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The Asia Pacific Partnership on Clean Development and Climate (AP6): a distraction to the Kyoto process or a viable alternative?

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Given the deep cuts in greenhouse gas emissions called for by scientists, accelerated technology development and transfer is crucial to address climate change. To date, the UN Framework Convention on Climate Change and the Kyoto Protocol have had limited success in driving technology transfer. AP6, as a collaborative mechanism for promoting technology transfer, holds promise in bringing together the United States and Japan with key developing countries, particularly China and India. However, this promise is unlikely to be realized and AP6 will remain a distraction unless injected with a massive increase in project funding. Moreover, for the necessary rapid technology transfer to occur, both increased R & D as well as mechanisms such as emissions trading or carbon taxes are urgently required.

Introduction

While scientists continue to call for sharp reductions in greenhouse gas (GHG) emissions, global emissions continue to rise ever faster - particularly amongst larger developing countries. China, for example, will overtake the United States as the country with the largest GHG emissions before 2010². Although “per capita emissions of non-OECD countries” are likely to remain “well below those of the OECD countries”³, by 2030 developing

*This Article was completed on 22 July 2007. Canada joined the Partnership on 15 October 2007. From that date, AP6 became known as APP. The abbreviation AP6 is used throughout this article.

¹ Senior Lecturer, University of Tasmania Law School. The author wishes to thank the following for their assistance in preparing this article: Howard Bamsey, Chief Executive, Australian Greenhouse Office, Greg Terrill, Assistant Secretary, Commonwealth Department of the Environment and Water Management, Ruth Groom, Hydro Tasmania, Associate Professor Greg Rose, University of Wollongong, Steve Waight, Resource Planning and Development Commission (Tasmania) and Anja Hilkemeijer. All views, errors and omissions are the author's.

² International Energy Agency (IEA), *World Energy Outlook 2006, Summary and Conclusions*, <http://www.worldenergyoutlook.org/summaries2006/English.pdf> (22 February 2007) at 5.

³ *Ibid* at 2.

countries are likely to account for over one half of global emissions⁴. Globally, energy demand is projected to increase by just over half between now and 2030⁵. Yet, the bulk of the growing demand for energy seems set to be met largely by existing fossil fuel technologies⁶. Deep GHG emission cuts require rapid technology development as well as transfer throughout the world combined with market mechanisms such as emissions trading. Yet the relevant mechanisms of the United Nations Framework Convention on Climate Change⁷ (hereafter ‘UNFCCC’) and Kyoto Protocol to the UNFCCC⁸ (hereafter ‘Kyoto Protocol’) have had limited bite. We are currently locked into high GHG emission energy technologies and a form of economic development involving ever increasing GHG emissions.⁹

In this context, the launching of a new cooperative framework to promote cleaner technologies by six countries representing roughly half of current global GHG emissions¹⁰ is deserving of assessment.

The Asia Pacific Partnership on Clean Development and Climate (AP6), comprising a framework for cooperation in promoting cleaner technologies, was launched in January 2006 by the governments of the US, Japan, China, India, Australia and South Korea.¹¹

The AP6 Charter proclaims that the initiative is intended to ‘complement but not replace the UNFCCC and the Kyoto Protocol’¹² respecting the fact that Japan, China, India and South Korea are parties to both these treaties - while the US and Australia are parties to the UNFCCC but have not ratified the Kyoto Protocol. This has not prevented commentators from diverging points of view proclaiming, on the one hand, the AP6 as a promising and more

⁴ Ibid at 5.

⁵ Ibid at 1.

⁶ Ibid at 1-2.

⁷ Text available at *United Nations Framework Convention on Climate Change* <http://www.unfccc.int/> (25 April 2006).

⁸ Ibid.

⁹ Thomas C. Heller and P.R. Shukla, “Development and Climate: Engaging Developing Countries” *Pew Centre on Global Climate Change* www.pewclimate.org/ (25 April 2006) at 1-2.

¹⁰ ‘Technological Development and Economic Growth,’ *ABARE Research Report 06.1*, Prepared for the Inaugural Ministerial Meeting of the Asia Pacific Partnership on Clean Development and Climate, Sydney, 11-13 January, Australian Bureau of Agricultural and Resource Economics (ABARE), Canberra, (2006), 5.

¹¹ The AP 6 Charter and other basic documents relating to the partnership are contained on www.asiapacificpartnership.org/ (8 May 2006). See also www.dfat.gov.au/environment/climate.ap6/charter.html (1 March 2006).

¹² Third preambular paragraph of the AP6 Charter, *ibid*.

effective approach than the ‘failed’ Kyoto Protocol,¹³ or, alternatively, arguing that AP6 is fatally flawed by not including hard targets to reduce GHG emissions.¹⁴

This article aims to look beyond the political rhetoric and provide a preliminary assessment of AP6. How does the AP6 approach - especially in relation to technology development and transfer - differ from the UNFCCC and Kyoto Protocol approaches? Will the AP6 deliver significant GHG emission reductions?

The need for a careful assessment of AP6 has become more pressing with US President George Bush suggesting in May 2007 that the US convene a meeting of the major developed and developing GHG emitters, to develop a post-2012 framework on climate change building on the AP6 while complementing the UNFCCC process¹⁵ (see section H below).

This article first outlines the climate change problem (Section A) and the international response to it reflected in the UNFCCC and Kyoto Protocol (Section B). The technology transfer arrangements relating to climate change, generally, and more specifically under the UNFCCC and Kyoto Protocol are discussed in Section C. The architecture of AP6 is described (Section D), with a particular focus on the mechanism for technology development (Section E). Problems of implementation of the AP6 agenda are briefly addressed, particularly in relation to intellectual property rights and trade barriers (Section F). AP6 as a possible forum for emissions trading is discussed (Section G), and finally a broader evaluation of AP6 is provided (Sections H and I).

Section A: The Climate Change Problem

In early 2006, at the time AP6 was launched, there was solid scientific evidence linking human activities to increased global warming and predictions of damaging consequences for the planet as GHG emissions

¹³ Aynsley Kellow, Submission to the Joint Standing Committee on Treaties, Commonwealth of Australia, Official Committee, Hansard, 31 March 2006, www.aph.gov.au/hansard/joint/committee/J9132.pdf (23 March 2007) at TR 49.

¹⁴ ‘AP6 locks world in to four degrees global warming’, *WWF-Australia Press Release* www.wwf.org.au/news/ap6-locks-world/ (1 March 2006).

¹⁵ The White House, President George W. Bush, “Fact Sheet: a New International Climate Change Framework” May 31 2007 www.whitehouse.gov/news/releases/2007/05/print/20070531-13.html (11 June 2007) at 1.

continued to rise. At this time, the most authoritative report on the subject was considered to be the 2001 Third Assessment Report (TAR) of the Intergovernmental Panel on Climate Change (IPCC), an international body tasked to assess the science on climate change. This Report predicted that global mean temperatures would increase 1.4-5.8 degrees C above 1990 levels by 2100 accompanied by an increase in sea level of 0.09-0.88 meter.¹⁶ The key elements of the report were summarised by the Australian Greenhouse Office:

‘Although many natural factors influence the Earth's climate, a majority of the world’s scientists are confident that greenhouse gas increases were the main factor contributing to global warming in the last 50 years. Increases in carbon dioxide, methane, tropospheric (lower atmosphere) ozone, halocarbons and nitrous oxide have all contributed to global warming’.¹⁷

While it was acknowledged that scientific uncertainty remained in relation to the precise nature and magnitude of impacts likely to occur from global warming over the next 50-100 years the projected consequences of global warming included an increase in the extreme weather and climatic events such as devastating cyclones.¹⁸

In February 2007, the IPCC released its Fourth Summary for Policymakers in relation to the science of climate change as part of the IPCC Fourth Assessment Report.¹⁹ The report - using more sophisticated climate models than had previously been available - concluded that global warming to date was "very likely" (>90%) caused by human activity²⁰. Predictions for increased global warming were based on a broader range of models compared to the TAR²¹ with predictions that the earth's average surface

¹⁶ Intergovernmental Panel on Climate Change (IPCC) *Climate Change 2001, Third Assessment Report, Working Group 1: The Scientific Basis, Summary for Policymakers* http://www.grida.no/climate/ipcc_tar/wg1/008.htm at 4.

¹⁷ ‘Climate Change Science, Questions and Answers on Climate Change Science’ *Australian Greenhouse Office*, Australian Government (2005), www.greenhouse.gov.au/science.qa/pubs/science-qa.pdf (25 April 2006) at 4.

¹⁸ IPCC note 16 above at 4.

¹⁹ IPCC, ‘Climate Change 2007: The Physical Science Basis, Summary for Policymakers’ *WMO, UNEP 5* February 2007 www.ipcc.ch/SPM2feb07.pdf (22 February 2007).

²⁰ *Ibid* at 2-7. See also helpful commentary on this report in: ‘2 Feb 2007 The IPCC Fourth Assessment SPM’, ‘Real Climate, Climate science from climate scientists’, www.realclimate.org/index.php/archives/2007/02/the-ipcc-fourth-assessment-su (24 February 2007).

²¹ IPCC note 19 above at 12.

temperature would likely rise by 1.8 degrees C to 4 degrees C from 1990 to 2100 and could rise as much as 6.4 degrees C²².

A 2006 report by Preston and Jones of the CSIRO highlights the potential impacts on Australia should GHG emissions continue to rise.²³ Impacts include more frequent climate extremes such as tropical cyclones, heat waves and flooding which would put a strain on Australia's infrastructure and public health.²⁴

It is crucial to remember that even if the annual flow of GHG emissions were miraculously "held constant at year 2000 levels, a further warming trend would occur in the next two decades at a rate of about 0.1°C per decade, due mainly to the slow response of the oceans."²⁵ Moreover, "[b]oth past and future anthropogenic carbon dioxide emissions will continue to contribute to warming and sea level rise for more than the millennium, due to the timescales required for removal of this gas from the atmosphere."²⁶ To avoid the more extreme climate changes experts argue for a reduction of at least 60% in GHG emissions by all industrialized countries from 1990 to 2050²⁷. The reference to industrialised countries reflects the notion that industrialised countries should take the lead in reducing emissions given both 1) industrialised countries' historic contribution to emissions compared

²² These projections are "broadly consistent with the span quoted in the TAR (1.4 to 5.8 degrees C)", IPCC, note 19 above at 13.

²³ B. L. Preston and R.N Jones 'Climate Change Impacts on Australia and the Benefits of Early Action to Reduce Global Greenhouse Gas Emissions' *Commonwealth Scientific and Industrial Research Organisation (CSIRO) Australia* <http://www.csiro.au/resources/pfbg.html> (15 March 2007) at 5.

²⁴ *Ibid* at 5.

²⁵ IPCC note 19 above at 13.

²⁶ IPCC note 19 above at 17. The Stern Review points out that on the assumption of a business as usual scenario, i.e. without sharp reductions in greenhouse gas emissions, there is "...at least a 77% chance"... "of a global average temperature rise exceeding 2°C." Sir Nicholas Stern *The Economics of Climate Change*, HM Treasury, UK, 30 October 2006 http://www.hm-treasury.gov.uk/Independent_Reviews/stern_review_economics_climate_change/sternreview_index.cfm, (12 March 2007), at iii. To put this in perspective, an additional 1° C increase in temperature would cause extensive damage to Australia's Great Barrier Reef. Preston Jones, note 22 at 5.

²⁷ The European Union's Environment Council has called for emissions reductions by developed countries of 60-80% by 2050. European Council (2005) *Provisional Minutes of European Council*, Brussels, Belgium, March 10, in Preston & Jones note 23 above at 17. The UK Government on 13 March 2007 proposed a legally binding GHG reduction targets including a 60% reduction to be achieved by 2050. See draft UK Climate Bill: <http://www.defra.gov.uk/news/latest/2007/climate-0313.html> (15 March 2007). In Australia, the New South Wales Greenhouse Advisory Panel has recommended Australia reduce its emissions 60% by 2050. New South Wales Greenhouse Advisory Panel Submission on the Energy Directions Green Paper (2004). The Australian Labour Party in 2007 adopted as part of its policy platform support for a 60% reduction by 2050. See Kevin Rudd, Leader of the Opposition, Annual Fraser Lecture, Belconnen Labour Club, Canberra 30 May 2007 <http://www.alp.org.au/media/0507/speloo300.php> (6 June 2007).

to that of developing countries, and 2) industrialised countries' continuing much higher per capita GHG emission levels.²⁸ At the same time, given the increase in emissions by rapidly growing developing countries such as China and India, ultimately, substantial reductions in emissions by developing countries will also have to be made. The point in time at which such reductions should occur remains highly controversial.²⁹

Given that uncertainties in climate change impacts make it difficult to quantify precisely the costs of failing to constrain GHG emissions, why not wait until the science is more certain? The difficulty with this approach is that delay will almost certainly mean being forced to take more drastic - and costly - action later.

In this regard, the 2006 report by the former head of the UK Treasury, Sir Nicholas Stern is highly relevant.³⁰ The so-called "Stern Review" makes the argument that the costs of strong early action to reduce emissions considerably outweigh the costs of inaction. Stern argues that early action to reduce emissions must be viewed as "an investment, a cost incurred now and in the coming few decades to avoid the risks of very severe consequences in the future"³¹. The review argues that the costs of *not* taking action over the coming few decades "could create risks of major disruption to economic and social activity, later in the century and in the next, on a scale similar to those associated with the great wars and economic depression of the first half of the 20th century."³²

In the Australian context, a similar argument has been made: a failure to take early action would not only mean that later more costly action would have to be considered, but also inaction now would narrow the future response options³³. Preston and Jones have argued that early action would "give natural ecosystems and their associated species greater time to adapt to changing environmental conditions, reduce the likelihood of major adverse consequences for agriculture and forestry, help ensure Australia's public

²⁸ Preston and Jones, note 23 at 18. Most scenarios assume no significant reductions by developing countries before 2010 (Preston Jones note 23 at 18). Engaging developing countries in reduction efforts remains an enormous challenge, see below Section B.

²⁹ See useful discussion in Preston & Jones, note 23 at 18.

³⁰ Stern Review, note 26.

³¹ Stern Review, note 26.

³² Stern review note 26 at ii.

³³ The Allens Consulting Group "Deep Cuts in Greenhouse Gas Emissions, Economic, Social and Environmental Impacts for Australia" *Report to the Business Roundtable on Climate Chang*, March 2006 www.allenconsult.com.au/resouces/GHG2050%20FINALpdf (25 April 2006) at vi.

health infrastructure can keep pace with emerging health challenges, and reduce the chance of large scale singularities.”³⁴

In the past, preventive measures to slow down climate change have been justified on the basis of the "precautionary principle" which provides that:

"Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."³⁵

A slightly watered-down version of the precautionary principle is included in the UNFCCC which refers to "cost-effective" action³⁶. While debate continues as to whether the precautionary principle has become part of customary international law,³⁷ the *relative* certainty in relation to climate change science³⁸ means that measures to justify action to combat climate change no longer need to be based on a narrow interpretation of the precautionary principle. Given the high likelihood of the serious costs of *not* taking action to combat climate change, the onus is now more strongly on governments to justify their inaction.

This change in the policy context has been reflected in Australia where a national water crisis linked to the worst drought in Australian history - combined with greater awareness of the climate change problem - has resulted in strong public pressure on a reluctant Federal Government to finally adopt measures to combat climate change. In the latter half of 2006, national opinion polls showed climate change rating higher than national security as a political issue³⁹. The extensive coverage of the Stern Report, together with pressure from some segments of Australian industry also

³⁴ Preston and Jones, note 23 at 6. The term 'singularities' refers to abrupt changes in the climate system with potentially catastrophic consequences which are difficult to predict (Preston & Jones at 30).

³⁵ Principle 15 of the *Rio Declaration of the UN Conference on Environment and Development* ("Rio Declaration") 1992 www.unep.org/Documents/multilingual/Default.asp (23 March 2007).

³⁶ United Nations Framework Convention on Climate Change, Article 3.3 http://unfccc.int/essential_background/convention/background/items/1355.php (6 June 2007).

³⁷ Philippe Sands *Principles of International Environmental Law* (2nd, Cambridge University Press, Cambridge: 2003) 266-279.

³⁸ Jacqueline Peel *The Precautionary Principle in Practice* (1st, Federation Press, Sydney: 2005) points out the impossibility of attaining "full scientific certainty" noting that "no scientific conclusion based on empirical data, no matter how widely accepted, is foolproof" (at 36), and argues for a broader understanding of "scientific uncertainty" which takes into account the inescapable "value" element (34-55).

³⁹ Lowy Institute Poll on public opinion and foreign policy 2006, referred to by Judy Friedlander "Out and about beats fear" *Sydney Morning Herald* 15 May 2007 at 12.

played a role in the changed policy environment.⁴⁰ In response to this pressure the Howard Government in May 2007 moved to support “in principle” introduction of an emissions trading scheme by 2012 but refused to commit to targets until 2008, provoking widespread criticism⁴¹. Climate change is - together with industrial relations - set to be the key issue of the Australian federal election to occur in the second half of 2007.

Section B The UNFCCC and Kyoto Protocol

1. The UNFCCC

All six of the AP6 partners are state parties to the UNFCCC.⁴² The UNFCCC contains a vague requirement ("soft target") for industrialised countries to “limit their emissions with an overall goal of stabilising 1990 GHG emission levels by the year 2000.”⁴³ The Convention does not contain specific and enforceable targets. At the same time the Convention does provide a framework for cooperative efforts to reduce GHG emissions including through technology transfer and financing (see below).

In recognition of these inadequacies, the Kyoto Protocol to the UNFCCC was negotiated and adopted in 1997.⁴⁴ The Kyoto Protocol entered into force in February 2005.⁴⁵

2. The Kyoto impasse

The Kyoto Protocol is a modest response to the climate change challenge. The Protocol imposes individual targets on industrialised countries and Eastern European "economies in transition" (Annex I parties) but no targets on developing countries⁴⁶. However, the total impact of the targets imposed on Annex I parties under the Protocol - if met - would only result in a 5% reduction in developed country GHG's in the commitment period 2008-2012

⁴⁰ R.Johns Sandeman "A Critique of Present Australian Energy Policy" *International Journal of Environmental Studies* (2006) Vol 63 no 6 719-729. See also John Quiggin "The Greenhouse Mafia" *The Australian Financial Review* 1 June 2007 at 4-5.

⁴¹ Liz Minchin and Farrah Tomazin "Howard undermined on climate" *The Age* April 25 2007 <http://www.theage.com.au/articles/2007/04/24/1177180651382.html> (26 June 2007).

⁴² UNFCCC website, note 7.

⁴³ Article 4 (2). See P.Sands note 37 at 364-365.

⁴⁴ For text of Kyoto Protocol see <http://unfccc.int/resource/docs/convkp/kpeng.pdf> (23 March 2007).

⁴⁵ *Kyoto Protocol* <http://unfccc.int/kyoto-protocol/items/2830.php> (23 March 2007).

⁴⁶ Article 3 (1).

against a 1990 baseline.⁴⁷ The Protocol, by not involving binding targets for rapidly growing developing countries such as China and India - combined with US and Australia's refusal to ratify it - means that it has limited coverage of the world's current GHG emissions⁴⁸.

Developing countries have consistently made a "redistributive justice" or "equity" argument, maintaining that industrialised countries have created the climate change problem and that only after these countries have taken the lead in substantially reducing greenhouse gas emissions should the developing world make significant GHG reductions⁴⁹. Developing countries such as China and India have argued that their objectives of poverty reduction and economic development should take priority over efforts to mitigate GHG emissions. These arguments were made both during the Kyoto Protocol negotiations and in the period since. This perspective is also reflected in the "Principles" section of the UNFCCC which provides that the obligation of parties to protect the climate system is "on the basis of equity" and "in accordance with their common but differentiated responsibilities and respective capabilities...the developed country Parties should take the lead in combating climate change..."⁵⁰

On the other hand, the industrialised countries remain sharply divided. The United States and Australia have argued that the Kyoto Protocol, by not imposing any mitigation obligations on developing countries means that:

- efforts made by industrialised countries will be ineffective particularly given the rapid rise in GHG emissions by developing countries,
- their industry will be placed at a competitive disadvantage in relation to trade competitors in Southeast Asia not subject to GHG emission reductions, with a risk that energy intensive industries such as aluminium move offshore relocating to countries not subject to GHG emission reductions, and
- it is inequitable for the economic cost of GHG reductions to be borne solely by industrialised countries.⁵¹

⁴⁷ Article 3(1).

⁴⁸ UNFCCC website, note 7.

⁴⁹ B. Buchner and J. Lehmann "Equity Principles to Enhance the Effectiveness of Climate Policy: an Economic and Legal Perspective" in M. Bothe and E. Rehbinde, *Climate Change Policy* (Eleven International Publishing, Utrecht: 2005) 45-72 at 46.

⁵⁰ Article 3 (1).

⁵¹ See Letter from President George Bush to Senator Chuck Hagel, March 13, 2001, <http://www.lavoisier.com.au/papers/articles/Bushletter.html> (26 June 2007). See also 'Australia rejects

Unlike the US and Australia, the EU has accepted the developing country argument that industrialised countries should *first* take the lead in making substantial GHG reductions. The EU now has in place a target of cutting GHG emissions by 20% by 2020 from 1990 levels⁵². At the same time the EU is continuing to struggle to meet its Kyoto Protocol target.⁵³ Canada⁵⁴ and Japan,⁵⁵ who have also ratified the Kyoto Protocol, also struggle to meet their commitments.

The Kyoto Protocol's future is now very much in question with the impasse described above resulting in a failure to agree on *any* commitments in relation to the period following 2012.

Post 2012 commitments was a key issue at the Kyoto Protocol conference of parties (COP-11) held in Montreal in late 2005 where it was agreed to begin a process for discussing further commitments for Annex I parties.⁵⁶ Similarly, parties to the UNFCCC (meeting back to back with the Kyoto COP) agreed to further talks for enhancing implementation of the Convention but the dialogue “will not open any negotiations leading to new commitments”.⁵⁷ At the twelfth Conference of Parties (COP-12) to the UNFCCC and the second Meeting of Parties to the Kyoto Protocol, held 6-17 November 2006 in Nairobi, no breakthrough was achieved on post-2012 commitments by Annex I Parties, with further analytical work to continue.⁵⁸

Kyoto pact’, 5 June 2002, <http://news.bbc.co.uk/1/hi/world/asia-pacific/2026446.stm> (26 June 2007) and “Climate Change” Department of Foreign Affairs and Trade <http://www.dfat.gov.au/environment/climate/> (26 June 2007).

⁵² “EU leaders agree climate change targets” *Times on Line* March 9 2007

<http://www.timesonline.co.uk/tol/news/world/europe/article1492647.ece> (26 June 2007).

⁵³ “EU climate change policies” *Euractiv.com* 22 June 2007 <http://www.euractiv.com/en/sustainability/eu-climate-change-policies/article-117453> (26 June 2007).

⁵⁴ Canada's Fourth National Report on Climate Change <http://unfccc.int/resource/docs/natc/cannc4.pdf> (26 June 2007).

⁵⁵ Japan's Progress Report submitted 6 February 2006 <http://unfccc.int/resource/docs/dpr/jpn1.pdf> (26 June 2007). See also Toni Johnson “G8’s gradual move toward post-Kyoto climate change policy” <http://www.cfr.org> (27 June 2007).

⁵⁶ See Decision -/CMP.1, unfccc.int/meetings/cop.11/items (25 April 2006). Decisions adopted by COP11/MOP1 Montreal UN Climate Change Conference, 28 November -9 December 2005, Montreal. Annex I Parties comprise the industrialized countries and Eastern European economies in transition.

⁵⁷ *Ibid.* Paragraph 2.

⁵⁸ Decision 7/CMP.2 “Review of the Kyoto Protocol pursuant to its Article 9” FCCC/KP/CMP/2006/10/Add.1 at 32 <http://unfccc.int/resource/docs/2006/cmp2/eng/10a01.pdf#page=32> (27 June 2007).

The failure to reach agreement on post-2012 commitments is crucial not only in terms of the impact of targets, but also potential impacts on the so-called "flexibility mechanisms" of the Protocol. These include the Kyoto Protocol's Clean Development Mechanism (CDM), which allows industrialized countries to count towards their Kyoto targets emission reductions achieved through projects in developing countries and the Joint Implementation Mechanism which allows Annex 1 countries, to offset emission reductions through projects amongst themselves. The CDM was formally launched with entry into force of the Kyoto Protocol and currently has 1600 projects in the validation stage or beyond.⁵⁹

The Kyoto Protocol also includes an emissions trading scheme to operate amongst Annex I countries. The idea is that each Annex I country is given an allocation of GHG emissions equal to its national target. Annex I countries that exceed their reduction target can sell to other Annex I countries (who fail to reach their target) part of their allocation. The ground rules for this system have only recently been agreed and so trading is yet to take place.⁶⁰ At the same time the EU Emissions Trading Scheme (ETS) designed to be consistent with the Kyoto Protocol has been in operation since 1 January 2005.

In 2006 the global carbon market comprised more than \$US 30 billion, consisting of \$US 25 billion traded under the EU ETS and \$US 5 billion under the Kyoto Joint Implementation and CDM mechanisms⁶¹. However, the failure to agree on post-2012 Protocol commitments has created an overall uncertainty about the future of the Kyoto regime which in turn makes it difficult for industry to take longer term investment decisions.⁶²

Section C: Technology Development and Transfer to Address Climate Change

1. Some Conceptual Issues

Before evaluating the AP6 as a mechanism for technology development and transfer it is necessary to describe the existing mechanisms in this area,

⁵⁹ <http://cdm.unfccc.int/Statistics> (27 June 2007).

⁶⁰ UNFCCC website, note 7.

⁶¹ World Bank *State and Trends of the Carbon Market 2007* www.carbonfinance.org/docs/Carbon_Trends_2007_FINAL (14 July 2007) at 3.

⁶² Beverley Dawkin "The Montreal Climate Change Negotiations-What Next for Climate Policy?" www.chathamhouse.org.uk (24 April 2006).

particularly those under the UNFCCC and Kyoto. To understand these mechanisms some conceptual issues must first be addressed. The development of *new* technologies (“technology development”) must be distinguished from the transfer of *existing* technologies (“technology transfer”). These concepts are distinct but inter-linked: technology transfer may be considered part of the broader phenomenon of technology innovation, development and diffusion”.⁶³

Policies specifically designed to provide technology change are often referred to as "technology push" and include research and development policies. Technology transfer is also considered to require "market pull", in other words, policies which assist in creating a market for the new technology (e.g. a carbon tax or emissions trading scheme).⁶⁴

Thus in the climate change context, “technology push” may come in the form of a policy involving a research and development subsidy to develop a more efficient solar cell. However, diffusion or transfer of this new technology will only occur if there is a “market pull” in place which may occur through, for example, a government guaranteed price for renewable energy or a tax on the use of carbon fuel. Absent a market for the new solar cell it will languish in a research laboratory.

In concrete terms, technology development and transfer for climate change mitigation refers to increased uptake and improvement of renewable energy technologies (which have zero greenhouse gas emissions) including solar, hydro and biomass. It also includes the further development of cleaner coal technologies including so-called carbon sequestration (basically the capturing of CO₂ produced by fossil fuels - still in trial stage), energy efficiency and most controversially nuclear power.

Of equal importance in this area are both “soft technology” in the form of, for example, capacity building, training, information and research and “hard technologies” such as equipment and plant in the fields of energy production and distribution.⁶⁵

⁶³ Cedric Philibert “International Energy Technology Collaboration and Climate Change Mitigation” OECD paper COM/ENV/EPOC/IEA/SLT (2004) 1, at 9.

⁶⁴ Ibid. at 9.

⁶⁵ More broadly this field also includes “adoption” as well as “mitigation” and both sources and sinks. See Gill Wilkins *Technology Transfer for Renewable Energy, Overcoming Barriers in Developing Countries* (Earthscan, London: 2002) at 126.

Reflecting the necessity of both “technology push” and “market pull” to ensure technology transfer it is well recognized that no single mechanism can deliver the required technology development and transfer. Rather, the most successful policy approaches combine a range of measures to induce technology change. These may include, for example, both highly specific research and development subsidies combined with broader policies such as carbon taxes or emissions trading. The ABARE Report which underpins the AP6 initiative explicitly makes this point.⁶⁶

2. Technology Transfer under the UNFCCC and the Kyoto Protocol

The UNFCCC contains a general obligation on developed country parties to take “all practicable steps to promote, facilitate and finance, as appropriate, ... the transfer of, or access to, environmentally sound technologies and know-how to other parties, particularly developing country parties, to enable them to implement the provisions of the Convention”.⁶⁷ The Kyoto Protocol has a similar provision in Article 10(c), which, however, gives recognition to the role of the private sector.⁶⁸

These provisions have provided a weak mandate for action in this field. Developing countries have called on industrialized countries to honour these commitments and transfer specific technologies to them.⁶⁹

In response, industrialized country governments have said that they do not own the technology in question, which is largely owned by private

⁶⁶ Philibert OECD report, note 63 at 9. The ABARE Report which underpins the AP6 comes to a similar conclusion. “Both technology ‘push’, (for example, research and development policies) and ‘pull’, (for example emissions trading) will be required in the long-term. However, it will be important to ensure that sufficient funding and support policies are provided to reinvigorate energy research in both the public and private sectors and the necessary technologies to substantially reduce emissions actually exist and are capable of deployment before technology ‘pull’ policies are adopted”. Australian Bureau of Agricultural and Resource Economics (ABARE) *Technological Development and Economic Growth* ABARE Research Report 06.1 (Commonwealth of Australia, Canberra: 2006) at 4.

⁶⁷ Arts 4(5) and 11(1) UNFCCC, note 7 above.

⁶⁸ Article 19 (c) provides that Kyoto Parties: “Cooperate in the promotion of effective modalities for the development, application and diffusion of, and take all practicable steps to promote, facilitate and finance, as appropriate, the transfer of, or access to, environmentally sound technologies, know-how, practices and processes pertinent to climate change, in particular to developing countries, including the formulation of policies and programmes for the effective transfer of environmentally sound technologies that are publicly owned or in the public domain and the creation of an enabling environment for the private sector, to promote and enhance the transfer of, and access to, environmentally sound technologies” [www.unfccc.int-KYOTO](http://www.unfccc.int/KYOTO) (28 June 2007).

⁶⁹ Timothy Forsyth “Flexible Mechanisms of Climate Technology Transfer” (1999) Vol 8 (Sept) *Journal of Environment & Development* 238-257 at 246.

companies and is subject to intellectual property rights, arguing that they therefore are not in a position to transfer the technology to developing countries.⁷⁰

Experts have noted that the UNFCCC and Kyoto Protocol provisions assume technology transfer occurs in a lineal fashion only from North to South, ignoring, for example, south-south interactions. They have also pointed out the failure to address “technology development” as opposed to “technology transfer” in a context where both are essential for delivering deep cuts in GHG emissions.⁷¹

Perhaps even more problematic is the absence of specific binding targets for GHG reductions in the UNFCCC, which has in turn meant a failure to link technology transfer to implementation of the Convention. While Kyoto has targets for Annex 1 parties (industrialised countries and Eastern European countries – so called “economies in transition”) there are no targets for developing countries and the US and Australia have not ratified the Protocol. Therefore, while technology transfer under Kyoto Protocol CDM projects can offset Annex I emission reduction efforts its impact in delivering technology transfer has been limited.

In summary, the climate change regime lacks a powerful regulatory mechanism to direct market forces to drive technology transfer. This is in stark contrast to the Montreal Protocol on Ozone Depletion where “incremental costs” of developing countries meeting specific targets for the phase-out of ozone depleting substances were met through a multi-layered fund financed by industrialized countries. This approach provided a powerful incentive for industry investment in technology transfer and development.⁷²

The Global Environment Facility (GEF) located in the World Bank and jointly run by UNEP and UNDP has operated as the financial mechanism for the UNFCCC. In this role the GEF has funded projects in developing countries involving: energy efficiency, renewable energies (e.g. solar and

⁷⁰ Ibid. at 239.

⁷¹ Forsyth, note 69 at 243.

⁷² See Peter Lawrence “Technology Transfer Funds and the Law: Recent Amendments to the Montreal Protocol on Substances that Deplete the Ozone Layer” (1992) 4 *Journal of Environmental Law* 15.

hydro energy) and sustainable transportation totaling US\$250 million per year.⁷³

The UNFCCC has established a Special Climate Change Fund (SCCF) which has included technology transfer in its mandate but funds (to May 2006) were limited to US \$36.7 million.⁷⁴

A Group on Technology Transfer (EGTT) has been created under the UNFCCC but with limited resources.⁷⁵ At the UNFCCC COP-12 in 2006 a developing country proposal was made to replace the EGTT with a stronger body - a Technology Transfer and Development Board as well as establishing a Multilateral Technology Acquisition Fund to buy intellectual property rights. However, developed countries opposed these new bodies, preferring to strengthen the existing EGTT. The final compromise was to extend the mandate of the EGTT for one year and continue the discussion on its future in the subsidiary bodies⁷⁶.

The key problem with these efforts is that they have been limited to the supply of technologies by public finance. There has been limited success in harnessing direct private foreign investment in a context where such private investment remains the predominant source of financing in energy development.⁷⁷ Thus “between 1990 and 1997 private sector foreign direct investment between developed and developing countries amounted to some \$US 240-250 billion whereas funding from the Global Environment Facility (GEF) amounted to just \$US 5.25 billion.”⁷⁸ Critics have also pointed out the lack of linkage between the environmental goals of the GEF and the political priorities of developing countries,⁷⁹ with overall a “limited potential to channel private investment toward large-scale climate friendly endeavours”.⁸⁰

⁷³ *Global Environment Facility (GEF)* www.gefweb.org/projects/Focal_Areas/climate/climate.html (16 June 2006).

⁷⁴ *Global Environment Facility (GEF), Status Report on the Climate Funds, 19 May 2006* GEF/C.28/4/Rev.1 <http://thegef.org/documents/Co> (11 July 2007) at 4.

⁷⁵ See UN document FCCC/SBSTA/200/L.9 on UNFCCC website.

⁷⁶ See Decision 5/CP.12 in UN document FCCC/CP/2006/5/Add.1 on UNFCCC website.

⁷⁷ Wilkins, note 65 at 113.

⁷⁸ Forsyth, note 69 at 239 citing World Bank figures quoted from T. Forsyth (ed.) *Positive Measures for Technology Transfer under the Climate Change Convention* (Royal Institute of International Affairs, London: 1998) at 25.

⁷⁹ Heller and Shukla, note 9 at 5.

⁸⁰ *Ibid.* at 5-6.

2 a) How successful is the transfer of technology under the Kyoto Protocol?

As mentioned above (page 15) the Kyoto Protocol Clean Development Mechanism (CDM) allows industrialised country Parties to the Protocol to gain credits for reductions in GHG emissions achieved through projects in developing countries under certain conditions.⁸¹ The Kyoto Protocol emissions trading scheme is not yet in operation but the European Union emissions trading scheme began operations at the beginning of 2005 and has been growing rapidly.⁸²

Australia and the United States by not ratifying the Kyoto Protocol, remain outside these mechanisms, although interestingly a number of states in the US have adopted their own emissions trading system and some Australian states are moving in the same direction.⁸³ New South Wales has established an emissions trading system and the states and territories have jointly proposed establishing a national emissions trading system if the federal government does not act with sufficient speed.⁸⁴

The CDM has only been in operation since entry into force of the Kyoto Protocol (February 2005) and has since that time seen a rapid increase in projects; as of 2 May 2007, 176 CDM projects had been registered, providing 45 million tonnes of CO₂ reductions.⁸⁵

But the CDM has difficulties. First, Kyoto Protocol parties are yet to agree on commitments post-2012 which is starting to have a chilling effect on industry investment.⁸⁶

Secondly, the slow approval process and high transaction costs of CDM projects have been creating difficulties.⁸⁷

⁸¹ Kyoto Protocol, note 7, Article 12.

⁸² World Bank, note 61 and associated text.

⁸³ *Prime Ministerial Task Group on Emissions Trading – Final Report* <http://www.pmc.gov.au/publications/emissions/index.cfm> at 66-70.

⁸⁴ www.emissionstrading.nsw.gov.au/ (19 July 2007).

⁸⁵ *Point Carbon 2007, CDM DJI Monitor* www.pointcarbon.com/article21980-195.html?articleID=21980&categoryID=195 (7 July 2007).

⁸⁶ ABN AMRO Bank N.V., Pacific Hydro, Australian Business Council for Sustainable Energy, Phillips Fox *Show me the money* May 2006 at 22.

⁸⁷ *The Fifteenth Asia-Pacific Seminar on Climate Change 11-15 September 2005, Yokohama, Kanagawa, Japan, Chairperson's Summary* www.ap-net.org/seminar/h01.html (5 May 2006) at 3.

Thirdly, there is the difficulty in applying the so called “additionality requirement” i.e. the requirement that projects would not have gone ahead without the revenue from the certified emissions reduction (CERs).⁸⁸ This requirement is essential in order to avoid countries counting projects which were going ahead anyway, but has created complex methodological issues. At the same time there has been some recent progress in addressing the additionality issue and high transaction costs by streamlining the approval processes.⁸⁹

Fourthly, the absence of the US (and Australia) from the CDM - as non-Parties to the Kyoto Protocol - has weakened its impact. However, companies have found creative ways around this. For example, Hydro Tasmania’s “Roaring Forties Project” comprises \$A109 million joint venture with a Chinese enterprise to create a wind farm project in China with the Carbon credits sold on to Kyoto parties (i.e. not Australia).⁹⁰

In spite of these weaknesses the CDM has unlocked significant and growing financial resources especially from industry in Kyoto Parties such as the EC and Japan. Many of these CDM projects have a technology transfer element.

At the same time, to unlock the technology development and transfer required there is clearly a need for a stronger technology transfer mechanism under the UNFCCC/Kyoto framework. Examples of such mechanisms include the possibility of a more effective technology transfer fund or a more direct link between the CDM and technology transfer. This will remain a crucial but to date relatively neglected area of negotiations.

Section D: AP6 Architecture

1. AP6 Objectives

AP6 unites a group of countries which have taken sharply differing views in the negotiations on climate change in the UNFCCC and Kyoto Protocol. Is there an underlying vision which these countries share?

⁸⁸ Heller and Shukla, note 9 at 4.

⁸⁹ cdm.unfccc.int/ (19 July 2007).

⁹⁰ www.roaring40s.com.au (19 July 2007).

In announcing the AP6's inaugural meeting the Australian Prime Minister, John Howard, emphasized that the six countries shared a common vision of tackling climate change without any slowing down of economic growth. Tackling poverty was also emphasized. The key to achieving this is to be through technology development.⁹¹

Importantly, AP6 does not have mitigation of climate change as an overall objective. Rather, the Preamble to the AP6 Charter states that AP6 will pursue "development, energy, environment and climate change objectives."⁹² This bundling together of linked policy areas was emphasised by the Australian Minister for Foreign Affairs Alexander Downer, who at the announcement of AP6 in 2005, stated that:

*"the core element of the Partnership is policy integration. The Partnership sensibly doesn't seek to address issues in isolation. It is a coming together to find ways to meet our energy, climate change and air pollution issues in a practical way that makes economic sense. Technology cooperation will be a core means of delivering outcomes."*⁹³

Implicitly the AP6 Charter acknowledges the differing priorities and national circumstances of the partners.⁹⁴ For China and India, development is the overriding concern. As articulated by the Chinese Ambassador to Laos at the announcement of AP6 in 2005:

*"climate change is not only an environmental issue but also development issue. ... the partnership will further facilitate international cooperation on energy technology and with the framework of the climate change convention we are ready to enhance scientific and technological cooperation with other countries in the world"*⁹⁵

⁹¹ Joint Press Release "Australia Joins New Asia Pacific Partnership on Clean Development and Climate", 28 July 2005 at <http://www.ap6.gov.au> (27 June 2007).

⁹² AP6 Charter, note 11, fourth preambular paragraph.

⁹³ Press Conference, Vientiane, Laos, 28 July 2005 quoted in: R. Pritchard "The AP 6 Charter," *Oil, Gas and Energy Law Intelligence* (March 2006) 2.

⁹⁴ *Ibid.* at 2.

⁹⁵ Mr Liu Yongxing, Chinese Ambassador to Laos, Vientienne, Laos 28 July 2005, quoted in Pritchard note 93.

At the launching of AP6 in Sydney, Mr Raja, the Indian Minister for Environment, stated that "we are developing countries, we have our own agendas for our development activities, so we cannot give any promise, any commitment to reduce further our emissions"⁹⁶. So for AP6 members, at least for the time being, the divisive - but crucial - issue of the point in time at which developing countries take on commitments to reduce GHG emissions has been set to one side.

For China and India, AP6 is also a vehicle for addressing the ever-increasing problem of environmental air pollution in their major cities. On the other hand, for the United States, AP6 is viewed as a framework for addressing climate change objectives in the broader context of sustainable development and energy security.⁹⁷

Similarly, Australia, Japan and South Korea also see AP6 as a vehicle for addressing climate change. Particularly given the United States' and Australia's refusal to ratify Kyoto, AP6 has been portrayed by these countries as demonstrating substantial action to address the climate change issue.

2. AP-6 Institutional Framework

AP6 has been launched by way of a non-legally binding Charter which proclaims that the purpose of the Partnership is to "create a voluntary, non-legally binding framework for international cooperation to facilitate the development, diffusions, deployment and transfer of existing, emerging and longer term cost-effective, cleaner, more efficient technologies and practices among the Partners through concrete and substantial cooperation..."⁹⁸

The mechanisms for achieving the AP6 purposes comprise an overarching Policy and Implementation Committee (PIC) and an Administration Support Group which functions as a Secretariat. The latter is responsible for organising meetings and other administrative matters and is located, at this stage, in the US.⁹⁹

⁹⁶ Press conference, Sydney, 12 January 2006, quoted in Pritchard, note 93.

⁹⁷ Condoleeza Rice, US Secretary of State, press conference, Washington DC, 9 February 2006, <http://www.state.gov/secretary/rm/2006/60858.htm> (26 April 2006).

⁹⁸ AP6 Charter, note 11 at paragraph 2.1.3.

⁹⁹ AP6 Charter, note 11 paragraph 4.

The *modus vivendi* for the AP6 is through a number of government-business task forces to develop sustainable solutions through bottom-up practical action. These task forces cover:

1. cleaner fossil energy with an emphasis on CO₂ geo-sequestration (capturing and storing CO₂ emissions from coal),
2. renewable energy and distributed generation,
3. power generation and transmission,
4. steel,
5. aluminium,
6. cement,
7. coal mining, and
8. buildings and appliances.¹⁰⁰

3. AP6 Mechanism for Technology Development and Transfer

In each sector covered by AP6, Task Forces are to:

- “review the current status of their sector...;
- share knowledge, experience and good practice...;
- identify specific opportunities for cooperation...;
- define the current state of the technology in terms of cost...; performance, market share and barriers...;
- identify cost and performance objectives and the actions needed to achieve these objectives...; and
- identify, wherever possible, ambitious and realistic goals¹⁰¹”

It remains unclear whether these tasks also extend to recommending the adoption of government regulation in the particular sectors covered by the AP6.

A further question is whether the government-industry structure of AP6 gives sufficient weight to the full spectrum of interests involved. The Task Forces are narrowly comprised of business interests and bureaucrats. While allowed to observe Task Force meetings, other groups such as scientists, NGOs and academics with expertise in energy and development are not permitted to participate directly. If the Task Forces allowed broader representation and participation, the increased transparency would likely

¹⁰⁰ See AP6 website at <http://www.asiapacificpartnership.org> – ‘workplan’.

¹⁰¹ AP6 Work Plan, note 11.

have positive benefits in, for example, ensuring that rigorous assessment of the impact of projects in reducing GHG emissions occurs.

Does the structure of the Task Forces give a built-in - and justifiable - preference to existing energy or other interests? There is logic in the Task Forces focusing on the high GHG energy sources such as coal and energy intensive industries such as steel, aluminium and cement. Given that coal will inevitably remain a major energy source for some considerable time the emphasis on coal sequestration is understandable.

At the same time, long-term deep cuts in GHG emissions will involve significant changes in market shares with increases in the proportion of energy derived from lower or zero GHG emission sources such as natural gas, nuclear, biomass and renewables and a decrease in market share of fossil fuels. There is only one group dealing with the various types of renewable energy and there are no Task Forces for 'transport' and 'energy efficiency'. Although the Work Plan notes that cooperation in transport and agriculture will "be explored as the Partnership develops". These are vital areas. While Task Force 8 covers energy efficiency in relation to buildings and appliances, the full gamut of energy efficiency - including for example industrial plant and equipment and consumer goods - is absent. Energy efficiency is an area where cost effective reductions in GHG emissions can be made rapidly.¹⁰² Over time it would be valuable for the AP 6 Task Forces to expand into these neglected areas.

To give an example of what the AP6 means in practice, let us consider the Renewable Energy and Distributed Generation Task Force (co-chaired by Australia and the Republic of Korea). In relation to this Task Force, projects will be of three types: "deployment projects", "market enabling projects" and "research development and demonstration projects".

Deployment projects aim to "accelerate the uptake of existing commercial renewable energy".¹⁰³ "Market enabling projects" are to involve, addressing barriers to the uptake of renewable energy through, e.g., training and finance. These are likely to be largely managed and funded by governments.

¹⁰² *Energy Efficiency: A Worldwide Review* (World Energy Council, London: 2004).

¹⁰³ *Asia-Pacific Partnership on Clean Development and Climate Partnership for Action 2006*
www.dfat.gov.au/environment/climate/ap6 (23 February 2007) at 8-9.

Research development and demonstration projects involve applied research of new technologies to “reduce their commercial and technical risk”.¹⁰⁴

Examples from the Renewables Task Force are:

1. improving the cost effectiveness of biomass gasification energy generation (partners Australia, China, Japan and Republic of Korea), and
2. building expertise in solar energy engineering (partners Australia, China and other AP6 partners).
3. identifying optimal legal frameworks for renewable energy in China, India and the Republic of Korea (all AP6 partners involved)¹⁰⁵

These examples show that projects involve the development, diffusion and distribution of new technology as well as the removal of barriers to its transfer.

AP 6 seems to cover a range of types of projects, including: 1) projects which would not otherwise be commercially viable (for example training), 2) projects of marginal commercial viability where a modest AP6 subsidy makes the project viable, and 3) projects which would be commercially viable without AP6 but where AP6 helps give market penetration through enhanced business links.

4.AP6 Funding

Membership of the AP6 does not entail funding obligations. Under the Charter, funding by governments of AP6 activities is to be on a voluntary basis. "Each partner may, at its discretion, contribute funds, personnel and other resources to the partnership."¹⁰⁶ To date, AP6 government funding has been modest to say the least. The United States has announced that it will allocate \$US 52 million in the first year and Australia has allocated A\$150 million over five years.¹⁰⁷ This compares to the more than \$US 30 billion global carbon market in 2006 which comprised \$US 25 billion trade traded

¹⁰⁴ Ibid at 10-11.

¹⁰⁵ *Asia-Pacific Partnership on Clean Development and Climate, Partnership for Action, 200*, <http://www.asiapacificpartnership.org> (23 February 2007).

¹⁰⁶ AP6 Charter, note 11 paragraph 5.1.

¹⁰⁷ Condoleezza Rice, US Secretary of State, press conference, Washington DC, 9 February 2006, <http://www.state.gov/secretary/rm/2006/60858.htm>. For Australia see <http://www.ap6.gov.au> (15 November 2007).

under the EU Emissions Trading Scheme and \$US 5 billion involving the Kyoto joint implementation and CDM mechanisms.¹⁰⁸

Section E: The AP6 Technology Development Mechanism - Evaluation

We have seen that the UNFCCC/Kyoto Protocol mechanisms for technology transfer are relatively weak. Does AP6 offer more?

The AP6 explicit focus on technology development, and not just the narrower concept of technology transfer, is positive given the acute need to devise new technologies. There is also value in a cooperative framework in this field which avoids a narrow North-South lineal approach, acknowledging the importance of South-South cooperation.¹⁰⁹ Providing a cooperative framework to facilitate - more directly - research and development efforts amongst industry located in different countries is valuable.

The industry by industry sectoral approach adopted in the AP6 is also of interest. Given the Byzantine nature of the UNFCCC/Kyoto Protocol regimes and associated negotiation processes, seeking progress on an industry by industry basis may also provide a basis for progress in the UNFCCC/Kyoto Protocol. At the same time, as noted above, the AP6 sectoral groups omit key areas of cooperation essential for climate change, such as transport and agriculture.

On the negative side AP6, as a technology development mechanism, has serious limitations. The relatively small amount of funding for AP6 will limit the degree to which it can impact on R& D or mobilize serious levels of foreign direct investment.

A more fundamental problem is that technology development and diffusion on a scale to allow deep cuts in GHG emissions seems highly unlikely to occur unless cooperative mechanisms (such as AP6) are combined with national regulation in the form of some type of carbon tax or emission quota

¹⁰⁸ World Bank, *State and Trends of the Carbon Market 2007* www.carbonfinance.org/docs/Carbon_Trends_2007_FINAL (14 July 2007) at 3.

¹⁰⁹ China's aggressive push to develop renewable energy shows that a narrow North-South analysis is out of date. See China's Climate Change National Action Plan launched on 4 June 2007 which includes a target of 20 per cent reduction of energy consumption per unit GDP by 2010 and a target of raising the proportion of renewable energy in the primary energy supply sector to 10 % by 2010 www.GOV.cn (11 June 2007) at 16.

system or emissions trading.¹¹⁰ Only with such a mechanism in place, would there be sufficient market pull to provide an incentive for industry to invest – on the scale required - at home or overseas in zero or low GHG technologies. As argued above, technology push in the form of publicly financed R&D is also vital. Such technology push could occur through, for example, using a significant proportion of revenue generated through an emissions trading system.¹¹¹ The Stern Report notes that the market failure experienced to some extent in all R & D is particularly apparent in zero-and low- emissions energy technologies.¹¹²

Section F: Challenges in AP6 Implementation

It is early days in implementing the AP6 with the first round of 42 projects approved in 2006¹¹³. However, some challenges to implementation are evident. These issues include ensuring that technology is appropriate to local conditions, the careful handling of intellectual property and addressing trade and investment barriers.

1. Appropriate Technology

Any technology developed through AP6 must be appropriate to local conditions for it to have a chance of succeeding in reducing GHG emissions. This means that it is essential to identify projects which mesh with the broader sustainable development priorities of developing countries.¹¹⁴

It is also important that projects have long-term economic viability.¹¹⁵ This will not occur, if for example, if projects rely on maintaining equipment where the technical expertise does not exist in the country hosting the project, unless that capacity is built in as part of the project.

¹¹⁰ Debra Justus and Cedric Philibert *International Energy Technology Collaboration and Climate Change Mitigation, Synthesis Report* International Energy Agency, November 2005 (COM/ENV.EPOC/IEA/SLT (2005)11) at 6.

¹¹¹ Martin R and Vaitilingam R *Climate Change: Economic Sense and Non-sense of Carbon Mitigating Policies* http://cep.lse.ac.uk/briefings/pa.climate_change.pdf (28 Feb 2007) at 6.

¹¹² Stern Report, note 26 at 352-5.

¹¹³ *Asia-Pacific Partnership on Clean Development and Climate Partnership for Action 2006* www.dfat.gov.au/environment/climate/ap6 (23 Feb 2007).

¹¹⁴ R.K. Pachauri “Climate change and technology transfer” <http://environment.yale.edu/documents/downloads/o-u/Pachauri.pdf> at 185.

¹¹⁵ Gordon J. MacDonald “Technology Transfer: The Climate Change Challenge” (1992) Vol 1,1 *Journal of Environment and Development* at 13.

The active involvement of developing country partners in selecting projects should lessen these risks.¹¹⁶

2. Intellectual property (IP) protection

AP6 will need to handle sensitive intellectual property issues in a manner which does not deter investment. Intellectual Property protection is a two-edged sword. Sufficient intellectual property protection - in the form of patents for example - is a necessary condition for providing economic incentives for the development of climate change related technologies. However, overly broad IP protection can stifle the rapid diffusion of new technologies.¹¹⁷

Intellectual property protection may not be an issue for a wide range of climate change related technologies which are already in the public domain, for example, training programs, assessments, old hydro related technologies and older clean coal technologies. However, IP protection is likely to be a serious issue for some of the newer technologies such as state-of-the-art solar cells.

Under the AP6 Charter, IP is to be handled on case-by-case basis.¹¹⁸ It remains to be seen whether the AP 6 Policy Implementation Committee can develop a creative approach to this issue. Parties involved in a joint-venture could share intellectual property developed, but if there is leakage on one side, this could deter future investment. This may arise particularly in relation to projects involving China or India. While China and India are parties to the WTO TRIPS Agreement which requires minimum standards of intellectual property protection, enforcement remains a challenge, particularly in China.¹¹⁹ Of course there are a range of possible approaches to minimise the risk, including licensing arrangements.

3. Trade and investment barriers

A further interesting challenge to AP6 implementation will be the addressing of trade barriers, particularly in relation to investment in renewable energy.

¹¹⁶ Ibid.

¹¹⁷ Wilkins, note 65 at 126.

¹¹⁸ AP6 Charter, note 11, Article 6.1.

¹¹⁹ Berta Gomez and Peggy B. Hu *Intellectual Property Enforcement High on U.S.-China Agenda* usinfo.state.gov/eap/Archive/2005/May/19-694355.html (11 July 2007).

The extent to which the AP6 becomes active in this area remains to be seen. To date progress has been faltering in the WTO Doha Round in addressing trade and environment related issues. The rapid diffusion of low GHG technologies would be facilitated by a change to existing WTO rules, for example, allowing lower tariffs to apply to the import of technology used to produce renewable or other zero or low GHG emission energy. However, developing countries remain wary about environment related conditionalities being imposed by industrialised countries as a new form of protectionism.¹²⁰

Section G: AP6 as a forum for emissions trading?

Former Australian Minister for the Environment and Heritage, Ian Campbell, was quoted in November 2006 as saying "that while an Asia-Pacific regional carbon trading scheme was not on the AP6 agenda now, he "certainly would not rule out the AP6 as a place where we could do that work in the future."¹²¹

Japan - which is a party to the Kyoto Protocol as well as AP6 member - has recently introduced its own voluntary emissions trading scheme which is consistent with the Kyoto emissions trading scheme¹²².

Australia is set to move to a national emissions trading scheme by 2012. The Australian Task Group on Emissions Trading argues that a global emissions trading scheme is most likely to be developed from the 'bottom-up' with e.g. Australia's national scheme joining up with Canadian and New Zealand Schemes and a regional AP6 Scheme eventually linking to the EC and other regional schemes.¹²³

¹²⁰ Ronald Steenblick, "Liberalisation of Trade in Renewable Energy Products and Associated Goods: Charcoal, Solar Photovoltaic Systems and Wind Pumps and Turbines" *OECD Trade and Environment Working Paper* NO. 200507 COM/ENV/TD (2005) 23/FINAL, 9 Dec 2005 at 4-6.

¹²¹ The Australian Financial Review, Wednesday 1 November 2006, page 17. See also Press Release, Business Council of Australia, "New BCA Approach to Tackling Climate Change" proposing Australia encourage the development of a "pro-forma trading market within the AP 6 group as a precursor to the development of a global market." <http://www.bca.com.au/PrintMe.aspx?ContentID=100903> (5 March 2007) at 2.

¹²² "Japan Launches Voluntary Emissions Trading Scheme" *Japan for Sustainability* www.greenbiz.com/news/news_third.cfm?NewsID=28866 (2 March 2007).

¹²³ *Prime Ministerial Task Group on Emissions Trading – Final Report*, <http://www.pmc.gov.au/publications/emissions/index.cfm> at 72-75.

For AP6 to operate as a regional ET scheme, would require either: 1) an AP6 wide cap (or so-called "bubble") on GHG emissions or 2) linkage between national ET schemes established by AP- 6 member countries.

The first option would involve an AP6 wide cap on GHG emissions e.g. in relation to carbon intensive industries under which trading would take place on a country - to - country basis. This would seem extremely unlikely at present given the strong resistance to a binding national target by the US, China, India and Australia. Only Japan, at this stage could conceivably be interested in such a scheme given its Kyoto target and existing national ET scheme.

As mentioned the second option would be a system whereby linkage occurred between national ET schemes established by AP- 6 member countries. Under such a scheme, emission credits in Japan, could be sold in Australia - when Australia has its own national ET scheme in operation - and vice versa. It remains to be seen whether this would be a realistic option. Currently, under the European ET scheme direct trading with non-Kyoto parties is not permitted.¹²⁴ The European ET scheme is designed to link up with other Kyoto party schemes such as those Canada, Japan and New Zealand.

If in future, an AP6 regional emissions trading scheme was to develop, it would be important to build on the Kyoto framework for the same reasons given above in relation to national schemes.

Section H: Will AP6 make a difference to emissions reductions?

According to the ABARE study underpinning the AP6, the impact of the AP6 could be to reduce global GHG emission by about 23% in 2050 compared to what would otherwise have been the case.¹²⁵

This may be overly optimistic and, in any event, is well short of the 60% cut in global GHG emissions called for by scientists. At the same time, there are some positive aspects of AP6.

¹²⁴ Peter Lawrence *Submission to Prime Minister's Task Group on Emissions Trading* www.pmc.gov.au. (11 July 2007).

¹²⁵ ABARE Research Report, note 10 at 3.

Given the impasse between leading developing countries (e.g. China and India) and industrialized countries in the UNFCCC climate negotiations, the AP6 has at least the potential to see a more positive dialogue develop. Given AP6 includes six key countries representing 48 % of global GHG emissions and world energy consumption the potential is great.

While AP6 has some potential to make a difference, in the short term the negatives overshadow the positives.

Funding of AP6 is too small for it to make a significant difference. Therefore the claims for AP6 have been exaggerated, especially by the US and Australia. As mentioned above (p15) the US has allocated \$US52 million for AP6 in its first year and Australia \$A150 million over 5 years. These relatively paltry sums of money fall well short of the massive investment in technology development and transfer urgently required.

However, of even more fundamental importance is that technology development and diffusion on a scale to allow deep GHG cuts will only occur if there is government regulation in addition to a market mechanism.

¹²⁶ AP6 involves modest subsidies and is a useful forum to generate collaborative projects, but this is not enough. Government regulation through a carbon tax - or cap and trade system - combined with a dramatic increase in public funded R& D is vital to drive technology development and transfer. Without a price signal it is not possible to deeply reduce GHG emissions through a rapid expansion of renewables, more natural gas, greater energy efficiency and a gradual move away from fossil fuel dependency.

By diverting attention away from the regulation issue, AP6 is a distraction. As mentioned above, the ABARE Report which underpinned the launching of the AP6 drew a similar conclusion that “[b]oth technology ‘push’, (for example, research and development policies) and ‘pull’, (for example emissions trading) will be required in the long-term.”¹²⁷

¹²⁶ An OECD study draws a similar conclusion, see note 63. Michael Grubb has also argued that a combination of pricing regulation to ensure market ‘pull’ as well as a suite of policies that ‘span the innovation chain’ is required. See Michael Grubb *Climate, energy and innovation: moving from theory to practice* www.econ.cam.ac.uk/fac (11 June 2007) at 15.

¹²⁷ ABARE Report, note 66 at 4.

The Johannesburg World Summit on Sustainable Development produced a proliferation of "partnerships for sustainable development" including partnerships of industry and NGOs. "Bottom-up" approaches can be a positive supplement to "top-down" regulation but can become 'green wash' if such initiatives are merely a substitute for regulation at the national and intergovernmental level. "Greenwash" has been defined as "an attempt to achieve the appearance of a social and environmental conscience without corresponding substance."¹²⁸

With new political leadership in United States and Australia, AP6 could be invigorated and further developed but there is a long way to go.

US President Bush has recently announced that the US will convene the major developed and developing country emitters to develop a post-2012 framework on climate change by 2008. President Bush emphasized that this effort would 'complement' the UN Framework Convention on Climate Change and that: "the effort will build on and advance US relation with the Asia-Pacific Partnership on Clean Development and Climate and other technology and bilateral partnerships".¹²⁹ It remains to be seen the extent to which such negotiations are matched with concrete measures and a further dramatic increase in the funding of AP6 projects.

There is also a proposal for a major climate change initiative to be undertaken in APEC which will meet in Sydney in September 2007.¹³⁰

Section I: Conclusion

The UNFCCC, Kyoto Protocol and AP6 all appear incapable of addressing the problem of climate change before it is too late.

To the extent that the AP6 takes pressure off governments - especially the US and Australia - to take strong regulatory action to reduce GHG

¹²⁸ Charlotte Streck: "The World Summit on Sustainable Development: Partnerships as New Tools in Environmental Governance" (2004) Vol 13 *Yearbook, of International Environmental Law* 63-95 at 66.

¹²⁹ The White House, President George W. Bush, *Fact Sheet: a New International Climate Change Framework* May 31 2007 www.whitehouse.gov/news/releases/2007/05/print/20070531-13.html (11 June 2007) at 1. See also G8 Chair's summary Heiligendamm, 8 June 2007, www.g-8.de/Content/DE/Artikel/G-8Gipfel/Anlage (11 June 2007).

¹³⁰ Prime Minister of Australia media release "APEC Economic Leaders Meeting - Climate Change" 31 March 2007. Space precludes a discussion of the possible role of APEC in these issues www.pm.gov.au/media/Release (19 July 2007).

emissions, AP6 can be regarded as a distraction. At the same time, AP6 does have the potential to produce concrete results in relation to technology development and transfer, particularly if there was a massive increase in its funding and if this was combined with regulatory action in the form of emissions trading or a carbon tax.

AP6's focus on technology development and transfer is welcome in a context where it is becoming increasingly clear that rapid technology development will be essential for achieving the deep cuts in GHG emissions required. The pressing need for a stronger technology transfer mechanism under the UNFCCC remains a key issue.

The President of Kiribati He Teburoro Tito described climate change negotiations as follows:

“It is like greedy piglets fighting over their share of milk from their ill mother. Instead of cooperating on how they could help save their mother, they were all carried away fighting for their share, and making their mother even more ill, until all of a sudden they found they had lost their mother and there was no more milk to live on.”¹³¹

At the risk of straining this analogy, AP6 is like offering the piglets a brightly painted bowl which unfortunately only contains a few drops of milk. There is initial excitement - and distraction - but then quick disappointment.

The AP6 will hopefully deliver some concrete results but the larger challenge of technology development and transfer remains an unmet challenge of global urgency.

¹³¹ Charles Arthur “That sinking feeling” published 6 January 2004, *The Independent* (UK) <http://environment.independent.co.uk/articles83484.ece> (28 June 2007) at 2.