

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT

**A PILOT
GREENHOUSE GAS
TRADING SYSTEM**

the legal issues



A pilot greenhouse gas trading system: the legal issues

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Foreword

For more than five years the UNCTAD secretariat has been helping governments find flexible and cost-effective means of controlling emissions of greenhouse gases (GHG). In 1992, UNCTAD published *Study on a global system of tradeable carbon emission entitlements*, which analysed key issues in setting up an international trading system for greenhouse gases, similar in principle to the one already in operation in the United States for sulphur dioxide. Further studies were published and by mid-1995 developments at the international level had convinced us that the time had come to develop a pilot GHG emissions trading programme. This would allow participating countries to 'learn by doing', and could lead to the establishment of a full trading system.

This publication is a plain language version of a more detailed report called *Legal Issues Presented by a Pilot International Greenhouse Gas Trading System* (Richard B. Stewart, Jonathan B. Wiener and Philippe Sands, United Nations, Geneva, 1996, UNCTAD/GDS/GFSB/Misc. 1). It discusses the principal legal, institutional and organizational issues presented by a pilot trading system and identifies, for the first time, the key legal regimes and institutions needed for regulation, monitoring, certification and

enforcement of such a system. Public interest in these issues was greatly stimulated by the second Conference of the Parties to the Framework Convention on Climate Change, held in Geneva in July 1996. Negotiations will now focus on agreeing a new instrument, with '... quantified legally-binding objectives for emission limitations and significant overall reductions within specified timeframes'.

It is hoped that this report will be useful to these negotiations and provide a common basis for action among countries wishing to develop a multilateral greenhouse gas emissions trading system. The UNCTAD Secretariat has been encouraging public/private partnerships in this area and has worked with the Earth Council and Centre Financial Products to develop a pilot emissions market through the establishment of the Global Environmental Trading System (GETS).

This work is the result of intensive collaboration between the UNCTAD secretariat and the United States Environmental Protection Agency. Research funds were made available by US EPA and the project has also benefited from financial support from the Governments of Germany, the Netherlands and Norway.

Overview

‘One [greenhouse gas trading] scheme would involve the issue of permits to emit specified amounts of GHG over specified periods. These permits could then be traded, giving countries the flexibility to emit more or less GHG as they required, and to profit (by the sale of permits) from reducing their emissions below set limits.’

Many countries have expressed interest in establishing a greenhouse gas trading system as a means of regulating emissions of these gases. One such scheme would involve the issue of permits to emit specified amounts of GHG over specified periods. These permits could then be traded, giving countries the flexibility to emit more or less GHG as they required, and to profit (by the sale of permits) from reducing their emissions below set limits. There are also other ways in which a GHG trading system could be set up.

Some emissions trading systems have already been effective in meeting environmental targets at a lower cost than traditional types of regulation. Like any system of regulation, emissions trading systems require adequate monitoring and enforcement. These systems can also increase transparency because they give emissions sources (such as factories), sequestration projects set up to eliminate specific emissions, and governments a strong incentive to use easily understandable and standardized methods for monitoring and reporting their emissions. Furthermore, such trading systems provide incentives for the transfer of technology, and financial and other resources to developing countries, and specifically to projects and countries where emission reductions can be made most cheaply. This encourages the development of new technologies to reduce emissions.

The market and its members

The pilot trading system discussed here would include trading of energy-sector CO₂ emissions, and might also include emissions of other GHG such as hydrochlorofluorocarbons (HCHCs) and hydrofluorocarbons (HFCs), all of which are

relatively easy to monitor and verify. It would be desirable to include forest-sector CO₂ emissions and sinks (caused by felling and planting trees respectively), fossil-fuel methane (CH₄) and nitrogen oxides, provided that monitoring and verification were possible. Eventually, as monitoring methods improve, the system could be extended to include other GHG. The pilot system could be designed for an initial 15–20 year period.

The key elements of such a system are a group of countries which become Members of an international Agreement, the legal framework round which the system would be based. The pilot system would probably begin with a small but diverse group of States, which would speed the learning process. It could take one of two basic forms:

- An allowance trading system which established an overall emissions limit for the group and allocated emissions allowances for each Member.
- A budgeted emissions system in which Members committed themselves to limiting their cumulative emissions to specific values during each of several successive multi-year periods. Reducing emissions below the amount budgeted would generate savings that could be reserved for future use or traded.

An international system within the context of the FCCC

There are two fundamental assumptions underlying this proposal. The first is that any international system for trading emissions would be governed by international law rather than by the national laws of any particular State. It is

most unlikely that a State could accept that its rights or obligations under such arrangements could be governed by the national laws of another State.

The second assumption is that any pilot trading system would be established in the context of the 1992 United Nations Framework Convention on Climate Change (FCCC). Of course, separate arrangements could be made but Parties to the FCCC are not likely to establish an independent and potentially competing system that might undermine the FCCC.

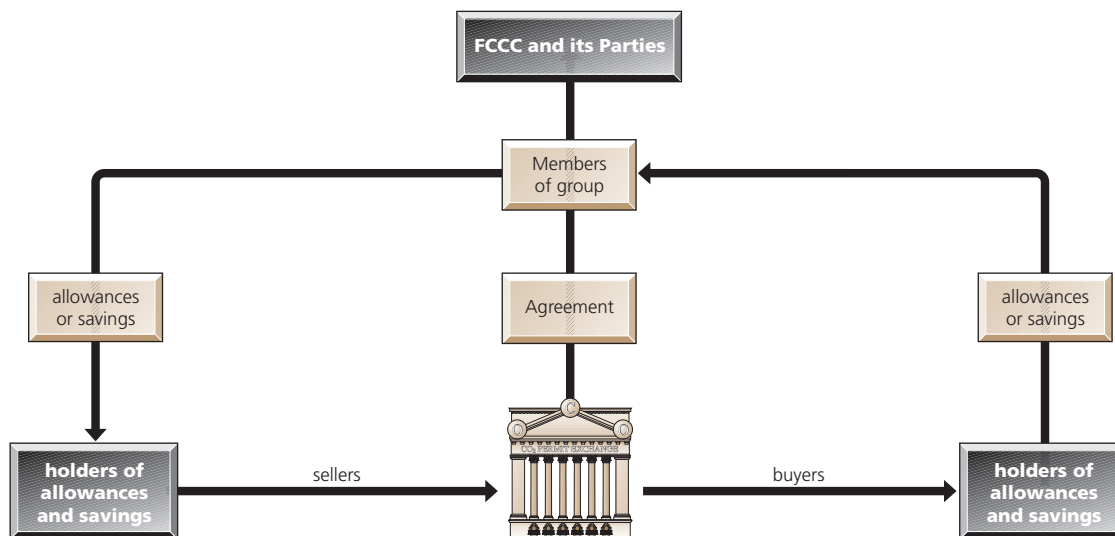
Building on these assumptions, one way of initiating a pilot emissions trading system might be for those FCCC Parties that have already committed themselves to GHG limitations and are interested in participating in such a system to conclude an international Agreement on the system's structure and operation.

The 'learning by doing' experience of a pilot trading system might provide the basis for enlarging the system with additional Members, eventually including most or all Parties to the FCCC. It is also possible that certain industries might agree to an industry-wide emissions limitation and trading system independent of, or linked to, the Group trading system.

This publication describes the principal legal, institutional and organizational issues presented by a pilot international GHG trading system, and suggests ways of putting it into practice. The following two pages outline the basic elements of possible pilot trading systems and the organizational structure needed to establish and support them. The remainder of the publication analyses in greater detail a number of key design, organizational and legal issues that must be resolved before the trading system can be successfully operated.

'The 'learning by doing' experience of a pilot trading system might provide the basis for enlarging the system with additional Members, eventually including most or all Parties to the FCCC.'

The basic trading system



Basic elements of the system

‘Developing countries, by contrast, might economize on the use of their allowances in the early years to provide for rapid industrial growth and increased emissions in later years.’

The first requirement for an international emissions trading market is for potential Members of such a market to conclude a legally-binding Agreement on how the system would work. An international body, called the International Emissions Trading Organization (IETO), would then be created to make it work. A second international institution (called Monitor) would also be required to review and certify Members’ emissions. Members would be required to make annual reports to Monitor.

There are two basic alternatives for the market itself: an allowance trading system or a budgeted emissions trading system.

The allowance trading system

In an allowance trading system, the Agreement would establish a cap or ceiling on the emissions

of the Members as a whole; it would also establish caps on the emissions of individual Members. Emissions allowances would then be allocated to Members, which would distribute them to their national sources of emissions. Each allowance would permit the emission of one tonne of carbon dioxide (or its equivalent in other GHG). Allowances would be sequentially numbered for easy identification and could be bought or sold by anyone. Members with emissions lower than their caps in any period would thus be able to profit by selling their allowances or keeping them for future use. Those with emissions exceeding their caps would have to buy additional allowances. Members whose emissions exceeded their allowances at the end of any given period would be subject to a number of possible sanctions such as having their allowances reduced in the next period or paying a fine.

The initial caps themselves could be defined in one of several ways:

- as a numerically-specified annual amount, expressed in CO₂-equivalent units;
- as a year-to-year increase or reduction in emissions from or towards an historic base year; or
- as a cumulative limitation on annual emissions over a number of years.

A multi-year period would give Members increased flexibility. Instead of being issued with 200 units a year for each of 20 years, they might then be issued with 4000 units at the beginning of a 20-year period. They could then choose, for example, to use many units early on in the hope that nearer the end of the period new technologies would make it easier and cheaper to reduce emissions. Developing countries, by

Key elements of the allowance trading system

The Agreement fixes a cap on GHG emissions for the Group of Members and allocates permitted emissions for each Member for each year, or cumulatively for a period of years.

IETO issues allowances to each Member equal to its allocation of permitted emissions for the relevant period. Members then allocate allowances to their sources.

Allowances entitle the holder to emit one tonne of CO₂ or equivalent during the period for which they are issued or any subsequent period. Sources may not emit GHG in excess of the allowances that they hold.

Allowances may be held, sold or bought by anyone, and may be used to cover emissions by any source in any Member.

Members must ensure that emissions by their sources do not exceed the allowances that they hold. If a Member’s emissions, as determined by Monitor, exceed the allowances held by it and its sources sanctions, including a reduction in the number of allowances issued to it for the next period, and fines would be imposed.

contrast, might economize on the use of their allowances in the early years to provide for rapid industrial growth and increased emissions in later years.

Too much flexibility, however, could also undermine the system. It might be politically difficult to impose large fines at the end of a 20-year period. A Member might not even find this threat credible, and be tempted to accrue large deficits. This would discourage trading. Environmentally, some of the point of the exercise would also be lost if countries opted for large immediate emissions while what is actually needed is substantial and rapid emissions reductions.

A possible compromise is for the Agreement to issue multi-year allowances and for Members themselves to specify annual and binding allocations for each year.

The budgeted emissions trading system

In a budgeted emissions system, the Agreement would specify a target level of cumulative emissions for each Member for the first of a number of budget periods of, for example, ten years each. Members could then either adopt national emissions budgets for their sources or limit emissions in other ways. Emissions budgets for Members would be negotiated for each budget period before the previous period ended. If a Member's emissions for any period were less than the budgeted amount, savings would be generated that could be held for future use or sold to others. Members might establish sub-budgets for every one or two years within a budget period; savings could be generated by keeping net emissions below the

sub-budgeted targets. Savings could be held, sold or bought by anyone.

GHG coverage

Initially the trading system would include energy-sector CO₂ emissions, and might also include emissions of HCFCs and HFCs. It would also be desirable to include forest-sector CO₂, fossil-fuel methane and nitrogen oxides. Ideally, all GHG should eventually be included in the market. However, a trading system, like any other form of regulation, depends on efficient monitoring and reporting, and some GHG are notoriously difficult to monitor.

‘Initially the trading system would include energy-sector CO₂ emissions, and might also include emissions of HCFCs and HFCs. It would also be desirable to include forest-sector CO₂, fossil-fuel methane and nitrogen oxides.’

Key elements of the budgeted emissions trading system

The Agreement fixes a budget for each Member that limits its emissions over a given period (for example, ten years). Members may also establish sub-budgets for shorter periods (for example, every year). Each Member agrees to meet its budgeted level of emissions for the budget period.

If Monitor determines that a Member's emissions are less than its budgeted emissions, IETO issues savings to the Member for the difference.

Savings may be held, sold or bought by anyone, and may be used to cover emissions by any source in any Member. Savings may be carried forward to future budget or sub-budget periods, and may earn premiums.

Members are responsible for ensuring that their sources' net emissions do not exceed the budgeted amount, plus savings held, for the relevant period. If a Member's net GHG emissions, as determined by

Monitor, are greater than its budgeted emissions, the non-complying Member will be subject to sanctions, including a reduction in its budgeted emissions for the following budget period, and fines.

Towards the end of the initial budget period, Members negotiate the budget for the next period, taking into account scientific, technical and other developments.

Major issues

‘Members’ domestic legislation would include the establishment of a domestic trading system and a system for distributing among sources a Member’s quota of allowances and allowance deficits or surpluses.’

There are many detailed issues that need to be resolved before even a pilot trading system could become operational. This chapter describes the main ones.

The Agreement

The Agreement would be an instrument of international law, established in the context of the FCCC, that created an allowance or budgeted emissions trading system, a governing body including voting rules, a Secretariat and procedures for amending the Agreement and admitting new Members.

The Secretariat would represent the Council and the Members in operational relations with IETO and Monitor, prepare reports, provide support for technical advisory committees, and administer inputs from other parties, including NGOs.

Each Member would have to adopt domestic legislation to implement the Agreement. This would establish means of allocating allowances among sources, of ensuring compliance by sources with national emissions budgets, of dealing with sequestration projects, and of monitoring and enforcement. The success of the trading system will depend on all Members acting in the same way. For example, they will have to adopt similar methods of monitoring and reporting their emissions; these methods will be specified in the Agreement. Because



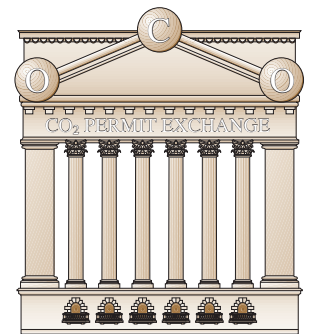
these measures would be central to the success of the system, each Member's legislation might have to be certified by the Council.

In theory, a Member's government might be the exclusive trading agent on behalf of all sources and investors within the country. In practice, however, this would hamper the effectiveness of the system. Moreover, States willing to join an international trading system are likely to be committed to an internal trading system as well. For this reason Members’ domestic legislation would include the establishment of a domestic trading system and a system for distributing among sources a Member’s quota of allowances and allowance deficits or surpluses.

With a budgeted emissions system, however, there is not as strong a need for Members to establish a domestic trading system to ensure a successful market. Members would therefore be free to control their sources’ emissions in whatever way they wished.

The International Emissions Trading Organization

IETO would be established under international law in the context of the FCCC, and financed by the Members either directly or through payment of fees by their sources, sequestration projects, or holders of allowances or savings. Its role could



be primarily entrepreneurial, in which case it would be given incentives to make the markets work. Alternatively, its role could be primarily professional and technical, and the entrepreneurial function would be assigned to private sector exchanges, brokers and traders. In either case, IETO would have incentives to reduce transaction costs and eliminate potential conflicts of interest.

IETO would be governed by a Board of Directors and would be responsible for issuing allowances and savings; recording trades and allowance and savings holdings reported to it; and maintaining a system to track trades and Members' and holders' account balances.

IETO would have its headquarters in a Member country. As with other international organizations, an agreement would provide basic rules on its legal status in the country concerned, the extent to which IETO could sue or be sued, rights of contracting, privileges and immunities, and procedures for resolution of internal disputes. It would not be usual for such disputes to be heard before national courts.

NGOs might be represented in IETO's governance structure or might have a role through advisory committees. IETO would make an annual public report to the Council, and its account books would be open for public inspection. NGOs could be given opportunities to comment on the report and air other concerns with the Council. NGOs would also be free to participate in the trading market itself—they would be able to purchase, sell, hold and retire allowances or savings, or to design and finance projects to reduce net emissions and thereby to earn surplus allowances or savings to hold, sell or retire.

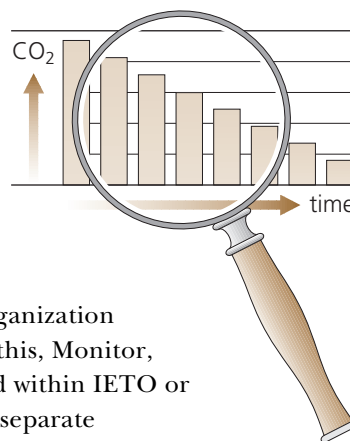
Monitor

Monitoring emissions and sequestration credits will be vital to the success of the trading scheme. The organization responsible for this, Monitor, could be located within IETO or established as a separate organization, or an existing institution could be contracted to do the job.

Whichever approach is chosen, there will be a strong role for qualified independent scientists and technical experts. If it is a separate organization, its Governing Board should include representatives of the Members and of international scientific organizations such as the World Meteorological Organization. Its constitution could also include an advisory body of qualified scientists and technical experts.

Monitor would have four essential functions:

- formulate the monitoring procedures to be followed by Members, including bookkeeping and preparation of annual reports on net emissions;
- conduct monitoring as an independent check on the Members' national monitoring and reporting programmes;
- review the annual reports on net emissions and determine their accuracy; and
- certify each Member's net emissions for each year.



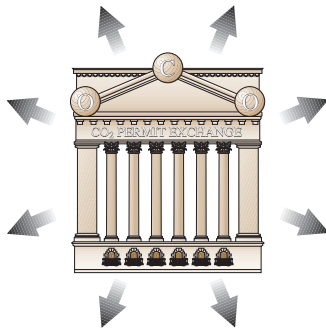
'NGOs would also be free to participate in the trading market itself—they would be able to purchase, sell, hold and retire allowances or savings, or to design and finance projects to reduce net emissions and thereby to earn surplus allowances or savings to hold, sell or retire.'

‘... trading should be conducted on any exchange that wishes to provide emission trading services and meets the qualifications established in the Agreement.’

Decisions about the exact level of net emissions will involve some uncertainty and judgment. What is important for the acceptability of certification decisions and the success of the trading system is that such decisions are scientifically sound and taken in the same way for each Member and for each year.

One way of dealing with controversy over net emissions certifications would be for Monitor to issue draft certificates. Members could then raise questions and provide explanations or additional data before the final certificate was issued.

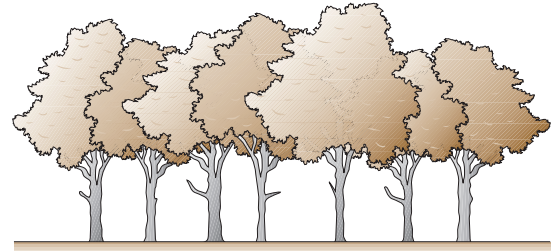
Scope of the market



Any person or entity, whether or not a citizen of a Member, should be able to hold, buy and sell allowances or savings allocated to Members.

Non-Members could be allowed to purchase from Members or their citizens by investing in GHG reduction or sequestration activities. New allowances (credits) or savings, however, could not be created by investing in emissions reductions or sequestration services in non-Members. Furthermore, trading should be conducted on any exchange that wishes to provide emission trading services and meets the qualifications established in the Agreement.

Sequestration



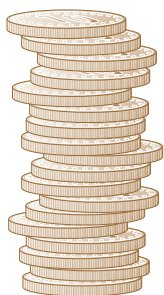
It is important that the trading system deals not only with straightforward reductions in emissions but also with sequestration projects, such as forestation, that in effect withdraw CO₂ from the atmosphere. There are two ways of dealing with such projects.

The first is for IETO to issue additional allowances to a Member (over and above those mutually agreed) or recognize savings for sequestration projects based on the tonnes of CO₂ equivalent sequestered in a given year. The Member could then allocate these allowances or savings to each such project, thus bringing sequestration services into the trading system.

The second is to allow a Member to comply with its allowance allocation or emissions budget on the basis of its net emissions, which would be calculated by deducting the amount of GHG stored by sequestration projects from its gross emissions. Sequestration projects would thus make up some of the relevant Member surplus or generate savings by reducing net emissions below budgeted amounts; the Member could then channel these surplus allowances or savings into the trading system.

Whichever approach is used, accurate monitoring and certification of sequestration services must be assured.

Market power



A common concern about tradeable pollution permit systems is how to prevent them being abused—for example by hoarders and

cartels. If certain Members or firms could amass a sufficient

number of allowances or savings, they could in theory manipulate prices to their advantage.

To the extent that large numbers of allowances or savings were held by electric utilities or by the oil and gas industry, which might be government-owned or enjoy a legally-conferred monopoly, there could be cause for concern. There is also a risk that government regulations and policies on allowances or savings could be used to promote cartelization or deter new entrants.

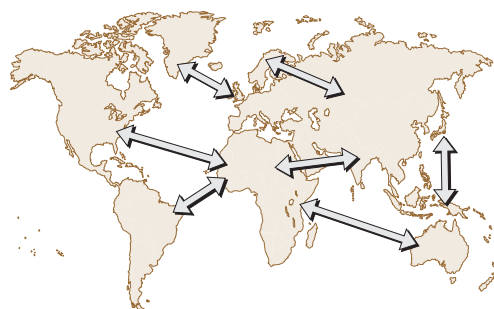
However, the number and diversity of holders of allowances or savings is likely to be sufficiently great to make monopolization very difficult, and cartelization implausible. The fact that allowances would be issued only for a given year also diminishes the threat of market power.

Nevertheless, a number of steps could be taken to deal with this threat. The most important is to ensure that allowances or savings are widely held and can be freely traded—that is, to ensure a ‘thick’ market. In addition, IETO could be authorized to hold a reserve of allowances or savings which it would auction or sell in the open market either at fixed periods or at its discretion. This would help ensure a good supply for purchasers and maintain confidence in the market.

Another means of dealing with abuse is through domestic or international antitrust

remedies. Sources complaining of monopolization, cartelization or price fixing could in any event resort to their domestic laws.

International trade laws



It is possible that some aspects of the proposed market could be challenged as discriminatory or otherwise contrary to international trade rules. However, if a substantial number of FCCC Parties joined the Agreement, the likelihood of such a challenge is remote. Moreover, there is no well-established legal basis for such a challenge.

The Uruguay Round of multilateral trade agreements adopted under the auspices of the World Trade Organization (WTO) apply principally to States that are members of the WTO, and to the European Union. These Agreements apply to trade in goods and in services. To what extent does the proposed trading system involve trade in goods and services? Would emissions allowances or savings be recognized by the WTO as goods or services? The relevant agreements are not clear on this point, and there is no interpretation by WTO members on the subject. There are three possibilities:

- that emissions allowances and savings are not covered by the WTO Agreements, in

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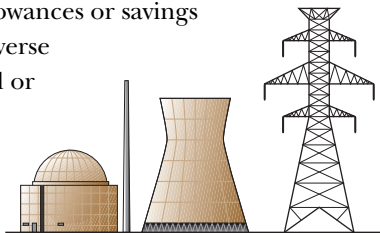
which case the benefits and obligations of these agreements are not relevant;

- if a WTO Dispute Settlement Panel found allowances or savings similar to goods, an Agreement that limited trading to a group of less than all WTO Members could be problematic in that allowances or savings could be obtained only for providing GHG abatement services to Members—however, there are grounds for believing that if membership is open to any State on reasonable terms, then the Agreement would withstand WTO scrutiny;
- if a WTO Dispute Settlement Panel found trade in allowances or savings similar to trade in services, it seems unlikely that the issuing of allowances or savings to Members would run foul of the rules that require open and competitive participation when issuing securities, particularly if IETO were careful to maintain the open and competitive character of the trading markets.

Environmental and social effects

Trading in allowances or savings could have adverse environmental or social effects within Member States. For example, a

firm in Member A might sell to a utility company in Member B a nuclear generating plant, in exchange for compensation that included the surplus allowances or savings resulting from the switch to nuclear-fuelled power in B. Such a transaction might be challenged by those concerned with the hazards of nuclear power.



Should the Agreement therefore give IETO the authority to block trades with adverse environmental and social impacts? Such measures could create serious uncertainty, cost and potential delay that would undermine the effective working of the trading system. Since the system’s main goal is to protect the Earth’s climate, limiting the trading system could undermine important environmental protection efforts. Moreover, there may often be no clear way to link individual trades to particular side effects. Furthermore, in an open trading system, Members are under no obligation to trade with another; market participants are free to choose when, where and with whom to trade.

It is therefore probably best that environmental and social concerns of this sort be addressed through national regulation.

Resolving disputes

IETO would have to record all trades in allowances or savings, whether on organized



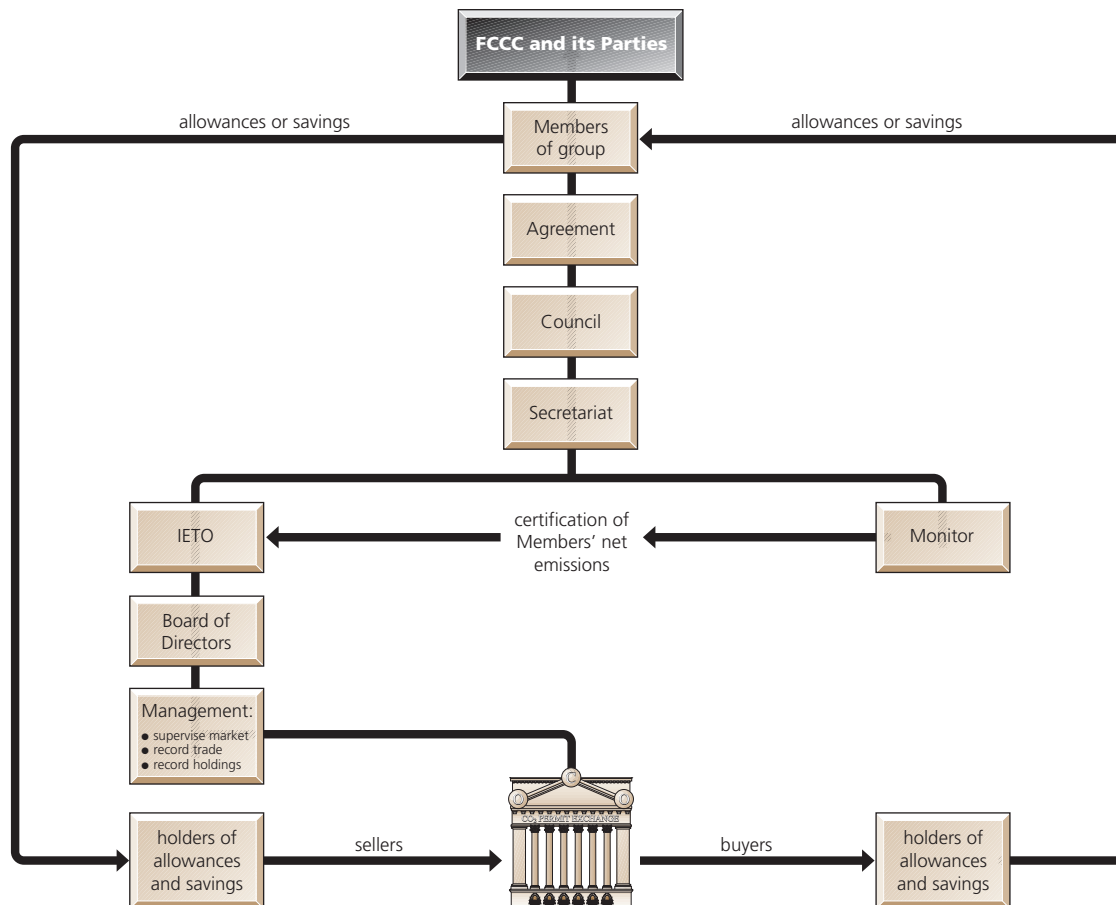
exchanges or through informal transactions. It would also establish the basic requirements for exchanges that wished to conduct organized trading. The ultimate sanction for failure of exchanges to adhere to these requirements might be refusal by IETO to record trades conducted on that exchange. IETO might also set minimum requirements for individual brokers.

IETO would also have to establish the rules for the futures market. One way would be for

IETO to issue scrip to the Members in accordance with the allocations or emissions savings projected for the following year or period. Members would then distribute their scrip to their sources and other holders. On maturity, the scrip would be redeemed, appropriately discounted if allowances had been exceeded or augmented if allowances had been under-utilized

There seems to be no need for the Agreement to establish legal rules to govern trade in allowances, savings or scrip. Such contracts could be established in accordance with the normal practices and procedures of commercial law. Thus issues such as disclosure, fraud, breach of contract and sanctions for non-performance would be addressed by contractual agreements for arbitration or domestic law.

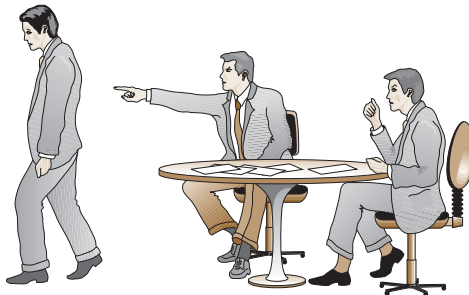
Organizational structure of the greenhouse gas trading system



'IETO might establish dispute resolution procedures if these helped protect purchasers and sellers, and promoted confidence in the system. These would apply to disputes between members of an exchange as well as disputes between an exchange and its members.'

IETO, however, might establish dispute resolution procedures if these helped protect purchasers and sellers, and promoted confidence in the system. These would apply to disputes between members of an exchange as well as disputes between an exchange and its members and/or their customers.

Withdrawal and expropriation



A Member could, at short notice, withdraw from the Agreement because it wanted to increase emissions beyond its allotment and felt it could do so more cheaply by abandoning the Agreement rather than buying additional allowances or savings. This would forfeit the Member's financial securities deposited with IETO, and would bar the Member from participation in the trading system.

Members might also 'expropriate' allowances, savings or scrip by 'nationalizing' private emissions reduction or sequestration projects, invoking the principle of 'permanent sovereignty over natural resources' in support of their right to use the air to emit GHG.

The Agreement would therefore need to limit the extent to which expropriation could occur. Significant security would be provided by establishing the Agreement as a treaty (within

the framework of the FCCC) governed by public international law, with provisions on withdrawal and a clause which prohibited interference by Members with interests in allowances, savings or scrips held in accordance with the Agreement by private parties. Further security would be obtained by ensuring that the dispute settlement provisions of the Agreement were accessible to other bodies which had claims against Members. In addition, the Agreement could require advance consent by Members to compensate those from whom allowances, savings or scrip are taken, and could even establish a compensation fund with deposits by the Members.

Sanctions

The Agreement will have to provide for cases where a Member fails to comply with its agreed limits and thereby incurs a deficit. The primary mechanism for dealing with



deficits would be for IETO to reduce the allowances or emissions budgets to be issued to the Member for a subsequent year or period by an amount equivalent to the deficit.

This type of action is often used when countries exceed their export quotas in international commodity agreements. It is also used in the SO₂ allowance trading system in the United States. It can be seen not as a sanction but as a means of introducing flexibility to the system. However, large or persistent deficits by Members would threaten

the integrity of the trading system. Accordingly, the size of the deficit that a Member should be allowed to run in any given year without penalty should be limited to a small percentage of its allocation or emissions budget. If this were exceeded, significant penalties should be imposed, such as fines and larger than 1-for-1 reductions in future allowances or budgeted emissions.

There are additional checks against Members running large and persistent deficits. Powerful domestic interests will want to avoid such deficits, including environmental groups, holders of scrip (whose holdings will be devalued by the prospect of future deficits), and sequestration projects and sources with surplus allowances or savings (whose opportunity to sell will be diminished as a result of deficits).

Additional sanctions could be imposed to deal with persistent or gross deficits, such as fines—a sanction rarely used in international arrangements, except in the European Union and the Montreal Protocol on the Depletion of the Ozone Layer. (The European Commission recently fined a number of States a total of \$1000 million for violations of the Community's agricultural policy). A substantial fine would have an appreciable deterrent effect and an adverse impact on the Member's standing in the international financial community.

Potential further sanctions could include suspending the Member's voting rights or halting trade in allowances or savings with that Member. These sanctions are provided in some international commodity and environmental agreements. The ultimate sanction for repeated deficits would be expulsion.

New members



There are many good reasons for encouraging new Members to join the trading system but rules for doing so would need to be defined with care. Every new Member would need to meet the Agreement's requirements (see box on page 16). When a new Member is added, it will be subject to emissions caps or to binding emission budgets. In the allowance model, Members may be concerned that the group is enlarged in an orderly way. Suddenly adding a major new Member could destabilize allowance prices if the new Member added a sufficiently large number of emissions and allowances to influence market prices significantly. However, concerns about market stability should not be allowed to displace the environmental goal of encouraging greater participation in the system.

Similar issues would arise in an emissions budget approach but since savings do not accrue until they are earned, the effect would be slower.

Members might wish to include in the Agreement a mechanism for considering petitions from prospective Members. The Group could then decide how to alter the aggregate emissions cap and how to allocate allowances to the prospective Member. Votes

'Large or persistent deficits by Members would threaten the integrity of the trading system. Accordingly, the size of the deficit that a Member should be allowed to run in any given year without penalty should be limited to a small percentage of its allocation or emissions budget.'

Basic requirements that must be met by participating nations

Agree to achieve set limits on net emissions.

Establish and enforce emission limits and allocate allowances or emissions budgets to domestic sources.

Monitor emissions and report annually to international authorities, and permit inspection and monitoring by these authorities.

Agree to a system of accounting by an international authority of holdings and trades of emissions allowances or savings.

Agree to respect free trade in emission allowances or savings established by the system, and not to expropriate them.

Make a financial contribution (in the case of developed countries) to the international authorities

responsible for implementing the trading system.

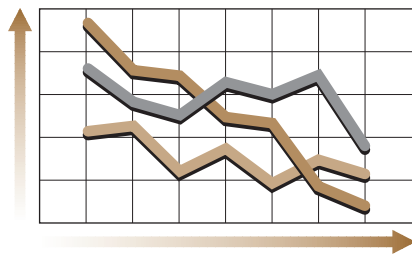
Submit to sanctions, possibly including fines, if emission limitations are exceeded.

Agree to participate in and abide by the outcome of dispute settlement procedures.

Pass domestic laws to implement the trading system.

would have to be taken on admission. Since a unanimous voting rule might exclude new members, a simple majority rule should probably be adopted.

Changing caps, allocations and budgets



Changes in technology or the international system could lead to a need to change the group cap. This would affect the number and value of allowances and of scrip. Raising the cap and allocating additional allowances—equivalent to

regulating less stringently—would devalue allowances and scrip. Experience with markets in government-issued licences, such as taxicab medallions, indicates that current licence holders can be a powerful lobby against increasing the total number of licences. This suggests that trading systems may be resistant to relaxation, a feature which may worry those concerned about the cost of emissions controls but may please those concerned about environmental objectives.

Lowering the cap—equivalent to regulating emissions more stringently—would mean reducing the number of allowances or purchasing allowances with taxpayer revenues and retiring them. Existing holders might resist the first move but might be indifferent to the second. Under either scenario, stock holders might seek to restrict changes in the stock of allowances. In addition, changing future caps and allocations would affect the value of scrip issued for those future years. Like holders of

allowances, scrip holders could be expected to oppose changes that devalued their scrip.

These inertial factors might work against the need for flexibility to adjust the aggregate cap in the light of new developments. On the other hand it might protect Members—and the environmental goals reflected in the cap—from the use of changes in the cap to manipulate trading prices for competitive or financial reasons. For these reasons, the voting rules for changes in the aggregate Group cap will be important.

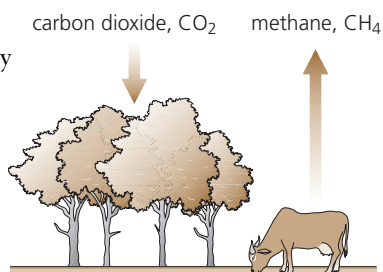
Changes to the allocation of allowances or emission budgets among Members would be even more controversial. For such changes, a unanimous voting rule would probably be required because redistributing allowances is tantamount to renegotiating the crux of the Agreement.

Adding more GHGs

The system would initially cover CO₂ emissions from the energy sector and might also include emissions of

HCFCs, HFCs, PFCs and SF₆. Emissions of these GHG are relatively easy to monitor and verify. It would also be desirable to include forest-sector CO₂ (including sinks), energy-sector CH₄ (methane) and nitrogen oxides. Sectors such as agriculture and emissions of other greenhouse gases are not likely to be included in the near future.

Including forest-sector CO₂ (including sinks) and energy-sector CH₄ in the initial trading



system would have a number of significant advantages.

- It would address a significant additional share of the contributions to global warming.
- It would allow Members the flexibility to control their net emissions in the most cost-effective manner. Including forest-sector CO₂ (sequestration) and energy-sector CH₄ could significantly reduce the cost of emissions abatement.
- It would avoid counterproductive shifts from controlled categories to uncontrolled categories. For example, a CO₂-only system could induce shifts from coal to natural gas with the result that emissions of CH₄ from leaky pipelines produced a net increase in contributions to global warming. This would be avoided if energy-related CH₄ emissions were included in the trading programme.
- It would demonstrate the success of a trading system applied to a diverse set of gases and sectors. For both environmental and economic reasons, it would be desirable for the trading system ultimately to cover all anthropogenic emissions significantly affecting the climate.

Voting rules should be specified for any future decision to enlarge the coverage of the system. This could be handled through Annex procedures rather than renegotiating the Agreement. This is the process that has been used for the Montreal Protocol. Since the initial listing of various CFCs in 1987, numerous other gases have been added to the Annex of the Montreal Protocol, enlarging the Protocol's scope and improving its environmental effectiveness.

'For both environmental and economic reasons, it would be desirable for the trading system ultimately to cover all anthropogenic emissions significantly affecting the climate.'

Conclusion

A system for international trading of GHG emissions limitations or reductions could provide significant environmental and economic benefits. This report has analysed the legal issues, and related issues of organization, procedure and implementation, presented by two possible pilot

GHG trading systems: an allowance trading system and an emissions budget system. The analysis concludes that all these issues can in principle be resolved in a satisfactory manner and do not represent a material impediment to establishing a successful pilot trading system.

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Further reading

The text of this publication is based on:

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

A previous plain language publication in this series was:

Robin Clarke, *Controlling Carbon Dioxide Emissions: the tradeable permit system* (United Nations, Geneva, 1995, UNCTAD/GID/11)

This was based, in turn, on five technical papers:

United Nations Conference on Trade and Development, *Combating Global Warming: study on a global system of tradeable carbon emission entitlements* (United Nations, Geneva, 1992, UNCTAD/RDP/DFP/1)

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* (UNCTAD/GID/8, Part II, 1994)

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* (UNCTAD/GID/8, Part I, 1994)

Peter Bohm, *An Analytical Approach to Evaluating the National Net Costs of a Global System of Tradeable Carbon Emission Entitlements: with special emphasis on the effects on different country categories* (UNCTAD/GID/9, 1994)

Scott Barrett, *The Strategy of Joint Implementation in the Framework Convention on Climate Change* (UNCTAD/GID/10, 1994)