## Submission to the Inquiry into the Regulatory Arrangements for Trading in Greenhouse Gas Emissions

Submission by Matthew Brooks February 1998

## Submission to the Inquiry into the Regulatory Arrangements for Trading in Greenhouse Gas Emissions

Secretary of House of Representatives Standing Committee on Environment, Recreation and the Arts Parliament House, Canberra ACT 2600

Submission by Matthew Brooks BE

Contact Details :

Matthew Brooks 32 Chapman Parade FAULCONBRIDGE NSW 2776

#### **Terms of Reference of Committee**

INQUIRY INTO THE REGULATORY ARRANGEMENTS FOR TRADING IN GREENHOUSE GAS EMISSIONS

The Committee will inquire into the regulatory arrangements that would need to be put in place to support a market in greenhouse gas emissions including:  $\cdot$ 

1. mechanisms for measuring, verifying and monitoring emissions and the compliance with contracted arrangements

2. mechanisms to integrate emissions trading with the development of carbon sinks (such as timber plantations, gas aquifer reinjection, soil rehabilitation etc), including the science, measurement and security of such arrangements

3. the allocation of the right to emit greenhouse gases

4. regulatory mechanisms to support a national market and potentially an international market in emissions trading

5. possible emission traders, administration and transaction costs

6. roles and responsibilities of governments and other stakeholders

7. the impact of emission trading on the environment and industry and the economic and social welfare of the Australian community.

#### **Contents of Submission**

- 1.0 Introduction
- 2.0 Background
  - 2.1 Scientific Opinion
  - 2.2 Policy Choices
  - 2.3 ABARE's Research on International Emissions Trading
  - 2.4 Kyoto Outcomes
    - 2.4.1 Differentiation
    - 2.4.2 Coverage and Inclusion
    - 2.4.3 International Emissions Trading
- 3.0 Emissions Trading Theory
  - 3.1 Definition of Emissions Trading
  - 3.2 Economics of Externality
  - 3.3 Policy Principles
  - 3.4 Theory of the Producer
- 4.0 Regulatory Arrangements for Emissions Trading
  - 4.1 Measurement and Compliance
    - 4.1.1 Determination of Actual Emissions
    - 4.1.2 Verification of Permit Ownership
  - 4.2 Integration of Carbon Sequestration
  - 4.3 Allocation of Rights
    - 4.3.1 Necessary Conditions
    - 4.3.2 Definition of the Instrument
    - 4.3.3 Method of Allocation
      - 4.3.3.1 Auction of Permits
      - 4.3.3.2 Grandfathering of Permits
    - 4.3.4 Complicating Factors
      - 4.3.4.1 Uncertain Future Value
      - 4.3.4.2 Barriers to Entry
      - 4.3.4.3 Unclear Incentives
      - 4.3.4.4 Lobbying for Permits
  - 4.4 Mechanisms for a market
  - 4.5 Emission Traders and Administration
  - 4.6 Government and Stakeholders
  - 4.7 Impact of Emission Trading
- 5.0 Recommendations
  - 5.1 Recommendation One Introduce a Paper Trial
  - 5.2 Recommendation Two Harmony with Energy Policy
- 6.0 References and Bibliography

#### 1.0 Introduction

It serves as a good introduction to this discourse on greenhouse gas emissions trading to consider the international problem of Climate Change and some comments made by national and international leaders about the problem and their respective government's responses.

Consider the Prime Minister's 'Safeguarding the Future : Australia's Response to Climate Change' of 20 November 1997.

"The world's climate scientists have provided us with a clear message - that the balance of evidence suggests humans are having a discernible influence on global climate.

What is required is sober, sensible but forward looking action to reduce greenhouse gases and this is the approach my Government will adopt.

Although Australia contributes only 1.4 per cent of the world's greenhouse gas emissions we want to play our part in meeting this challenge. But pulling our weight doesn't mean carrying more than our share of the burden. Only with all countries working together, carrying equitable burdens, can we achieve an effective global outcome.

This will require creativity, persistence and in some instances, sacrifices - but the benefits of preserving our environmental and quality of life for the sake of our children are too important to forgo"

Consider also the following statements given by the President of the United States in his 'State of the Union' Address to the Congress on January 27, 1998.

"Our overriding environmental challenge ... is the worldwide problem of climate change, global warming, the gathering crisis that requires worldwide action. The vast majority of scientists have concluded unequivocally that if we don't reduce the emission of greenhouse gases, at some point in the next century we'll disrupt our climate and put our children and grandchildren at risk"

The President then went on to make the argument that with innovative policy and resolve the problem of Climate Change can be adequately mitigated.

"Every time we have acted to heal our environment, pessimists have told us it would hurt the economy... We have always found a way to clean the environment and grow the economy at the same time. And when it comes to global warming we'll do it again"

The central issue for Governments in the area of Climate Change policy can be expressed as follows:

... to mitigate the risks associated with Climate Change in the most economically efficient manner

The purpose of this discourse is to :

... assist in the design of a feasible system for emission trading and study the consequences of implementing such a scheme

## 2.0 Background

## 2.1 Scientific Opinion

The following extract from the Intergovernmental Panel on Climate Change (IPCC) Working Group II (1995) conveys the scientific opinion with respect to International Climate Change.

"Human activities are increasing the atmospheric concentrations of greenhouse gases - which tend to warm the atmosphere - and, in some regions, aerosols - which tend to cool the atmosphere. These changes in greenhouse gases and aerosols, taken together, are projected to lead to regional and global changes in climate and climate related parameters such as temperature, precipitation, soil moisture, and sea level. Based on the range of sensitivities of climate to increases in greenhouse gas concentrations reported by IPCC Working Group I and plausible ranges of emissions (IPCC IS92; see Table 1), climate models, taking into account greenhouse gases and aerosols, project an increase in global mean surface temperature of about 1-3.5°C by 2100, and an associated increase in sea level of about 15-95 cm. The reliability of regional scale predictions is still low, and the degree to which climate variability may change is uncertain. However, potentially serious changes have been identified, including an increase in some regions in the incidence of extreme high temperature events, floods, and droughts, with resultant consequences for fires, pest outbreaks, and ecosystem composition, structure, and functioning, including primary productivity"

### 2.2 Policy Choices

Policymakers should remember that reductions in greenhouse gas emissions are *technically* feasible and can be *economically* feasible. There are technological and policy measures that can accelerate technology development, diffusion, and transfer in all the important sectors.

Policymakers should understand the sectorial distribution of our Greenhouse Gas Inventory when they consider any policy measure. It is clear from our inventory that the major source of our greenhouse gas emissions is the Stationary Energy sector, which is mainly electricity generation. Targeting specific sectors cannot be ruled out.

#### Australia's Greenhouse Gas Inventory (1990)

(excluding land use change and forestry)

Sector	Net Greenhouse Gas Emissions Mt CO <sub>2</sub> e
All Energy	293.3
- Stationary Energy	205.5
- Transport	61.8
- Fugitive	26.0
Industrial Processes	12.1
Agricultural	88.8
Waste	14.8
TOTAL NET EMISSIONS	409

Source : Commonwealth Dept of Environment (1997), Australia's Second National Report under the UN Framework Convention on Climate Change

Mitigation of greenhouse gas emissions depends on reducing barriers betweens firms, sectors, regions and nations in the following activities :

- diffusion and transfer of technology between firms, sectors, regions and nations
- mobilising financial resources for adoption of new technology
- assist in the implementation of behavioural changes and technological opportunities in all sectors

A number of policies can facilitate the penetration of less greenhouse gas intensive technologies and can modify consumption patterns these include :

- Putting in place appropriate institutional and structural frameworks
- Energy pricing strategies (e.g., carbon or energy taxes)
- Emissions Trading
- Voluntary programs with industry
- Demand side management programs by energy utilities
- Stimulating R&D to make new technologies available
- Renewable energy incentives
- Incentives such as provisions for accelerated depreciation for investors in relevant technology

#### 2.3 ABARE's Research on International Emissions Trading

Before the Kyoto Conference in 1997, ABARE (Australian Bureau of Agricultural and Research Economics) carried out some economic analysis on the international costs of uniform targets and differentiated targets and while undertaking this research it published some research on the international benefits of an International Emissions Trading scheme.

In particular, ABARE demonstrated the benefits of international emission trading by examining the global costs of uniform abatement with those costs incurred under an International Emissions Trading scheme in which the initial allocation of emission permits to countries were based on their actual levels of emissions in 1990. (ie. grandfathering allocation of emission permits). The results are given below, it shows the sensitivity of Gross National Expenditure to the reduction in greenhouse gas emissions.

THE ELECTRONIC VERSION OF THIS SUBMISSION DOES NOT INCLUDE THIS GRAPH SUPPLIED WITH THE ORIGINAL SUBMISSION

Source : Megabare Model and Climate Change Policy by ABARE (1997)

The ABARE results show that under the regime of International Emissions Trading there would be a significantly lower economic cost of achieving the objective, the abatement of greenhouse gas emissions. In particular, it shows that in the early years there is great economic advantage by trading emissions between low cost abatement countries (eg. Russian Federation) and high cost abatement countries.

#### 2.4 Kyoto Outcomes

The key outcomes for Australia were as follows : Differentiation, Coverage and Inclusion of Carbon Sinks and Land Use Changes and the possible development of an International Emissions Trading scheme.

## 2.4.1 Differentiation

The Kyoto meeting established differentiated Greenhouse Gas Emission Targets for Annex I countries (Australia is an Annex I country). The Australian target is +8% on 1990 levels.

### 2.4.2 Coverage and Inclusion

There was comprehensive coverage of gases, emission sources and sinks. The agreement recognises Australia's circumstances in the land use change and forestry sector. (If Australia can reduce its land clearing rates the GHG emissions avoided could offset any possible increases in the energy sector)

#### List of Greenhouse Gases recognised in the Kyoto Protocol (1997)

Carbon Dioxide (CO<sub>2</sub>) Methane (CH<sub>4</sub>) Nitrous Oxide (N<sub>2</sub>O) Hydrofluorocarbons (HFCs) Perfluorocarbons (PFCs) Sulphur hexafluoride (SF<sub>6</sub>)

## 2.4.3 International Emissions Trading

The Kyoto Protocol opens the possibility of an International Emissions Trading scheme. Article 6, Point 3 authorises Annex I countries to transfer or acquire emission reduction credits for its compliance. Also, Article 16 bis commits a future conference to define the relevant principles, modalities, rules and guidelines, in particular for verification, reporting and accountability for emission trading.

## 3.0 Emissions Trading Theory

#### 3.1 Definition of Emissions Trading

Emission Trading is a market based method of reducing greenhouse gas emissions in an economically efficient manner

Emission Trading allows the market to achieve reductions rather than rely on *command and control* directives from Government.

It has the features common to many free markets and they are: low cost, flexibility in choices and innovation by producers.

An emission trading scheme would involve a *market* in the exchange of *emission permits* (or "credits").

The term *permit* is the right to emit which would be conferred from Government to emitters. The allocation of these permits or rights from Government would be the initial allocation or the primary market for permits. The term *credit* is associated with carbon sequestration or an emission reduction measure relative to a base case for emissions. In general, the terms are synonymous.

### 3.2 Economics of Externality

Emissions of greenhouse gases by individual firms is an *externality*. The externality exists because the emission of the greenhouse gases by firms cause harm to the environment and this harm is not transacted as a cost of production to the firm. The economic cost of the emissions need to be *internalised* into the cost functions of firms to allow for it to be considered in decision making. Emission Trading allows for the cost of emissions to be considered when firms are making choices which may affect emissions.

### 3.3 Policy Principles

An economically efficient policy such as emissions trading would achieve a number of policy objectives. It would minimise the economic cost of achieving our international commitments. Emission trading would also result in the polluter paying for emission abatement which is a satisfactory policy outcome. In a general sense, emission trading would establish a framework whereby there would be incentives for innovation. Because Climate Change is a global problem all emissions and emissions reductions are of equal value and are interchangeable, unlike acid rain and sulfide emissions, there are no locational dimensions.

## 3.4 Theory of the Producer

# The economic basis for the efficiency of emissions trading is that there exists differences in the marginal cost of emissions abatement between firms, sectors in the economy, regions and between countries

To fully understand the operation of economic instruments in the area of greenhouse gas emissions trading it is useful to consider some economic theory of the *producer*. In this case, we consider the reduction in greenhouse gas emissions to be carried out by producers who have marginal costs associated with their production of greenhouse gas emissions reductions.

## Emissions Trading - The Theory of the Producer



In this example there are two firms considered, Firm A and Firm B, both emit greenhouse gases and both have the capacity for abatement but at a cost which is described by their marginal cost of abatement curves given above. The marginal cost of abatement curves are functions of each firms mode of operation, this is largely determined by technology.

Consider the point where the two marginal cost curves intersect, this is given by the emission reduction Eer with marginal cost at Ec, at this point it would cost both firms the same amount to each achieve an emission reduction of Eer.

Now consider a target set by Government at Ter. The cost of Firm B complying with this target is Bc and similarly of Firm A complying is Ac. Now because of the differences in the firms marginal cost curves there is a difference. Under the criteria of least economic cost abatement it is economically efficient to have Firm A reduce its emissions by 2Ter ie achieve its own target and Firm B's aswell, as this minimises the total economic cost.

A consequence of this theory is that emissions trading instruments can achieve the economically efficient way of achieving GHG emissions reductions. If the target Ter was administered to both firms and there was the ability to transfer emissions reduction rights or credits and was sanctioned by the

appropriate laws then Firm B would purchase emissions reductions rights from Firm A, if the cost of purchasing the rights is less then the marginal cost of abatement.

Following this example and extrapolating it somewhat, we can see that there would be many firms with different marginal cost of abatement curves and this is the driver of emissions trading in achieving economic efficiency in reducing emissions.

## 4.0 Regulatory Arrangements for Emissions Trading

The following is a discussion on the various choices that need to be made to implement an emission trading system.

### 4.1 Measurement and Compliance

mechanisms for measuring, verifying and monitoring emissions and the compliance with contracted arrangements

The verification of compliance is critical to the effectiveness of the emission trading scheme. Quite simply, if there is uncertainty associated with compliance then the scheme will have no creditability.

The task at hand here is the task of ensuring that the level of emissions from emitters does not exceed their level of ownership of the necessary permits. However, if carbon sequestration were to be admitted into the scheme then there would need to be a process of confirming the amount of carbon sequestered.

The function of compliance here has two (2) main objectives :

- 1. Determining the level of real emissions for each emitter required to comply
- 2. Verification of the permit ownership for each emitter required to comply

#### 4.1.1 Determination of Actual Emissions

This means that there needs to be something similar to a Greenhouse Gas Inventory carried out for each emitter. The same methodology used for calculating the National Inventory must be used to ensure consistency. It is relatively simple to calculate emissions from the quantity of fossil fuel used for combustion. The onus of compliance should be on the physical emitter.

## 4.1.2 Verification of Permit Ownership

If after the initial allocation of permits there is a strong and fluid secondary market in trading the permits then the task of verifying ownership of permits may be difficult. There would need to be a central registry for the ownership and transfer of permits.

#### 4.2 Integration of Carbon Sequestration

mechanisms to integrate emissions trading with the development of carbon sinks (such as timber plantations, gas aquifer reinjection, soil rehabilitation etc), including the science, measurement and security of such arrangements

Carbon sequestration is the process where  $CO_2$  is absorbed from the atmosphere in a gaseous state and converted to a solid form of carbon which reduces the atmospheric concentration of  $CO_2$  which mitigates Climate Change effects. The key sector for this in the Australian economy is the forestry sector.

In general, the forestry sector is a store or 'sink' of carbon as trees absorb carbon dioxide while they grow. The forestry sink is enhanced by tree growth and reduced by harvesting.

The problem inherent in the admission of carbon sinks into an emission trading scheme is the problem of determining how much  $CO_2$  has been sequestered from the atmosphere in total net terms.

The following article in the Australian Financial Review on 18 December 1997 explored these issues.

"When woodland is cleared for agriculture, some of the aboveground vegetation may be burnt immediately, some burnt within the year, and some not burnt at all but left to decay. The inventory methodology (for National Greenhouse Gas Inventory) assumes that one-tenth of the carbon from cleared vegetation is emitted in each of the following 10 years, and that one-twentieth of the soil carbon associated with the cleared vegetation is emitted in each of the following 20 years. Turning a hectare of Queensland scrub into cleared beef grazing land today will have an impact on the greenhouse gas inventory for the next 20 years"

The article went on to make the following comment.

"(Emission Traders) who consider paying landowners to leave land uncleared (ie the landowner has sold GHG emission reduction credits) may decide that the value of leaving a tonne of carbon standing in a tree is much less than the value of leaving a tonne of fossil carbon in the ground. Standing biomass is subject to a range of risks - wildfire, disease, clearing by a future owner, and changes in estimation methodology to name a few. Saving a tonne of carbon by not burning fossil fuel, on the other hand, is easily verifiable and risk free.

Avoiding land clearing and reducing emissions both have a role, but they are not interchangeable."

This presents a powerful argument for not admitting development of carbon sinks into an emission trading scheme. However, due to Australia's special position, we should strive to have sequestration admitted to the international scheme and set the example by including it in our national scheme

Some of the other factors which relate to carbon sinks which would need to be addressed in an emission trading scheme are as follows :

- mass of vegetation cleared per hectare
- whether vegetation cleared is intact (native) vegetation or regrowth
- carbon content of soils and extent of soil carbon loss
- carbon content of species cleared
- the age of trees cleared

All these factors create an uncertain framework for the measurement of emissions reductions achieved which complicate emission trading.

## 4.3 Allocation of Rights

the allocation of the right to emit greenhouse gases

Before we consider the *method* of allocating rights to emit greenhouse gases we must consider some of the critical choices that Government needs to make before this needs to be considered.

### 4.3.1 Necessary Conditions

These are the fundamental choices that are necessary for emission trading to occur in a rational manner:

- 1. Government needs to choose a future *target* for greenhouse gas emissions. This would be its target to fulfil its international commitments. This target can be considered as our international rights to emit and should be the basis of our domestic measures.
- 2. Government needs to choose the *temporal loading* of the target. This is the trajectory of total emissions per annum that Australia should follow in order to achieve the longer term target. We can choose to make reductions early in the time frame or later depending on our attitude to risk and the effects of other policy.
- 3. Government needs to define the properties of the permit or the credit.
- 4. Government needs to determine the method of allocating the right to emit greenhouse gases

### 4.3.2 Definition of the Instrument

The starting point in emissions trading is the definition of the *permit* ("*credit*") and the properties associated with it.

The permit confers from Government to the Owner of the permit the right to emit greenhouse gases.

One complicating issue is that in the inter-temporal sense there will be a difference in value of the permits depending on the temporal allocation of the permits

The key issues are:

1. *Duration* of each permit - a one year duration is acceptable. The duration of permits is determined by the temporal allocation of the target. If there is a yearly target set to achieve the longer term target, then it seems natural to have permits with duration of one year.

2. Coverage of gases - the gases included in the scheme should be the same as the types of gases mentioned in international commitments. Permits should be in  $CO_2$  equivalence defined according to the international methodology.

Examples of parties in the economy that would expect to get an allocation of rights to emit greenhouse gases :

- Energy Producers (Stationary Energy Electricity)
- Fuel Combustion (Non-Stationary Energy Transport)
- Fugitive emissions from fuels
- Manufacturing industries and construction
- Industrial processes
- Mineral products
- Chemical industry
- Metal industry
- Agriculture
- Field Burning of Agricultural residues
- Waste disposal on land

• Waste incineration

#### 4.3.3 Method of Allocation

There are two (2) methods of initially allocating the right to emit greenhouse gases:

- 1. Auctioning of Permits
- 2. Grandfathering of Permits

The initial allocation of permits can be thought of as the primary market and the subsequent trading that would occur can be thought of as the secondary market.

## 4.3.3.1 Auction of Permits

Auctioning of permits means that the total quantum of the permits for a period of time are sold to the parties offering the highest prices. In practice each emitter needing to buy permits would be prepared to pay an amount upto but not exceeding the cost of abatement and as a result few trades in the secondary market would occur.

The necessary consequence of auctioning permits is that there would be a residue of funds in the hands of Government. Another consequence is that Industry would view this as a tax and it does not recognise what the emitters had before, that is the right to emit free of any charge.

## 4.3.3.2 Grandfathering of Permits

Grandfathering of permits means that the permits are given to emitters free of charge and issued on the basis of historical levels of emissions. The choice of a base year must be made and then permits allocated on the basis of the emissions in that year.

This is acceptable to emitters because their previous rights to emit are recognised. The choice of base year will be contentious and will create winners and losers in the allocation of rights by Grandfathering. There is one interesting consideration worthy of attention with Grandfathering, if a firm has taken action before the base year to reduce emissions, then in retrospect, it has wasted the money - because if it hadn't have done this action it would have got more permits.

### 4.3.4 Complicating Factors

There are a number of complicating factors associated with the allocation of rights to emit greenhouse gases.

### 4.3.4.1 Uncertain Future Value

As a result of uncertainties with the allocation of future permits to emitters and any changes to the total emission cap there will the uncertainty in the future value of the permit. The admissibility of carbon sequestration and the associated methodology that goes with it is another source of uncertainty in the future value.

This uncertainty will cause problems for intending investors in affected industries - we need to avoid this uncertainty particularly when it may delay or extinguish developments in greenhouse gas friendly activity.

### 4.3.4.2 Barriers to Entry

It is unclear how grandfathered permits affect barriers to entry for new participants in an affected industry or sector. The economic theory tells us that there is no barrier to entry as the permits are now

an opportunity cost to producers who receive a grandfathered right to emit. This may require further investigation before an Emissions Trading scheme is implemented.

#### 4.3.4.3 Unclear Incentives

Some of the critical considerations are as follows :

How does a person developing renewable energy projects see an incentive or comparable advantage by emission trading ?

How do the transport sector receive an allocation or appropriate economic signals ?

How do public transport projects see an incentive ?

## 4.3.4.4 Lobbying for Permits

The process of allocating rights to emitters would be a strong political struggle - as large competing interests lobby the decision makers to maximise their allocation of permits. An allocation of rights to emit is equivalent to a capital gift from the Government. There needs to be full and open disclosure of the allocation of rights to emit and the levels of the allocation.

#### 4.4 Mechanisms for a market

regulatory mechanisms to support a national market and potentially an international market in emissions trading

There needs to be some legislation that prohibits prescribed emitters from emitting more than their level of permit ownership and there needs to be penalties and sanctions for emitters that do not comply. It is important to put in place sufficient regulatory strength to ensure compliance.

There are considerations associated with the development of the secondary market for trading. After the initial allocation of permits it is anticipated that there will be quite strong trade in the permits between parties in the economy. Due to the nature of the instrument, we are dealing with a financial market and this is important. The regulation required for emission trading and the nature of the participants will result in a financial market being established similar to a stock exchange or futures exchange trading in commodities. Firms that will be required to comply with emissions permits will require a liquid market in trading the instrument and due to the wide inclusion of firms and sectors, the secondary market could probably develop in a forum such as a futures exchange.

### 4.5 Emission Traders and Administration

possible emission traders, administration and transaction costs

#### 4.5.1 Possible Traders

After the initial allocation of permits there would exist a secondary market for trading permits. The secondary market should allow any party to trade and not be restricted to emitters. This helps in the process of price discovery.

Financial markets operators such as the Sydney Futures Exchange should be asked for their expressions of interest in operating a market in trading emissions permits.

### 4.5.2 Functions of the Administrator

The key functions would be :

- administering a registry of the initial allocation of permits
- issuing credits for carbon sequestration activities
- verifying the ownership of permits at time of compliance

### 4.5.3 Transaction Costs

The transaction costs associated with emissions trading are defined as the difference between buying and selling price of the permit.

The transaction cost can be thought of as a 'search' cost necessary for finding a party with whom to trade and the reaching and implementation of an agreement.

Preference should be given to an homogenous permit that is therefore easily traded. The contrast to this should be avoided, the scheme should not be allowed to operate on an 'over the counter' basis, where every trade is transacted through individual legal arrangements.

Engaging a financial markets operator could allow for a low transaction cost financial product to be implemented.

#### 4.6 Government and Stakeholders

roles and responsibilities of governments and other stakeholders

The Commonwealth Government should take responsibility for developing the emissions trading scheme. The States should not proceed with any emissions trading scheme on their own.

There are jurisdictional difficulties that would need to be addressed. An example is the Electricity Supply Act of NSW. It talks about guidelines for emissions of electricity retailers and the benchmark for the NSW electricity sector is a reduction in the emission of the principle greenhouse gases (carbon dioxide, methane and nitrous oxide) to 5% below the 1989-90 per capita level (NSW) by the year 2000-2001. This guideline sets the basis for a possible emission trading scheme. Retailers could trade between themselves in order to achieve economically efficient compliance.

The Committee of Inquiry into Sale of the NSW Electricity Assets examined the issue of emissions trading. Under its terms of reference it accepted submissions from the public on Environmental Protection with respect to the privatisation of NSW electricity industry.

The recommendation from the committee was

" ...encourage the development of a voluntary emissions permit trading scheme by requiring IPART to administer a Register of Emissions Trades. Emissions trading will facilitate least-cost innovative achievement of greenhouse benchmarks ... "

The States should not proceed with their own emissions trading schemes as this would result in duplication and wasted effort when a national scheme would eventually come into existence.

#### 4.7 Impact of Emission Trading

the impact of emission trading on the environment and industry and the economic and social welfare of the Australian community.

Few would argue with the following statement :

"The economic cost of Australia's compliance with our international greenhouse gas commitments would be minimised by successful use of emissions trading"

Emissions trading is good for the social welfare of Australians because it is a mechanism that allows us to most efficiently mitigate the climate change problem.

The social benefits are twofold : it helps deliver a better environment by reducing climate change and it minimises the economic cost of doing it. We can conclude that emissions trading would preserve jobs while facilitating our reduction in greenhouse gas emissions.

It is good for industry because it allows the most efficient sectors and firms in the economy to deliver the greenhouse gas emissions reductions.

The Australian Business Community has embraced the climate change problem through the Greenhouse Challenge Program. This has resulted in voluntary reductions of 22 million tonnes of  $CO_2$  equivalent by 2000. The companies that have signed agreements account for over 45 per cent of Australia's industrial emissions.

If there was any doubt as to the benefits of emissions trading we should conduct and indicative trial in order to quantify the benefits associated with it and compare that to the economic cost of not proceeding with emissions trading.

There is the possibility that Australia can be a seller of credits in an international scheme and hence there would be financial benefit for Australia. In view of the possibility we should gain as much experience in emissions trading as early as possible.

## 5.0 Recommendations to the Committee

## 5.1 Recommendation One

#### The Government establish an Emissions Trading 'paper trial'

A *paper trial* would allow us to refine the practical considerations such as measurement, compliance, allocation of rights and the administrative aspects related to a scheme. A *paper trial* would allow us to develop the skills associated with emissions trading which would be useful in view of possible future international emissions trading schemes. It would be beneficial for us to develop skills in this area as soon as possible.

The Government should ask for interested parties to participate in the paper trial and form a group to cooperate with Government on a consultative basis to establish the paper trial with the objective of identifying benefits, confirming that the various practical considerations work in practice and develop skills in emissions trading.

## 5.2 Recommendation Two

#### The Government harmonise Emissions Trading choices into its Energy Policy

The Government should strive for consistency and integration with emissions trading opportunities and its energy policy choices.

The policies of particular interest are :

1. The Sustainable Energy Green Paper

(and forthcoming White Paper)

2. The Prime Minister's "Safe Guarding the Future"

(reference to renewable electricity and greenhouse emissions intensities of electricity pools)

Emissions Trading will have a strong impact on energy policy and in particular the development of new electricity generation. The Sustainable Energy Whitepaper should include Emission Trading as an incentive and framework for lower emissions energy and renewable electricity.

#### 6.0 References and Bibliography

Australian Financial Review (page 15) 18 December 1997 by George Wilkenfeld

Australian Financial Review (page 21) 26 November 1997 by Robin Roy and Graham Mawer

British Columbia Ministry of Environment, Lands & Parks Web Pages at http://www.env.gov.bc.ca/main/newsrel/fisc9798/november/nr135.htm

Carbon Taxes, Tradeable Emission Permits and "Feebates" by David Thorp UNSW

Committee of Inquiry into Sale of the NSW Electricity Assets 1997, Report, (R. Hogg, Chairman), State of New South Wales

Competing in Electricity : The Role of Regulation by Robert Milliner of Mallesons Stephen Jacques presented at an Electricity Supply Association of Australia conference 18-19 June 1997 at Hotel Sofitel Melbourne

Electricity Supply Act 1995 (of NSW Parliament) Further Environmental Guidelines and Requirements Retail Suppliers - Greenhouse Gas Reduction Strategies July 1997 at http://www.doe.nsw.gov.au/ on 6 August 1997.

Framework for Greenhouse Emission Trading in Australia, Industry Commission Research Paper by Cornwell, Travis and Gunasekera

Kyoto Protocol to the United Nations Framework Convention on Climate Change - Conference of the Parties Kyoto, 1-10 December 1997

Megabare Model and Climate Change Policy - the Role of Research in Policy Development by Roger Stuart, Stephen Brown and Kevin Hanslow at http://www.abare.gov.au/research/gigabare/GIGABARE/CP97.16.htm on 14 January 1997

Outcomes of the Third Session of the Conference of the Parties to the Framework Convention on Climate Change, Kyoto, 1-11 December 1997 at http://www.dfat.gov.au/environment/climate/cop3.htm on 6 February 1997

Requirements for a Pilot Greenhouse Gas Offsets Program in British Columbia : A Discussion Paper by Cost Benefit/Economic Instruments Steering Committee : Environment Canada (1997)

Safeguarding the Future, Australia's response to climate change, statement by The Prime Minister of Australia to the Commonwealth Parliament, 20 November 1997

Summary for Policymakers : Scientific-Technical Analysis of Impacts, and Mitigation of Climate Change, IPPC Working Group II (1995) at http://www.unfccc.de/fccc/science/sumwg2.htm on 5 January 1998.

Sustainable Energy Policy for Australia, Green Paper (1996) Department of Primary Industries and Energy

Tradeable CO<sub>2</sub> Emission Permits in Europe by Paul Rudolf Koutstaal (1996) Rijksuniversiteit Groningen