to purchase a combined total of 105 MW of their generation from renewable and small hydropower sources. The Iowa Utilities Board has allocated these 105 megawatts among the state's three investor-owned utilities -- Mid-American, IES Utilities, and Interstate Utilities -- based upon each utility's percentage of the total Iowa retail peak demand. The majority of the capacity is being met with wind power and biomass applications.

### **Massachusetts Renewable Portfolio Standard**

In 1997 the Massachusetts Electric Utility Restructuring Act established a Renewable Energy Portfolio Standard. The RPS requires electricity suppliers to provide retail customers with a set minimum levels of electricity generated from "new" renewable energy sources. The RPS law will become operational in 2003 (see Table 1 below).

Renewables covered by the RPS include: solar, wind, ocean thermal, wave, and tidal, fuel cells using renewable fuels, landfill gas, and "low emission" biomass. To qualify as a new source, the renewable energy generating facility must have begun commercial operation after December 31, 1997.

**TABLE Appendix 1.2: RPS Renewable Energy Implementation Requirements, Massachusetts**

<b>Year (Start Date)</b>	<b>Percent of Sales from New Renewables</b>	<b>Estimated Annual Energy from New Renewables (GWh*)</b>
<b>2003</b>	<b>1.0%</b>	<b>450</b>
<b>2004</b>	<b>1.5%</b>	<b>685</b>
<b>2005</b>	<b>2.0%</b>	<b>927</b>
<b>2006</b>	<b>2.5%</b>	<b>1,176</b>
<b>2007</b>	<b>3.0%</b>	<b>1,433</b>
<b>2008</b>	<b>3.5%</b>	<b>1,696</b>
<b>2009</b>	<b>4.0%</b>	<b>1,968</b>
annually thereafter	+ 1% per year until ended by DOER <sup>88</sup>	
gigawatt-hour (GWh) = one million kilowatt-hours		

<sup>88</sup> Massachusetts Division of Energy Resources

**Source: MA Division of Energy Resources, Renewable Portfolio Standard, Renewable Energy Program, 2001**

A distinctive feature of MA RPS is that it covers multiple economic sectors: the law applies to commercial, Industrial, Residential, Nonprofit sectors, as well as to residential consumers and all kind of electric utilities. The major drawback of this legislation is the lack of clear stipulation of penalties for non-compliance and the absence of an RPS credit system.

### **Maine Renewable Portfolio Standard**

The State of Maine Public Utility Commission adopted a Renewable Resource Portfolio Requirement rule on September 28, 1999, which became effective on November 4 the same year. Maine's RPF is considered to be the most ambitious in the United States since it set up the initial RPF minimum at 30%. However, as is explained below, this high requirement of renewable electricity requirements has, paradoxically, slowed down development of renewable capacity in the state.

The rule requires electricity providers to supply at least 30% of their total retail sales in Maine from eligible renewable resources. Eligible resources must be a "small power production facility" that produces electricity using biomass, waste, renewable resources, or a combination of these resources as a primary energy source; such facility also has to have a production capacity of 80 megawatts or less including *all* facilities located at the same site. A renewable resource may also be a generation facility of 100 MW or less that uses fuel cells, tidal power, solar arrays and installations, wind power installations, geothermal installations, hydroelectric generators, biomass generators, or generators fueled by municipal solid waste in conjunction with recycling. In addition to renewables, the RPS can be met with "efficient resources," specifically, qualified cogeneration facilities.

Maine presents an interesting case because the state already had the highest percentage of renewables use in the country at over 50% of its total renewable energy generation capacity<sup>89</sup> most of which is hydropower and biomass. Thus, while Maine's RPS goal is the highest in the country, it is in fact lower than the existing level of renewables use. And it has been argued that this low target has, in fact, discouraged development of additional renewable capacity in the state by allowing utilities to decrease purchases from green power generators. However, it has been proposed that American New England region develops a *collective* portfolio standard with *tradable* RPS credits (green certificates), which would encourage additional renewable capacity. Under such a scenario, Maine could sell the credits it earn from its excess renewable energy generation to support the continued use of that renewable generation.

### **Minnesota Renewable Portfolio Standard**

Minnesota is the most recent state in the U.S. to adopt a RPS. However, the legislative language of the MI RPS is substantially different from the 'conventional' RPS in that it represents a '*recommendation*', not a requirement. Governor Jesse Ventura signed Senate

---

<sup>89</sup> Meaning that over 50% of Maine's renewable energy resources are considered to be already in use.

Bill 772 in June of 2001 authorizing the Renewable recommendation. The legislation suggests that Minnesota electric utilities offer *voluntary* options to their customers to purchase power generated from renewable sources or "high efficiency, low emission distributed generation, such as fuel cells or microturbines fueled by a renewable fuel."

Under the new law, rates charged for green power can reflect any premium paid to generate electricity from renewables. Utilities may generate their own supplies or purchase credits from a renewable energy provider certified by the Public Utilities Commission.

The law says utilities must obtain at least 10 percent of their retail energy from renewable sources by 2015. The original one percent of green electricity sales is recommended for the year 2005, after which green electricity sales are suggested to increase by one percent every subsequent year, reaching the aforementioned 10% in 2015. However, that requirement is *non-binding*, which substantially weakens its effectiveness.

### **Minnesota: Xcel Renewable Energy Mandate**

Before the adoption of the State-wide RPS, Minnesota mandated wind power generation through the Fund supported by the Xcel Energy (North States Power). This law remains in force as EcoSecurities prepares the final draft of this report. We briefly review this mandate below.

As of the summer 2001, Minnesota retains legislation that specifically required Xcel Energy (formerly Northern States Power) to build or contract for 225 MW of wind power by December 31, 1998. Xcel must build or contract out an additional 200 MW by December 31, 2002, and Xcel must build or purchase 50 MW of electric energy from farm grown closed-loop biomass systems by December 31, 1998, with an additional 75 MW by December 31, 2002. This rule gradually transformed nuclear power into wind-based electricity generation since Xcel is mandated to scale down its disposal of nuclear waste from nuclear power generation facilities

Minnesota's renewable energy mandate should result in about 825 MW of wind energy and 125 MW of biomass power for the state.

### **Nevada's Renewable Portfolio Standard**

The present Renewable Portfolio Standard in Nevada requires all electric providers in the state to acquire actual renewable electric generation capacity or to purchase renewable energy credits. Renewable energy resources include wind, solar, geothermal and biomass energy resources. The standard excludes municipal utilities and rural cooperatives generating electricity. All systems must be "new" which means they must have been installed and operational after July 1, 1997. Penalties for non-compliance include license suspension and revocation.

The required percentage of renewables in electricity generation is:

**TABLE Appendix 1.3: Nevada, RPS:**

<b>% Renewables</b>	<b>Date</b>
<b>0.2%</b>	<b>01/01/2001</b>
<b>0.4%</b>	<b>01/01/2003</b>
<b>0.6%</b>	<b>01/01/2005</b>
<b>0.8%</b>	<b>01/01/2007</b>
<b>1.0%</b>	<b>01/01/2009</b>

**Source: DSIRE Review, March 16, 2001**

The standard recognizes renewable energy credits, when applicable. The interesting part of Nevada's portfolio standard rule is that it requires that at least 50 percent of the renewables meeting the RPS must be solar-powered electricity generation.

The system of credits was designed so as to ensure that credits are issued for renewable energy resources for each kilowatt-hour of energy that it produces. Holders of credits may trade or sell the credits to other parties. The state encourages green certificate trading. Under such a system, those utilities with a percentage of renewable capacity exceeding the standard will be able to sell their excess credits to those utilities that have not met the standard through renewable energy production.

### **New Jersey Renewable Portfolio Standard**

The New Jersey RPS distinguishes two classes of renewables. Class I includes wind, solar, fuel cells, ocean energy, landfill methane and biomass, if the biomass is "cultivated and harvested in a sustainable manner", while Class II includes hydro and waste-to-energy facilities that meet the "highest environmental standards." Only hydroelectric facilities with the maximum design capacity of 30 megawatts or less are included in Class II.

According to the requirements of the Electric Discount and Energy Competition Act (P.L. 1999, chapter 23), all retail electric suppliers are to provide 0.5% of their energy from Class I renewable resources by January 1, 2001; 1% by January 1, 2006 and an additional 0.5% per year until it reaches 4% by 2012. The renewable portfolio standard (RPS) was originally set up at 2.5% in 2000, a requirement that could be met by Class I or Class II Renewables. However, all subsequent additions must be met with Class I renewables only.

For each year beyond 2012, the minimum percentage of energy required from Class I and Class II renewables should be fixed at 4% per year from Class I renewables and an additional 2.5 percent from either Class I or Class II renewables.

According to the law, the RPS *cannot* be fulfilled by spot market purchases as renewable energy from other sources (to avoid counting renewable energy in more than one supplier's energy portfolio). The state rules also explicitly prohibit transfer of RPS compliance rights from any other state into New Jersey (i.e., no trade of RPS credits between states).

Interestingly, the program envisions development of renewable energy trading *within* the state, but no specific date is given relative to when it is expected to start or in what form it will be exercised. The trading program also mentions inter-temporal trading, which also remains on paper at this juncture.. For 2001 only, the standard allowed to credit utilities for renewable energy flowing into/from New York power pool towards meeting its RPS for 2002.

### **New Mexico Renewable Portfolio Standard**

New Mexico's "Electric Utility Industry Restructuring Act of 1999" requires the state's Public Regulation Commission (PRC) to examine adoption of a renewable portfolio standard for the state. In May 2000, the PRC issued an order calling for retail electric suppliers to meet 5% of their standard offer service with renewables. Eligible renewables must come from New Mexico and include wind, solar, geothermal, biomass, hydropower and fuel cells. The majority of renewable energy generation is projected to come from solar power. The Land and Water Fund of the Rockies (LAW) estimated that the NM RPS will lead to 60 to 120 MW of new renewable energy for the state.

However, the PRC also ruled that compliance with the RPS would be waived should the RPS result in increases in the cost of electricity of more than \$0.001 per kWh (retail price). The PRC also required utilities to offer an optional green power tariff for standard offer customers who are willing to pay more for renewable energy.

The current implementation of the RPS in New Mexico has been postponed until, approximately, 2005 due to the state preference to first deregulate its electricity suppliers and only then proceed with the RPS.

### **Pennsylvania Renewable Portfolio Standard**

Pennsylvania's 1996 electricity restructuring law did not establish a renewable portfolio standard comparable with the RPS of other states. However, a system similar to a 'conventional' RPS was subsequently established through individual utility restructuring settlements. According to these settlements, the Competitive Default Service (CDS) bidding process is being used to select the Energy Generator Supplier (EGS), and in order to qualify for the CDS bidding process EGSs must supply at least 2.0% of energy generated from renewables, increasing this percentage by 0.5% each subsequent year. Eligible renewables include photovoltaic, solar thermal, wind, low head hydro, geothermal, landfill and mine-based methane gas, energy from waste and sustainable biomass. The start dates for the Competitive Default Service bidding processes are:

- 6/1/00 for General Public Utilities (GPU);
- 6/1/01 for PECO and West Penn Power; and
- 6/1/02 for Pennsylvania Power & Light (PP&L).

### **Texas Renewable Portfolio Standard**

According to a recent study published by the American Wind Energy Association (AWEA), Texas's renewable portfolio standard is "the most effective policy any state has recently adopted to promote renewable energy,"<sup>90</sup> in terms of new renewable generation

---

<sup>90</sup> AWEA News Release, 3/21/2001)

constructed. The Renewable Portfolio Standard passed in Texas in 1999 (enacted under former Governor George W. Bush) requires utilities to acquire 1280 megawatts of generating capacity from renewable technologies by January 2003; increasing to 1730 MW by January 2005, 2280 MW by January 2007, and 2880 MW by January 2009 (equal to 3% of total capacity).

In sum, the RPS goals will be met according to the following schedule (assuming that there is 880MW of currently existing installed capacity):

**TABLE Appendix I.4: Texas, RPS:**

<b>Installed Capacity</b>	<b>MW New Renewables</b>	<b>Date</b>
<b>1280 MW</b>	<b>400 MW</b>	<b>01/01/2002</b>
<b>1280 MW</b>	<b>400 MW</b>	<b>01/01/2003</b>
<b>1730 MW</b>	<b>850 MW</b>	<b>01/01/2004</b>
<b>1730 MW</b>	<b>850 MW</b>	<b>01/01/2005</b>
<b>2280 MW</b>	<b>1,400 MW</b>	<b>01/01/2006</b>
<b>2280 MW</b>	<b>1,400 MW</b>	<b>01/01/2007</b>
<b>2880 MW</b>	<b>2,000 MW</b>	<b>01/01/2008</b>

*Source:* <http://www.dcs.ncsu.edu/solar/dsire/incentive>

Out of the total required amount, 2000 MW of generating capacity must come from new installations. Renewable energy technologies include solar, wind, geothermal, hydroelectric, wave or tidal energy, and biomass or biomass-based waste products including landfill gas. The program has been so successful that the deadlines delineated above are likely be met years in advance of required dates.

The Texas RPS policy may be particularly effective due to a number of factors including:

- (1) acceptance of tradable renewable energy credits (RECs),
- (2) requirement of new renewable resources,
- (3) strict and explicit penalties for failed compliance (\$50 per MWh), and
- (4) initially flexible system which allows for the utilization of federal Production Tax Credits (PTCs).<sup>91</sup>

The success of the Texan RPS is attributed to the vibrant renewable energy credits trading program, under which any retail electric provider, municipally owned utility, or electric cooperative that does not satisfy the requirements of the law by directly owning or purchasing capacity using renewable energy technologies can purchase sufficient renewable energy credits to satisfy the requirements. Hence, utilities may generate renewable power independently or purchase renewable energy credits. A Renewable Energy Credits (REC) Trading Program will start January 1, 2002, and continue through 2019. Renewable capacity additions have a minimum of 10 years of credits to recover over-market costs.

<sup>91</sup> Porter and Wisser, 2001. A Status Report on RPS and SBC, p. 8.

The above rules represent the most sophisticated and flexible RPS/‘green certificate trading’ system in the United States. They make Texas one of the most attractive markets for renewable energy in North America. To date, over 700 MW of renewable generation (mostly wind and some landfill) have been built or planned in Texas as a result of this policy.

### **Wisconsin Renewable Portfolio Standard**

Wisconsin’s RPS was adopted in 1999, making Wisconsin the first state in the nation to have a RPS in advance of retail competition. The schedule of the percentages required and compliance dates are as follows:

**TABLE Appendix 1.5: Wisconsin, RPS**

<b>% Renewables</b>	<b>Date</b>
<b>0.5%</b>	<b>12/31/2001</b>
<b>0.85%</b>	<b>12/31/2003</b>
<b>1.2%</b>	<b>12/31/2005</b>
<b>1.55%</b>	<b>12/31/2007</b>
<b>1.9%</b>	<b>12/31/2009</b>
<b>2.2%</b>	<b>12/31/2010</b>

**Source: <http://www.dcs.ncsu.edu/solar/dsire/incentive>**

Qualifying renewables include fuel cells that use a renewable fuel, tidal or wave action, solar thermal electric or photovoltaic energy, wind power, geothermal technology, biomass, and hydro power (less than 60 MW).

Similar to Texas, Wisconsin established a green credit trading program: WI electric service providers may sell to other electric providers renewable credits for any renewable energy in excess of the percentage specified for a given year. Credits can also be used in subsequent years, i.e. the state recognizes credit banking. Violation of the RPS or misleading certification of renewable resources can lead to penalties of up to \$500,000.

### **In sum**

Overall, if well designed, a Renewable Portfolio Standard seems to be capable of substantially increasing the usage of renewable technologies for electricity generation through state mandate. If a RPS policy is politically feasible (and desirable), it can be a cost-effective strategy for increasing renewable generation within a given jurisdiction. By increasing green power capacity, the RPS can help create a renewable energy industry that is mature enough to market green power to individual consumers, as well as reducing the average cost of renewables (making them more attractive to consumers).

Inevitably, successful implementation of RPS leads to state-wide reduction of GHG emissions, which is the main reason for our review of these renewable energy initiatives. Therefore, at the state level, a Renewable Portfolio Standard should be regarded as complementary tool to greenhouse gas emissions trading and other policy instruments directly regulating GHG emissions from energy-intensive consumers.

### ***III. Other Initiatives: the Urgent Need to Focus on Transportation***

Apart from the major initiatives listed above, states are also encouraging the use of renewable energy in other ways using subsidies, tax incentives, and tax breaks to promote renewable energy, cleaner cars, and energy efficiency. However, the biggest obstacle on the road to achieving a noticeable reduction of American GHG emissions is the rapid proliferation of inefficient vehicles and corresponding difficulties in regulating CO2 emissions from road traffic. Therefore, our last note in this Appendix represents a very generic overview of the US transportation initiatives.

#### **TRANSPORTATION**

Transportation embodies over a third of U.S. greenhouse gases. Americans are increasingly buying less fuel-efficient vehicles. However, there is to date no centralized policy on fuel efficiency at national level, though there are initiatives in Congress to raise the fuel efficiency of cars, light trucks, and SUVs (sport utility vehicles). Presently SUVs are required to have gas-efficiency of 20.1 miles per gallon, but if a new SUV-standard legislation is passed on the federal level<sup>92</sup>, the new requirement would be 40 miles per gallon.

Most states are dealing with transportation issues as part of their Climate Action Plans. Overall, across the reviewed states, GHG-abating transportation policies focus on:

- **Promotion the sale of AFV [Alternative Fuel Vehicles] to private customers – through rebates and tax credits;**
- **Replacement of state's/public fleet with AFVs;**
- **Research on innovative non-carbon-intensive alternative fuel, such as various biodiesel substances;**
- **Creation of the AFV support infrastructure;**
- **Enhancement/reconstruction of public transportation routes;**
- **Carpool/vanpool incentives (parking discounts, tax credits); and**
- **Telecommuting incentives (tax credits).**

Smog and pollution has become so rampant in some cities that state officials are being forced to change policies in order to meet the minimum air quality standards. Greenhouse gas emissions could be considered in combination with components forming what is conventionally called 'photo-smog', which represents a residual of gasoline combustion.

For instance, in California, a bill aimed at the reduction of greenhouse gas emissions has been slowly proceeding through the state legislature. Proposed Assembly Bill 1058 would regulate carbon dioxide emissions from motor vehicles among other components contributing to the notorious California air pollution.

Nearly two-thirds of California's greenhouse gas emissions come from the transportation sector. AB 1058 directly addresses emissions that come from passenger vehicles, light-duty trucks and other vehicles used for personal transportation in the state. However, according to a number of sources interviewed by EcoSecurities during preparation of this

---

<sup>92</sup> Such law is currently in Congressional review after the gas-mileage proposal was advanced by President Bush in the Spring of 2001.

report, AB 1058 is not likely to go through the state legislature due to the strong opposition of national car manufacturers.

#### ***IV. Greenhouse Gas Inventorying Initiatives Beyond California***

Last, we would like to mention recent progress of GHG inventorying in several US States. Recognizing that in order to implement at emissions reduction policies one first needs to assess current levels of emissions, a number of states have voluntarily set up GHG inventorying requirements aimed at educating state businesses about measuring, documenting and verifying their GHG discharges. This step is seen as a first in a series of launching an overarching emissions reduction scheme in the country as a whole.

In the first section of this Appendix, we have discussed emissions inventorying efforts in California. As of the end of August 2001, similar initiatives were under development in Oregon, California, Maine, New Hampshire, New Jersey, Rhode Island, Texas and Wisconsin. The exact structure of each state GHG inventory is shown in the table below:

<sup>93</sup>

---

<sup>93</sup> Source: California Energy Commission and California Greenhouse Gas Inventory



## Appendix I: Draft Comparison of State Voluntary GHG Registries

	<a href="#">California</a>	<a href="#">Maine</a>	<a href="#">New Hampshire</a>	<a href="#">New Jersey</a>	<a href="#">Rhode Island</a>	<a href="#">Texas</a>	<a href="#">Wisconsin</a>
<b>Implementation Timing</b>	January 2001, new law enacted Spring 2001, Board appointments and organization plan being developed	LD 87 brought forward by Representative Bob Daigle directs ME DEP to adopt rules for GHG registry	Adopted Chapter Env-A 3800 "Voluntary Greenhouse Gas Reductions Registry" on 2/23/01	Amended the Open Market Emission Trading Program to include GHGs	As part of its climate working group, RI DEP is considering a GHG registry	The Texas Natural Resource Conservation Commission instructed the Executive Director to establish a GHG registry by 12/1/01	The WI legislature directed the DNR to establish a multi-pollutant emissions registry-currently engaged in the rulemaking process
<b>Voluntary</b>	Yes- Voluntary Program administered by a non-profit managed by a stakeholder board of directors	Yes	Yes	Yes	N/A	Yes	Yes
<b>Emissions Included</b>	GHGs (CO <sub>2</sub> ), CH <sub>4</sub> , N <sub>2</sub> O, HFCs, PFCs, SF <sub>6</sub> after three years of involvement	N/A	GHGs (CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, HFCs, PFCs, SF <sub>6</sub> )	GHGs (CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, HFCs, PFCs, SF <sub>6</sub> ), NOx, VOC	N/A	N/A	GHGs (CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, HFCs, PFCs, SF <sub>6</sub> ) NOx, SO <sub>2</sub> , VOC, PM <sub>2.5</sub> , CO, Lead, Mercury
<b>Whole Corporation Inventory Reporting</b>	Yes	N/A	No	No	N/A	N/A	No
<b>Project-Specific Emission Reduction Reporting</b>	NO	N/A	Yes	Yes	N/A	N/A	Yes
<b>Third party verification</b>	Yes	N/A	Yes	Yes	N/A	N/A	No
<b>Participants Must Commit to a Reduction Target</b>	Encouraged, but not required	N/A	No	No	N/A	N/A	No
<b>State Commitment to Defend Registered Reductions</b>	Yes	N/A	Yes	N/A	N/A	N/A	Yes

## Appendix I: Draft Comparison of State Voluntary GHG Registries

	<a href="#">California</a>	<a href="#">Maine</a>	<a href="#">New Hampshire</a>	<a href="#">New Jersey</a>	<a href="#">Rhode Island</a>	<a href="#">Texas</a>	<a href="#">Wisconsin</a>
<b>Quantification Protocols</b>	Board will adopt protocols that facilitate recognition in future regulatory regimes.	N/A	Defers to EIA 1605(b) and others as determined by the agency	Articulated by the DEP	N/A	N/A	IPCC, EPA EIIIP and others
<b>Reporting Scope</b>	Both direct and indirect emissions reported	N/A	Both direct and indirect emission reductions	Both direct and indirect emission reductions	N/A	N/A	Both direct and indirect emission reductions
<b>Reporting Metrics</b>	Mass and rate-based	N/A	Mass-based	Mass-based	N/A	N/A	Mass and rate-based
<b>Provides for Emission Trading</b>		N/A	No	Yes but not for GHGs	N/A	N/A	No
<b>Reporting Software</b>	Registry will review available software, including EPA's software, to see whether it will meet registry requirements	N/A	Has developed reporting forms - Defers to EIA 1605(b)	Reporting forms - Private firm administering registry	N/A	N/A	Reporting forms
<b>Cost of Participation</b>	Reasonable fees	N/A	None	For NOx and VOC From \$0.20 - \$12.50 per DER (ton) Vary for GHGs From \$0.00 - \$0.03 per DER (ton)	N/A	N/A	None
<b>Contact Information</b>	Molly Tirpak/Pierre duVair Registry Working Group/California Energy Commission  415-641-7080/ 916-653-8685 <a href="mailto:molly@climateregistry.org">molly@climateregistry.org</a> / <a href="mailto:pduvair@energy.state.ca.us">pduvair@energy.state.ca.us</a>	Kevin McDonald  ME DEP  <a href="mailto:Kevin.Macdonald@state.me.us">Kevin.Macdonald@state.me.us</a>	Joanne Morin  NH DES  <a href="mailto:jmorin@des.state.nh.us">jmorin@des.state.nh.us</a>	Allan Willinger  NJ DEP  <a href="mailto:awillinger@dep.state.nj.us">awillinger@dep.state.nj.us</a>	Joshua M. Uebelherr  RI DEM  (401) 222-3434 ext. 7134 <a href="mailto:juebelhe@dem.state.ri.us">juebelhe@dem.state.ri.us</a>	Lynn Weber  TNRCC  <a href="mailto:lweber@tnrcc.state.tx.us">lweber@tnrcc.state.tx.us</a>	Eric Mosher  WI DNR  <a href="mailto:moshee@dnr.state.wi.us">moshee@dnr.state.wi.us</a>

## ***V. The North-Eastern States GHG Reduction Initiative***

While finalizing this report, we received information that Governors of several North-Eastern States and Canadian provinces came to an agreement to launch a joint GHG emissions reduction program. On August 28 CO2e.com reported that this North-Eastern resolution calls on state and provincial governments to document the emission levels in their regions, develop plans for reducing greenhouse gases, use more environmentally friendly fuel sources and reduce their energy consumption.<sup>94</sup> This self-monitoring agreement also urges leaders to use more efficient vehicles, enhance mass transit and promote lower-carbon fuels to reduce the levels by 2010.

The group of parties to that agreement includes:

- Connecticut (USA);
- Maine (USA);
- Massachusetts (USA);
- New Hampshire (USA);
- Rhode Island (USA);
- Vermont (USA);
- Quebec (Canada);
- New Brunswick (Canada);
- Newfoundland (Canada);
- Nova Scotia (Canada); and
- Prince Edward Island (Canada).

The agreement commits the regions to reduce gas emissions by at least 10 per cent below 1990 levels by 2020. However, this emissions reduction targets represents the ‘medium-term goal’, while the states further expect to reduce regional GHG emissions to eliminate ‘dangerous threat to climate’, which would call for the estimated emissions reduction of 75%-85% below the current levels.<sup>95</sup> No specific timetable is set up for the implementation of this very ambitious *long-term* goal. The agreement covers carbon dioxide, methane, nitrous oxide and other heat-trapping gases.

On the American side, this agreement is *hugely* important since, in the opinion of EcoSecurities, it could potentially influence the administration of the U.S. President George Bush to reassess the US Kyoto position in the long-term. Politically, it would be hard for the US President to ignore the fact that *all* of the New England states have agreed to sign an international agreement to reduce emissions that cause climate change, which the federal government decided to abandon.

The move has also highlighted the US’s struggle to deal with a shortage of electricity, something Canadian leaders were hoping to take advantage of as they promoted their emerging natural gas markets. Nova Scotia Premier John Hamm was intent on selling Sable Island natural gas to his American counterparts, some of whom said they were interested in bringing in more electricity. Northeastern Canada is a region that is

---

<sup>94</sup> <http://www.co2e.com/News/story.asp?StoryID=340>

<sup>95</sup> The target is quoted from Donna Boysen, M.J. Bradley and Associates: Presentation at the 2001 Emissions Marketing Association Meeting, Hilton Head, SC, USA, October 1, 2001.

relatively rich in gas, oil and hydropower while New England could use the less carbon-intensive fossils, according to Maine Governor Angus King.<sup>96</sup>

According to the information EcoSecurities obtained in a number of confidential interviews, the implementation of the regional GHG reduction plan will be carried out in several concurrent steps, which include:

1. Establishment of the regional GHG inventory protocol leading to consistency of all GHG inventorying procedures across the states/Provinces;
2. Creation of a plan for each jurisdiction articulating measures to achieve GHG reductions in view of the regional short and mid-term GHG emissions reduction targets;
3. By 2005, making the public in the regions aware of the problems and impacts of climate change and what actions the public could take at home/work to reduce such impacts. This action would imply coordinated public educational and electricity disclosure policies;
4. State and provincial governments 'leading by example': reduction of GHG emissions from public operations by 25% by 2012, as measured from an established baseline;
5. By 2025 reduction of CO<sub>2</sub> emissions per MW/h of electricity use by 20% relative to current (2001) emissions;
6. By 2025, increase the amount of energy saved through conservation programs by 20%, using policies designed to encourage residential, commercial, industrial and institutional energy conservation;
7. Promotion the shift to higher energy efficiency vehicles, lower carbon fuels and advanced transportation technologies; and
8. Exploration of emissions trading mechanism, with the development of emissions trading registry and methods for baseline creation and credit generation.

More specific recommendations will be presented to the Governors and Premiers at their next regional conference.

## ***VI. Conclusion***

While the United States remains the world's largest emitter of GHGs, the federal government presently does not directly participate in implementing domestic GHG reduction programs. The majority of climate change policies are thus for the moment initiated and carried out at the State level.

The main characteristic of the federal Climate Change program is its incentive-based approach, which encourages flexibility and independence among the compliant entities. In the majority of policy areas, federal legislation cannot mandate certain emissions reduction standards due to the specifics in state demographics, large variances in climatic conditions, uniqueness of states' industrial infrastructures and the resulting substantial regional difference in energy consumption patterns. In addition, states differ in their political attitudes towards climate change issues, which calls for individual climate change policy plans for each jurisdiction.

The Climate Action Plans that we have discussed represent innovative ways states are dealing with climate change. In the programs reviewed above, Illinois has forged a cost-effective carbon sequestration scheme in addition to launching a number of biodiesel initiatives in the city of Chicago; New Jersey became a pioneer of multi-pollutant emissions trading as well as the jurisdiction developing well-integrated GHG

---

<sup>96</sup> <http://www.co2e.com/News/story.asp?StoryID=340>

transportation policies; Oregon created a unique state trust, supporting multiplicity of carbon offset projects, with possible extension of funding to JI and CDM; Washington worked on the boldest GHG emissions reduction law imposing emissions caps on energy intensive industries and Massachusetts became the first state to limit carbon dioxide emissions from ‘old’ power plants.

Most interestingly, we showed that a coalition of several North-Eastern States, in cooperation with a number of Canadian provinces, have signed a formal 10% GHG reduction agreement with the target to achieve this goal by 2020. In our opinion this action represents a significant impetus to the birth of similar regional initiatives. Of great importance is the fact that this initiative transcends the US borders as it creates the first international GHG reduction coalition initiated in the United States *despite of* the federal government’s decision to abstain from any national GHG reduction commitments.

We also demonstrated several State renewable energy initiatives, which are implicitly related to GHG emissions reduction. Although we acknowledged that Renewable Portfolio Standards (RPS) and ‘Green Certificate’ Trading have not been designed to alleviate the problem of global warming, we stressed that these tools should be considered as a critical integral part of States’ greenhouse gas policies. We especially emphasized the importance of devising rigorously –specified and highly flexible RPS proposals, which utilize market incentives mechanisms to their highest potential. In lie of this, we singled out the Texan RPS and CERs trading regulations as the most advanced in the nation. We advise our reader to follow these developments on the state level to comprehend the exact scale of the US GHG reduction potential.

We conclude that despite the fact that the U.S. does not have a national climate change policy, it would thus be far from the truth to say that no action is being taken in this country. Individual states are indeed making huge advancements in their climate change policies.

## Appendix II

### Methodological Note to Section B/Appendix III

National emissions *projections* given in Section II are taken from the latest data reported in the *National Communications*.<sup>97</sup> Although several projections have been revised after the publication of the National Communications to account for structural and/or economic changes, EcoSecurities still adheres to the data from the UNFCCC sources because it would allow for basic cross-national comparisons since all GHG inventorying procedures applicable to the UNFCCC submissions are relatively standardized.

The majority of historical emissions data are obtained from the UNFCCC greenhouse gas emissions database, which can be found at:

<http://www.unfccc.org/resource/ghg/tempemis2.html>

To allow for cross-national comparison of emissions reduction performance, we convert all data points from giga-grams (Gg) of *CO<sub>2</sub>-equivalent* to MMT of *carbon equivalent*.

Our speculations about the net buyer/seller position of each respective country are based on comparing historical levels of GHG emissions to respective national obligations under Kyoto Protocol and/or the 1998 “European Bubble” agreement. As most of Section II covers European Union states, we accentuate our efforts of the EU umbrella agreement and judge national emissions profiles against the percentages of emissions reductions assigned under the Luxembourg 1998 “EU Bubble” document. Thus, we compare historical levels of emissions to:

- national emissions projections for the years 2000 and 2010;
- respective EU obligations for 2010 (the agreed percentage of emissions reduction under the “EU Bubble”); and
- Kyoto commitment for 2008-2012.

We place a special attention on comparing the actual rate of GHG emissions to national emissions projections for 2000 made for the ‘BAU<sup>98</sup>’ and “GHG abatement policy” scenarios because national emissions projections for the year 2000 are *closer* to the observed 1998 emissions. Therefore, emissions projections for the year 2000 (relative to emissions projections for the year 2010) would provide a more accurate basis for comparing historical levels of GHG emissions to the expected ones. Although we also compare historical emissions to the 2010-2020 projections (first Kyoto Commitment Period and beyond), EcoSecurities feels that such comparison would be less accurate.

Our goal is to compare the emissions data across the countries to observe national emissions reduction progress relative to Kyoto/EU targets to assess the direction of carbon transactions in the emerging international carbon market.

---

<sup>97</sup> All National Communications for all Annex B states can be viewed at:

<http://www.unfccc.org/resource/natcom/nctable.html#a1>

Consider the Second National Communications only

<sup>98</sup> Business as Usual.

## Appendix III<sup>99</sup>

### Greenhouse Gas Emissions Position for Selected Annex B States

#### Appendix III.1. AUSTRIA

Table Appendix III.1.1: Austria, Historical GHG Emissions, in MMTCE (1990-1998):

NATIONAL TOTAL/ Austria (in MMTCE)				
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total
1990	16.924	3.076	.554	20.554
1991	17.984	3.014	.577	21.575
1992	16.316	2.943	.582	19.841
1993	16.823	2.908	.598	20.329
1994	17.350	2.860	.616	20.826
1995	17.954	2.800	.619	21.373
1996	18.193	2.755	.621	21.569
1997	18.143	2.689	.616	21.448
1998	18.140	2.628	.626	21.394

*Note:* Data for 1999 are not available

*Source:* UNFCCC, greenhouse gas database

As national emissions projections are reported mainly for CO<sub>2</sub> emissions, we adhere to analyzing these projections, given in CO<sub>2</sub> equivalents for the period 2000-2020:

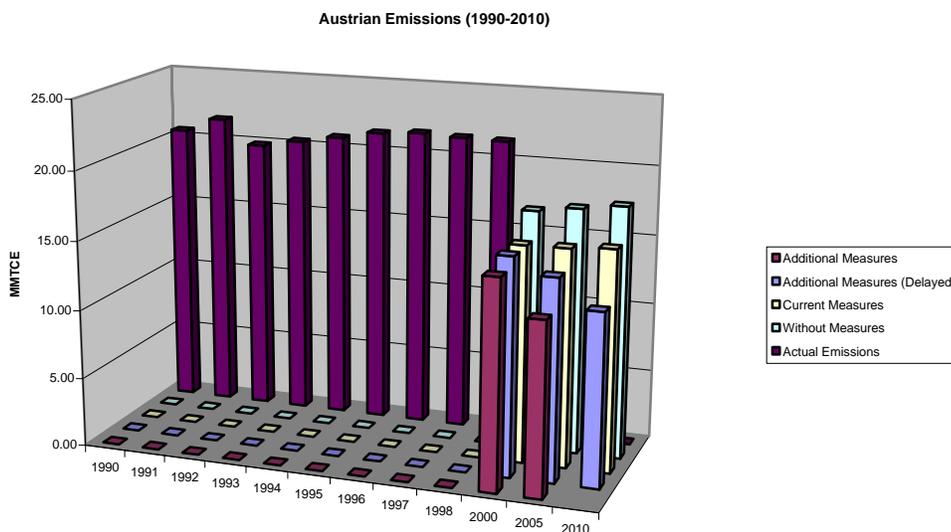
Table Appendix III.1.2. Austria, National Emissions Projections, CO<sub>2</sub> (2000-2010, in Millions Tons CO<sub>2</sub>)

Scenario	2000	2005	2010
Without Measures	63.5	65.0	66.5
Current Measures	57.3	57.5	58.3
Additional Measures	55.1	45.6	
Additional Measures Delayed	57.3	53.1	45.6

*Source:* "Second National Climate Report of the Austrian Federal Government", Vienna 1997, p. 92.

<sup>99</sup> The reader should be aware that the majority of national emissions projections are reported in CO<sub>2</sub> equivalents, while the historical emissions data are given in carbon equivalents. As emissions projections are reported by national governments in the units of their choice, all tables showing national emissions forecasts retain these original units. However, graphs supporting each national emissions review convert all CO<sub>2</sub>e into Ce, but the reader should not attempt a direct comparison of national emissions projections to the historical data without dividing emissions projections reported in CO<sub>2</sub>e by 3.671 (where 3.671 represents the CO<sub>2</sub>e/Ce conversion factor).

**Figure Appendix III.1: Comparative Emissions Profile, Austria: Historical Emissions Versus National Projections**



**Source:** EcoSecurities, 2001

The above projections were carried out for a set of scenarios, which include:

- The “**without measures**” scenario is based on a simple econometric analysis that displays an exponential trend value of 0.4 percent for the relative changes in CO<sub>2</sub> emissions relative to the previous year;
- “**Current measures**” incorporates routine energy efficiency improvements built into an annual economic growth rate of 1.75%-2% (with corresponding autonomous energy efficiency improvements per unit of GDP equivalent to 1.9% - 1.0%, which is consistent with historically observed trends); and
- The “**additional measures**” scenario is based on projected achievements of the “Comprehensive Technology Program for the Austrian Energy Sector”. The program incorporates 34 comprehensive measures, covering the domains of transportation, renewable energy use, industrial R&D and so on.

If one compares the actual carbon dioxide emissions recorded in table Appendix III.1.3 to the projected levels, we see that Austrian emissions are likely to be slightly above the national projections. However, “...According to the assumptions discussed [in the National Communication], it is unlikely that Austrian CO<sub>2</sub> emissions will exceed by 2010 the historical peak values. Current policy measures should enable Austria to meet the stabilization targets of the European Union by the year 2000” (National Communication, p. 92). EcoSecurities does not possess sufficient data to estimate whether the nation has met its internal emissions reduction target in the year 2000.

At the same time, as revealed in Table Appendix.III.1.1, Austrian CH<sub>4</sub> emissions have been continuously dropping, although the total volume of methane emissions remained relatively low even in the base year. This achievement is, however, offset by the increase in national N<sub>2</sub>O emissions.

In the “EU Bubble” Austria is mandated to reduce its base year emissions by 13%. Therefore, with respect to the European Bubble performance, it appears that Austria has to substantially expedite carbon dioxide sequestration/emissions reduction policies. EcoSecurities believes that, based on its 1998 GHG emissions position, **Austria is likely to become an importer/buyer of emissions reduction credits** (although in 1997 and 98 we observed *stabilization* of Austrian GHG emissions at the level of 21.4 MMTCE).

### Appendix III.2. BELGIUM

**Table Appendix III.2.1: Belgium, Historical GHG Emissions, in MMTCE (1990-1998):**

NATIONAL TOTAL/ Belgium (in MMTCE)				
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total
1990	31.053	3.501	2.619	37.173
1991	33.075	3.512	2.627	39.214
1992	33.122	3.506	2.554	39.182
1993	32.558	3.568	2.620	38.746
1994	33.863	3.418	2.938	40.219
1995	34.208	3.414	3.052	40.674
1996	35.318	3.417	3.091	41.816
1997	33.054	3.342	2.770	39.166
1998	33.227	3.325	2.848	39.45

**Note:** Data for 1999 are not available

**Source:** UNFCCC, greenhouse gas database

Belgian Second National Communication presents CO<sub>2</sub> emissions projections in the following form:

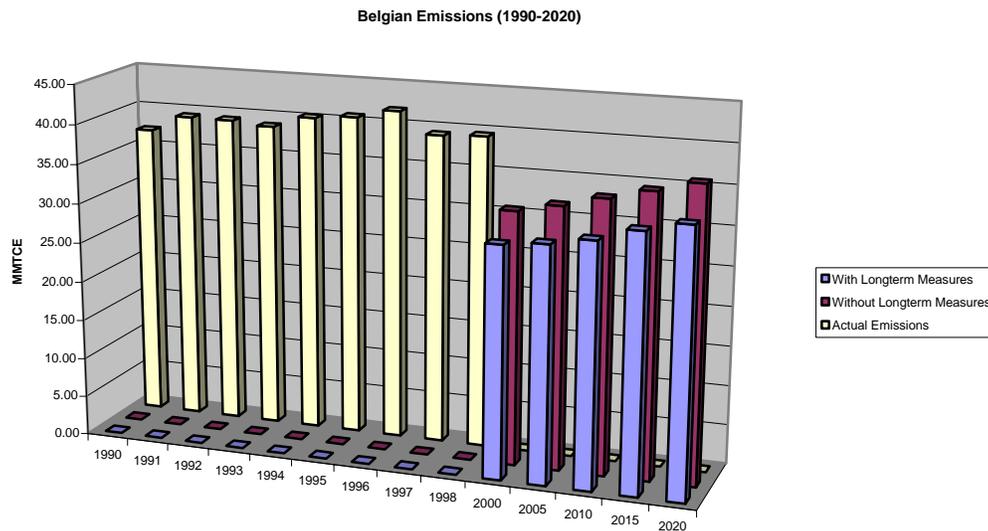
**Table Appendix III.2.2: National Emissions Projections, CO<sub>2</sub> Belgium (1990-2020, MMTCO<sub>2</sub>):**

Scenario/year	2000	2005	2010	2015	2020
Without measures	<b>117.0</b>	<b>120.9</b>	<b>125.8</b>	<b>130.6</b>	<b>135.6</b>
With long-term measures	<b>106.8</b>	<b>108.8</b>	<b>112.2</b>	<b>118.1</b>	<b>122.5</b>

**Source:** “Deuxième Communication Nationale Conformément Aux Articles 4 et 12 De La Convention”, Brussels, August 1997, p. 2-9.<sup>100</sup>

<sup>100</sup> A number of additional emissions reduction scenarios is reported in the 2<sup>nd</sup> National Communication; however, all of them project even lower levels of CO<sub>2</sub> emissions for 2000-2020, which would further disadvantage the current national emissions position.

**Figure Appendix III.2: Comparative Emissions Profile, Belgium: Historical Emissions Versus National Emissions Projections**



Source: EcoSecurities, 2001

In the above projections made under the ‘long-term measures’ scenario presume active implementation of national energy/CO2 taxes.

Comparison of historical 1998 emissions to national projections<sup>101</sup> demonstrates that Belgium has acceded the projected national emissions reduction target of 117 MMTCO<sub>2</sub> by approximately 4 MMT.

In the EU Bubble Belgium is mandated to reduce its emissions by 7.5% relative to the base year. As one observes in table Appendix III.2.1, Belgian growth in carbon dioxide emissions is partially offset by a marginal decrease of methane emissions. However, since carbon dioxide contributes over 75% to the overall national GHG emissions, EcoSecurities projects that Belgium will not be able to meet its European and/or Kyoto commitments if the current level of GHG emissions is not *reduced* by approximately 3% in all years from 2002 to 2008.<sup>102</sup> **Therefore, it appears that in the long-term the nation can be viewed as a net carbon buyer.**

<sup>101</sup> Carried out in MMTCE.

<sup>102</sup> The 3% value of our calculation of what it would take for Belgium to return on the path of *projected* GHG emissions. To achieve the compliance with the European bubble, Belgium would need to achieve even higher percentage of emissions reduction.

### Appendix III.3. CANADA

Table Appendix III.3.1: Canada, Historical GHG Emissions, in MMTCE (1990-1998):

NATIONAL TOTAL/ Canada (in MMTCE)				
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total
1990	126.847	20.260	17.105	164.212
1991	124.317	20.988	17.059	162.364
1992	127.905	21.673	17.067	166.645
1993	127.496	22.411	17.474	167.381
1994	131.315	22.987	18.617	172.921
1995	134.524	23.812	18.835	177.172
1996	137.988	24.564	19.545	182.098
1997	141.208	24.697	19.075	184.981
1998	144.219	24.375	17.678	186.272

*Note:* Data for 1999 are not available

*Source:* UNFCCC, greenhouse gas database

In table Appendix III.3.1. we see a gradual but persistent increase in Canadian carbon dioxide and methane emissions. Nitrogen oxide emissions fluctuate, with a small-scale emissions ‘dive’ recorded in 1998. Overall, in 1990-1998 Canadian GHG emissions grew by approximately 24 MMTCE, which constitutes a 14% increase relative to the total GHG emissions levels in the base year (1990).

At the same time, the Second National Communication (1997) projected the *end-use*<sup>103</sup> *increase* of GHG emissions by approximately 30% by the year 2000,<sup>104</sup> while the empirically observable *total* GHG emissions ‘gap’ between 1990 and 1999 emissions was computed to be close to 13%<sup>105</sup> (which corresponds to our finding reported in the preceding paragraph).

To compare Canadian GHG emissions performance with national ‘expectations’ we resort to the GHG emissions projections contained in the Second National Communication:

<sup>103</sup> ‘End-use emissions’ stand for the discharges from the final use of GHG-releasing goods and/or electricity.

<sup>104</sup> “Canada’s Second National Report on Climate Change”, November 1997, Chapter 4, p. 49.

<sup>105</sup> Ibid., Chapter 5, p. 58.

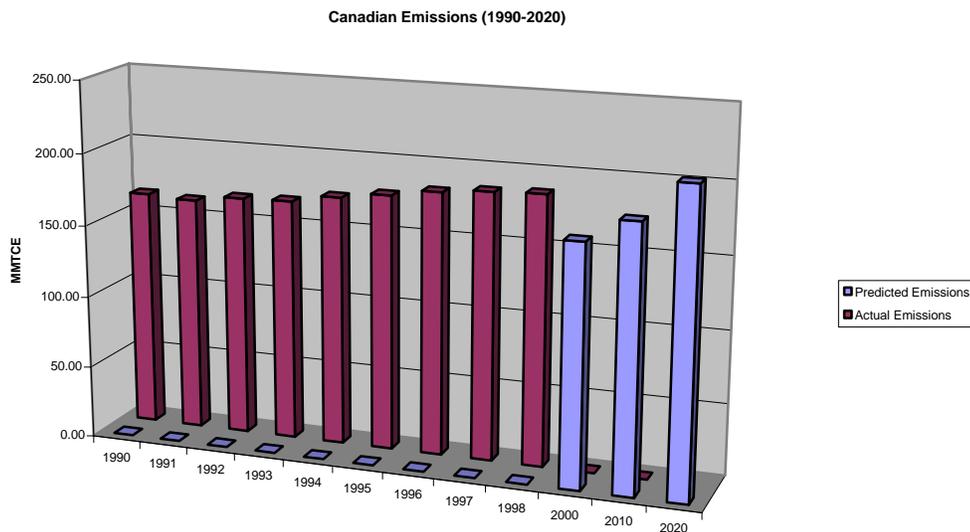
**Table Appendix III.3.2: Canada, GHG Emissions Projections, 1990-2020 (MMTCO<sub>2</sub> Equivalent)**

	1995*	2000	2010	2020
Total emissions	619	610	669	767
Out of which CO <sub>2</sub> emissions	493	501	545	620
% Change from 1990	+9.5	+8.2	+18.6	+26.1

*Source: Canada's Second Report on Climate Change, 1997, Chapter 5, p. 60*

\*1995 represents a data point

**Figure Appendix III.3: Comparative Emissions Profile, Canada: Historical Emissions Versus National Emissions Projections**



*Source: EcoSecurities, 2001*

Assessment of tables Appendix III.3.1 and Appendix III.3.2 demonstrates that Canadian emissions trajectory was acceding its national prognosis by approximately 6% with respect to the total level of GHG emissions. Hence, current Canadian emissions accede national emissions projections while demonstrating an accelerating growth, especially in the transportation sector. **Therefore, similar to previously examined states, Canada should be viewed as a net carbon buyer.**<sup>106</sup>

<sup>106</sup> Some questions have been raised about the effects of large Canadian sinks allocations on the ability of the country to meet its Kyoto obligations. Canada has about 12 MTCE of forestry-related GHG emissions allowances, which represents the largest allocation amongst all countries in terms of percentage of base year emissions (about 7.25% of base year emissions). However, according to information EcoSecurities was able to obtain from the Canadian IISD (International Institute for Sustainable Development), in the *near future* Canada expects to use only half of its 12 MTCE allocation under forest management (through business-as-usual and several lower cost additional activities). The reason for this is in the expectation that it would take substantial investment and government policy incentives to create the other half of the allowed reductions. Canadians appear to believe that such approach could be less competitive than using other forms of sinks and/or alternative measures. However, in the long term, Canadians are considering using all the Article 3.4 sinks allowances it will be able to finance, however, no formal decision has been

### Appendix III.4. FINLAND

Table Appendix III.4.1: Finland, Historical GHG Emissions, in MMTCE (1990-1998):

NATIONAL TOTAL/Finland (in MMTCE)				
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total
1990	16.554	1.667	2.250	20.471
1991	15.453	1.550	2.102	15.456
1992	15.740	1.417	1.865	15.743
1993	15.973	1.299	1.882	19.154
1994	17.655	1.264	1.874	20.793
1995	16.950	1.275	2.115	20.341
1996	18.629	1.240	2.154	22.017
1997	18.027	1.189	2.172	21.388
1998	17.419	1.130	2.164	20.713

Note: Data for 1999 are not available

Source: UNFCCC, greenhouse gas database

The Finnish Second National Communication estimates that in the BAU scenario (which is called “the **Energy Market Scenario**”), Finnish carbon dioxide emissions from primary energy consumption would increase from approximately 60 MMT CO<sub>2</sub> to 79-80 MMT CO<sub>2</sub> by 2020.<sup>107</sup> If the national GHG emissions were to follow the trend projected under the 1995 National energy efficiency program (in addition to national CO<sub>2</sub> taxation), it would be possible to stabilize carbon dioxide emissions at the level of 2000. However, “...in order for CO<sub>2</sub> emissions to follow [substantial emissions reduction] trend, besides the fairly tight departure points concerning energy consumption, it would be necessary to use considerably more wood as an energy source, to increase importation of natural gas *fourfold*, and to continue importation of electricity at least to the same extent as it is now imported. In this context, wood would have to replace half the peat consumption by 2025...” (2<sup>nd</sup> National Communication, p. 43). Additional decrease of CO<sub>2</sub> emissions is plausible only in the case of substantial nuclear power construction.

The Second National Communication does not provide cumulative projections of GHG emissions. EcoSecurities approximated the value of these forecasts from various tables and graphs presented in the report, which yields the following CO<sub>2</sub> emissions projections:

---

made on that matter. In lie of this, at this juncture, EcoSecurities cannot project the exact effect the sinks allowance will have on the Canadian ability to meet its Kyoto obligations.

<sup>107</sup> Second National Communication, p. 46.

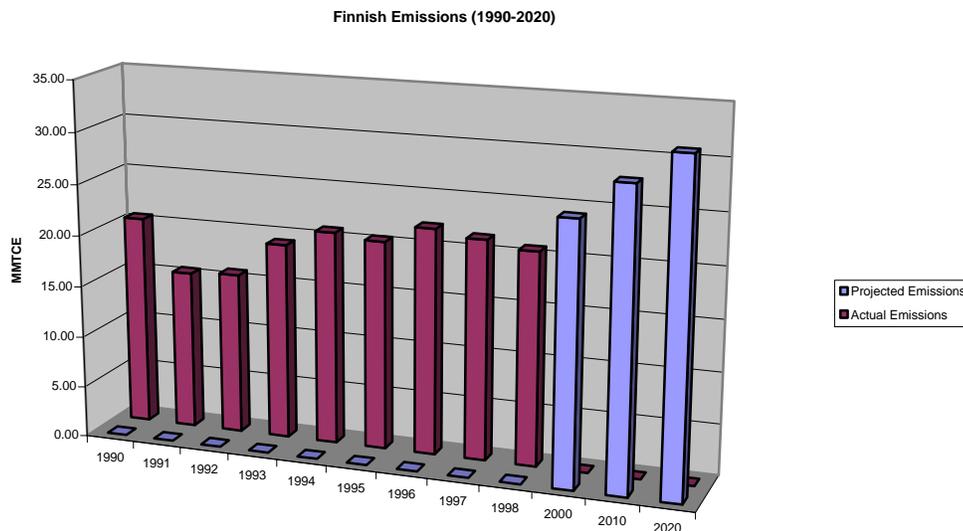
**Table Appendix III. 4.2. Finland, National CO2 Emissions Projections, in MMTCO2 Equivalent (1990-2020)**

Emissions factor/year	1990	2000	2010	2020
CO2 *	58	93	106	117
CO2 from fossil fuel/electricity generation	52.6	59	55-70	48-79

**Note:** \* emissions projections are given without the consideration of the effect of national carbon abatement measures, such as a nation-wide carbon tax; all emissions sources are taken into account.

**Source:** 2<sup>nd</sup> National Communication.

**Figure Appendix III.4: Comparative Emissions Profile, Finland: Historical Emissions Versus National Emissions Projections**



**Source:** EcoSecurities, 2001

When compared to the actual level of carbon dioxide emissions reported for 1998, we observe that the carbon dioxide emissions remain *below* the national projections. Further, we observe the steady decline of methane emissions:

Arguably, the Finnish emissions reduction success could be attributed either to the impact of the national carbon tax, which in the recent EU review of energy taxes was labeled the most efficient and non-discriminatory carbon tax ever implemented in Europe, or to the rapid decline of the national economic growth rate in mid-1990s (which was partially associated with the collapse of the Russian market that historically served as one of the major outlets of Finnish exports). For example, the 2<sup>nd</sup> National Communication reported that Finnish CO2 tax was expected to reduce carbon dioxide emissions (relative to the BAU) by 4-5% by the year 2000. At the same time, the decline in the volume of national carbon dioxide emissions in 1992-93 cannot be attributed to the tax effects.

Further, relative to the base year, Finnish carbon dioxide emissions continue to grow, albeit with a decelerating pace. Given that carbon dioxide constitutes the largest share of any nation's emissions profile, as well as considering the fact that the majority of Finnish

CO2 emissions come from power generation, it proves rather difficult to assess whether Finland would be able to 'freeze' national GHG emissions at the aspired 1990 level.

Inability to acquire the latest data for 1999-2000 prevents us from placing Finland either in the camp of net credit buyers or sellers. However, under the European emissions reduction agreement, Finland has to remain at the level of the base year (1990) to be in compliance with the requirements of the Bubble agreement: its' emissions reduction commitment is equal to zero. Therefore, out of the states reported so far on these pages, Finland is one of the most promising candidates *to become a net seller of emissions credits*, although this assertion needs to be substantiated by the latter data.

### **Appendix III.5. ITALY**

**Table Appendix III.5.1: Italy, Historical GHG Emissions, in MMTCE (1990-1998):**

<b>NATIONAL TOTAL/ Italy (in MMTCE)</b>				
	<b>CO<sub>2</sub></b>	<b>CH<sub>4</sub></b>	<b>N<sub>2</sub>O</b>	<b>Total</b>
<b>1990</b>	117.833	10.866	12.329	141.028
<b>1991</b>	117.382	10.932	12.698	141.012
<b>1992</b>	116.952	10.469	12.482	139.904
<b>1993</b>	115.043	10.442	12.322	137.807
<b>1994</b>	113.893	10.772	12.100	136.766
<b>1995</b>	120.725	10.947	12.447	144.120
<b>1996</b>	119.617	10.997	12.465	143.178
<b>1997</b>	120.194	11.167	12.714	144.076
<b>1998</b>	125.160	11.272	10.504	146.936

*Note:* data for 1999 are not available

*Source:* UNFCCC, green house gas database

As follows from the above, Italian GHG emissions have demonstrated a slow grow, with the 1990-98 rate of increase of approximately 0.3%. However, carbon dioxide and methane emissions began accelerating in 1997, with CO2 emissions increasing on average at the rate of 0.5% per annum. If that trend is to continue beyond the year 2000, then Italy would be hard pressed to meet its EU obligation of emissions reduction of – 6.5% (relative to 1990, where the total volume of emissions reductions should reach approximately 9.166 MMTCE).

National emissions projections reported in the Italian Second Communication are carried under a set of economic growth assumptions, which are summarized below:

**Table Appendix III.5.2. Main Hypotheses of Italian Economic Development to 2010<sup>108</sup>**

	<b>1990</b>	<b>1995</b>	<b>2000</b>	<b>2010</b>
<b>Population (miln)</b>	56.7	57.3	57.3	56.5
<b>GNP (thousand billion liras 1990)</b>	1311	1386	1530	1865
<b>Annual growth rate</b>	.	1.1	2.0	2.0
<b>Industrial production (index)</b>	100.0	106.9	118	145
<b>Family consumption (in thousand billion)</b>	1041	1093	1207	1471

*Source: Italian Second National Communication, 1998, p. 146 (based on Enea data)*

Although the Second National Communication provides a set of emissions projections, we adhere to the forecast carried out under the above assumptions, which is called a “**basic scenario**”.

Relative to the data shown below, Italian GHG emissions were lower for the year 1998 relative to projections carried out for the year 2000, with the exception of carbon dioxide (where the upper boundary of emissions projections, 459 MMTCO<sub>2</sub> equivalent corresponds to historical emissions in 1998). Comparing the national historical emissions with emissions projections, one notices a *substantially* lower historical level of methane and nitrogen oxide emissions.

**Table Appendix III.5.3. Italy: National GHG Emissions Projections, 1995-2020, MMTCO<sub>2</sub> equivalent (all data for ‘basic scenario’):**

	<b>1995<sup>109</sup></b>	<b>2000</b>	<b>2010<sup>110</sup></b>
<b>CO<sub>2</sub></b>	433-440	445-459	510
<b>CH<sub>4</sub></b>	40	52	56
<b>N<sub>2</sub>O</b>	45	50	50
<b>Total (net emissions projection)</b>		<b>524</b> (with consideration of carbon absorption factor)	<b>579</b> (with consideration of carbon absorption factor)
<b>Total (gross emissions)<sup>111</sup></b>	<b>518-525</b>	<b>561</b>	<b>615</b>

*Source: Italian Second National Communication, 1998, p.p. 141-149.*

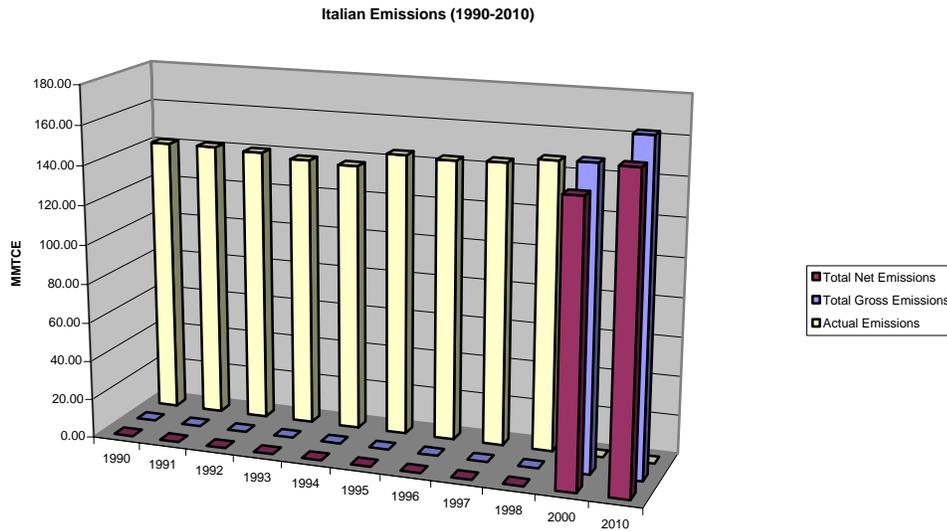
<sup>108</sup> For 2000 the projections are made by extrapolating the 1996-97 emissions trends to the year 2000 with the consideration of an average economic growth rate for 1997-2000 (governmental projections). For 2000 the total GHG emissions levels were projected to reach 445 MT CO<sub>2</sub>/year +1.5%.

<sup>109</sup> The data points within the Second National Communication and the UNFCCC greenhouse gas emissions database diverge for a number of observations. EcoSecurities chooses to report the data as shown in the original source.

<sup>110</sup> For 2010 projections, see a separate section in the Second National Communication, p. 149.

<sup>111</sup> Gross emissions projections are reported without considering the carbon absorption factor.

**Figure Appendix III.5: Comparative Emissions Profile, Italy: Historical Emissions Versus National Emissions Projections**



**Source:** EcoSecurities, 2001

To summarize, without going into a detailed analysis of reasons for Italian GHG emissions reduction performance, at the beginning of the 2000s Italy *could* become a potential (long-term) carbon credits seller, if only its energy profile will continue to heavily rely on natural gas and expansion of solar power. However, the nation is also mandated a 6.5 percent reduction of its national GHG emissions under the EU “Bubble” agreement. Although Italy appears to be closer than most EU nations to achieving stabilization of national emissions, it is not likely to achieve the total reduction of 33.651 MMTCO<sub>2</sub> equivalent (or, as mentioned before, 9.166 MMTCE) unless its overall value of emissions is being reduced by approximately 7 MMTCO<sub>2</sub> equivalent per annum, or 1.2% gross annual total GHG reduction.

Therefore, although long-term trends of Italian GHG emissions look promising – as long as CH<sub>4</sub> and N<sub>2</sub>O emissions continue to decline and there is a reasonable control of CO<sub>2</sub> emissions – we feel *that in the short-term the nation would become a buyer of international carbon credits.*

## Appendix III.6. NETHERLANDS

Table Appendix III.6.1: Netherlands, Historical GHG Emissions, in MMTCE (1990-1998):

NATIONAL TOTAL/ Netherlands (in MMTCE)				
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total
1990	43.955	7.392	5.556	56.904
1991	45.467	7.487	5.649	58.603
1992	45.004	7.185	5.843	58.032
1993	45.614	7.005	5.809	58.429
1994	45.856	6.881	5.970	58.708
1995	48.251	6.707	6.096	61.055
1996	50.337	6.661	6.063	62.062
1997	49.912	6.322	6.189	62.425
1998	49.406	6.095	6.046	61.546

*Source:* UNFCCC, greenhouse gas database

As can be seen in Table Appendix III.6.1, Dutch CO<sub>2</sub> emissions have fluctuated between the average of 1.5% increase to –0.5% decrease; however, from 1990 to 1998 carbon dioxide emissions increased by 12%. Better performance is witnessed with respect to methane emissions, which for the same period declined 17%. Still, the drop in methane emissions is offset by the growth of nitrogen oxide discharges, which increased by approximately 7%. In sum, judging by the sheer magnitude of carbon dioxide emissions, in 1998 the nation was far from meeting its –6% EU emissions reduction commitment.

How does this performance fit into the national emissions projections for the early 2000? The Dutch Central Planning Bureau (which constructed emissions projections for the Second National Communication) derived emissions forecasts for three scenarios, which take into account some of the latest insights into recent economic growth, energy prices and energy supply/demand:

- “**Favorable-High**” scenario (relatively *high* growth of energy-intensive industry and electricity exports);
- “**Favorable-Low**” scenario (relatively *low* growth of energy-intensive industry and electricity exports); and
- “**Trend**” scenario – economic development without consideration of the latest GHG emissions reduction measures announced by the Dutch *Third White Paper* on Energy Policy and *CO<sub>2</sub> Reduction Plan*.

**Table Appendix III.6.2. Netherlands, National Emissions Projections: Key Assumptions**

Variable/Scenario	Favorable	Trend
Economic growth	(?)	2.3%/year (1990-2020)
Population growth	(?)	0.5%/year (1990-2020)
Growth of industrial production	Low or high, depending on scenario (favorably-low <i>versus</i> favorably-high)	3.3%/year
Increase in energy prices	Moderate: to \$25/bbl/oil in 2020, From 2000 – an EU CO <sub>2</sub> /energy tax of \$10/bbl (for all large consumers)	Closer to \$20/bbl/oil in 2020
Growth of the number of dwellings	N/A; EU standards for electric appliances (energy efficiency measures)	1.0%/year
Growth of the number of cars	N/A; Favorable EU conditions for introduction of electric cars	0.7%/year (which is 24% higher in 2020 than in 1990)

*Source: Second National Communication, 1997, Section 5, p. 5-2.*

Under these scenarios, Dutch emissions projections for 2000-2020 appear as follows:

**Table Appendix III.6.3. National Emissions Projections, 1990-2020 (MMTCO<sub>2</sub> equivalent)**

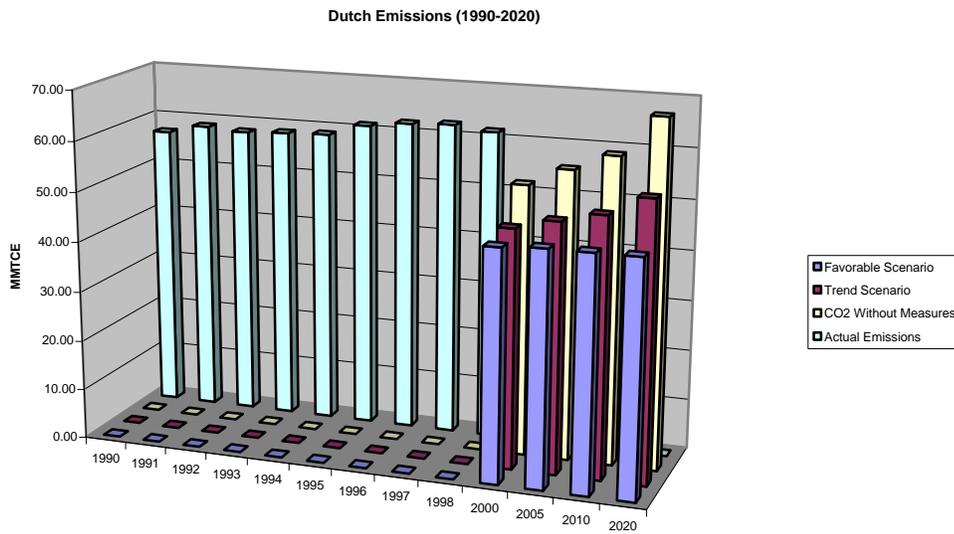
	1990 <sup>112</sup>	2000	2005	2010	2020
CO <sub>2</sub> (target)	161-173	168	168	168	168
CO <sub>2</sub> without measures	161-173	197	210	222	251
Trend scenario	161-173	170-177 (173.5)	181	188	202
Favorable scenario	161	168	170	170	170

*Note: the values for 2005, 2010 and 2020 are interpolated.*

*Source: Second National Communication, 1997, Section 5, p. 5-3.*

<sup>112</sup> Similar to the Italian example, the CO<sub>2</sub> emission data in the National Communication diverge from the records of historical emissions reported by the UNFCCC.

**Figure Appendix III.6: Comparative Emissions Profile, the Netherlands: Historical Emissions Versus National Emissions Projections**



**Source:** EcoSecurities, 2001

When compared to the historical level of emissions expressed in CO2 equivalents, the projections show that Netherlands is closer to the national emissions projections under the scenario reflecting no national GHG abatement measures. The historical level of carbon emissions has significantly acceded the target level for the year 2000: specifically, the 1998 emissions exceeded the target level by 8%.

In general, we project that regardless of noticeable reduction of methane emissions, *in the near future the Netherlands will appear to be the next carbon credit buyer.*

### Appendix III.7. NEW ZEALAND

Table Appendix III.7.1: New Zealand, Historical GHG Emissions, in MMTCE (1990-1998):

NATIONAL TOTAL/ New Zealand (in MMTCE)				
	CO <sub>2</sub>	CH <sub>4</sub>	N <sub>2</sub> O	Total
1990	6.918	9.592	3.229	19.739
1991	7.050	9.392	3.194	19.636
1992	7.562	9.223	3.198	19.983
1993	7.391	9.233	3.238	19.863
1994	7.408	9.290	3.282	19.980
1995	7.411	9.301	3.295	20.007
1996	7.702	9.289	3.280	20.272
1997	8.273	9.117	3.285	20.676
1998	7.883	9.105	3.284	20.272

*Note:* data for 1999 are not available

*Source:* UNFCCC greenhouse gas database

New Zealand's summary of emissions projections, presented in the Second National Communication, elucidates that the nation has slightly exceeded projected emissions growth: with respect to CO<sub>2</sub> emissions projections, the 1998 historical emissions were less than 0.001% above the forecasted value. However, with respect to methane emissions, the historical levels for 1998 were directly on the mark with respect to national projections. The reader can ascertain the validity of these claims comparing the data in tables 7.1 and 7.2.

The majority of national GHG emissions projections shown above are based on **the BAU scenario**. "Based on the BAU, carbon dioxide emissions are expected to rise by 28% ... between 1990 and 2000 if GDP growth averages 3% between 1995 and 2000."<sup>113</sup> In the absence of GHG abatement measures, national projections yield CO<sub>2</sub> emissions increase close to 46% by 2005.

Additional projections of CO<sub>2</sub> emissions assume a set of national measures, which would reduce emissions increase to 22% relative to 28% under the 'without measures' scenario. Namely, "... policy measures are estimated to reduce the growth in energy CO<sub>2</sub> emissions by about 21.5% below the "business-as-usual" growth path by 2000."<sup>114</sup>

In sum, the New Zealand emissions projections yield the following *multi-gas* estimates:

<sup>113</sup> New Zealand, Second National Communication, p. 75.

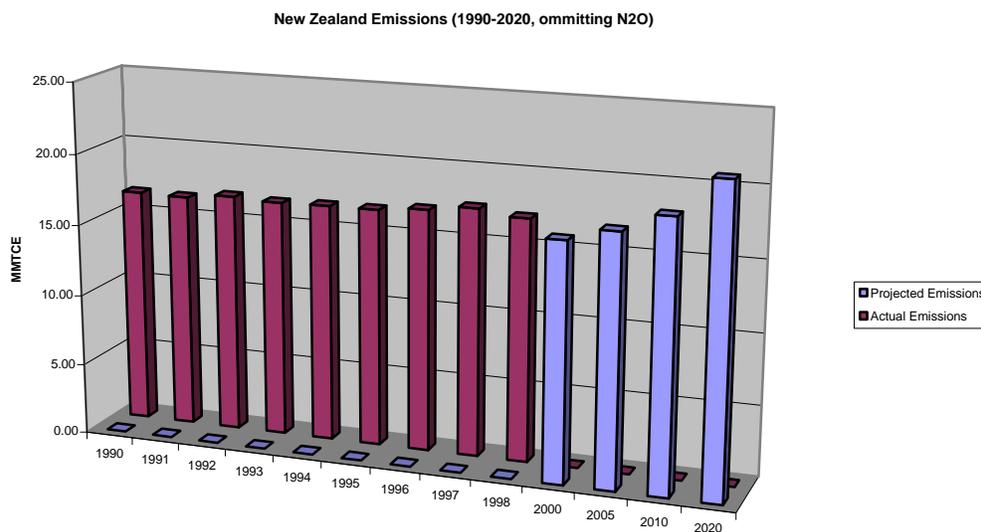
<sup>114</sup> Ibid., p. 75.

**Table Appendix III.7.2. New Zealand, GHG Emissions Projections, 1990-2020, in MMT CO2 Equivalent**

Gas	1990	1995	2000	2005	2010	2020
CO2	23.176 - 25.475	25.059	28.141	30.389	33.057	39.820
CH4	32	35	33	34	36	39
N2O <sup>115</sup>	775	806	899	775	806	868

*Source: Second National Communication, June 1997, p. 75.*

**Figure Appendix III.7: Comparative Emissions Profile, New Zealand: Historical Emissions Versus National Emissions Projections.**



*Source: EcoSecurities, 2001*

While the projections data for NO2 emissions appear to be inconclusive since they do not correspond to the historical levels of emissions reported by the UNFCCC in carbon dioxide equivalents, we assert that New Zealand's emissions profile proves that the nation has only marginally surpassed emissions limits negotiated under Kyoto (unless the N2O historical records are correct, which would imply that the nation has *twelve times* overshot (!) its national nitrous oxides emissions projections).

Specifically, under Kyoto agreements, New Zealand is allowed to retain 100% of its base year emissions. Therefore, the national goal is emissions stabilization for the year 2008 is close to 72.462 MMTCO2 equivalent or 19.739 MMTCE.

So far (in 1998) the country has acceded the 1990 stabilization goal by approximately 2.8%. **Therefore, in the short run it appears to join the camp of carbon credit buyers.**

<sup>115</sup> We observed substantial discrepancy between the volume of N2O emissions projections reported in the Second National Communication and the historical N2O emissions reported for New Zealand by the UNFCCC. We resort to reporting the data as they appear in the original and do not analyze the performance of N2O emissions.

Still, this conclusion is subject to qualifications depending on the availability of data reflecting the correct volume of N2O emissions in 1998-2000 as well as on the update data on CO2 emissions for 1999-2000.

Finally, we review the emissions data for Switzerland, after which we proceed to the cross-national comparison of country's performance.

### **Appendix III.8. SWITZERLAND**

**Table Appendix III.8.1: Switzerland, Historical GHG Emissions, in MMTCE (1990-1998):**

<b>NATIONAL TOTAL /Switzerland (in MMTCE)</b>				
	<b>CO<sub>2</sub></b>	<b>CH<sub>4</sub></b>	<b>N<sub>2</sub>O</b>	<b>Total</b>
<b>1990</b>	12.097	1.384	0.958	14.438
<b>1991</b>	12.608	1.389	0.965	14.964
<b>1992</b>	12.527	1.376	0.972	14.848
<b>1993</b>	11.867	1.363	0.975	14.206
<b>1994</b>	11.693	1.339	0.978	14.012
<b>1995</b>	11.933	1.334	0.976	14.243
<b>1996</b>	12.044	1.316	0.976	14.607
<b>1997</b>	11.863	1.287	0.968	14.129
<b>1998</b>	12.206	1.256	0.979	14.442

*Note:* data for 1999 are not available

*Source:* UNFCCC greenhouse gas database

National emissions forecasts are based on extending the present structure of electricity consumption/economic growth into the future, while retaining a heavy reliance on nuclear power and substantial electricity imports from France.

#### **Key assumptions on which Swiss forecasts are developed:**

- The economic and demographic framework follows the trend of the early 1990s, with the GDP growth of approximately 1.7%/annum and population increase of 600,000 by 2010;
- The nation actively pursues substitution of carbon-intensive for low-CO2 intensive sources of energy;
- The country goes through rapid implementation of the national energy policy, including voluntary producer GHG abatement measures (i.e., '**measures implemented**' scenario);
- Switzerland continues to purchase electricity from France until the end of projection/first Kyoto commitment period. If such assumption proves unrealistic, new installations of gas-powered plants would add 12% to domestic CO2 emissions.

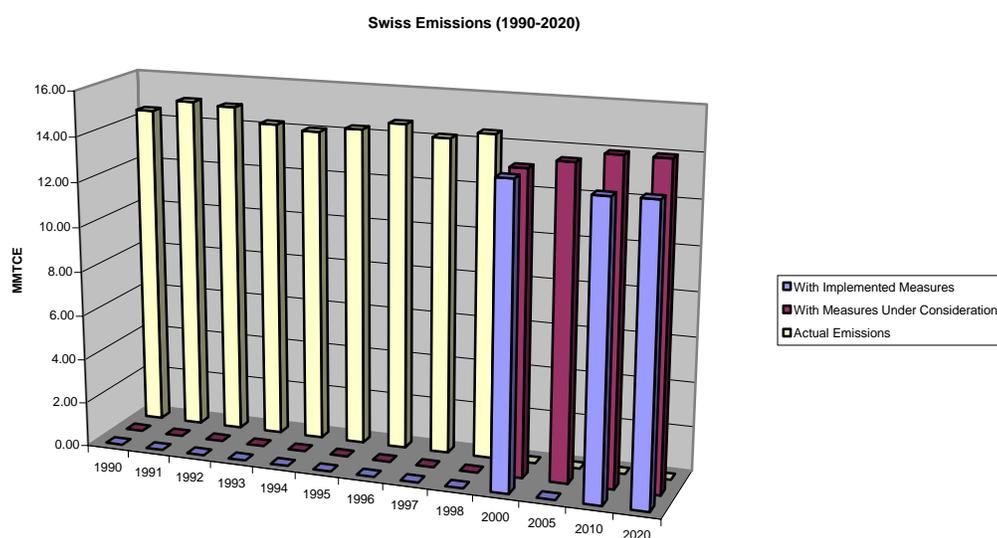
Econometric estimates based on the above assumptions yield the following forecasts:

**Table Appendix III.8.2. Switzerland, National GHG Emissions Forecasts, 1990-2020 (in MMT CO2 equivalent)**

Gas	1990	2000	2005	2010	2020
CO2 (with implemented measures)	44.8	41	42.6	44.6	45.1
CO2 (with measures under consideration)	44.5	40.9	N/a	39.9	39.5
CH4 (with implemented measures)	5.124 <sup>116</sup>	4.935	4.809	4.431	4.032
N2O (with implemented measures)	3.565 <sup>117</sup>	3.658	3.627	3.596	3.503

*Source: Second National Communication of Switzerland, 1997, p.p. 74-89.*

**Figure Appendix III.8: Comparative Emissions Profile, Switzerland: Historical Emissions Versus National Emissions Projections.**



*Source: EcoSecurities, 2001*

The Second National Communication (1997) stressed that the goals of the national Swiss energy program have been to stabilize GHG emissions in 2000 at the levels of 1990 emissions. Most dramatic decrease in GHG emissions was foreseen with respect to methane: methane emissions were projected to decline: between 1995 and 2010/ Put differently, a decline of close to 18% in methane emissions was expected.<sup>118</sup>

<sup>116</sup> The National Communication provides the data in original units of methane emissions, which is converted in CO2 equivalents by multiplying the Swiss data by the CH4 GWP equivalent to 21.

<sup>117</sup> The nitrous oxide data are also converted from measures Swiss Communication reported in original units.

<sup>118</sup> Second National Communication of Switzerland, 1997, p. 74.

Comparing the historical emissions data (in MMT CO<sub>2</sub> equivalent) to the above forecasts, we witness relative success of Switzerland with respect to stabilizing national emissions. Specifically, Swiss N<sub>2</sub>O and CH<sub>4</sub> emissions recorded in 1998 were close to the national emissions projections at the emissions stabilization level. For the same year, CO<sub>2</sub> emissions acceded national projections by approximately 1% (0.92%, to be more precise).

The Swiss Kyoto target is 92% relative to the 1990 base year, which would constitute total emissions reduction of approximately 4.240 MMT CO<sub>2</sub> equivalent (or 1.154 MMTCE). Relative to the total emissions recorded in 1998 this number constitutes a thirteen-percent decrease in emissions. Unless Switzerland launches an aggressive CO<sub>2</sub> tax, which is currently under discussion in the national legislature, it would not be able to meet its Kyoto commitment with the rate of emissions reduction for CH<sub>4</sub> and N<sub>2</sub>O based on the data reported for 1998.

At the same time, the US 'Bubble target' is not applicable since Switzerland as it is not a member of the European Union. Therefore, Switzerland could be placed in the same group with Japan, Australia, Canada and other non-EU states with respect to assessing its emissions reduction performance. And relative to the emissions reduction profile shown by EcoSecurities for the above state, Switzerland appears to be in the position of a net carbon credit seller as its relative rate of emissions increase is *lower* than the rate of emissions increase in other developed economies. ***Therefore, we hypothesize that Switzerland, regardless of the relatively small size of its emissions reduction market, could gradually become a net emissions credits seller*** (although detailed substantiation of this argument would require the data for 1999-2000).