



# Global Greenhouse Emissions



## T R A D E R

*A quarterly newsletter dedicated to greenhouse gas emissions trading*

### **UNCTAD and Earth Council launched 'Greenhouse Gas Emissions Trading Policy Forum' in Chicago** *Stephanie Foster, Frank Joshua, Michael Walsh*

The inaugural meeting to launch the Policy Forum on Greenhouse Gas Emissions Trading was successfully convened in Chicago, USA, on 19 and 20 June 1997. Sponsored by UNCTAD and the Earth Council, and hosted by the Chicago-based firm Centre Financial Products Limited, the event gathered together more than 50 senior policy makers and officials from Argentina, Brazil, Canada, Costa Rica, India, New Zealand, Norway, Poland, Russian Federation, Switzerland, The Netherlands, United Kingdom and United States of America. Senior corporate executives came from British Petroleum, Niagara Mohawk, Ontario Hydro, Norsk Hydro, British Gas, National Power, Powergen, General Motors, Wisconsin Electric Power Company, CNA Insurance Company, Bankers' Trust, and Katten, Muchin & Zavis. UNEP, UNFCCC Secretariat, The World Bank, OECD Secretariat, Greenpeace, and the World Business Council for Sustainable Development (WBCSD) also participated.

The meeting was co-chaired by Mr Maurice Strong, Chairman of the Earth Council and Executive Coordinator for UN Reform, and Dr Richard L. Sandor, President and CEO of Centre Financial Products Limited. The opening keynote address was delivered by Professor Ronald Coase, Nobel laureate in economics, 1991. In a lunchtime address to the inaugural meeting, US Commerce Secretary William Daley welcomed 'this important environmental initiative', stating that 'the move towards an international greenhouse gas emissions market, similar to the successful US programme for cost-effectively lowering acid rain, is both timely and appropriate'.

In his summing up of the Chicago meeting, Mr. Strong stated that a global consensus was emerging on the importance of international greenhouse gas trading in bringing about 'real, equitable, cost-effective and verifiable reductions in greenhouse gases'. The Forum, he said, represented a crucial and timely step in the right direction; one that would send a strong positive signal to governments participating in the negotiations on a protocol to the United Nations

Framework Convention on Climate Change. He argued that a market for greenhouse gases would provide a level playing field for the pursuit of international competition, would protect worldwide economic growth, and encourage new investments in sustainable development in developing countries and countries with economies in transition.

Mr Strong warned, however, that emissions trading was only one of many initiatives that need to be undertaken in combating climate change and could not be a substitute for domestic efforts to reduce pollution.

The Policy Forum will be a vehicle for interested governments, corporations and non-governmental organizations (NGOs) to work together towards the establishment of an initial-phase, pilot greenhouse gas emissions trading market by the year 2000, in accordance with the Kyoto Protocol. Under this arrangement, companies that succeed in holding their emissions below a legislated 'cap' level will be able to sell the spare capacity allowed by their permits to other companies looking for cost-effective solutions.

During the next two years the Forum will pursue an ambitious work programme that includes policy work on key issues such as an international participation agreement, model domestic legislation, monitoring, certification and enforcement; and market design and operational work. National training and institution building are also high on the Forum's agenda. The Forum is expected to meet again in November, in Toronto, Canada.

*Stephanie Foster is Executive Director, The Earth Council Institute, Toronto, Canada.*

*Frank Joshua is Head, Greenhouse Gas Emissions Trading, UNCTAD Secretariat, Geneva.*

*Michael Walsh is Senior Vice-President, Centre Financial Products Limited, Chicago, USA.*

Issue 2 • September 1997

### **Global Greenhouse Emissions**

#### T R A D E R

is published by the Greenhouse Gas Emissions Trading Project of the United Nations Conference on Trade and Development (UNCTAD)

#### **In this issue:**

*UNCTAD and Earth Council launched Greenhouse Gas Trading Policy Forum*

page 1

*Getting started: rationale for a limited-scale international Greenhouse Gas Emissions Trading Programme*

page 2

*The US SO<sub>2</sub> allowance programme*

page 3

*Forthcoming events*

page 5

*Greenhouse gas emissions trading: budgets, banking and borrowing*

page 5

*Recent news*

page 6

#### **Editor**

Frank T. Joshua

#### **Advisory Board**

John Cuddy Jostein Leiro  
Brian McLean Doug Russell  
Richard Sandor Maurice Strong  
Thomas H. Tietenberg  
Michael Walsh

#### **Consultant**

Alice LeBlanc

#### **Secretarial Assistant**

Alla Koljada



## Getting started: rationale for a limited-scale international Greenhouse Gas Emissions Trading Programme

Richard L. Sandor

In 1991 we began working with UNCTAD to design an international system of tradeable greenhouse gas (GHG) emission allowances as a contribution to the 'Rio process' and its search for workable mechanisms to deal with climate change. At that time, there was little support for the idea. Some felt that it was premature and should not detract from efforts to introduce more conventional measures such as carbon taxes and new regulations, or from the newly launched effort to gather support for a bilateral offsets programme (or 'joint implementation'). However, in just a few short years the idea of using tradeable permits to combat global warming appears to be gaining widespread acceptance.

Several factors have influenced the evolution of perceptions towards tradeable permits. One of the most important is the success of the US sulphur dioxide (SO<sub>2</sub>) allowance trading programme. Responding to incentives, participants in this programme have reduced emissions ahead of schedule and at a cost far lower than even the most optimistic forecasts. This major success has piqued the interests of both the environmental and business communities because it reflects the win-win nature of emissions trading. Pollution is strictly limited and precisely measured, and industry is allowed to be creative in its compliance.

With an agreement to reduce GHG emissions potentially emerging from Kyoto, we must now prepare for the challenge of moving from the drawing boards to implementation. A wealth of lessons is available to us from inventive processes ranging from aircraft to computers to new commodity markets. The evolutionary development pattern observed for many international treaties and, as well, for cooperative compacts such as the European Community, is also pertinent. The lessons leave us convinced that the only viable approach to the realization of a large-scale GHG trading system is to begin with a simple limited-scale programme. Provisions to add

additional participants, gases, and emission sources and sinks should be included to assure the market's structured evolution over time. A coalition of 'market leaders' is now being formed consisting of leading governments, energy companies, insurance companies and financial institutions. The first step is to agree on a plan for the operationalization of the programme.

A limited-scale GHG trading programme is an essential step on the path to a larger international trading system, so we must act now. But pioneers will be needed to face the challenge of innovation. It is in the interest of the major emission sources to assume the pioneering role.

### The economic significance of lower-cost emission reductions

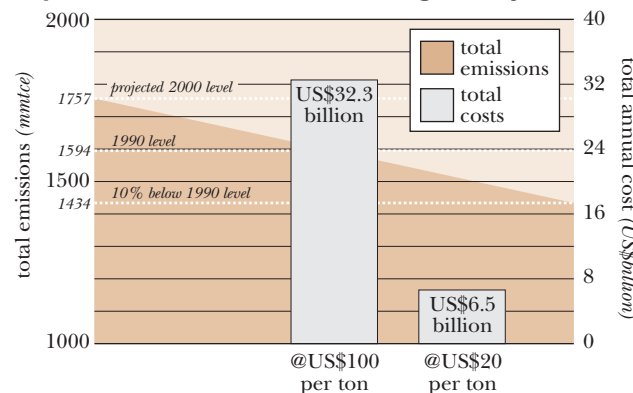
The economic benefits of driving down the cost of cutting greenhouse gas emissions are impressive. We have considered some simple cost scenarios for lowering total US emissions to 10 per cent below 1990 levels starting in year 2000. Using the latest US numbers, such a cut would require a reduction of 323 million metric tons carbon equivalent (mmtce) to go from projected 2000 level of 1,757 mmtce to 10 per cent below the 1990 level of 1594 mmtce.

At a reduction cost of US\$100 per ton the annual US cost would total \$32.3 billion. On the other hand, consider a US\$20 per ton cost, a price in the range

of many proposed offset transactions and a level which many analysts believe would generate very large emission reduction quantities. If a market system succeeds in driving the cost down to US\$20 per ton, the annual US cost would total US\$6.5 billion. This total cost figure is less than 0.09 per cent of US national income (1996 GDP), or 1.3 per cent of the 1993 US final energy bill (US\$493 billion). Similar numbers arise for Canada, but costs as a fraction of national income are far lower for Japan and the European Union. The bottom line is the industrialized world can take very meaningful steps to bring down GHG emissions at a cost that is rather small, provided we use methods that help drive down compliance costs.

Prior to launch of the US SO<sub>2</sub> emissions cap-and-trade programme, forecasts put compliance costs in the range from \$600 to as high as \$1500 per ton. The first trades were executed in 1992 at around \$300 per ton, and in 1993 the price from the first EPA/Chicago Board of Trade auction was \$131 per ton. In 1996 the auction price dropped to \$66, and in 1997 the auction price was \$107. To summarize, emissions came down ahead of schedule (in 1995 and 1996 total emissions were more than 34 per cent below allowed levels), and the market tells us that national current per-ton cost of lowering emissions is a small fraction of the original projections. If a greenhouse gas trading programme can

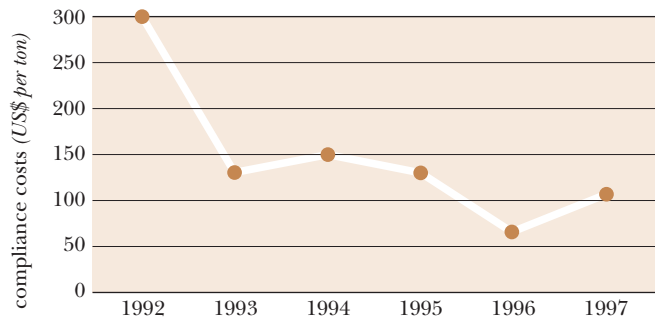
Cost scenarios for a reduction in total US emissions to 10 per cent below 1990 levels starting in the year 2000



At a reduction cost of US\$100 per ton, the annual cost to reduce total US emissions from projected 2000 levels to 10% below 1990 levels would total US\$32.3 billion; if a market system succeeds in forcing the reduction cost down to US\$20 per ton, the annual cost would be US\$6.5 billion—less than 0.09% of US national income.



Allowance prices under the US SO<sub>2</sub> emissions cap-and-trade programme



Prior to launch of the US SO<sub>2</sub> allowance programme, compliance costs had been forecast as high as US\$1500 per ton. Actual trading prices dropped to as low as US\$66 per ton, whilst total emissions in 1995 and 1996 were reduced to less than 66 per cent of allowed levels.

bring the same sort of cost-lowering effect, it would move us from facing a potentially significant drag on our economies to one that is for practical purposes economically imperceptible.

How do we get started?

To date we have treated our atmosphere as an unlimited resource, available to all, in unlimited quantities, at no charge. It is no wonder we have managed to fundamentally alter its chemical composition! To respectfully treat the atmosphere as the limited resource it truly represents, we must place limits on its consumption, and institute a process for treating it responsibly. Nobody owns the atmosphere now, so nobody takes account. Enforcing a legal ownership will help usher in an era of responsibility and care. The zero price now being charged for use of the atmosphere tells us a market is missing and must be introduced.

The first step in developing the missing GHG market is to define the commodity. This requires an

international agreement among market participants that limits total emissions and delineates the basis for the creation of the property right or commodity. Other key ingredients needed to implement the market include participants' baseline emission rates, initial allowance allocations, and protocols for monitoring emissions and calculating the benefits of emission avoidance or sequestration programmes.

The lessons from the introduction of new markets tell us the following steps are needed:

- Clearly define the tradeable commodity for greenhouse gas emissions
- Establish a market oversight body
- Establish emission baselines
- Clearly specify allocation and monitoring procedures
- Establish uniform, non-segmented allowances
- Launch an international allowance clearinghouse and registrar
- Employ existing exchange and trading systems

- Use allowance auctions to assist the market
- Develop standardized trade documentation
- Require cooperation among trade forums, including provisions for information sharing and mutual offset
- Use existing expertise to design bookkeeping and accounting systems
- Provide for assistance to market forums in emerging economies

Conclusion

Emissions trading is an environmental and economic winner. Trading must be near the top of the full menu of policies that will be needed to prevent the costly threat of climate change. We must act now to exploit this opportunity to make the vital first step in the direction of protecting the environment with firm emission limits achieved through incentives and the creativity of the private sector. Leaders are needed now to send a clear message that this is the best way forward. And the skills possessed by innovative private entities and leading government and non-government organizations must be brought to bear on this exciting and promising challenge.



Richard L. Sandor is Chairman and Chief Executive Officer, Centre Financial Products Limited, Chicago, USA.

The US SO<sub>2</sub> allowance programme

Brian McLean

(Note: This is the second of two instalments; see Issue 1, April 1997).

At this point, with almost two years of operating experience, several observations can be made about the SO<sub>2</sub> allowance programme.

First, traditional operating permits can be greatly simplified. With rigorous emission monitoring and the flexibility of an allowance system there is no need for

setting source specific emission limits, specifying control technology, or requiring detailed compliance schedules.

Second, transaction costs can be made very small because the government involvement in an allowance transaction simply involves recordation, not case-by-case review or approval, and the source has numerous venues in which to transact allowances. There are hundreds of allowance holders, several brokers, and

the annual no-fee government allowance auctions. Furthermore, the decision to trade is not a standalone one, but part of a company's overall compliance strategy.

Third, the ability to bank allowances can reduce cost and lead to significant early emissions reductions, but it also can extend the time for achieving the ultimate emission reduction target.

Fourth, continuous emissions monitoring can be expensive, particularly



for installation of elevators and platforms for tall stacks and for frequent quality assurance, but accurate monitoring and timely reporting are also critical to the credibility of the entire trading programme and their cost is modest when compared to the overall cost savings. The cost of monitoring at more than 2000 sources for SO<sub>2</sub>, NO<sub>x</sub> and CO<sub>2</sub> has been estimated at about \$200 to \$300 million per year compared to the cost savings for the SO<sub>2</sub> programme alone of \$2 to \$3 billion per year.

*Fifth*, phasing in the participation of sources can complicate administration and undermine achievement of emission reduction goals and has been perhaps the most serious flaw of the SO<sub>2</sub> allowance programme. Two types of problems can occur: a) with interconnected electric utility grids, participating sources can shift electrical load to non-participating sources whose emissions could increase and undermine the emission reduction goal; and b) if sources in a particular region are allowed to participate voluntarily while others in the same region can choose not to participate, there is a risk of allowances being earned by the voluntary participants and used by other participants in lieu of reducing emissions, while the non-volunteering sources increase their emissions and cause a net increase in emissions.

In retrospect, all affected sources should have been included from the outset in Phase I with emissions limitations tightened in Phase II to accomplish the goals of the programme.

*Sixth*, capping total emissions coupled with allowance system compliance flexibility are compatible with electric power industry restructuring. The electric industry is the largest source of SO<sub>2</sub> in the United States and one of the largest sources of NO<sub>x</sub>, mercury deposition, fine particulates and CO<sub>2</sub>. The industry is also undergoing a major restructuring from one dominated by regulated monopolies to one which will be competing nationally on price and availability.

*Seventh*, cost savings can exceed expectations. Since 1990, the projected cost of compliance with the full SO<sub>2</sub> emissions reductions has declined from

\$4 billion per year to less than \$2.0 billion per year, against an annualized cost of compliance without trading of \$4.9 billion. Although some of the cost savings can be attributed to the unexpected lack of increase in fuel prices, competitive markets do continuously seek more cost-effective solutions, leading to more rapid innovation and cost savings.

*Eighth*, governmental administrative costs can be much lower than traditional programmes. By streamlining permitting, eliminating case-by-case review of trades, removing government participation in compliance decisions, and focusing instead on the measurement of emissions produced by affected sources, considerable public resources can be saved.

One governmental decision not eliminated by the allowance trading system is the need to allocate allowances. This usually requires some consideration of historical utilization and emissions information. For traditional programmes, historical (and sometimes future) utilization and emissions information are required as each source receives an emission limit or applies for approval of a trade. For an allowance trading programme this activity occurs once for all participating sources at the beginning of the programme. The advantage of this is more equitable and consistent treatment of sources, and elimination of what have often been lengthy delays in the approval of trades.

### Conclusions

From the SO<sub>2</sub> allowance programme we have learned several things about designing and implementing effective and efficient environmental programmes.

*First*, actions prior to programme design are important. This is where our best scientific understanding is brought to bear on defining the problem and setting goals, where the economic, social, and environmental implications of alternative solutions are evaluated, and where the appropriateness of using a market-based approach is explored. It is also during this stage that the public's acceptance and support of the proposed solutions is assessed. Market-based instruments are tools to solve problems, but first the problem must be defined, goals set, and

the need to take action accepted.

*Second*, the design of the programme is critical because it determines whether effective and efficient implementation is possible. The goals and responsibilities should be clearly stated, and there should be unequivocal consequences for not complying or for delaying implementation. From the beginning of the programme the emissions of all potentially affected sources should be accounted for and a maximum allowable emissions level (or cap) should be established (and sustained). Accurate measurement of emissions is the key to environmental accountability, market credibility, and operational flexibility. Allowance allocation is primarily a political process, not an environmental one. Overall, the design should be simple. This will ensure faster start-up, greater certainty for all stakeholders, and lower administrative cost.

*Third*, in implementing the programme, government should stay focused on achieving the goals in the legislation, resolving issues promptly, and improving operational efficiency. Government should refrain from trying to participate in, control, or fine tune the market, particularly since many changes, such as restructuring, may occur outside the regulator's purview. This focus should provide the certainty, efficiency, and stability desired by all and necessary for optimal market performance. All those involved in implementing the programme—government and industry—should maintain a vigorous dialogue with the goal of continuous improvement in both the environmental effectiveness and the operational efficiency of the programme.

Even though it has been only six years since its enactment, the SO<sub>2</sub> allowance programme is providing useful lessons for effectively and efficiently protecting public health and the environment. The programme also serves as a benchmark against which other air pollution control and market-based programmes can be measured.

*Brian McLean* is Director, Acid Rain Division, US Environmental Protection Agency, Washington, D.C.



### Forthcoming events

#### September 2–3, London, UK

Workshop: 'Defining and Trading Emission Commitments in the Kyoto Agreement', organized by The Royal Institute of International Affairs (Chatham House).

**Contact: Michael Grubb,**  
Tel: (44) 171 957 5700 Fax: (44) 171 957 5710

#### September 4–5, Prague, Czech Republic

Workshop on Greenhouse Gas Emissions Trading, sponsored by the Governments of Norway and the United States.

**Contact: Carol Berrigan (Washington, D.C.),**  
Tel: (1) 202 393 1648 Fax: (1) 202 628 8498

#### September 5–7, Baltimore, Maryland, USA

Workshop on Biotic Mitigation Measures as Part of a Future Implementation Regime, organized by Trexler and Associates, Inc.

**Contact: Mark Trexler,**  
Tel: (1) 503 786 0559 Fax: (1) 505 786 9859

#### September 8–9, Washington, D.C., USA

Offsets Forum, Center for Clean Air Policy.

**Contact: David Festa,**  
Tel: (1) 202 408 9260 Fax: (1) 202 408 8869

#### September 18–19 Washington, D.C., USA

Meeting of Invited Experts on the Design of a Domestic Greenhouse Gas Emissions Trading System in the United States, sponsored by the Center for Clean Air Policy.

**Contact: Tim Hargrave,**  
Tel: (1) 202 408 9260 Fax: (1) 202 408 8869

#### October 1, Paris, France

Workshop, Annex I Expert Group on the UNFCCC, organised by the OECD and IEA Secretariats

**Contacts: Fiona Mullins (OECD),**  
Tel: (33) 1 45 24 96 97 Fax: (33) 1 45 24 78 76;  
**and Richard Baron (IEA),**  
Tel: (33) 1 40 57 67 24 Fax: (33) 1 40 57 67 09

#### October 20–31, Bonn, Germany

Eighth Session of the Ad Hoc Group on the Berlin Mandate

**Contact: UNFCCC, P.O. Box 260 124, D-53153 Bonn, Germany,**  
Tel: (49) 228 815 1000 Fax: (49) 228 815 1999  
e-mail: secretariat@unfccc.de

#### October 27–29, Phoenix, Arizona, USA

Meeting of the Emissions Marketing Association

**Contact: Dan Chartier,**  
Tel: (1) 414 221 4618 Fax: (1) 414 221 2169

#### November, Toronto, Canada

Second Session of the Policy Forum on Greenhouse Gas Emissions Trading  
Sponsored by UNCTAD and The Earth Council

**Contacts: Frank T. Joshua (UNCTAD),**  
Tel: (41) 22 917 5834 Fax: (41) 22 907 0274  
e-mail: frank.joshua@unctad.org  
**and Stephanie Foster (Earth Council),**  
Tel: (1) 416 203 8601 Fax: (1) 416 203 7837  
e-mail: ecfoster@web.net

#### December 1–12, Kyoto, Japan

Third Conference of the Parties to the FCCC

**Contact: UNFCCC, P.O. Box 260 124, D-53153 Bonn, Germany,**  
Tel: (49) 228 815 1000 Fax: (49) 228 815 1999  
e-mail: secretariat@unfccc.de

## Greenhouse gas emissions trading: budgets, banking and borrowing

Alice LeBlanc

In the latter part of 1996, the United States government proposed a framework and key elements for a protocol under the United Nations Framework Convention on Climate Change to guide greenhouse gas emissions reductions in the post-2000 period. Since the US has both the largest economy and the most greenhouse gas emissions among the nations of the world, the proposed protocol deserves careful examination. Highlights include:

- developed countries' specific commitments would take the form of emissions 'budgets', i.e. cumulative or average emissions over multi-year periods;
- emissions trading would be allowed between countries with emissions budgets that are also in compliance with other key obligations under the agreement;
- Joint Implementation (JI), by which countries without emissions budgets could create and transfer emissions reduction credits, would also be allowed;
- banking, or saving for future use emissions not used during one budget period, would be permitted, as would limited borrowing (with a penalty) of emissions from a future time period;
- countries with emissions budgets must establish national systems to measure emissions accurately and to report annually on measurement, compliance and enforcement efforts for the relevant budget period;
- developing countries must report annual emissions inventories and steps taken to reduce emissions; and
- a new category of Parties would be created (Annex B) to encourage rapidly developing countries to adopt emissions budgets voluntarily.

### Emissions trading and crediting of JI projects

Both of these options for meeting emissions limitation commitments (emissions trading between countries with

emissions budgets and transfer of credits from JI) are essential to achieving cost-effective reductions. Both options are voluntary. Countries with emissions budgets could participate or not in a capped trading system. If they choose to participate, they could integrate this participation with their own domestic emissions reductions measures, as they see fit. For example, a country's participation in an international, capped trading system could be integrated with a domestic greenhouse gas trading system by allowing individual companies or entities within the country to trade directly with international partners. A domestically levied carbon tax or centrally planned regime might also be integrated with an international emissions trading system where trading is carried out at the government level.

Under the proposed protocol, countries could establish domestic regimes of their choosing for achieving compliance, including: the establishment of emissions limits and the allocation of allowances for trading at the primary fuel producer or at the major emitter level; levying carbon taxes; legislating efficiency standards; or adopting other centrally planned measures. Monitoring and measurement of emissions could occur at the primary fuel producer/importer level or be performed by major sources of emissions, or some combination of these two approaches.

### Multi-year emissions budgets

Multi-year emissions budgets for purposes of compliance with an international protocol would provide countries with more flexibility in meeting targets by eliminating international scrutiny and potential sanctions on an annual basis. This would give countries more control over their internal greenhouse gas mitigation regimes. From the standpoint of climate change impact, the difference in annual and multi-year budget periods, for any of the budget period lengths contemplated, is insignificant. Since there are no localized impacts of carbon dioxide emissions, the



## Recent news

**Communique of The Denver Summit of The Eight, 22 June 1997**, stated: 'Our ultimate goal must be to stabilize atmospheric concentration of greenhouse gases at an acceptable level. This will require efficient and cost-effective policies and measures sufficient to lead to a significant reduction in emissions. International cooperation will be essential. At the Third Conference of the Parties to the UN Framework Convention on Climate Change in Kyoto we must forge a strong agreement that is consistent with the Berlin Mandate and that contains quantified and legally-binding emission targets. We intend to commit to meaningful, realistic and equitable targets

that will result in reductions of greenhouse gas emissions by 2010. The agreement must ensure transparency and accountability and allow Participants flexibility in the manner in which they meet their targets.'

**Wall Street Journal, June 27, 1997.** In his address to the Special Session of the UN General Assembly on June 26, US President Bill Clinton said 'The science is clear and compelling: We humans are changing the global climate.' He noted that the US, with 4 per cent of the world's population, already produced more than 20 per cent of its greenhouse gases. He also said 'We must

create new technologies and develop new strategies like emissions trading that will both curtail pollution and support continued economic growth.' He vowed to work with the American people and the US Congress, and to 'bring to the Kyoto conference a strong American commitment to realistic and binding limits that will significantly reduce our emissions of greenhouse gases.' Mr Clinton said he will convene a White House Conference on Climate Change later this year 'to lay the scientific facts before our people to understand that we must act, and to lay the economic facts there so that they will understand the benefits and the costs'.

emissions path over the budget period will not have adverse local impacts.

Administrative burden should be one consideration in determining the length of the budget periods. The assessment of compliance at the international level will be facilitated by multi-year budget periods. A yearly evaluation and assessment of compliance at the international level, and application of sanctions if a country is not meeting its commitments, would require an almost constant review and enforcement process. The UNFCCC currently requires a review of adequacy of commitments to be carried out every three years. Compliance assessment could also be put on a three-yearly basis, or a multiple of three years, so that compliance assessment coincides with the review of the adequacy of commitments.

Regardless of the length of the budget periods for international compliance, each country can set its own emissions budget period for domestic review and compliance, as long as these are consistent with the budget periods under the Convention. For example, compliance assessment and the denomination of allowances for a domestic trading system could be annual, regardless of the number of years in the emissions budget periods under the Convention. An annual assessment of compliance at the national level would be consistent with the annual

measurement of emissions under the Convention. This would enable each country to monitor more closely its own compliance with international emissions budget periods. In theory, multi-year budgets should not have much impact on trading since the same number of allowances are available to trade as in annual budget periods. In practice, multi-year budgets might discourage some trading in the early part of the budget period. However, if allocation of allowances and compliance assessment for domestic trading regimes are on an annual basis, the potential negative impact on trading under multi-year international emissions budgets will be removed.

### Banking and borrowing

Banking of emissions allowances or credits for future use is a good idea from an environmental perspective because it encourages early reductions and over-compliance. From an economic perspective, it allows more flexibility as to when reductions can be made and, therefore, has a potential for cost savings. As proposed by the United States, the amount of emissions that could be 'borrowed' would be strictly limited, and any borrowing would require a replacement with interest—i.e. more emissions would have to be paid back than are borrowed. The ability to borrow from

the future in a national carbon account might tend to discourage international trading. In the limited amount proposed, borrowing would not have a significant environmental impact; in fact the interest on the replacement might result in a small environmental benefit. However, if emissions trading and JI crediting are allowed, borrowing would likely be unnecessary. Given the controversy surrounding the concept of borrowing, if it is perceived to be necessary, its introduction could well be delayed until emissions reduction commitments are strengthened and a track record of compliance with reduction obligations is established.

*Alice LeBlanc is a private consultant.*

### Global Greenhouse Emissions

#### T R A D E R

can be obtained free of charge from:

**UNCTAD Secretariat  
Greenhouse Gas Emissions Trading Project  
Palais des Nations, 1211 Geneva 10,  
Switzerland**

For further information, contact:

**Frank Joshua  
Tel: (41) 22-917 5834/5831 Fax: (41) 22-907 0274  
e-mail: frank.joshua@unctad.org**

*Views, comments and contributions from readers are welcome. The views expressed in this newsletter are those of the authors and do not necessarily reflect the views of their institutions.*