

Submission from Mr Terrence Weir, B Ec CPA, (Bangkok, Thailand)

Effective Financial Technologies - The key to Reducing Greenhouse Gas Emissions

1. Introduction

Effective Financial technologies are the prerequisite to all other low emissions technologies. Without implantation of effective financial technologies which provide sufficient stable long term incentives investors will be reluctant to invest in the development and implementation of the wide variety of physical technologies necessary to reduce greenhouse gas emissions "GHGE". The less predictable the returns from such investments the higher the hurdle for returns from such investments and the result is a lesser number of GHGE reduction projects being implemented that would be under an environment of stable or increasing returns.

Today, the prime financial technology being utilised in an attempt to reduce "GHGE" is the GHGE tax/subsidy system set in the mechanisms of the Kyoto Protocol. The concept is in essence simple and looks attractive since by using carbon credits through the Kyoto Protocol mechanisms, the funds of GHGE producers are used to finance the investments by other producers to reduce GHGE. However, the Kyoto Protocol mechanisms have fatal flaws such that global GHGE are not and will not reduce unless more comprehensive financial technologies are implemented.

2. The Kyoto Protocol

2.1 Background

The United Nations Framework Convention on Climate Change "UNFCCC" requires that "governments:

- (1) gather and share information on greenhouse gas emissions, national policies and best practices
- (2) launch national strategies for addressing greenhouse gas emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries
- (3) co-operate in preparing for adaptation to the impacts of climate change

The Convention entered into force on 21 March 1994"

http://unfccc.int/essential_background/convention/items/2627.php

The Kyoto Protocol "requires developed countries to reduce their GHG emissions below levels specified for each of them in [Annex I of] the Treaty. These targets must be met within a five-year time frame between 2008 and 2012, and add up to a total cut in GHG emissions of at of at least 5% against the baseline of 1990." "The detailed rules for its implementation were adopted at COP 7 in Marrakesh in 2001, and are called the "Marrakesh Accords." http://unfccc.int/kyoto_protocol/items/2830.php

2.2 The Kyoto Protocol Three Mechanisms

2.2.1 "Emissions trading "ETS". Under the Protocol, [Annex I (developed)] countries may buy and sell greenhouse-gas emissions "units" and "credits."

2.2.2 'Joint implementation "JI". "Within the Protocol, industrialized countries are granted "emissions reduction units" for financing projects in other [Annex I (developed)] countries -- a system likely to increase efficiency and reduce the global-warming output of the "transition economies" of central and eastern Europe".

2.2.3 Clean development mechanism "CDM". "The Protocol provides a system for financing emissions-reducing or emissions-avoiding projects in developing nations".

http://unfccc.int/kyoto_protocol/background/items/2878.php

2.2.4 Countries List. The mechanisms for Emission Trading and Joint Implementation apply to Annex I Countries with Annex B listed GHGE target commitments. http://unfccc.int/kyoto_protocol/background/items/3145.php

http://unfccc.int/files/national_reports/accounting_reporting_and_review_under_the_kyoto_protocol/application/pdf/rm_final.pdf

Annex I Countries List - http://unfccc.int/parties_and_observers/parties/annex_i/items/2774.php

Non Annex I Countries List - http://unfccc.int/parties_and_observers/parties/non_annex_i/items/2833.php

3. Features of the Mechanisms that are causing the Kyoto Protocol to fail

3.1 The commitments to limit or reduce GHGE only apply to Annex I (developed) countries.

3.2 The Kyoto ETS permit allocations are primarily arbitrary with no direct relationship to the cost of GHGE reduction.

3.3 The market trading system for the permits of the Kyoto Protocol can fluctuate significantly.

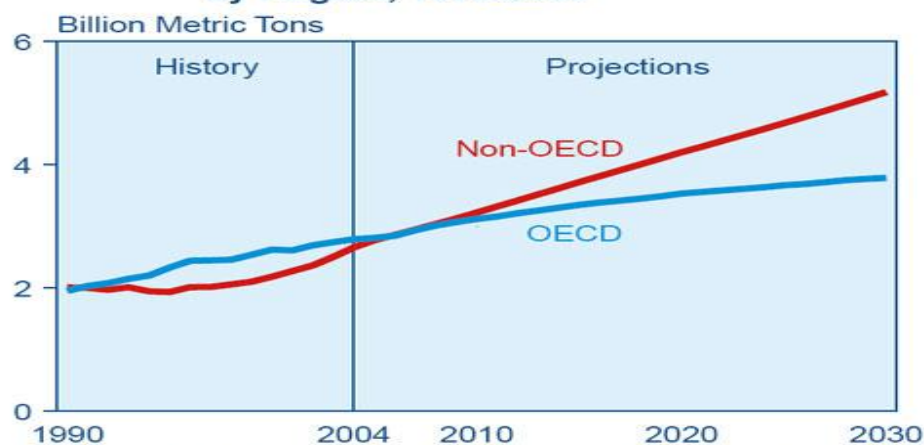
As we know markets can be volatile however, renewable energy projects have lifetimes in decades therefore what is required is predictability not volatility in the value of carbon credits.

3.4 The "CDM" enables funds to be transferred to developing countries which as at the same time increasing GHG emissions.

To illustrate the failure we can imagine a typical example. A petrochemical plant in a developing country creates a project to renovate its factory to reduce GHGE. It obtains carbon credits for the investment through the CDM and sells those carbon credits to a coal fired power station in a developed country. Overall, we would expect that there has now been a net reduction in GHGE after the plant is completed. However, that is not the case as across the road in the developing country a new coal fired power station being constructed, which unlike a similar power station in the developed country it is excluded from being required to purchase carbon credits.

3.5 The exclusion of developing countries and the CDM reduces export competitiveness of developed countries. Since the Annex I, developed countries have to pay higher energy costs due to the costs of meeting their GHGE reduction commitments and developing countries not being required to incur such costs the developing countries export industries have an unfair competitive advantage. This is further exacerbated through the CDM mechanism subsidising the GHGE reductions in developing countries.

Figure 82. World Carbon Dioxide Emissions from Natural Gas Combustion by Region, 1990-2030



Sources: **History:** Energy Information Administration (EIA), *International Energy Annual 2004* (May-July 2006), web site www.eia.doe.gov/iea. **Projections:** EIA, *System for the Analysis of Global Energy Markets* (2007).

<http://www.eia.doe.gov/oiaf/ieo/emissions.html>

At this time it the economic effects are not noticeable however, neither are the GHGE reductions.

The above flaws are causing the global emissions to continue to increase and each of the flaws will be increasing evident as the developed countries increase the cost of GHGE in an attempt to meet their Annex B targets. Points 1 and 5 are the prime reasons are why the United States has not ratified the Kyoto Protocol. http://www.whrc.org/resources/online_publications/warming_earth/kyoto.htm

At the Rio conference the developing countries would not agree to pass legislation limit GHGE in their respective countries. However, these are the very countries which are providing almost all of the global growth in GHGE. Developing countries argue that almost all of the GHGE in the atmosphere up until year 2000 is due the GHGE from developed countries and on a per capita basis developed countries still produce far more GHGE each year. <http://news.bbc.co.uk/1/hi/sci/tech/3143798.stm>

The developed countries could make an opposite argument that it is the transfer of technologies by the developed countries to developing countries which has enabled the developing countries to rapidly develop their economies. Therefore, the developing countries in benefiting from the technology transfers and trade with the developed countries should not expect a free ride now by refusing to commit to GHGE reductions.

Both developing and developed countries have good arguments for their position but GHGE continue to increase and therefore new measures are required that will reduce global GHGE.

4. Characteristics for a Financial System to be successful in reducing GHGE

Regardless of which financial or other legal incentive system is used it must have the following characteristics to be successful in reducing GHGE:

4.1 Apply across the board to all major producers or consumers.

If in some regions, producers (A) of products creating GHGE have to bear additional financial costs compared to other producers (B) then clearly producers (B) will have a competitive advantage and those products will be increasingly manufactured in the producer (B)'s regions. The result is GHGE emissions will not decrease as expected and the economies of regions of producers (A) will decline.

4.2 Provide financial incentives which are significantly high enough for the low emissions technologies to have a competitive advantage over technologies which produce higher GHGE.

The cost of introducing any new technology is usually burdened with significant short term costs which tend to reduce over time as volumes increase, markets are established, and new investments depreciated.

e.g. consumer electronics markets Whilst we can purchase a mobile phone for less than \$100, this is only the result of two decades of development of the phone, mobile phone production volumes in the hundreds millions and millions of subscribers. Clearly, if the demand for mobile phones was in the thousands the cost of purchasing and using a mobile phone would be many thousands of dollars.

4.3 Be implemented in a clear and consistent manner over time.

Investors need to be able to predict future cash flows to enable them to calculate the financial returns which are necessary to make the initial investments. Clearly, investments in low emissions technologies are usually going to be substantial of a long term nature. As with fossil fuel "FF" technology energy plants, these investments are made with a investment horizon always exceeding 10 years and more likely 20 years. Therefore, measures such as waiving excise tax on renewable fuels for 5 or even 10 years does not encourage investment in renewable energy plants. Such short term measures are just a political stunt without honest intention to encourage development of low emissions physical technologies.

4.4 The incentives need to be monitored and adjusted to ensure that they remain competitive against technologies producing higher levels of GHGE

Over time due to relative changes in the cost of inputs, such as an increase in renewable fuel prices compared to fossil fuels an investment in a renewable energy plant may at times be uneconomic compared to a fossil fuel energy plant. If the reduction in GHGE is to be achieved then the legislation needs to change to ensure that the renewable energy plants competitive advantage is maintained. e.g. To increase the tax on fossil fuels.

This very case has happened in 2007 with the mothballing of Australian Renewable Fuels and Australian Biodiesel Group renewable fuel plants due to increased raw material prices.

<http://envirofuel.com.au/2007/11/05/australian-renewable-fuels-shuts-down-production/>

<http://envirofuel.com.au/2007/11/07/now-australian-biodiesel-group-shuts-down-production/>

4.5 Taxes raised from domestic producers and consumers cannot significantly be used to transfer wealth to foreign recipients.

Clearly, the domestic economy will be materially damaged if significant funds are transfer are made abroad through an ETS.

4.6 GHGE Taxes raised need to be used to provide a comprehensive range of incentives for producers and consumers to significantly reduce GHGE

A domestic ETS can be used to make transfers from producers of GHGE to fund other producers to reduce GHGE. For example to pay for carbon credits for farmers and forest owners to increase the carbon content of the soils and therefore reducing CO₂ in the atmosphere. Funds raised from GHGE taxes could be used to reduce income taxes and other taxes. They could also be used to subsidise the renovation costs of buildings to enable them to reduce energy consumption. The funds could also be used to subsidise the cost of low emissions vehicles.

Whilst the principles established under UNFCCC are an fine the current implementation of the Kyoto Protocol fails on all of the above points.

5. The Solution - Still Tax Reform but more Comprehensive and Equitable

Most of the elements to establish a workable financial system to reduce GHGE are already in place. However, the scale needs to be significantly increased to encourage producers and consumers to significantly reduce GHGE. The solution is major and massive reform of the taxation system (implemented over time) which transfers the significant majority of tax revenues away from income tax, GST, and other taxes to taxes based of GHGE production/consumption.

The major features of the new GHGE tax system would be:

5.1 Simplify the tax system. Eliminate all income taxes on persons paying income below the average rate of tax and increase benefits to low income earners and pensioners. Eliminate GST and all other taxes except punitive moral' taxes on tobacco and liquor etc.

5.2 Reduce other taxes and raise the tax revenue by implementing a GHGE tax

To the extent that the other taxes are reduced, tax revenue would be raised by implementing GHGE taxes at the controllable points in the fossil fuel energy supply chain (which are difficult to bypass). We already have such a system in place which is the fuel excise tax included in every liter of petrol or diesel produced. A similar system would be established to tax the GHGE of power stations and petrochemical plants etc.

5.3 Ensure exporters international competitiveness, exporters need to receive a tax rebate for the GHGE taxes they have paid through the supply chain to manufacture their goods for export.

5.4 Ensure domestic industry competitiveness, imports need to be charged at the port of entry the GHGE taxes based on the (assessed) GHGE produced in the goods manufacture plus the GHGE for the freight to the port of import. (Point 3 and 4 is similar in principle to how the GST system operates).

5.5 A country of import can obtain a GHGE (per unit of energy) rating which is used in the assessment of GHGE duty in (4) above. If a country does not have a rating then a default (high) rate will be used. The Kyoto Protocol provides mechanisms which can be adopted for this purpose.

5.6 Importers may receive a concessionary rating, (below the country rate), if they have an independently assessed lower GHGE per unit of energy usage than their country rating.

Points 5 and 6 are similar to customs duty.

5.7 The GHGE tax system is a major reform. It would need to be implemented over a 15 year time period. This is to avoid an economic shock as a sudden implementation would create significant prior investment losses and shortage of products in demand.

6. Advantages of GHGE Tax Reform

6.1 International Trade is The Leverage to Encourage Countries to Adopt Low GHGE Policies

The GHGE Tax incentivises other countries and their exporters to reduce the GHGE produced in the manufacture of their products, as their products will have a lower GHGE duty assessed on import.

6.2 Countries with Higher GHGE Per Capita pay more GHGE tax

It is a fair tax as it is on the consumer of GHGE as the amount of GHGE tax a consumer pays is directly related to the amount of GHGE produced in the manufacture of the products consumed. However, the revenues for the GHGE tax will be collected by the country of the consumer.

6.3 The GHGE Tax addresses the Concerns of the United States

The main arguments from the US for not signing up to the Kyoto Protocol are addressed by the GHGE Tax as all other trading nations, (which are also happened to produce most of GHGE) are incentivised to reduce GHGE and the domestic economy and exporters retain their international competitiveness.

6.4 The GHGE tax should not damage Economic Growth

There is no evidence of any correlation between economic growth and energy (GHGE) taxation. Developed countries, the European union, in particular have, for last three decades, significantly higher levels of gasoline taxation than non OECD countries in general. There is no evidence, and no claims from any party that the high levels of gasoline tax have caused any economic damage. As the GHGE taxation (as described) does not damage the domestic economies international competitive position and the GHGE taxes raised are offset by a reduction income and other taxes, the effect on the domestic economy (i.e. taxation redistribution) should not be negative.

6.5 Agreement with Other countries is Not Needed for Successful Implementation

The GHGE tax system resolves all of the weakness of the Kyoto Protocol and all the requirements to successfully incentivise producers and consumers to reduce GHGE. The fact that a country can implement a GHGE Tax as outlined without agreement or loss of economic competitiveness and therefore without the need for agreement with any other country is a critical advantage of this system as it avoids the wrangling and compromises that occurred at the Rio conference to establish the Kyoto Protocol ETS.

6.6 Early-mover Advantage

Countries which are early to implement a GHGE tax system will be providing the necessary incentives for domestic companies to cluster and develop low emissions technologies which can be exported to a global market.

6.7 High Tax Collection Efficiency

Simplifying the tax system will increase tax collection efficiency by reducing the costs of tax collection per dollar of tax collected. The system also avoids high monitoring and transaction costs of the Kyoto Protocol Mechanisms.

7. A GHGE tax is a complementary system to an ETS and Is Allowed for by the Kyoto Protocol

The three Kyoto mechanisms are still useful but a the GHGE tax reform is necessary to be the main driver to achieve long term GHGE reductions. The GHGE tax is allowed by the Kyoto Protocol as a domestic measure to enable Annex I countries to meet their targets. Effectively a GHGE tax becomes an additional but domestic mechanism.

8. Outlook

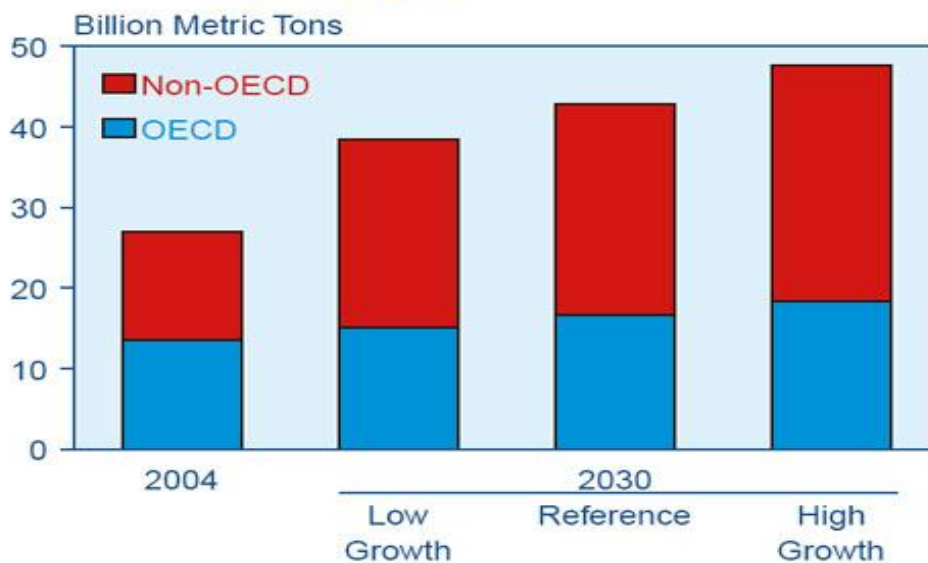
"The world is changing rapidly. Four-fifths of the world controls 20% of Gross Domestic Product (GDP). But in just a few decades, the developing world will control 50%, 60% of GDP".

...Former World Bank chief - James Wolfensohn, Bangkok Post, Friday March 7, 2008

The near and medium term outlook for the major countries around the world to take measures that will reduce enough GHG emissions to alleviate the major effects of global warming is dismal. GHGE are currently continuing to increase and at an increasing rate. We do not even have to look at the GHGE charts. We can see from the rapidly increasing price of all fossil fuels that demand for fossil fuels is increasing and not decreasing as is required to reduce GHGE. Alone, the mechanisms of the Kyoto Protocol to facilitate the reduction in global GHGE are not sufficient and it is very unlikely that developing countries will adopt similar measures to what is already agreed for developed countries. However, without developing countries coming on board GHGE globally cannot be reduced.

In the long term, as the effects of global warming become increasingly obvious, more significant actions will be taken, however, the longer the time period before effective action is taken to reduce GHGE the more severe the consequences from global warming will be.

**Figure 87. Carbon Dioxide Emissions by Region
in Three Economic Growth Cases,
2004 and 2030**



Sources: **2004:** Energy Information Administration, *International Energy Annual 2004* (May-July 2006), web site www.eia.doe.gov/iea. **2030:** Energy Information Administration, *System for the Analysis of Global Energy Markets* (2007).

<http://www.eia.doe.gov/oiaf/ieo/emissions.html>