



Second session of the UNCTAD-Earth Council Emissions Trading Policy Forum held in Toronto

Stephanie Foster, Frank Joshua, and Michael Walsh

The second session of the UNCTAD-Earth Council Greenhouse Gas Emissions Trading Policy Forum was convened on 12–14 November in Toronto, Canada, under the auspices of the Earth Council Institute. The meeting was chaired by Mr Maurice Strong, Chairman of The Earth Council. Mr Dan Leckie, Toronto City Councillor and President of the Toronto Atmospheric Fund, delivered the luncheon address. The Forum held its inaugural session in Chicago in June 1997, hosted by the Chicago-based firm Centre Financial Products Limited.

The meeting was attended by more than 60 senior policy makers and officials from both developed and developing countries (including from Australia, Brazil, Canada, France, Netherlands, Norway, Poland, Russian Federation, Ukraine, United Kingdom, and United States of America), executives from major corporations (including British Gas, Ontario Hydro, Norsk Hydro, National Power, PowerGen, Wisconsin Electric Power Company, Electricite de France, KPMG, SGS Forestry, Lloyd's Register, Centre Financial Products Limited), as well as representatives from the Centre for Clean Air Policy, Environmental Defence Fund, Resources for the Future, World Resources Institute, Toronto Atmospheric Fund, Earth Council, UNCTAD, UNEP, OECD, GEF, IUCN, Combined Heat and Power Association, and the North American Commission for Environmental Cooperation.

Aims and objectives of the Policy Forum

The meeting was called to consider the Policy Forum's Work Plan for the post-Kyoto period. The aim of the Policy Forum is to provide timely support to interested governments, corporations, and non-governmental organizations in their efforts to design and implement an initial-phase international greenhouse gas emissions trading system, in accordance with the Kyoto Protocol to the United Nations Framework Convention on Climate Change. The goal of the Forum is to launch a market for trading in greenhouse gas emission allowances and reduction credits by the

year 2000, thus contributing to the early and effective implementation of the Kyoto Protocol.

The Policy Forum is dedicated to facilitating a dialogue among a core group of government policy makers, corporate executives and leaders of non-governmental organizations for the purpose of identifying feasible steps to implement the emissions trading market. This includes:

- (a) assisting the Parties of the Kyoto Protocol in their efforts to establish a comprehensive regulatory framework for emissions trading (including with respect to defining the tradeable commodity, accounting, monitoring, certification, reporting, non-compliance, and enforcement); and
- (b) assisting national authorities and market makers in their efforts to develop efficient trading rules, trading instruments and supporting institutions.

This initiative is an outgrowth of several years of research by UNCTAD into the feasibility of a global greenhouse gas emissions trading market, and the Earth Council's Global Environmental Trading System initiative, launched in 1995. Furthermore, the success of the United States sulphur dioxide allowance trading programme in dramatically reducing SO₂ emissions well ahead of schedule, and at significantly lower cost than had been predicted, provides a proven model that emissions trading can bring early and quantifiable environmental, economic and social benefits.

Main elements of the Work Plan

The Toronto meeting established two Working Groups:

- The Policy Framework Working Group; and
- The Market Design and Operations Working Group.

The *Policy Framework Working Group* will assist the Parties to the Kyoto Protocol in their efforts to establish a comprehensive regulatory framework for emissions trading, including defining the tradable commodity, accounting, monitoring, certification, reporting, non-compliance, and enforcement.

The *Market Design and Operations Working*

Issue 3 • December 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:

Second session of the UNCTAD-Earth Council Emissions Trading Policy Forum held in Toronto
page 1

Why emissions trading makes environmental and economic sense
page 3

Ten design elements of an initial-phase international greenhouse gas emissions trading system
page 4

Domestic greenhouse gas trading in the United States
page 5

Forthcoming events
page 5

UNCTAD publications and papers on greenhouse gas emissions trading, 1992–97
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

Sheila Addy



Group will assist national authorities and market makers to develop efficient trading rules, trading instruments and supporting institutions.

The activities of the Forum will be overseen by a *Steering*

Committee, to be co-chaired by Mr. Maurice Strong and the Secretary-General of UNCTAD, Mr Rubens Ricupero.

UNCTAD and The Earth Council, as sponsors of the Forum, will ensure regular coordination with the Climate Change Secretariat.

Institutional structure of the Policy Forum

Policy Framework Working Group



From left to right:

Chairman Maurice Strong, Chairman of the Earth Council, Executive Coordinator for UN Reform, and Senior Advisor to the President of the World Bank

Vice-Chairman Dirk Forrister, Chairman, White House Climate Change Task Force

Special Advisor Douglas Russell, Former Head of Canadian Climate Change Delegation, and partner, GCSI

Secretary Frank T. Joshua, Head, Greenhouse Gas Emissions Trading, UNCTAD Secretariat

Key substantive outputs

- Review and analysis of the Kyoto Protocol and related COP-3 decisions
- International participants' agreement
- Guidelines on domestic legislation
- Technical guidelines on domestic allowance allocation practices
- Guidelines on trading system expansion (opt-in provisions)
- Guidelines on emissions and sinks monitoring and certification
- Allowances and credits tracking system
- Guidelines on transfers and accounting
- Guidelines on reporting
- Guidelines on non-compliance and enforcement
- Public data systems
- International GHG development Fund
- National training programmes and modules
- Quarterly Newsletter and Publications

Steering Committee



From left to right:

Chairmen Rubens Ricupero, Secretary-General of UNCTAD; and Maurice Strong, Chairman of the Earth Council, Executive Coordinator for UN Reform, and Senior Advisor to the President of the World Bank

Vice-Chairmen Dirk Forrister, Chairman, White House Climate Change Task Force; and John Cuddy, Coordinator, Sustainable Development, UNCTAD Secretariat

Secretary Stephanie Foster, Executive Director, Earth Council Institute

Other members Frank Joshua, Douglas Russell, Richard Sandor, Michael Walsh

Market Design and Operations Working Group



Chairman (above left) Richard L. Sandor, Chairman and CEO, Centre Financial Products Limited

Vice-Chairman (to be decided)

Special Advisor (to be decided)

Secretary (above right) Michael Walsh, Vice-President, Centre Financial Products Limited

Key substantive outputs

- Trading rules—transfers and registration
- Model trading contracts
- Allowances and credits tracking system
- Institutional arrangements (clearinghouse services; commodity exchanges; financial exchange services; etc.)
- Guidelines for market auctions
- Voluntary trading groups
- Guidelines on legal, tax and accounting practices
- International emissions trading association
- Transactions information systems
- National training programmes and modules
- Publications

Market development timetable

1997

- establishment of the Greenhouse Gas Emissions Trading Policy Forum
- Work Plan development

1998

- design and implementation of the policy and regulatory frameworks
- design and implementation of the market mechanisms
- training, institution and capacity-building

1999

- design and implementation of the policy and regulatory frameworks
- design and implementation of the market mechanisms
- training, institution and capacity-building

2000

- implementation of policy and regulatory instruments
- implementation of market instruments
- training, institution and capacity-building
- market preparation and market launch.



Why emissions trading makes environmental and economic sense

Frank T. Joshua and Douglas Russell

Consider a simple numerical example

Two countries, A and B, decide to reduce their greenhouse gas emissions by 10 tons of CO₂ each.

Country A faces a marginal abatement cost of \$10 per ton of CO₂.

Country B faces a marginal abatement cost of \$100 per ton of CO₂.

Under a 'no-trading' scenario (see box, below left), each country will be obliged to undertake all emission reductions within its own borders.

Under the 'emissions trading' scenario (below right), Country A would

have an incentive to reduce its own emissions well below its obligated level and sell the additional tons reduced to Country B.

With emissions trading, the overall emissions reduction target of 20 tons of CO₂ will be achieved while both countries would experience substantial cost savings.

Result

Cost savings with emissions trading amount to \$450, a 40 per cent saving over the cost of achieving an identical reduction in a no-trading scenario.

Lessons

- Set clearly-defined numerical emission reduction targets and timetables.
- Make the agreement legally binding (with penalties for non-compliance).
- Provide for accurate monitoring and reporting.
- Certify and record all transfers and acquisitions of emission allowances.
- Minimizing compliance cost is essential to:
 - encourage early and substantial emissions reductions, and
 - sustaining economic growth and world trade.

Scenario one: no trading

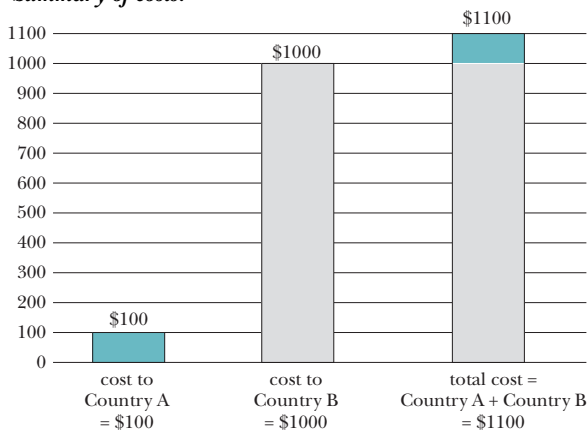
Country A

Emission reduction target = 10 tons
Reduction cost per ton = \$10
Cost of reducing emissions by 10 tons = \$10 x 10 = \$100

Country B

Emission reduction target = 10 tons
Reduction cost per ton = \$100
Cost of reducing emissions by 10 tons = \$100 x 10 = \$1000

Summary of costs:



If no trading, the cost to reduce emissions by 20 tons of CO₂ would be as follows:

Cost to Country A = \$100
Cost to Country B = \$1000
Total cost = \$1100

Scenario two: emissions trading

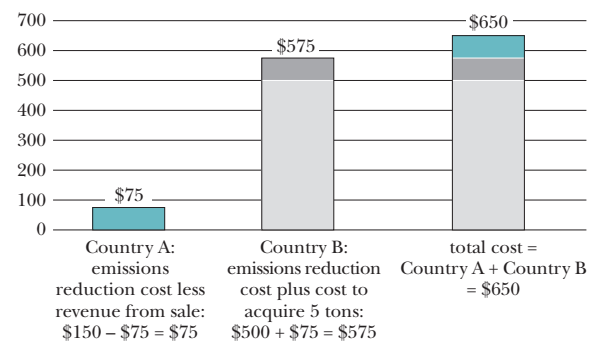
Country A

Emissions reduction target = 10 tons
Reduction cost per ton = \$10
Transfer of 5 tons to Country B: revenue received = \$75
Emissions reduction = 15 tons: cost = \$10 x 15 = \$150
Cost to Country A = \$150 - \$75 = \$75

Country B

Emission reduction target: 10 tons
Reduction cost per ton: \$100
Acquisition of 5 tons from Country A @ \$15 per ton: cost = \$75
Emissions reduction = 5 tons: cost = \$100 x 5 = \$500
Cost to Country B = \$500 + \$75 = \$575

Summary of costs:



Cost to Country A to reduce emissions by 15 tons = \$150
less revenue from sale of 5 tons to Country B = (\$75)
Cost to Country B to reduce emissions by 5 tons = \$500
plus purchase of 5 tons from Country A = \$75
Total cost: \$650

Ten design elements of an initial-phase international greenhouse gas emissions trading system

Frank T. Joshua and Richard L. Sandor

1. Eligibility

Countries with quantified emission limits (cap and trade)

2. Commodity

Emission allowances
Emission credits
JI credits

3. Domestic allocation

Allocate allowances to selected domestic entities (e.g. major stationary emission sources such as energy utilities, oil and gas companies, etc.).

Criteria: emission sources should be easy to monitor and measure accurately.

4. Monitoring and accounting

Accurate emissions inventories should be established prior to the start of trading.

5. Banking

Prior to first compliance year, emission reductions achieved below specified levels may be banked or sold.

6. Trading Systems

Open-market trading—facilitated by private sector institutions including:

- brokerages
- clearinghouses
- commodity exchanges
- financial exchanges, etc.

7. National supervision and control

National authorities should have primary responsibility for monitoring and certification, accounting, reporting, compliance enforcement, policy and regulatory oversight, etc.

All transfers and acquisitions of allowances and credits must be certified and approved by national authorities.

8. International oversight

The Climate Change Secretariat should establish trading accounts, record transfers and acquisitions, balance trading accounts, review compliance reports, etc.

9. Projected market launch

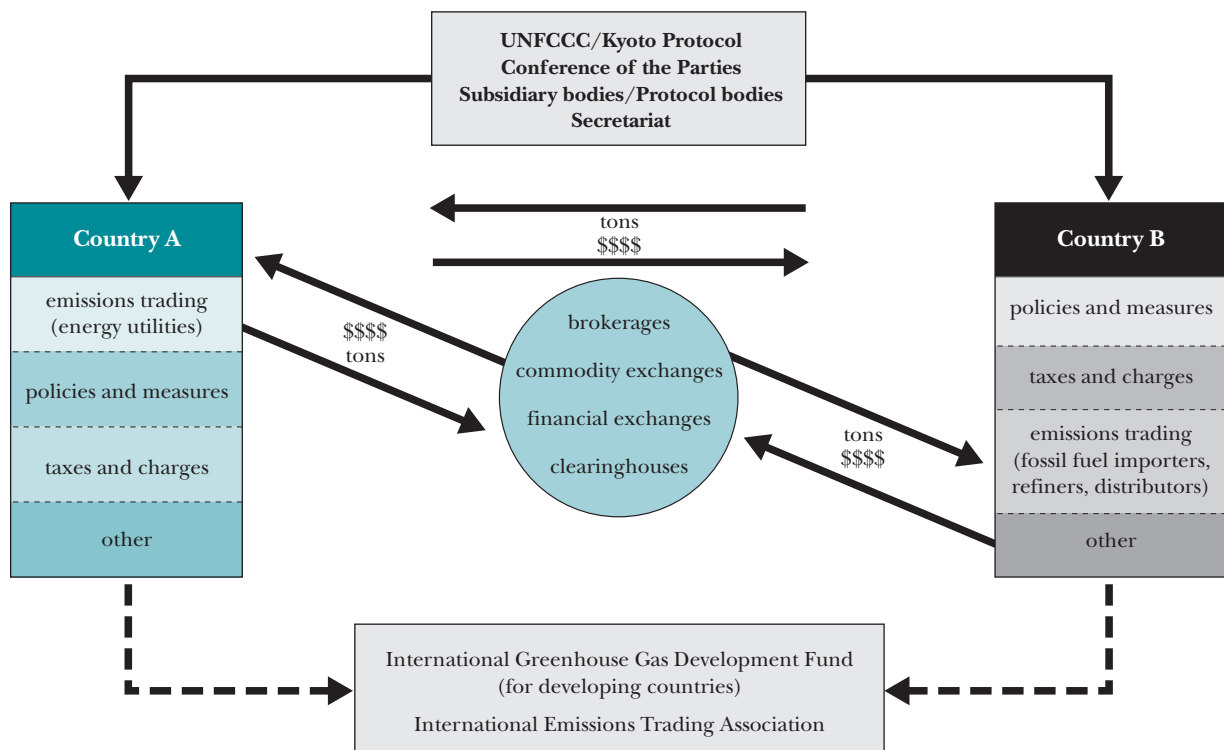
Year 2000

10. Opt-in Provisions

Plan for Expansion:

- new entrants
- new gases/sectors
- iterate to a fully-fledged GHG Emissions Trading System

Diagrammatic representation of a hypothetical emissions trading system





Forthcoming events

February 5–6, Washington, D.C., USA

Meeting of invited experts on how to include JI in an international emissions trading system. Center for Clean Air Policy.

Contact: Tim Hargrave, Washington, D.C.
Tel: (1) 202 408 9260 Fax: (1) 202 408 8869
e-mail: tim.hargrave@ccap.org

February 5–6, London, UK

Conference on Climate Change After Kyoto: Implications for Energy. Royal Institute of International Affairs, London, UK.

Contact: Dr Michael Grubb or Diana Bailey
Tel: (44) 171 957 5700 Fax: (44) 171 957 5710

February 26–27, Warrenton, VA., USA

Meeting of invited experts on domestic GHG trading in the United States. Center for Clean Air Policy.

Contact: Tim Hargrave, Washington, D.C.
Tel: (1) 202 408 9260 Fax: (1) 202 408 8869
E-mail: tim.hargrave@ccap.org

February 25–26, London, UK

Third session of the UNCTAD-Earth Council Greenhouse Gas Emissions Trading Policy Forum.

Contacts: Frank Joshua, UNCTAD Secretariat, Geneva, Switzerland
Tel: (41) 22 917 5834 Fax: (41) 22 907 0274
e-mail: frank.joshua@unctad.org

Stephanie Foster, Earth Council Institute, Toronto, Canada
Tel. (1) 416 498 3150 Fax: (1) 416 498 7296
e-mail: ecfoster@web.net

Michael Walsh, Centre Financial Products Limited, Chicago, USA
Tel: (1) 312 554 3380 Fax: (1) 312 554 33651
e-mail: mw Walsh@chi.hedgefin.com

March 18–20, Vancouver, Canada

Globe 98: 5th International Conference and Trade Fair on Developing the Business of the Environment.

Contact: Globe Foundation of Canada, 504-999 Canada Place, Vancouver, BC V6C 3E1, Canada
Tel: (1) 604 775 1994 Fax: (1) 604 666 8123

May 11–12, London, UK

Emerging Markets for Emissions Trading—Opportunities from the Kyoto Protocol and the Implications for Business. Sponsored by British Gas Plc, and UNCTAD.

Contacts: Paul Haley, Global Village Conferences Ltd. Tel. (44) 1344 875 308.
Fax. (44) 1344 875 289.
E-mail: gvc-northconsult@paranoia

Frank Joshua, UNCTAD Secretariat, Geneva, Switzerland. Tel. (41) 22 917 5834.
Fax. (41) 22 907 0274.
E-mail: frank.joshua@unctad.org

Domestic greenhouse gas trading in the United States

Alice LeBlanc

The Clinton administration's position on domestic greenhouse gas policy includes the launching, in about ten years from now, of 'a broad emissions trading initiative to ensure we hit binding targets'. The US position for Kyoto calls for stabilization of greenhouse gas emissions at 1990 levels by the period 2008–2012, and further reductions thereafter. 'Stabilization at 1990 levels in the 2008–2012 time-frame represents a 30–35 per cent reduction from 'business as usual' emissions, and 11 per cent from current levels.

Based on the experience of the US SO₂ trading system, ten years is a not an unduly long time-frame for the establishment of a trading system. The acid rain trading programme began five years after legislation was passed. Those five years were used to write regulations and help businesses plan and implement mitigation strategies. CO₂ emissions trading is much more wide-ranging and could involve a far more numerous and diverse group of regulated companies.

One immediate step in the US Government's proposal is a commitment of \$5 billion over the next five years for a combination of direct government spending on research and development for energy efficiency technology and tax cuts for private sector initiatives. In addition, a system of crediting for early reductions made prior to 2008 will be established. Other measures include reviewing the federal government's energy consumption, fostering competition in the electricity industry, and encouraging key sectors to prepare their own greenhouse gas reduction plans.

The US Environmental Protection Agency has begun work on developing a framework for early reduction credits and is supporting two 'dialogue' groups on issues and policy options for a domestic greenhouse gas emissions trading system. The objective of these meetings is to provide government

policy makers with input from experts and stakeholders to help formulate the design of a domestic trading system. The focus has been on CO₂ fossil fuel emissions. Issues explored by the groups include:

- *Structure of the system—downstream versus upstream:* A downstream trading system would target emitters as regulated entities, whenever feasible. This could potentially include major stationary sources, such as utilities and industries that combust fossil fuel; automobile manufacturers or vehicle fleets; shipping companies; airlines; and natural gas local distribution companies. An upstream system would target fossil fuel producers, whenever feasible. Because of the large number of independent producers in the US, refineries, processing plants or distribution companies might have to be regulated. Those in favour of an upstream approach argue that it is easier to administer and more comprehensive. Proponents of a downstream system hold that it will stimulate more robust trading among diverse participants, which will lead to increased innovation, and that it can provide an incremental approach to meeting an emissions cap. It also has an established model in the SO₂ trading programme.

- *Allowance distribution method—'grandfathering' versus auction:* 'Grandfathering' of allowances, or giving them to regulated sources based on historical energy use, has a precedent in the acid rain programme. This allocation method appears to be more politically feasible because it confers the economic rents of the trading system on the regulated entities. This could stimulate investment, with a positive impact on economic growth. An auction is theoretically the more efficient way to distribute the



UNCTAD publications and papers on greenhouse gas emissions trading, 1992-97

Publications

Richard B. Stewart, Jonathan B. Wiener, and Philippe Sands, *Legal Issues Presented by a Pilot International Greenhouse Gas Trading System* (in UNCTAD/GDS/GFSB/Misc. 1, United Nations, Geneva, 1996).

Robin Clarke, *A Pilot Greenhouse Gas Trading System: The Legal Issues* (in UNCTAD/GDS/GFSB/Misc.2, United Nations, Geneva, 1996).

Robin Clarke, *Controlling Carbon Dioxide Emissions: The Tradeable Permit System* (in UNCTAD/GID/11, United Nations, Geneva, 1995).

Peter Bohm, *An Analytical Approach to Evaluating the National Net Costs of a Global System of Tradeable Carbon Emission Entitlements* (in UNCTAD/GID/9, United Nations, Geneva, 1995).

Scott Barrett, *The Strategy of Joint Implementation in the Framework Convention on Climate Change* (in UNCTAD/GID/10, United Nations, Geneva, 1995).

Tom Tietenberg and David Victor, 'Administrative structures and procedures for implementing a tradeable entitlement approach to controlling global warming', in *Possible Rules, Regulations and*

Administrative Arrangements for a Global Market in CO₂ Emission Entitlements (in UNCTAD/GID/8, Part I, United Nations, Geneva, 1994).

Richard L. Sandor, Joseph B. Cole and M. Eileen Kelly, 'Model rules and regulations for a global CO₂ emissions credit market', in *Possible Rules, Regulations and Administrative Arrangements for a Global Market in CO₂ Emission Entitlements* (in UNCTAD/GID/8, Part II, United Nations, Geneva, 1994).

Scott Barrett, Michael Grubb, Kjell Roland, Adam Rose, Richard L. Sandor and Tom Tietenberg, *Combating Global Warming: Study on a Global System of Tradeable Carbon Emission Entitlements* (in UNCTAD/RDP/DFP/I, United Nations, Geneva, 1992).

Papers

Richard L. Sandor, 'In Search of the Trees: Market Architecture and the Tradeable Instrument', (UNCTAD, Geneva, 1992).

Daniel J. Dudek and Alice LeBlanc, *Identification and Pre-feasibility Evaluation of Potential Joint Implementation Demonstration Projects in Costa Rica* (UNCTAD, December 1994).

Frank T. Joshua and Richard L. Sandor, 'Building a Global CO₂ Emissions Trading System: The UNCTAD Initiative', in *Proceedings of the Conference on International Energy Markets* (Wall Street Journal Europe/Handelsblatt, Vienna, September 1995).

Frank T. Joshua, 'Design and Implementation of Pilot Systems for Greenhouse Gas Emissions Trading: Lessons from UNCTAD's GHG Research and Development Project', in *Proceedings of the Conference on Controlling Carbon and Sulphur: International Investment and Trading Initiatives* (Royal Institute of International Affairs, London, December 1996).

Frank T. Joshua, 'Key Steps in the Construction of a Greenhouse Gas Trading System: Insights from UNCTAD's Research and Development Project' (4th Annual Handelsblatt Energy Congress, Konigswinter/Bonn, January 1997).

Frank T. Joshua, 'Expanding the Greenhouse Gas Trading System: Emissions Trading and Joint Implementation in a Single Global Emissions Market' (Chatham House, London, September 1997).

allowances, but if the proceeds are returned to consumers or used for government spending, auctions could have a more adverse impact on the economy.

- *How to include the transportation sector:* One of most difficult issues is how to incorporate the multitude of diverse transportation sources. The issue is complicated by the interrelationships among key factors that influence driving behaviour. On-road vehicles are the major source of US transportation emissions. They could be regulated through allowances required of

vehicle manufacturers to cover the emissions of the vehicles they produce, through regulation of groups of vehicles such as car rental or trucking companies or through regulation at refineries of motor vehicle fuels.

- *Other issues:* Issues not yet fully considered by the groups, but which will have important ramifications for a trading system, include how to bring biotic offsets into the system; how to interface domestic trading with joint implementation and international trading; and how to phase in gases other than CO₂.

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.

Designed and produced by Words and Publications, Oxford, United Kingdom • <http://www.words.co.uk>