

**“GREENHOUSE GAS MITIGATION MECHANISMS:
SOUTH AFRICAN POLICY & STRATEGY
AND
LESSONS FROM INTERNATIONAL JURISDICTIONS”**

BASIC PROJECT COMPANION RESOURCE TO:

**“Options for greenhouse gas mitigation measures
in South African legislation”**

**(Paper drafted by IMBEWU Enviro-Legal Specialists (Pty) Ltd within the context of
BASIC Task 3: Policy coherence and institutional coordination: clarifying institutional
responsibilities, including for the Clean Development Mechanism)**

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GENERAL INTRODUCTION

As its contribution to the BASIC Project (Task 3) IMBEWU Enviro-Legal Specialists (Pty) Ltd has produced a research paper that considers various South African environmental statutes as potential vehicles for greenhouse gas mitigation mechanisms. The paper is entitled: []

The South African environmental legal landscape is a particularly dynamic one, with a number of relevant statutes, White Papers, policies and strategies having emerged in recent times. Notwithstanding the legislative focus of its paper IMBEWU felt it was necessary to capture this information White Papers, policies and strategies so as to provide a perspective on how future South African environmental legislation may evolve. In addition, during the course of conducting its research IMBEWU gathered a very broad spectrum of information on mitigation actions being undertaken, or proposed to be undertaken, in other international jurisdictions.

Given that the abovementioned information had been gathered as a consequence of its research into the paper, IMBEWU considered it appropriate, particularly considering the object of the BASIC Project as an information-sharing forum, to include this information in a Companion Resource to the paper.

This document is that Companion Resource.

Please Note: Much of the information found in this Companion Resource had been gathered by February 2006. Consequently some of the information herein will have dated, although this factor is more likely to apply to the tables dealing with international jurisdictions found in Part Two than the South African information found in Part One. IMBEWU notes that, since February 2006, there have been many developments in the international area around greenhouse gas mitigation measures. Examples include the emerging framework for the Regional Greenhouse Gas Initiative (certain north-eastern states in the United States), or the initiative of Australian state governments to implement an emissions trading scheme. Given the rate at which these developments take place, this document does not include a description of the latest movements.

PART ONE:

1. SOUTH AFRICAN POLICY AND STRATEGY

1.1 Introduction

The law reform process of the Department of Environmental Affairs and Tourism (DEAT), which focuses on the renovation of South African environmental law, is part of a wider process of legislative revision currently being undertaken in South Africa.

The shift from the *Apartheid*-era to the present era of constitutional democracy necessitated a re-evaluation of virtually every aspect of the legislative *status quo*. The Department of Minerals and Energy (DME), for example, has been at the forefront of various reform processes that have produced policy and strategy documents that are of particular relevance to the subject of this paper. The *White Paper on the Energy Policy of South Africa* (1998)¹ (the Energy Policy White Paper) describes government's general policy for the supply and consumption of energy until, approximately, the year 2010, addresses all sectors of the South Africa energy sector and can be regarded as operating from three very broad perspectives, namely:

- the strengthening of existing energy systems;
- the development of underdeveloped systems; and,
- the need for renovation in the energy sector.

The Energy Policy White Paper notes that future energy policy should serve government's overall objectives of job creation, poverty alleviation and sustainable growth and describes the following five objectives of energy sector policy:

1. Increasing access to affordable energy services;
2. Improving energy governance;
3. Stimulating economic development;
4. Managing energy-related environmental and health impacts;
5. Securing supply through diversity.

Objective two of the Energy Policy White Paper ("improving energy governance") is further elaborated to recognise the need for government to increase its capacity to deal with the pressing needs of the day, while improving its ability to address long-term issues, e.g., the development of renewable energy resources to achieve a more sustainable

¹ Department of Minerals and Energy, *White Paper on the Energy Policy of the Republic of South Africa*, December 1998, www.dme.gov.za

energy mix. Within this context the following medium-term goal (three to seven years) is articulated: “Create appropriate institutional capacity to implement energy efficiency programmes”. Objective five of the Energy Policy White Paper (“securing supply through diversity”) operates from the perspective that government will pursue energy security by encouraging a diversity of both supply sources and primary energy carriers.

The following two medium-term objectives are noted for Objective Five:

- utilise integrated resource planning methodologies to evaluate future energy supply options; and,
- reappraise coal resources and support the introduction of other primary energy carriers as appropriate. (our emphasis)

It is within the contexts of encouraging energy efficiency and introducing primary energy carriers, other than coal, that most of the documents assessed below have been chosen. These documents are relevant to the objectives of this paper because they present an illustration of certain elements of the future South African regime pertaining to greenhouse emissions mitigation, namely renewable energy and energy efficiency.

A brief assessment of DEAT’s *National Climate Change Response Strategy for South Africa* is included in this Annexure “A” because it is a specific policy document pertaining to the particular matter of climate change, and associated greenhouse gas emissions.

1.2. White Paper on Renewable Energy Policy²

Renewable energy sources have not yet been comprehensively exploited in South Africa. However, the *White Paper on Renewable Energy* (the Renewable Energy White Paper) lays the foundation for widespread implementation of renewable energy and sets a target of ten thousand gigawatt-hours of renewable energy contribution to final energy demand by 2013. The Renewable Energy White Paper was approved by Cabinet in December 2003.

In order to achieve this goal a number of policy principles are enumerated, namely:

- Full cost accounting, i.e., power pricing based on the full economic, social and environmental costs and benefits of activities associated with energy production and utilization.
- Equity, i.e., equitable access to basic services for the current generation in the context of the inter-generational responsibility not to impair the capacity of future generations to ensure their well-being.

² Department of Minerals and Energy, *White Paper on Renewable Energy Policy*, November 2003, www.dme.gov.za

- Global and international co-operation and responsibilities, i.e., government’s recognition of its shared responsibility for global and regional issues and act with due regard for commitments made in this regard in relevant international agreements.
- Allocation of functions, i.e., government will allocate functions associated with renewable energy production, in a constitutional manner, and to those spheres of government most suited to achieving the required outcome.
- Participation, i.e., the participation of all stakeholders in energy governance will be encouraged.

The context of the Renewable Energy White Paper is the need to secure South Africa’s energy future through diversification of supply and it notes that government’s long-term goal is the establishment of a renewable energy industry producing modern energy carriers offering a sustainable, fully non-subsidised, alternative to fossil fuels. It is recognised that development of the renewable energy sector will *inter alia* require the use of financial incentives and that the preferred approach is a phased one, starting with “early win” investments in low cost technologies, e.g., biomass cogeneration, solar, wind and small-scale hydro. The Renewable Energy White Paper addresses four key strategic areas, namely:

- financial instruments to promote the implementation of sustainable renewable energy through the establishment of appropriate financial instruments;
- legal instruments to develop, implement, maintain and continuously improve an effective legislative system to promote the implementation of renewable energy;
- technology development to promote, enhance and develop technologies for the implementation of sustainable renewable energy; and,
- building capacity and education to develop mechanisms to raise awareness of the benefits and opportunities renewable energy offers.

A set of “objectives” and “deliverables” has been outlined for each key strategic area. For present purposes it is instructive to consider objectives and deliverables that have been identified under the strategic areas of “financial” and “legal” instruments. Table One provides a tabulation of the objectives and deliverables of the abovementioned financial and legal instruments.

TABLE ONE:	
WHITE PAPER ON RENEWABLE ENERGY POLICY	
GOALS OBJECTIVES & DELIVERABLES FOR FINANCIAL AND LEGAL INSTRUMENTS	
FINANCIAL INSTRUMENTS	LEGAL INSTRUMENTS
<p>Goal: To promote the implementation of sustainable renewable energy through the establishment of appropriate financial and fiscal instruments.</p>	<p>Goal: To develop, implement, maintain and continuously improve an effective legislative system to promote the implementation of renewable energy.</p>
<p>Objectives:</p> <ul style="list-style-type: none"> • To ensure that an equitable level of national resources is invested in renewable energy technologies, given their potential and compared to investments in other energy supply options. • To set targets for the directing of public resources for the implementation of renewable energy Technologies in combination with international sources of funding for this purpose. • To extend existing state financial support systems and institutions and introduce innovative approaches to the establishment of sustainable structures and financing mechanisms for delivering renewable energy systems. • To introduce appropriate fiscal incentives for renewable energy. • To facilitate the creation of an investment climate for the development of the renewable energy sector for the purposes of attracting foreign and local investors. 	<p>Objectives:</p> <ul style="list-style-type: none"> • To develop an appropriate legal and regulatory framework for pricing and tariff structures to support the integration of renewable energy into the energy economy and to attract investment. • To develop an enabling legislative and regulatory framework to integrate Independent Power Producers into the existing electricity system. • To develop an enabling legislative framework to integrate local producers of liquid fuels and gas from renewable resources into their respective systems.
<p>Deliverables:</p> <ul style="list-style-type: none"> • An analysis of the current financial framework and an identification of barriers to the implementation of renewable energy sources. • An investigation into appropriate financial (e.g., subsidies, and green certificates) and fiscal instruments/incentives (e.g. low interest loans and tax rebates) to stimulate the implementation of renewable energy technologies and practices. • Incentives and regulations for the promotion of thermally efficient housing in collaboration with the Department of Housing. • Clarify the role of the Central Energy Fund in financing the implementation of renewable energy initiatives. The Fund could be used for example to facilitate access to green financing, as well acting as a loan guarantor to reduce the risks for financing institutions. 	<p>Deliverables:</p> <ul style="list-style-type: none"> • Appropriate regulations for grid-connection and wheeling of electricity generated from renewable energy. • Phasing in of regulations requiring power generator's tariffs to be based on full cost accounting and the incorporation of environmental externalities. • New legislation for the energy sector incorporating renewable energy and energy efficiency that provides equitable opportunities for their development. • Regulations for the petroleum industry to accommodate locally produced bio-diesel and ethanol. • Clear rights for property owners to capture solar radiation on their property without interference by other structures or vegetation on neighbouring properties.

TABLE ONE:	
WHITE PAPER ON RENEWABLE ENERGY POLICY	
GOALS OBJECTIVES & DELIVERABLES FOR FINANCIAL AND LEGAL INSTRUMENTS	
FINANCIAL INSTRUMENTS	LEGAL INSTRUMENTS
<ul style="list-style-type: none"> • Monitor and evaluate the effectiveness of financial incentive schemes. • An equitable electricity tariff structure that will be managed by the National Electricity Regulator that addresses the issue of cost of supply for the different renewable energy technologies, including capital replacement costs for non-domestic users. • Support a national “green” market survey to ascertain the willingness of customers (households and commerce) to pay a premium for “green” energy. 	<ul style="list-style-type: none"> • Appropriate legal and regulatory instruments to stimulate the uptake of renewable energy power generation into the electricity system. • Mechanisms to increase the access of renewable energy to the national electricity grid.

Unfortunately, there has been no further legislative development of the Renewable Energy White Paper since November 2003. Consequently the abovementioned deliverables, and particularly those that would be of relevance to this paper, e.g., legal instruments for the uptake of renewable energy into the grid, have not been finalised. Processes for achieving certain of the deliverables have been set in motion. For example, the publication of the abovementioned Electricity Regulation Bill and National Energy Bill, both of which provide some indication of the future role for renewable energy (and energy efficiency) in the national power generation mix. By the same token the National Treasury has begun, but not completed, a process to investigate environmental fiscal instruments.³

However, it is submitted that the information contained on Table One can be taken as an indication that government intends both to legislate for future renewable energy production, and to encourage such production *inter alia* through the use of financial incentives. The Renewable Energy White Paper indicates that a Renewable Energy Strategy will be developed to focus efforts in the above regard. However, as matters currently stand such a Strategy has also not been released. A further note of interest is that the White Paper recognises that there are several areas of overlap between renewable energy and energy efficiency. These overlaps are apparent from certain elements of the policy and strategy documents discussed below.

³ See further reference to the National Treasury process at section two, above.

1.3. Energy Efficiency Strategy of the Republic of South Africa⁴

Within the context of South Africa's growing demand for energy - projected to rise exponentially over the next two decades - DME has published the *Energy Efficiency Strategy of the Republic of South Africa* (the Energy Efficiency Strategy). The Energy Efficiency Strategy *inter alia* sets a national target for energy efficiency improvement of 12% by 2014 and provides for a number of "enabling instruments" that may be harnessed to achieve this target.

Anticipated enabling instruments will include:

- economic and legislative means;
- efficiency labels and performance standards;
- energy management activities and energy audits; and,
- promotion of efficient practices.

The vision of the Energy Efficiency Strategy is articulated as being to "...encourage sustainable energy sector development and energy use through efficient practices thereby minimising the undesirable impacts of energy usage upon health and the environment and contributing towards secure and affordable energy for all".⁵ A series of eight goals, according with the three major principles of sustainable development, have been outlined within the context of the above vision.

Box One (overleaf) lists the eight goals of the Energy Efficiency Strategy.

⁴ Department of Minerals and Energy, *Energy Efficiency Strategy of the Republic of South Africa*, March 2005, www.dme.gov.za

⁵ *Id.*

BOX ONE: GOALS OF THE ENERGY EFFICIENCY STRATEGY

Social Sustainability

Goal 1: Improve the health of the nation

- Energy efficiency reduces the atmospheric emission of harmful substances such as oxides of Sulphur, oxides of Nitrogen, and smoke. Such substances are known to have an adverse effect on health and are frequently a primary cause of common respiratory

Goal 2: Job Creation

- Studies show that jobs will be created by the spin-off effects of energy efficiency implementation. Improvements in commercial economic performance, and uplifting the energy efficiency sector itself, will inevitably lead to nationwide employment opportunities.

Goal 3: Alleviate energy poverty

- Energy efficient homes not only improve occupant health and wellbeing, but also enable the adequate provision of energy services to the community at an affordable cost.

Environmental Sustainability

Goal 4: Reduce environmental pollution

- Energy efficiency will reduce the local environmental impacts of its production and use. These impacts include the atmospheric emission of harmful and odorous gases.

Goal 5: Reduce CO₂ emissions

- Energy efficiency is one of the most cost-effective methods of reducing Greenhouse Gas emissions, and thereby combating Climate Change. Addressing Climate Change opens the door to utilising novel financing mechanisms, such as the CDM, to reduce CO₂ emissions.

Economic Sustainability

Goal 6: Improve industrial competitiveness

- It has been demonstrated that one of the most cost-effective ways of maximizing commercial profitability is the adoption of appropriate energy efficiency measures. Nationwide, this will improve South Africa's export performance and improve the value that her economy derives from indigenous energy resources.

Goal 7: Enhance Energy Security

- Energy conservation will reduce the necessary volume of imported primary energy sources, crude oil in particular. This will enhance the robustness of South Africa's energy security and will increase the country's resilience against external energy supply disruptions and price fluctuations.

Goal 8: Reduce the necessity for additional power generation capacity

- It is estimated that the country's existing power generation capacity will be insufficient to meet the rising national maximum demand by 2007-2012. Energy efficiency is integral to Eskom's Demand Side Management programme, which is intended to reduce the level of load growth by a cumulative value of 4255 MW by 2025, equivalent to a saving of a six unit coal-fired power station. Efforts will be made to give Eskom responsibility for meeting a portion of the target set out in this strategy through its annual shareholder compact.

The Energy Efficiency Strategy provides an overview of the current context of energy efficiency in the country which overview includes:

- providing certain baseline statistics;
- a consideration of barriers to the uptake of energy efficient practices;
- setting targets for the uptake of energy efficiency in certain sectors, including commercial and public building sector (final energy demand reduction of 15% by 2015), residential sector (final energy demand reduction of 10% by 2015), transport sector (final energy demand reduction of 9% by 2015) ;
- indicating the need for the implementation of a system for the monitoring of energy efficiency and the efficacy of measures to implement energy efficiency; and,
- providing a list of projected outcomes, to be achieved by 2015, that are linked directly to the goals mentioned in Box One, above.

In order to achieve the goals mentioned in Box One the Energy Efficiency Strategy makes use of a range of “implementing instruments” which are intended to be applied in the appropriate manner to meet the specific needs of each of sector for which a target is articulated (see above). The implementing instruments are briefly described on Table Two.

TABLE TWO: ENERGY EFFICIENCY STRATEGY: IMPLEMENTING INSTRUMENTS	
Implementing Instrument	Comment
A. Support Mechanisms	These mechanisms are intended to be independent of financial and policy instruments
<i>Research and Technology</i>	The National Energy Research Institute will be funded to undertake a dedicated energy efficiency programme.
<i>Regulation</i>	Voluntary measures to implement energy efficiency are likely to have only limited success due to the historically low price of energy and limited awareness of the need for energy efficient practices. The National Energy Regulator will develop mandatory Energy Efficiency Standards
<i>Energy Audits</i>	Both auditing and the implementation of reasonable measures, e.g., to implement all “no-cost” measures identified, should be an obligation.
<i>Energy Management</i>	The proliferation of energy management, which enables the formalisation of monitoring, evaluation and targeting of energy consumption, will be supported.

**TABLE TWO:
ENERGY EFFICIENCY STRATEGY: IMPLEMENTING INSTRUMENTS**

Implementing Instrument	Comment
B. Policy, Mandate & Governance	The White Paper on Energy Policy (1998) mandates DME to promote energy efficiency through various means and to consider the establishment of an Agency as the instrument through which to achieve co-ordination, leadership and sector capacity development. It is recognised the government's present capacity to undertake energy efficiency programmes is limited.
C. Financial Instruments	The financial focus of the policy is towards self-finance, positive saving and job creation. It is anticipated that the greatest progress towards energy efficiency will be achieved through the implementation of standards, and regulation and management tools. The investments required to implement these measures should be borne by the direct beneficiary of the measure, e.g., the factory-owner investing in energy efficient processes, particularly when pay-back periods are short. However, where payback periods are less favourable then other enabling mechanisms should be encouraged, e.g., Clean Development Mechanism projects. Government's greatest cost will lie in the dissemination of information and co-ordinating a cohesive approach.
<i>Incentives</i>	At this stage of South Africa's development it is difficult to justify government subsidies for energy efficiency where there are many other, more pressing, socio-economic needs.
<i>Fee Bates</i>	A fee bate for vehicles (currently under consideration) require the imposition of levies on less efficient vehicles with funds collected from less efficient vehicles being used to cross-subsidise more efficient vehicles. The Energy Efficiency Strategy notes that the National Treasury is developing <i>A Framework for Considering Market-Based Instruments to Support Environmental Fiscal Reform in South Africa.</i> ⁶
<i>Financing of Public Sector Implementation Plan</i>	Treasury has approved the movements of certain budget lines, e.g., within the Public Building Sector, to permit the financing of energy efficiency investment, for which no financing has currently been provided for, from existing budget lines.
<i>Energy Service Companies (ESCOs)</i>	ESCOs perform the business of selling energy and managing energy resources and are thus able to implement management or other measures to reduce costs, improve energy efficiency and manage risk.

⁶ See section two, above.

**TABLE TWO:
ENERGY EFFICIENCY STRATEGY: IMPLEMENTING INSTRUMENTS**

Implementing Instrument	Comment
	ESCOs are not well developed in South Africa but it has been determined that there is merit in supporting this type of energy service delivery. It is noted the Eskom’s (the monopolistic power utility) Demand Side Management programme makes use of ESCOs. [The Energy Efficiency Strategy does not go so far as to state that government will support the development of ESCOs.
<i>Clean Development Mechanism (CDM)</i>	The CDM is specifically mentioned as a financial instrument that should be encouraged to assist in achieving more energy efficiency in South Africa. For more information on the CDM see: http://www.unfccc.int/cdm
<i>Energy Pricing</i>	In the future energy pricing will be based on the assessment of full economic, social and environmental costs and benefits.

The conclusion that can be drawn from the above brief outline of the scope of the Energy Efficiency Strategy is that, while government is aware of the importance of pursuing a number of actions that are relevant to the objectives of this paper, the legislative environment has not yet been created for such purposes.

1.4. **National Climate Change Strategy for South Africa**⁷

DEAT released its *National Climate Change Response Strategy for South Africa* (the Climate Change Response Strategy) in September 2004. The Climate Change Response Strategy indicates that climate change benefit may be derived from adopting a future strategy designed to move the economy towards a cleaner development path. Provision is made for the determination of certain strategic objectives, principles and proposals for addressing national priorities related to global climate change. For example, stress is placed upon the commercial opportunities offered by the Clean Development Mechanism, which it regards as a very important source of foreign direct investment for South Africa.

A very wide range of recommendations are made in the Climate Change Response Strategy. Some of these recommendations have been implemented, e.g., the establishment of a Designated National Authority for the Clean Development Mechanism. However, most of the recommendations are in the process of being implemented or are still to be implemented. Indeed, little concrete action to combat climate change can (as yet) be said to be a direct consequence of the Climate Change Response Strategy. For this reason the Climate Change Response Strategy is currently regarded with some circumspection by the South African “climate change community”. While this attitude may be understandable it should be noted that the Climate Change Response Strategy is less of a

⁷ DEAT, *A National Climate Change Response Strategy for South Africa*, September 2004, www.gov.environment.za

practical plan for action and more of an enumeration of actions that may be possible in the future - in the context of the mitigation of climate change.

In this context the Climate Change Response Strategy deals with the question of mitigation in some detail and makes a number of valid recommendations for actions that will assist in future mitigation efforts. It would be overly burdensome on this document to repeat what is already easily accessible and in largely summarised form. This is particularly because, as abovementioned, the realisation of most of the recommendations is still nascent and therefore unlikely to have great impact on the objective of this paper. Interested Readers are referred to the DEAT website where a downloadable version of the Climate Change Response Strategy is available.⁸

1.5. **A Framework for considering market-based instruments to support environmental fiscal reform in South Africa**⁹

The Draft Policy Paper released by the National Treasury in April 2006 outlines the role of market-based instruments for environmental fiscal reform in South Africa by identifying possible reform measures to revenue-raising instruments, in particular, environmentally-related taxes and charges and outlines their role in the country's wider fiscal policy.

The objectives of the Draft Policy Paper include:

- Exploring how environmentally-related taxes and charges could assist in progressing towards the achievement of environmental goals and objectives in a cost effective and efficient manner;
- Exploring how environmentally-related taxes are able to contribute to revenue raising requirements;
- Providing a guiding framework and develop a process for considering the use and development of different market-based instruments; and
- Providing a consistent set of criteria for evaluating environmentally-related tax proposals.

In this context, the Draft Policy Paper proposes that market based instruments could play a supporting role to the overarching goal of sustainable development by contributing to both revenue requirements and environmental objectives. It is acknowledged that at present, environmental outcomes in South Africa are achieved mainly through regulatory instruments. However, the underlying principle of the Policy argues that market-based instruments may have certain advantages over traditional command-and-control regulatory approaches and may be more efficient in addressing environmental concerns whilst also contributing to fiscal objectives.

⁸ www.environment.gov.za

⁹ National Treasury, *A Framework for considering market-based instruments to support environmental fiscal reform in South Africa*, April 2006.

The Policy flagged a number of tax reform options, including reforming existing environmentally-related taxes and charges such as for example taxes and levies imposed on transport fuels, vehicle taxation and electricity generation. The Policy concludes that existing environmental charges need to be improved and that options regarding new environmentally-related taxes must be investigated. The Policy also examines the role of voluntary agreements in the form of negotiated contracts between different stakeholders. While acknowledging that voluntary agreements have potential to provide rapid and simple solutions without placing undue burden on the regulator, the Policy notes that their development must nevertheless conform to certain stipulated principles to ensure effective and consistent application.

The Policy approach is in line with the international trend of state preference for adopting fiscal reform rather than creating new markets for environmental goods and services and provides a framework in which decision makers have the potential to support, discourage or modify behaviour through means other than traditional regulatory methods.

PART TWO

2. GREENHOUSE GAS MITIGATION MEASURES WITH REFERENCE TO INTERNATIONAL JURISDICTIONS

2.1 Introduction

Technologies, Policies and Measures for Mitigating Climate Change, the first technical paper to emanate from the Intergovernmental Panel on Climate Change (IPCC Technical Paper I), “provides a sectoral analysis of technologies and practices that will reduce growth in GHG emissions and of measures that can stimulate and accelerate the use of these technologies and practices...”¹⁰

The range of literature dealing with greenhouse gas mitigation measures provides guidance with respect to generally accepted categorizations of such measures.¹¹ Following this guidance, this paper uses the following three broad categorisations:

- Regulatory Measures;
- Voluntary Measures;
- Market-based Measures.

A variety of potential measures are available which may be used to influence emissions from more than one sector¹². For convenience these measures are categorised as follows on the Table below:

- Regulatory: mandatory standards which enact specific standards to be met by (a) category(ies) of products. Such mandatory standards could result in carbon emissions reductions, if they are stringent enough.
- Market-based programmes: provide for an incentive for the promotion of increased use of energy-efficient technologies and practices. Market-based programmes are often used in place of, or in addition to, mandatory standards (regulatory measures). Market-based programmes can be designed to induce earlier acceptance of new and innovative technologies in the marketplace than would otherwise have been the case. A combination of regulatory measures and

¹⁰ IPCC, *Technologies, Policies and Measures for Mitigating Climate Change* (Technical Paper I), at 9.

¹¹ Such literature includes, for example: Intergovernmental Panel on Climate Change, Technical Paper I, *Technologies, Policies and Measures for Mitigating Climate Change*, prepared under the auspices of IPCC Working Group II, November 1996.

¹² *Ibid*, at page 10.

market-based programmes can assist in easing the pressure for achieving compliance experienced by particular sectors or individual industries.

- Voluntary: voluntary agreement by manufacturers (without government-mandated legislation) to generate products that meet defined criteria. Voluntary agreements/standards can serve as alternatives to mandatory standards (regulatory measures).

The objective of this section is to provide a brief comparative overview of climate change mitigation measures of other international jurisdictions. The study merely seeks to highlight the various mechanisms implemented by selected states, in line with their respective commitments. While every effort was made to ensure that a comprehensive study was made of available mitigation measures, it should not be regarded as an exhaustive list. The paper does not address the benefits or weaknesses associated with each measure, nor does it attempt to make recommendations in that regard.

**TABLE:
GREENHOUSE GAS MITIGATION MEASURES WITH REFERENCE TO INTERNATIONAL JURISDICTIONS**

Country(ies)	Name of Mitigation Measure	Characteristics of Mitigation Measure
Category One: Regulatory Measures		
Germany	Mandatory Labelling	<p>Ecological labelling informs consumers about the environmental background of a product including its processes and production methods. It is a comparative tool used to differentiate homogeneous products according to their impact on the environment. Compulsory labelling may be classified as a command and control measure as producers must ensure that certain standards and regulations are met otherwise the label will not be granted and the product will be denied market access.¹³</p> <p>The mandatory labelling of energy consumption was introduced into German law by the Law on Labelling and Limits of Energy Consumption, 1998, which stipulates that additional information has to be provided by producers on the consumption of energy and other resources, as well as carbon dioxide emissions, for all technical devices and vehicles. In terms of EU Directive 2001/77/EC, EU member states are obliged to ensure that the so-called “guarantees of origin” certificates for traded electricity from renewable energy sources, are issued on request.</p> <p>There is ongoing debate over the criteria to be used when establishing a labelling programme for “green” electricity due to its homogenous nature and the fact that it does not incorporate the characteristics of its method of production in its final state.</p>

¹³ German Institute for Economic Research, Discussion Papers No. 374 “National Climate Change Policy – Are the New German Energy Policy Initiatives in Conflict with WTO Laws? Berlin, October 2003, at page 12.

**TABLE:
GREENHOUSE GAS MITIGATION MEASURES WITH REFERENCE TO INTERNATIONAL JURISDICTIONS**

Country(ies)	Name of Mitigation Measure	Characteristics of Mitigation Measure
		<p>The criteria for “green” production, i.e. production based on renewable resources, could include the following :</p> <ul style="list-style-type: none"> ▪ the reduction of greenhouse gas emissions, ▪ resource intensity, ▪ processes and procedures related to the set-up of new capacities (production of solar cells, the construction of hydropower stations, etc.).¹⁴
European Union	The Electricity (Fuel Mix Disclosure) Regulations, 2005	<p>The Regulations place an obligation on EU member states to ensure that electricity suppliers specify certain information regarding the contribution of each energy source to the overall fuel mix of the supplier over the preceding year, in bills provided for the consumption of electricity and in promotional materials.¹⁵</p> <p>The Fuel Mix Disclosure Regulations are a component of other EU Regulations, which aim to make environmental information more readily available to the public, and to encourage industry to work towards cutting emissions. In order to allow customers to make informed decisions, electricity suppliers are obliged to disclose a breakdown of the fuels used to generate electricity, as well as the carbon dioxide emissions and radioactive waste produced,¹⁶. These Regulations came into operation on 18 March 2005.</p>
European Union	Guarantee of Origins (Directive 2001/77/EC)	<p>In terms of Article 5 of the EU Directive 2001/77/EC member states shall, by not later than 27 October 2003, ensure that the origin of electricity produced from renewable energy sources can be guaranteed as such in accordance with objective, transparent and non-</p>

¹⁴ *Ibid*, at pages 14 – 15.

¹⁵ Electricity (Fuel Mix Disclosure) Regulations, 2005, Schedule: Section B, Condition 30A.

¹⁶ http://www.edie.net/news/news_story.asp?id=10614&channel=1

**TABLE:
GREENHOUSE GAS MITIGATION MEASURES WITH REFERENCE TO INTERNATIONAL JURISDICTIONS**

Country(ies)	Name of Mitigation Measure	Characteristics of Mitigation Measure
		<p>discriminatory criteria laid down by each member state and ensure that a guarantee of origin is issued to this effect in response to a request.¹⁷ This means that suppliers of “green” electricity must obtain a “guarantee of origin” certificate from the member state before they are able to sell it to consumers.</p> <p>Tied to this Directive are the Electricity (Fuel Mix Disclosure) Regulations: Directive 2003/54/EC discussed in No. 1.2 above. Therefore, a “green” energy supplier requires two certificates before it can sell “green” energy to the market.</p> <p>Member states are obliged to promulgate domestic legislation in compliance with the Directives 2001/77/EC and 2003/54/EC. For example, the United Kingdom included the Electricity (Fuel Mix Disclosure) Regulations, 2005, in its domestic law regulating electricity in October 2005, compelling electricity suppliers to disclose their fuel mix.</p>
Australia	Mandatory Renewable Energy Target (MRET)	<p>The Australian Government’s MRET is designed to increase the contribution of renewable energy to Australia’s electricity supplies. The MRET imposes a legal liability on wholesale purchasers and retailers of electricity to source renewable energy. Large buyers of electricity are collectively required to source an additional 9500 GWh of their electricity from renewable energy sources by 2010.¹⁸The legislation establishes the rules for the participation of renewable energy generators who may create renewable energy certificates (RECs). These RECs can then be traded to the liable parties to meet their individual targets.¹⁹</p>
Australia	Greenhouse Gas Abatement Scheme (GGAS)	<p>The New South Wales (NSW) GGAS came into operation on 01 January 2003 and was one of the first mandatory greenhouse gas emissions trading schemes to be established. GGAS aims to reduce greenhouse gas emissions associated with the production and use of</p>

¹⁷ Weller TH “Guarantee of Origin for Renewable Energies – Experiences and Outlook”, TUV Industrie Service GmbH, TUV SUD Group, 2004, at pages 2-5.

¹⁸ *Ibid.*

¹⁹ Fifth Annual Workshop on Greenhouse Gas Emission Trading: Australia – Update on Emissions Trading, September 2005, at page 1.

**TABLE:
GREENHOUSE GAS MITIGATION MEASURES WITH REFERENCE TO INTERNATIONAL JURISDICTIONS**

Country(ies)	Name of Mitigation Measure	Characteristics of Mitigation Measure
		<p>electricity, by using project-based activities to offset the production of greenhouse gas emissions.²⁰</p> <p>GGAS establishes annual statewide greenhouse gas reduction targets, and requires individual electricity retailers and certain other parties who buy or sell electricity in NSW to meet mandatory benchmarks based on the size of their share of the electricity market. Should a benchmark participant fail to meet their respective reduction target, penalties are incurred. Monitoring the performance of benchmark participants is undertaken by the Independent Pricing and Regulatory Tribunal of NSW (IPART) in its role as Compliance Regulator.²¹</p> <p>IPART is, in addition to monitoring compliance with GGAS, the body responsible for assessing abatement projects, accrediting parties to undertake eligible projects and creating certificates. IPART is also currently tasked with managing the Greenhouse Registry which records the registration and transfer of certificates created from abatement projects.²²</p>
Canada	Canadian Environmental Protection Act, 1999 (CEPA 1999)	<p>The Canadian Department of the Environment issued a Notice of Intent to develop Regulations on greenhouse gas emissions by Large Final Emitters (LFE) in terms of Part 5 and 11 of the CEPA 1999. The main objective of the proposed Regulations is to ensure national consistency of the mandatory emission intensity targets, by prescribing specific emissions intensity targets for industrial activities in each LFE sector.</p> <p>LFE companies would have access to several flexible compliance units to meet their legal obligations, namely:</p> <ul style="list-style-type: none"> ▪ Credits from other LFE companies that exceeded their emission intensity targets; ▪ Domestic offset credits;

²⁰ The Greenhouse Gas Abatement Scheme available at <http://www.greenhousegas.nsw.gov.au>

²¹ *Ibid.*

²² *Ibid.*

**TABLE:
GREENHOUSE GAS MITIGATION MEASURES WITH REFERENCE TO INTERNATIONAL JURISDICTIONS**

Country(ies)	Name of Mitigation Measure	Characteristics of Mitigation Measure
		<ul style="list-style-type: none"> ▪ Technology Investment Units; and ▪ International Kyoto units, including credits from Clean Development Mechanisms (CDM) and Joint Implementation (JI) projects and “greened” Assigned Amount Units (AAUs)²³.
United Kingdom	Renewables Obligation ²⁴	<p>The Renewables Obligation is enforced by a statutory Order promulgated in April 2002 under the Utilities Act 2000.</p> <p>The Obligation requires licensed electricity suppliers to source a specified percentage of the electricity they supply from renewable sources. Currently, for each megawatt hour of renewable energy generated, a tradable certificate called a Renewables Obligation Certificate (ROC) is issued. The specified percentage target is increased annually.</p> <p>Electricity suppliers can meet their obligation in the following manner:</p> <ul style="list-style-type: none"> ▪ By acquiring ROCs; ▪ By paying a buy-out price per megawatt hour; and ▪ By a combination of ROCs and paying a buy-out price. <p>Should a supplier choose to pay the buy-out price, the money is transferred into the buy-out fund. At the end of the 12-month obligation period, the buy-out fund is recycled to ROC holders.</p>
United Kingdom	Climate Change Levy (2001) ²⁵	The Climate Change Levy (CCL), implemented in April 2001, is contained in the United Kingdom’s Finance Act 2000 Part II, clause 30 and in Schedules 6 and 7.

²³ Canada Gazette, Part I, Notice of Intent to Regulate Greenhouse Gas Emissions by Large Final Emitters, Canadian Environmental Protection Act, 1999, Department of the Environment, 16 July 2005.

²⁴ This section is largely based on The Renewables Obligation- The 2005/06 Renewables Obligation Review, http://www.dti.gov.uk/renewables/renew_2.2.5.htm

²⁵ This section is largely based on a Guideline Document on the United Kingdom Climate Change Levy, issued by the HM Revenue & Customs (Environmental Taxes Team), <http://www.hmrc.gov.uk>

**TABLE:
GREENHOUSE GAS MITIGATION MEASURES WITH REFERENCE TO INTERNATIONAL JURISDICTIONS**

Country(ies)	Name of Mitigation Measure	Characteristics of Mitigation Measure
		<p>The CCL seeks to achieve a balance between environmental objectives and administration and was designed to help the UK meet its legally binding commitment to reduce greenhouse gas emissions. Cognisance of the organisational aspects of the energy industries was taken into account in an effort to minimise compliance costs to business and to ensure the proper administration of the specific relief and exemptions.</p> <p>A levy is imposed on the industrial and commercial supply of electricity; natural gas as supplied by gas utilities; petroleum and hydrocarbon gas in a liquid state; coal and lignite; coke; and semi-coke of coal or lignite; and petroleum coke for lighting, heating and power by consumers in the following sectors of business: industry; commerce; agriculture; public administration; and other services.</p> <p>In an effort to ensure that domestic consumption of energy is not subjected to a levy and to keep compliance costs to a minimum, the levy is imposed at the time of supply to industrial and commercial consumers rather than at the time of consumption by end-users. In addition, the levy does not apply to diesel, petrol and road fuel gases used as fuel in road vehicles as these are subject to road fuel duties.</p> <p>Supplies excluded from the levy include: supplies used by domestic consumers or charity organisations for non-business purposes; supplies that are not used for burning or consuming in the UK; supplies used in some forms of transport; supplies used to produce other taxable commodities but excluding electricity; supplies other than self-supplies, to various categories of electricity producers including Combined Heat and Power (CHP) Schemes; supplies from certain CHP Schemes; electricity producers that are self-suppliers in specific circumstances; supplies not used as fuel; and supplies of electricity from renewable sources.</p> <p>The tax revenue generated by imposing the levy may be utilised in the following manner:</p>

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GREENHOUSE GAS MITIGATION MEASURES WITH REFERENCE TO INTERNATIONAL JURISDICTIONS**

Country(ies)	Name of Mitigation Measure	Characteristics of Mitigation Measure
		<ul style="list-style-type: none"> ▪ To reduce the tax burden of national health insurance on employers; ▪ To fund programmes of energy efficiency measures that are carried out by the Carbon Trust established by the government; and ▪ To reduce corporate taxes for energy-saving investments.
Category Two: Market-Based Programmes		
Germany	Green Certificates	<p>The concept of Green Certificates is comparable to that of tradable pollution permits, the difference being that Green Certificates document the number of electricity units produced in an environmentally friendly manner, instead of certifying units of pollution rights. The electricity units are sold at market rates and producers receive additional revenues from the certificate market.²⁶</p> <p>Demand for Green Certificates are generated by domestic regulation of the energy sector. By the selling of quotas that determine the share of electricity stemming from renewable resources, producers can either buy certificates from green producers or - guided by certificate prices – invest in green technologies and sell Green Certificates themselves. Therefore, by introducing Green Certificates, a government enables producers to meet obligations without necessarily making immediate changes of production technologies.²⁷</p>
Germany	Subsidies	<p>In a narrow sense, subsidies can be understood as a means of financial assistance (direct payments, tax exemptions) from government to the private sector.²⁸</p> <p>In Germany, the consumers and producers of energy are supported through direct payments,</p>

²⁶ See fn 13 above, at page 20.

²⁷ *Ibid.*

²⁸ *Ibid.*, at page 30.

**TABLE:
GREENHOUSE GAS MITIGATION MEASURES WITH REFERENCE TO INTERNATIONAL JURISDICTIONS**

Country(ies)	Name of Mitigation Measure	Characteristics of Mitigation Measure
		<p>price guarantees, and tax exemptions. The Renewable Energies Act, which came into operation in April 2000, introduced a system of financial aid for power generation from renewable energy sources. The Act aims to achieve a 12 per cent share of electricity produced from renewable energy sources by 2010. The Act also provides guarantees for the producers of renewable energy, like hydrodynamic power, landfill gas, firedamp, sewage gas, biomass energy, geothermal energy, wind energy, and solar radiation energy²⁹.</p> <p>Similarly, the Co-Generation Act, a law promoting the use of the combined production of heat and power, provides guaranteed prices for electricity to be paid by the grid operators to the energy producers of heat and power. The New Co-Generation Act, which entered into force on 01 April 2002, protects the existing combined heat and power energy production plants³⁰.</p>
South Africa	Renewable Energy Subsidy Scheme	DME is currently offering once-off capital/grant subsidies for renewable energy projects during the period 2005 to 2007. The subsidy presents opportunity for entities interested in the renewables industry and that willing to contribute to the South African government's renewable energy target. Expressions of interest can be submitted to the Renewable Energy Fund Subsidy Office (REFSO) using form obtainable from the following website: www.dme.gov.za/dme/energy/refso.htm
Denmark	CO ₂ tax (1992) ³¹	This tax, introduced on 01 March 1992, was established in terms of Denmark Carbon Dioxide Act. The main aim of the tax is to encourage consumers and companies to reduce consumption of energy and switch to more environmentally friendly alternatives.

²⁹ *Ibid*, at page 31.

³⁰ *Ibid*, at page 32.

³¹ This section is largely based on Denmark's Fourth National Communication on Climate Change under the United Nations Framework Convention on Climate Change (December 2005), Danish Ministry of the Environment (Environmental Protection Agency), from pages 101 to 108, and Tax in Denmark 2006, Ministry of Taxation, at pages 41 to 47.

**TABLE:
GREENHOUSE GAS MITIGATION MEASURES WITH REFERENCE TO INTERNATIONAL JURISDICTIONS**

Country(ies)	Name of Mitigation Measure	Characteristics of Mitigation Measure
		<p>This tax is levied on coal, oil, natural gas and electricity. It also provides for a special incentive to limit the amounts of environmental damaging emissions of carbon dioxide into the atmosphere, and the promotion of energy conservation.</p> <p>The tax rates are fixed according to the CO₂ content of the fuels and are reduced for certain industries. In addition, for businesses that have concluded agreements concerning greenhouse gas reductions, the tax rates are further reduced. The CO₂-tax is lifted on Danish export companies to enable them to compete with foreign competitors and to avoid double taxation. If a company has already paid the tax, it is repaid and if the company has not yet paid the tax, it is not levied.</p> <p>Bennie³² argues that the emergence of a world-leading wind turbine industry in Denmark, for example, is one result of Danish taxes on fossil fuels and electricity, which are among the highest in the world. The taxes have also spurred sales of energy-efficient appliances and encouraged other energy-saving behaviour. The introduction of CO₂-tax and the increase of rates since 1990 have had an effect on the consumption of a number of energy products and have therefore reduced the CO₂ emissions associated with consumption of these products.</p>
Germany	Environmental tax reform (1999)	<p>The German Environment Tax Reform Act (ETR) came into operation on 01 April 1999³³.</p> <p>The ETR provides, firstly, for the lowering of energy consumption and the promotion of energy efficiency, which could eventually lead to a reduction in greenhouse gas emissions, and, secondly for the redistribution of tax revenues to the social security system, which could lead to more employment³⁴.</p> <p>The first phase of the ETR increased the mineral oil tax on various fuels from oil and natural</p>

³² Fischlowitz-Roberts B “Restructuring Taxes To Protect the Environment” Earth Policy Institute (2002).

³³ Green Tax Criteria, The Ecological Tax Reform in Germany.

³⁴ See fn 13 above, at page 23.

**TABLE:
GREENHOUSE GAS MITIGATION MEASURES WITH REFERENCE TO INTERNATIONAL JURISDICTIONS**

Country(ies)	Name of Mitigation Measure	Characteristics of Mitigation Measure
		<p>gas and introduced a new electricity tax. The revenue from the ETR was used to subsidise the governmental social security. The ETR contained several exemptions for energy-intensive industries. For example: co-generation plants (producing electricity and heat) utilised up to a certain percentage of their capacity were completely exempted from the tax on petroleum products. Also those co-generation plants with an electricity efficiency factor of a certain percentage were exempted from the tax on petroleum products for the first 10 years. The ETR also exempted energy from renewable sources, as long as it was either used by the producer or was supplied to an electricity grid that was exclusively fed by renewable sources.</p> <p>The second phase of the ETR provided for a further increase on gasoline, diesel and electricity taxes, and the revenue was utilised to reduce the employer and employee contributions to the pension fund. It also exempted oil or gas power stations with conversion efficiencies in excess of a certain percentage from petroleum taxes and included a tax incentive for the use of low-sulfur fuels.</p> <p>The ETR appeared to have a small impact on the environment and the following indicators were observed:</p> <ul style="list-style-type: none"> • The tax was not based on sound environmental goals; and • The tax rates were therefore not determined according to justifiable environmental goals³⁵.
European Union- Member States	European Union Emissions Trading Scheme (EU-ETS)	<p>The international carbon market is currently dominated by the EU-ETS which began on 01 January 2005. This scheme is mandatory for all EU member states³⁶.</p> <p>The EU-ETS is a policy tool for managing emissions of firms in key industrial sectors. Two</p>

³⁵ See fn 33 above.

³⁶ Bell W and Drexhage J “Climate Change and the International Carbon Market”, International Institute for Sustainable Development (iisd), August 2005, at page 3. (<http://www.iisd.org>)

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GREENHOUSE GAS MITIGATION MEASURES WITH REFERENCE TO INTERNATIONAL JURISDICTIONS**

Country(ies)	Name of Mitigation Measure	Characteristics of Mitigation Measure
		<p>aspects of the climate change problem favour the use of emissions trading as a policy: First, greenhouse gases mix uniformly in the atmosphere so that the location of emission reductions does not matter. Second, lowering the costs of emission reductions is extremely important, given the scale of global reductions likely needed to meet the ultimate objective of the UNFCCC. This could entail implementing energy efficiency measures, adopting better control technologies or purchasing “reductions” from a source whose costs of reducing emissions are lower. Emissions trading encourage reductions to take place where they are the least costly, and offer the potential to significantly reduce the overall costs of meeting climate goals³⁷.</p> <p>Emissions trading support the adoption of low-carbon technologies. The development, deployment and dissemination of technology are critical to achieving climate goals. The scheme can also provide a market price incentive for the introduction of technologies that reduce emissions and offers an important complement to other policies that promote technology development and transfer³⁸.</p> <p>The main characteristics of the EU-ETS are³⁹:</p> <p>(a) Phases: The scheme is implemented in two phases, the “warm-up” phase from 2005-2007 and then successive 5-year period, and the second phase from 2008-2012 set to coincide with the Kyoto compliance period. The first phase is focused only on carbon dioxide and on a range of large installations in key industrial sectors. The overall cap</p>

³⁷ *Ibid.*, at page 2.

³⁸ *Ibid.*

³⁹ This paragraph is largely based on an article by the Pew Centre on Global Climate Change “The European Union Emissions Trading Scheme (EU-ETS) Insights and Opportunities, at pages 7-8.

⁴⁰ See fn 11, at page 3.

⁴¹ Kruger J and Pizer B “Europe Goes to Market: An Update- A Weathervane Commentary”, 28 November 2005.

⁴² *Ibid.*

**TABLE:
GREENHOUSE GAS MITIGATION MEASURES WITH REFERENCE TO INTERNATIONAL JURISDICTIONS**

Country(ies)	Name of Mitigation Measure	Characteristics of Mitigation Measure
		<p>in the scheme is made up of individual country caps set by each nation’s national allocation plan (NAP). The second phase will run for 5 years, from 01 January 2008, and will involve tighter overall caps and may be expanded to other greenhouse gases and additional sources and sectors.</p> <p>(b) Sectors: Six sectors are covered by the scheme, namely electricity generation, heat and steam production, mineral oil refineries, processing and production of ferrous metals, cement, bricks and ceramics manufacture and pulp and paper⁴⁰.</p> <p>(c) Allowances: The scheme is a cap-and-trade program where fixed amount of emissions allowances are allocated to (via the individual country NAPs). Firms under the EU-ETS can choose the installations at which they reduce emissions to meet their overall quota, over-comply and sell allowances to firms whose operations have higher-cost mitigation opportunities, or under-comply and purchase allowances to make up the difference.</p> <p>However, some features of the scheme remain controversial. The most contentious issue has been how to initially distribute the emissions allowances. Controversy has brewed over whether the first phase of allocation has provided too much flexibility, giving some member states a competitive advantage over others. There has also been considerable debate about whether free allocations to the electric power sector in some countries have created an economic windfall for the sector⁴¹.</p> <p>Other controversial issues include the reporting, monitoring and verification of emissions. Monitoring is left largely to the member states under flexible guidelines. Emissions are to be verified independently, either by agencies within the EU member states or by third parties, firms certified by the member states that specialise in that work. Use of these third party verifiers could provide an important source of expertise for those member states with limited internal capability to verify emissions. But because there are no uniform, mandatory standards for certification of qualified verifiers, there is the prospect that different verifiers will have inconsistent capabilities. Many technical and process questions lie ahead for a</p>

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Country(ies)	Name of Mitigation Measure	Characteristics of Mitigation Measure
		<p>system that uses third party verifiers, such as should interpretations differ, how will the matter be resolved? Whether there will be a case law of decisions that all verifiers must follow? If not, companies will be tempted to shop for the verifiers who provide the most lenient treatment of emissions accounting. Lastly, uneven enforcement from one country to another would create unfair competitive advantages for companies where the enforcement regime is weaker⁴².</p>
Australia	National Emissions Trading Scheme	<p>This is an initiative by the Australian States and Territories Governments to develop a model for a multi-jurisdictional emissions trading scheme. The Inter-jurisdictional Emissions Trading Working Group, established by the Australian States and Territory Governments in 2003, presented its reports to First Ministers in December 2004⁴³.</p> <p>The Working Group proposed a cap and trade approach to be used as the basis for the scheme design. A limit (cap) is set on the total amount of emissions allowed to be emitted by sectors subject to the scheme. Permits (allowances) are then allocated among participants consistent with the total emissions allowed under the cap. Cap and trade schemes provide certainty in terms of environmental outcomes because of the fact that an absolute limit is set on total emissions. In addition, the cap and trade approach has and is being applied to address greenhouse and other environmental issues in other countries. For example, it is the approach adopted for the EU-ETS and by following this approach, international trading between an Australian domestic scheme and the emerging international market for carbon credits would be facilitated⁴⁴.</p> <p>The Working Group also made the following propositions⁴⁵:</p> <ul style="list-style-type: none"> ▪ That the scheme be national and sector based;

⁴³ This section is largely based on the “Inter-Jurisdictional Working Group on Emissions Trading: A National Emissions Trading Scheme”, Background Paper for Stakeholder Consultation, 12 September 2005.

⁴⁴ *Ibid*, at page 6.

⁴⁵ *Ibid*, at pages 8 – 28.

**TABLE:
GREENHOUSE GAS MITIGATION MEASURES WITH REFERENCE TO INTERNATIONAL JURISDICTIONS**

Country(ies)	Name of Mitigation Measure	Characteristics of Mitigation Measure
		<ul style="list-style-type: none"> ▪ That in setting the cap, consideration be given to the overall national emissions abatement target, and how the abatement responsibility is allocated between sectors covered by the scheme and those outside the scheme; ▪ That the scheme initially cover the stationery energy sector; ▪ That the scheme cover all six greenhouse gases under the Kyoto Protocol; ▪ That permit allocation be made on the basis of a mix of administratively allocated and auctioned permits, with both long and short term (annual) permits; ▪ That a penalty should be set to encourage compliance and to establish a price ceiling for the permit market; ▪ That offsets be allowed; ▪ That mechanisms be included to address adverse affects and structural adjustment; and, ▪ That mechanism be included to allow a transition for participants who have taken early abatement action and new entrants.
Category Three: Voluntary Agreements		
Germany	Voluntary Compensation: Klimabalance ⁴⁶	<p>Voluntary compensation of greenhouse gas emissions is gradually emerging as a new business field and is a completely voluntary activity, which aims at demonstrating a commitment to climate protection. Compensation is a new approach which tries to use the principle of emissions trading to cover greenhouse gas emissions.</p> <p>Compensation means to take an optimal amount of the greenhouse gas emissions a customer has caused and avoid or reduce the same amount of emissions at a different place. For this purpose, projects are implemented which either avoid or reduce emissions from sources, like replacing diesel generators by wind power.</p>

⁴⁶ This section is largely based on Wolfgang Sterk and Maike Bunse “Voluntary Compensation of Greenhouse Gas Emissions”, Policy Paper No. 3/2004, October 2004, Wuppertal Institute for Climate, Environment and Energy, at pages 2-5. See also <http://www.klimabalance.de> and <http://www.500ppm.com>

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GREENHOUSE GAS MITIGATION MEASURES WITH REFERENCE TO INTERNATIONAL JURISDICTIONS**

Country(ies)	Name of Mitigation Measure	Characteristics of Mitigation Measure
		<p>In practice, the approach adopted in the German Klimabalance exemplifies many of the available offers. Klimabalance, a product of 500 PPM, offers to compensate greenhouse gas emissions by supporting projects in local communities in the South. First, the individual's emissions have to be estimated with the help of Klimabalance's CO₂ calculator. The calculator considers the emissions caused heating and transport as well as the entire life cycle emissions of consumer goods and infrastructure investments, including the emissions from the entire production chain.</p> <p>To compensate the greenhouse gas emissions, the customer can buy certificates. The certificates are generated by projects located in South Africa, Indonesia, India and Brazil. The next step offers a choice between three levels of greenhouse gas emissions compensation. To complete the process, the customer has to fill in her personal data as well as her preferred way of payment. Klimabalance will cancel the certificates and inform the customer about the progress and completion of the projects and about the realised emission reductions.</p>
North-eastern US States	Regional Greenhouse Gas Initiative (RGGI)	<p>With no action at the Federal level, some US states are taking a leadership role in addressing global warming by enacting innovative policies. In December 2005, seven Northeastern states have committed, through the Regional Greenhouse Gas Initiative (RGGI), to cut their carbon dioxide emissions by 10 percent by the end of 2018⁴⁷. The RGGI, with different features to that of the EU-ETS, is an internal cap-and-trade system for carbon dioxide. The states are more independent because the US federal government is not overseeing the scheme.</p> <p>The scheme is an agreement reached through stakeholder consultation. A new entrant reserve, for instance, was one of the contentious issues during creation of the EU-ETS, but not even an issue for RGGI. The major power companies affected by the scheme actually designed it as stakeholders, so they considered their potential expansion and new installations</p>

⁴⁷ Bailey J "Climate Neutral Bonding: Building Global Warming Solutions at the State and Local Level", February 2006, Institute for Local Self-Reliance, at page 4.

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Country(ies)	Name of Mitigation Measure	Characteristics of Mitigation Measure
		<p>during that process, eliminating the need for a special reserve. While EU member states have the option to auction some of their allowances, states of RGGI commit at least 25 per cent of theirs to “consumer benefit” purposes, auctioning them to promote energy efficiency or mitigate ratepayer impacts⁴⁸.</p>
United States	Climate Neutral Bonding	<p>In December 2005, nearly 200 U.S. municipalities formally declared their intention to achieve the greenhouse gas reduction goals of the Kyoto Protocol. This means they are committed to reducing global warming pollutants generated by city agencies and local businesses and residents by 7 percent below 1990 levels⁴⁹.</p> <p>With no action at the Federal level, the climate neutral bonding policy has been proposed for cities or public agencies serious about reducing greenhouse gas emissions in their community. Municipal bonds are issued by public entities, from states and local governments, to finance a variety of developments and projects. Making the projects funded with municipal bonds climate neutral offers an attractive opportunity for people in virtually all communities to make concrete their commitment to environmental protection and the efficient use of resources⁵⁰.</p> <p>The baseline emission under climate neutral bonding is zero. A baseline of zero means that any greenhouse gases emitted after the bond-financed project becomes operational will have to be offset. Climate neutral means that there is no net increase in greenhouse gas emissions within the bond issuing agency’s geographical jurisdiction after the project becomes operational⁵¹.</p>

⁴⁸ <http://www.pointcarbon.com>

⁴⁹ See fn 47, at page 4.

⁵⁰ *Ibid.*

⁵¹ See fn 47, at pages 4-5.

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GREENHOUSE GAS MITIGATION MEASURES WITH REFERENCE TO INTERNATIONAL JURISDICTIONS**

Country(ies)	Name of Mitigation Measure	Characteristics of Mitigation Measure
		<p>Cities are allowed flexibility in framing their rules. For example, one might adopt a policy that for every 1-pound increase in carbon dioxide-equivalent greenhouse gas emissions from a bonded project, there must be a 1.5-pound decrease elsewhere. While some cities may allow the purchase of renewable energy certificates from projects in other parts of the country for offsets⁵².</p>
Category Four: Other Measures		
	<p>Carbon Capture and Storage (CCS)⁵³</p>	<p>CCS is a process consisting of the separation of CO₂ from industrial and energy-related sources, transport to a storage location, and long-term isolation from the atmosphere. CCS has the potential to reduce overall mitigation costs and increase flexibility in achieving greenhouse gas emission reductions. The widespread application of CCS would depend on technical maturity, costs, overall potential diffusion and transfer of the technology to developing countries and their capacity to apply the technology, regulatory aspects, environmental issues and public perception.</p> <p>Capture of carbon dioxide can be applied to large fossil fuel or biomass energy facilities, major carbon dioxide emitting industries, natural gas production, synthetic fuel plants and fossil fuel-based hydrogen production plants. The CO₂ would then be compressed and transported for storage in geological formations, in the ocean, in mineral carbonates, or for use in industrial processes.</p> <p>Potential technical storage methods are:</p> <ul style="list-style-type: none"> ▪ Geological storage (in geological formations, such as oil and gas fields, unminable coal beds and deep saline formations); ▪ Ocean storage (direct release into the ocean water column or onto the deep seafloor; and,

⁵² See fn 47, at page 5.

⁵³ This section is largely based on the “IPCC Special Report on Carbon dioxide Capture and Storage”, Summary for Policymakers as approved by the 8th Session of IPCC Working Group III, 25th September 2005, Montreal, Canada, at pages 2-5 and 24.

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Country(ies)	Name of Mitigation Measure	Characteristics of Mitigation Measure
		<ul style="list-style-type: none"> ▪ Industrial fixation of carbon dioxide into inorganic carbonates. <p>The long-term liability issues associated with the leakage of carbon dioxide to the atmosphere and local environmental impacts are generally unresolved. Some countries take on long-term responsibility in situations compatible to carbon dioxide storage, such as underground mining operations.</p> <p>No formal interpretations so far have been agreed regarding whether or under what conditions carbon dioxide injection into the geological sub-seabed or the ocean is compatible with certain provisions of environmental international law. Currently, the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1972), and its London Protocol (1996), which has not yet entered into force, potentially apply to the injection of carbon dioxide into the geological sub-seabed or the ocean. However, these treaties have been drafted without specific consideration of carbon dioxide storage.</p>
United Kingdom	Climate Change and Sustainable Energy Bill (2005) ⁵⁴	<p>The Bill deals with four issues related to the reduction of emissions of greenhouse gases, namely;</p> <ul style="list-style-type: none"> ▪ annual reporting on greenhouse gas emissions; ▪ microgeneration; ▪ community energy; and ▪ renewable heat. <p>The Prime Minister will be obliged to report annually to Parliament on the level of greenhouse gas emissions, including any increase or decrease, in the United Kingdom, and steps the government has taken to reduce greenhouse gases emissions during the period to which the report relates.</p>

⁵⁴ Black R, “UK needs yearly climate updates”, Environment Correspondence, BBC News websites (26/09/2005), <http://news.bbc.co.uk/go/pr/fr/-/2/hi/science/nature/4284502.stm> and <http://www.epolitix.com/EN/Legislation/200508/087687ed-285b-4e6a-9f13-300e5d0f57eb.htm>. See also United Kingdom Climate Change and Sustainable Energy Bill, <http://www.marklazarowicz.org.uk/bill/draft.htm>

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Country(ies)	Name of Mitigation Measure	Characteristics of Mitigation Measure
		<p>The Secretary of State will be obliged to establish national targets for the take up of microgeneration in Great Britain. In addition, the Secretary will be obliged, after the promulgation of the Act, to make an order establishing small-scale renewable energy projects and enabling electricity produced by domestic microgeneration to be sold and to take steps to promote community energy. Furthermore, the Secretary will be empowered to introduce renewable heat obligation regulations, which may require suppliers of heating fuel to demonstrate that a specified proportion of the fuel they supply is derived from renewable heat sources, establish targets for the proportion of heating fuel supplied that is renewable and provide for penalties on suppliers that fail to meet those targets.</p> <p>The Chancellor of the Exchequer will be obliged, after the promulgation of the Act, to prepare and publish a strategy containing proposals for such fiscal and economic measures as he or she will consider appropriate to assist with microgeneration and energy efficiency in order to combat climate change and alleviate poverty.</p> <p>The Gas and Electricity Markets Authority, in performing its duty relating to green energy certificates, will be obliged to have regard to the desirability of promoting microgeneration and minimising the cost and administrative burdens for domestic customers in installing or operating, or seeking to install or operate, microgeneration installations.</p>

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