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ABSTRACT

In the paper we discuss China's participation in both the 2009 Copenhagen negotiations on a post-Kyoto global climate change regime currently under way and out beyond Copenhagen in further negotiations likely to follow. China is now both the largest and most rapidly growing carbon emitter, and has much higher emission intensity relative to GDP than OECD countries. In the Copenhagen negotiation, there will be strong pressure on China to take on emissions reduction commitments and China's concern will be to do so in ways that allow continuation of a high growth rate and fast development. Central to this will be maintaining access to OECD markets for manufactured exports in face of potential environmental protectionism. Thus the broad approach seems likely to be to take on environmental commitments in part in return for stronger guarantees of access to export markets abroad. This involves directly linked trade and environmental commitments although how linkage can be made explicit is a major issue. More narrowly, the issues that seem likely to dominate the climate change negotiating agenda from China's viewpoint are the interpretation of the common but differentiated responsibilities (CBDR) principle adopted in Kyoto, the choice of negotiating instruments and form of emission commitments, and the size (and form) of accompanying financial funds for adaptation and innovation. We suggest that a possible interpretation of CBDR reflecting China's desire to leave room to grow when undertaking emission reduction commitments might be for China to take on emission intensity commitments while OECD countries take on emission level commitments. Larger funds and flexibility in their use will also raise China's willingness to make commitments.

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1. Introduction

A central element in global policy coordination over the next 20-30 years will almost certainly be both the design and implementation of post-Kyoto arrangements aiming to mitigate climate change. In the shorter term, these are to be negotiated by the Committee of Parties (COP15) under the UN Framework Convention on Climate Change (UNFCCC) with the negotiating process to conclude in Copenhagen in November 2009. In the 2007 Bali meeting that launched this second round of global climate change negotiations (after Kyoto in 1997), four negotiation areas of mitigation, adaptation, innovation, and trade and finance were agreed on. The participation of China both in this process and beyond is the focus of this paper.

China did not participate in the earlier 1997 Kyoto negotiations, and faces decisions as to how actively and on what basis to involve herself in this second negotiating round of climate change mitigation initiatives. China is still a low income (even if rapidly growing) country, and the primary policy emphasis remains on achieving growth and development and accompanying poverty elimination for the bottom deciles of the Chinese population. China sees her need as having global environmental arrangements in place that allow her to continue to grow, and key to this is maintaining openness in the global economy, and without environmentally motivated trade restrictions, so as to allow for continued high export growth and continuing FDI inflows as she and others take on environmental commitments.

At the same time, China faces pressure to take on commitments as the largest and most rapidly growing global emitter and there is growing recognition in China of the potential damage China faces from climate change. China also has a significantly larger share of GDP originating in emissions intensive manufactures and relatively inefficient small coal burning power plants. China also has opportunities to influence the outcomes of negotiations through coalitional activities with other lower income and large population partners (India, Russia, and Brazil). Also the choice of approach to the negotiations through the selection of negotiating instruments, dealing with

Kyoto non-compliance and other issues key to China such as carbon embedment in exports will be critical.

The negotiating agenda agreed in Bali for conclusion in Copenhagen is simultaneously extremely ambitious, vague and highly imprecise, and the time frame for negotiation is short. For China, four issues seem likely to dominate the narrower climate change negotiating agenda outside the broader trade linkage issues. One is the interpretation of the common but differentiated responsibilities principle agreed in the Kyoto negotiation for non-OECD economies. Here compensation and the form and depth of emission reduction commitments enter as issues. A second is the choice of negotiating instrument, with issues of negotiation on emission intensity rather than emission level and embedment of emissions in exports. A third issue is the size and form of the funds that will likely be created to facilitate adaptation and innovation. A final issue is how to deal with non-compliance by key OECD countries with their Kyoto commitments, which weakens the credibility of any commitments that might now be made by OECD countries in a second round of global negotiations. China's interest is in dealing with Kyoto non-compliance through firmer environmental dispute resolution for new Copenhagen commitments.

We suggest that a possible compromise interpretation of the common but differentiated responsibility principle allowing negotiation to progress and reflecting China's desire to leave room to grow when undertaking emission reduction commitments might be for China (along with India, Russia, and Brazil) to take on emission intensity commitments while OECD countries take on emission level commitments. Non-compliance with Kyoto commitments seemingly implies both carrying forward and combining of levels of non-compliance from Kyoto into the post Bali Copenhagen agreements and even beyond, but now with new firmer dispute resolution and enforcement procedures. The size and form of accompanying financial funds (for adaptation and innovation) are also key to China, and firmer arrangements here also seem key.

It is clear that China now sees significant direct environmental benefit at home from climate change mitigation and wishes to continue high growth without adverse

environmental impact. These perceptions will likely induce significant Chinese participation in global Copenhagen negotiations, but China's other interests in maintaining openness and growth will be equally, if not more, important. China differs sharply from the OECD countries in having much smaller cumulative emissions, not having been a party to the first Kyoto negotiating round, having potential coalitional partners outside the OECD, having high growth which is to be maintained if development goals are to be met, and sharply higher emissions intensities than OECD countries. All of these factors will also come into play in negotiation.

2. Where current global environmental negotiations stand

Current climate change negotiations on a post-Kyoto world are driven by the global growth of concern over the last few decades both broadly over environmental issues and more specifically over climate change. In the immediate post World War II period when our present global economic architecture was shaped, only trade and finance issues entered debate since countries were seen as only linked by trade and finance, not physically. Environmental policy concerns did not centrally emerge until the 1960's, and then only as localized domestic issues with Rachael Carson's book *Silent Spring* (1962).

In the 1980's international environmental issues, in the form of ozone holes, CFCs, and early concerns over global warming began to shape the global negotiating agenda. These issues, in turn, were to lead to discussion of sustainability in developmental policies and to the Brundtland Report of 1987, and the Rio Earth Summit of 1991.

It was at the Rio summit that the present UN Framework Convention on Climate Change (UNFCCC) was adopted which, through the resulting joint commitment by all UN members to discuss carbon emission mitigation, was to provide the negotiating mandate for the subsequent Kyoto Protocol detailing arrangements on climate change mitigation out to 2012. Under UNFCCC auspices, the Bali conference of December 2007 initiated negotiations on Post-Kyoto climate change arrangements, and these negotiations are now under way following a negotiating mandate adapted in Bali widely referred to as the Bali roadmap. These negotiations are to conclude in Copenhagen in November 2009, with a midterm meeting in November 2008 at Potsdam.

China along with most other developing countries did not participate in the Kyoto negotiations and took on no environmental commitments as part of the Kyoto agreements. Russia was the notable exception. A principle labeled common but differentiated responsibilities covering the developing countries and giving them imprecisely defined rights to special treatment in global environmental negotiation

was agreed to as part of Kyoto. For the purpose of the Kyoto arrangements this was interpreted as agreement that developing countries would take on no commitments, and effectively not directly participate in negotiation. Their participation was indirect through the Clean Development Mechanism (CDM) allowing them to sell emissions reduction rights to producers in developed countries. But for Copenhagen the participation of larger developing countries (especially China) is key, and so the interpretation of this principle will be central to the negotiation.

2.1 The Kyoto Protocol of 1997

Even though China did not formally participate in Kyoto, the central building block for the post Bali process is the set of agreements arrived at in the Protocol. The Kyoto agreements to reduce greenhouse gas emissions worldwide were agreed to at a 1997 UN conference in Kyoto, Japan and came into force in February 2005. A total of 174 nations ratified the Protocol, but only a subset of countries (mainly developed plus Russia) took on commitments. Importantly for the present discussion, China took on no commitments to emission reductions.

Under an agreed principle of “common but differentiated responsibilities (CBDR)²”, the Kyoto Protocol effectively divided the world into two groups: one largely of developed countries who accepted mutual responsibility for reduction in carbon emissions³, and one of largely developing countries who, in an ill-defined sense, were granted rights to growth and development (again in some ill-defined sense) over any responsibility they took on for emission reductions. There was no precise statement of the principle or relative weighting on these two components (Yoshiro, 2002).

The Protocol also developed three “flexibility mechanisms”: Emissions Trading⁴, Joint Implementation and the Clean Development Mechanism (CDM)⁵.

² See the discussion in section 4 for some details.

³ The protocol required signatory developed countries to reduce their GHG emissions below the levels specified for each of them in the Treaty by 2012. These targets were to be met within a five-year time frame between 2008 and 2012, and yielded a total global cut in GHG emissions of 5% relative to a baseline of 1990.

⁴ Kyoto is a 'cap and trade' system that imposes national caps on the emissions of Annex I (developed

These so-called market-based mechanisms allow Annex I countries to meet their greenhouse gas emission commitments in part by purchasing GHG emissions credits. These can be bought either on financial exchanges, from projects which reduce emissions in non-Annex I economies under the CDM, from other Annex I countries under the JI, or from Annex I countries with excess allowances. Only CDM executive board-accredited Certified Emission Reductions (CER) can be bought and sold in this way. These mechanisms were aimed to identify the lowest-cost opportunities for reducing emissions and attract private sector participation in emission reduction efforts. Developing countries were thought to benefit through technology transfer and investment under collaboration with OECD countries. Whether all these mechanisms remain in their current form in a post Kyoto arrangement is a Bali roadmap negotiating issue.

An important feature of the Kyoto Protocol is that it represents only weak international disciplines (Walsh and Whalley, 2008). This is because it has weak enforcement mechanisms, effectively no dispute resolution⁶, and no joint mechanism to deal with noncompliance. Unlike WTO agreements which cover complaints of violation through notation, dispute resolution procedures, and (if necessary) retaliation through withdrawal of equivalent concessions, Kyoto has no such structure.

plus Russia) countries. Article 6 of the Kyoto Protocol covers emissions trading among Annex I countries. Any Party included in Annex I may transfer or acquire from any other Party emission reduction units resulting from projects aimed at reducing emissions or enhancing emissions removals by carbon sinks, provided that: any project has the approval of the Parties involved and any such project provides a reduction in emissions, or an enhancement of removals by sinks that is additional to any that would otherwise occur. The aim is that acquisition of emission reduction units shall be supplemental to domestic actions for the purposes of meeting reduction commitments.

⁵ Clean Development Mechanism (CDM) and Joint Implementation (JI) projects are sources of Kyoto emission reduction credits. The CDM is a scheme for encouraging Annex I countries to carry out emission reduction projects in developing countries by providing credit for “certified emission reductions” which can be used to meet the Annex I countries’ commitments. JI allows project-specific credits to be gained from existing credits obtained within Annex I countries. CDM projects produce Certified Emission Reductions (CERs), and JI projects produce Emission Reduction Units (ERUs). CERs/ERUs are overwhelmingly bought from project developers by funds or individual entities, rather than being exchange-traded allowances.

⁶ The legal structure is that under the Protocol's dispute settlement provision, states are free to settle disputes by negotiation or by other peaceful means of their own choice. If the dispute is not settled by negotiation, and if the parties have not agreed to submit the dispute to the International Court of Justice (ICJ) or arbitration, either party may request the convening of a conciliation commission, which can give a non-binding recommendation. Disputes arising in the course of flexibility mechanism transactions, however, are likely to involve private entities and fall outside these provisions.

Kyoto also differs from WTO agreements in being the outcome of a cross-country internalization negotiation which focused on offers to reduce emissions by countries conditional upon the actions of other countries. Once proposed actions of all parties are mutually agreed to, joint action can then proceed either globally as a whole or sub-globally for a subset of countries. Given that for most countries, the benefits of their own emission reduction efforts accrue to residents of other countries, how to deal with non-participants, how to enforce agreements and how to provide for modification of agreements in light of change remain as unresolved issues.

One can thus be skeptical of the ability of the post Bali process to yield further substantive and enforceable international disciplines if it only seeks to build narrowly on the Kyoto agreements. Whether the Kyoto Protocol represents a first step along a path which will yield even more significant emission mitigation, or whether other negotiating routes may need to be explored in the longer run is hence a key issue. For China, the issue this raises from a Copenhagen negotiating stand point is how far to seek to build on the initial cooperation established in Kyoto since focal points for cooperation are different to establish, and thus how far and how quickly to try to move the process down wholly new and different routes requires delicate judgment of what is feasible to negotiate.

2.2 The Post-Bali roadmap process

The 2007 Bali meeting held as a conference of the parties (COP13) to the UNFCCC was designed to shape a two-year negotiating process to finalize arrangements for a post-2012 climate change regime. These negotiations are to conclude by the end of 2009. Bali thus marked the start of a road aimed to lead (via Poznan, Poland in December 2008 and COP14) to Copenhagen in December 2009 and decisions and agreements for an as yet to be specified period beyond the 2012 Kyoto commitments.

The elements of the Bali agreement (UNFCCC, 2008) define both the key negotiation areas and building-blocks for a potential global post-2012 treaty arrangement. In contrast to the Kyoto process, the 'Bali Roadmap' process involves a

new body known as the ‘Ad Hoc Working Group on Long term Cooperative Action under the Convention’. It is this group which has identified the key elements of mitigation, adaptation, technology and financing for the Copenhagen negotiation.

Discussions in Bali on mitigation produced no agreement on the continued use of previous mechanisms to achieve the mitigation objectives, but the phraseology of deep and significant reductions was agreed. Adaptation was seen as necessary to strengthen the ability of markets to respond to the impacts of the worst case scenario impacts of climate change. Mitigation and adaptation were seen as complementing each other, and if pursued together could significantly reduce the risks of adverse climate change impacts. Basic research, technology development and transfer of technology were thought needed to play a major role in improving the ability of nations to adapt. And adaptation and clean technology were, in turn, to be dealt with by establishing new international funds, whose size, function and oversight were not specified. The finance component of negotiation was to build on estimates of global financial flows supposedly needed to finance climate change initiatives, but how these flows were to be achieved was not specified.

Bali also produced two further decisions. One was the adoption of an adaptation fund to provide funding to the most vulnerable countries to help them adapt to the inevitable impacts of climate change in the near term, and an agreement on a system of payments for the conservation of tropical forests by developing countries. These decisions effectively establish financial transfers as a supporting mechanism for global agreements to climate change reduction, a key development for a Chinese point of view.

The post-Bali process faces several challenges relevant to China. One lies in the assignment of property rights, a general externality issue now applied to global warming. This issue centers on who has the right to do what remaining carbon emissions. Do developing countries have overriding rights to development and poverty alleviation and hence should be compensated for restraint they take on through environmental commitments or are decisions to undertake global responsibilities equally accepted by all, so that all must alleviate damage no matter

how rich or poor. These property right issues are central to both China and the global negotiating process since developing countries have in the past been forceful in stating their rights to growth and development over responsibility for emission reductions, and their view that the emissions currently affecting global climate have been largely discharged by developed countries over the past 200 or so years since the industrial revolution began.

In addition to the issue of property rights there are the issues of free riding and coalition activity in these negotiations. Barrett (2007) notes that small countries have few incentives to agree to emission cuts that constrain their economy activities if the direct benefits are small and larger countries agree on arrangements mutual reductions. This generates incentives for free riding and incentives for sub-groups of countries to agree independently of others, as happened in the 1997 Kyoto negotiation.

As a result, coalitional activity will likely be central to the post Bali process and how China positions herself will be pivotal. The 48 countries comprising the Least Developed Countries (LCD) in the UN have been active in climate change negotiation. The fifteen members of the EU also agree common positions in negotiation. China thus has an incentive to explore coalitional activity with other rapidly growing large population low wage economies including India, Russia, and Brazil.

How final decisions can realistically be reached in this post Bali negotiation in the timeframe is a further issue. In the case of WTO, closure has effectively been achieved in pre Doha rounds by the granting of time-linked fast-track authority by the US congress to the executive branch. Negotiating activity is thus granted along with the clear understanding that termination of fast-track negotiating authority will cease and should negotiations continue beyond a specified deadline. No such similar structure or timeframe exists for the post Bali process. The declaration launching negotiations in Bali expressed the hope of completion in two years, but the absence of a mechanism for forcing a decision is notable.

There is also an issue of whether post Bali negotiations can realistically take place solely between nation states. This is because of heterogeneity within nation

states by region and across firms and even across sub-regional group in terms of their differences in impacts which will occur within countries.

All of these issues will arise in the post-Bali process and suggest careful consideration of the best approach to each by China in moving forward towards a new global environmental negotiation defining a post-Bali world. However, establishing and building on a focal point of cooperation in international negotiation is both difficult and time consuming, and 2007-2009 is a very short timeframe for negotiation with a mandate as extensive as the Bali roadmap. China is a key part of this process, and her negotiating decisions will help shape and define the outcome.

3. China's broader objectives in global environmental negotiations

China is a rapidly growing, large population and relatively low wage economy which has in the last two decades become heavily trade and FDI dependent. WTO data (WTO trade profiles statistics, 2008) show the share of imports and exports combined relative to GDP in China as 69% in 2006, up from 49 % in 2000. China's exports are growing at approximately 30% per year, as are imports. Foreign invested enterprises (financed by FDI flows) account for 60% of both exports and imports, and also account for over one half of all OECD FDI flows to non-OECD countries. China's position in global climate change negotiation therefore has to be seen in light of the need perceived by Chinese policymakers to continue her ever deeper integration into the global economy as a prime driver of future growth and ultimately further poverty alleviation.

China's global environmental negotiating objectives can thus be discussed both narrowly in terms of the details of any environmental commitments that may be undertaken both by China and by other countries, and also more broadly in how non environmental developmental objectives for China may be impacted. China's objectives in current and prospective future global environmental climate change negotiations will thus reflect both narrower special characteristics of China's climate change situation and also China's broad developmental aims.

Chinese policy makers clearly see China as following a long term high growth trajectory which is to lead to significant poverty alleviation and improved well being for the majority of China's population. Any commitments made by China in a global climate change negotiation will thus inevitably be crafted as far as possible to allow for continued high growth performance. This objective is the central friction between China's negotiating strategy for a post Bali world and OECD objectives, in large part because of the numerical implications of China's growth.

China has experienced a 4 fold increase in GDP/ Capita since 1978 and 10% growth between 2000 and 2050 implies a 30 fold increase in GDP/capita. This inevitably implies a very large increase in Chinese emissions if high growth continues,

even if the effects of growth on emissions are partially affected by more efficient coal burning, major adoption of renewables, energy conservation and other measures. The dilemma for China is that her large manufacturing sector activity already makes China the largest incremental source of emission globally, even before future growth is factored in.

China accounted for 17.5% of global CO₂ emissions in 2004, second only to the US of 22.0 % (see Table 1). China will seemingly inevitably pass the United States in a few years and become the largest country emitter by 2010(also Table 1). This will likely occur even if major conservation measures are introduced. Between 1990 and 2004, China's carbon emissions increased by 108% percent reflecting strong economic growth, and China substantially underperforms the OECD countries in terms of emission intensity (emission /GDP) by a large margin, although this gap is significantly reduced by using Chinese GDP in US\$ at PPP exchange rates rather than at current rates, also emissions intensity measures are falling much faster in China than in the OECD (see Table 2).

Table 1 Relative Annual CO₂ Emissions by Country (1990-2030)⁷

(% of worldwide emissions)

	1990	2004	2010	2020	2030
United States	23.5%	22.0%	20.1%	18.8%	18.5%
OECD Europe	19.3%	16.3%	14.6%	12.4%	10.9%
Japan	4.8%	4.7%	4.1%	3.5%	3.0%
China	10.5%	17.5%	21.1%	23.9%	26.2%
India	2.7%	4.1%	4.2%	4.7%	5.0%

Source: Cass (2007)

⁷ See Cass (2007) Table 8

Table 2 Changes in Carbon Emissions and Emission Intensity by Country⁸

Countries	% change in emission (CO ₂ only) 1990-2004	GHG Intensity (Tons of CO ₂ eq./ \$mil. GDP-PPP) 2000	% change in intensity (CO ₂ only) 1990-2002	% change in GDP 1990-2002
Ukraine	-47.1%	2369	-6	-50
Russia	-24.8%	1817	-5	-26
Germany	-12.2%	471	5	37
EU-25	1.6%	449	-23	27
U.S.	19.8%	720	-17	42
Brazil	67.8%	679	17	35
India	87.5%	768	-9	87
China	108.3%	1023	-51	205

Notes: GHG intensity covers emissions from six gases. GHG intensity and CO₂ intensity exclude CO₂ from international bunker fuels and land use change and forestry. GDP is measured in terms of PPP (constant 2000 international dollars).

Source: Cass (2007) and World Resources Institute (WRI), 2005

China's 11th five year plan (2006-2010) set out targets for a minimum annual growth rate of 7.5 percent for the national economy, a doubling of GDP and a 20 percent reduction in energy consumption over 5 years. Ecological and environmental degradation is also to be curbed, and the emissions of major pollutants reduced by 10%. In cities, 70% of wastewater and 60% of residential garbage are to be treated. Forest coverage rate is expected to reach 20%. 100 million rural residents will be provided access to safe drinking water, and 1.2 million kilometers of rural roads will be newly built and upgraded. Most towns and administrative villages will be given access to highways. China's development plans thus already embody some degree of environmental restraint, but China's modernization and development will nonetheless increase emissions levels.

More broadly, China's growth blueprint has been characterized by two steps: Step one was quadruple 1980 GNP by the end of 1990s. This was fulfilled by 1995. Step two was to raise per-capita GNP to the level of a medium-developed countries by

⁸ See Cass (2007) Table 5 and also see WRI 2005, Chapter 5 Figure 5.1.

the mid-21st century. The Asian Development Bank forecast that China will be the world's largest economy, surpassing the U.S. by 2025(Asian Development Bank, 2007).

This growth performance implies that there have to be large major reductions in emissions intensity in China to offset the effects of growth on emissions. This seemingly needs to occur through the use of relatively more efficient coal burning power plants, and significant moves to renewables and nuclear.

When China first entered Climate Change Negotiations in 1990, China made no offers to take on emissions reduction commitments. Since then, China's attitude towards international climate negotiations has become more proactive. Abatement costs, ecological vulnerability and principles of equity are now major points of internal debate on China's position (Zhang Haibin, 2006). If negotiations help to reduce China's abatement costs or helps make emission reductions possible, then China will adopt a more cooperative approach. The stress in Chinese debate is on accompanying transfer of technology and funds for innovation and adaptation along with emissions reduction commitments.

China also accepts that she has to achieve a balance between future growth on the one hand and the reality of being the largest emitter of carbon globally on the other hand. China likely will seek to maintain its high growth opportunity by stressing negotiation on emission intensity reductions rather than emission levels and also raising further carbon embedment issue. The treatment of emissions associated with Chinese exports.

China's size and influence in the G77 also makes it a key country in global climate negotiations from a coalitional perspective. As the world's largest developing economy and with an influential voice in the United Nations, China will play an important role in leading developing countries in shaping a future climate regime. China will see it as inevitable that environmental commitments are made as a part of global rule regime going beyond the trade and finance components of the 1944 Breton Woods' arrangement to now span trade, environment and finance. But maintaining openness in the trade regime so as to prevent closure of markets to China on

environmental grounds, as with carbon linked border tax adjustment prepossess will be key to China.

An equally central part of the negotiation strategy for China will be the interpretation of the CBDR commitment undertaken by developed countries as part of the Kyoto negotiations. There are different interpretations of this principle, and the Kyoto text is unfortunately vague in its strategy. But this principle will almost certainly be appealed to support augments that China should take on different forms of commitments from those undertaken by the OECD.

For now, the internal debate in China on climate change negotiation positions is still distinct from debate on domestic policy issues, and has yet to forcefully enter discussion on developmental priorities for China. But development priorities will nonetheless likely frame the climate change debate in China, and with China's increasing emissions and its position as a growing global economy, the pressure will also be on China to take on commitments. The likely outcome will be China taking on a more active and positive role in climate change negotiations, which may then also result in greater involvement by other major developing countries.

4 Key negotiation issues for China in Copenhagen

We now turn to more in depth discussion of key negotiating issues in Copenhagen stressing China's interest in each.

4.1 The interpretation of common but different responsibilities

In the Kyoto negotiations, common but differentiated responsibility (CBDR) ended up being interpreted as non-participation by developing countries in global emission commitments, even though the principle lacked a specific statement. In the Copenhagen negotiation, the expectation is that there will be active participation by China, along with India, Brazil, Russia, Indonesia and other larger low wage rapidly growing economies. CBDR will be taken by them as a prior core principle that these countries will participate in ways different from higher wage OECD countries, but exactly what these differences will be remains to be determined. The interpretation of CBDR that is agreed by parties to the negotiation is therefore the key to China's participation in the post Bali process.

CBDR as a principle has origins in terms of reference of the United Nations Conference on Environment and Development Convenes (UNCED). Principle 7 of the 1990 Rio Declaration simply states that "*in view of the different contributions to global environmental degradation, States have common but differentiated responsibilities. The developed countries acknowledge the responsibility that they bear in the international pursuit of sustainable development in view of the pressures their societies place on the global environment and of the technologies and financial resources they command*". This statement also finds its echo in the United Nations Framework Convention on Climate Change of 1992 in Article 3, 4 and 12, and also reflected in Kyoto Protocol Article 10 with the acknowledgements that (1) the largest part of historical and current global emissions of greenhouse gases originate in developed countries; (2) per capita emissions in developing countries are still relatively low, and (3) the share of global emissions originating in developing countries will grow but this is an inevitable accompaniment to their social and development needs.

This concept is somewhat analogous to the concept of special and differential treatment (SPT) for developing countries in the charter of WTO which first came into the GATT in 1960s. In those days, the trade and trade policy problems of developing countries were seen as common to all developing countries but different from those of developed countries, motivating special elements in the international trade rule regime in the GATT. These involved special rights for developing countries to protect other own industries and preferential rights of access to developed country's market. This in turn led to special rules for developing countries within the GATT (and later WTO rule regime (Whalley, 1990).

However, the analog of CBDR has not been clearly defined in term of elements of a climate change rule regime, other than in its initial Kyoto interpretation of non-participation. The principle only loosely embodies asymmetric responsibilities and participation without spelling out specifics and as a result there has been ongoing debate surrounding its interpretation.

Two different broad interpretations of CBDR currently circulate for the post Bali negotiation. One is that developing countries have rights to development and that they should receive financial compensation for any restraint on their growth and development that is implied by climate change commitments. The second is that the form of commitments should be different for developing countries compared to developed countries. Both interpretations can simultaneously apply in negotiation.

The concept is also discussed in Yoshiro (2002) in term of double standards in favor of developing countries, and the responsibility of developed countries to assist developing countries. Double standards in this context imply different environmental commitments for developed and developing countries. These may involve different rights and obligations, and timing in the application of disciplines, giving more flexibility for developing countries in negotiation. "Double standards" also involved developed countries agreement in Kyoto to assist developing countries' development. Yoshiro argues that such assistance can take various forms, but can be interpreted broadly as financial transfers, trade preferences or technical assistance. Developed countries may seek to interpret CBDR commitments more narrowly as only technical

assistance related to the sustainable development implications of environmental commitments.

These various interpretations of CBDR are central to China's participation in the post Bali negotiation as they determine the broad contours for the more detailed negotiation to follow. China, India, and other developing countries were not included in agreed numerical limits on emissions in the Kyoto Protocol, in part because they were viewed as not being the main contributors to the greenhouse gas emissions during the pre-treaty industrialization period. It was also because of the acknowledgement by developed countries that developing countries' need for growth and development has to be weighted alongside environmental commitments. CBDR thus seemingly endorses the important distinction between emissions that China creates to develop and Western's mature or luxury emissions, and implies developing countries' rights to growth and development to achieve income levels comparable to those to OECD.

CBDR also seemingly implies different commitments by parties to the negotiation, independently of financial compensation. Thus, one outcome consistent with CBDR would be that OECD countries take on commitments on reductions of emission levels, while China, India, Russia and Brazil take on commitments on reductions in emissions intensity relative to GDP. Also if China and other lower income countries can establish that they have rights granted by UNCCD and the terms of the Kyoto Protocol to achieve growth and development comparable to that of the OECD before taking any environment obligation, then China would seemingly have to be financially compensated for any environmental restraint they accept. This would suggest large and significant transfers being made to China as part of participation if it can be established that growth levels in China are significantly lower by commitments.

In the Copenhagen negotiations, it will also be argued by China and other developing countries that the Kyoto Protocol only relates to actions up to 2012 and establishes no precedents beyond 2012. New arrangements consistent with CBDR will be argued for. Under CBDR, China could still take on similar emission reductions

commitments to OECD countries, but would likely only do so if financial compensation and technical assistance was agreed and with China's current growth profile the compensation would presumably be large. With the four pillar structure agreed for the Post Bali roadmap process, the adaptation and innovation funds effectively act as a system of payments implying side financial compensation. This structure could thus be the basis for a concrete interpretation of what CBDR means also in terms of financial transfers.

4.2 The choice of negotiating instruments

A further central issue for China is the choice of negotiating instruments. These relate to the agreed mechanisms to be used to reduce carbon emissions, what are to be the base target years and what form commitments take. China's commitments regarding emissions could comprise a package of policies and measures more so than a single target.

4.2.1 Emission intensity versus emission targets

Absolute emissions targets involve the amount of carbon dioxide and other greenhouse gases produced and target for reductions by some specified date relative to a base date. These mechanisms were used in Kyoto and also widely used in other protocol and treaty arrangements. The target date for Copenhagen commitments is at this point imprecise. In the G8, there has been discussion of 50% cuts by 2050. Chancellor inertial has also been associated with targets for maximum temperature change (2°C) by 2050. 2050 targets might also be accompanied by intermediate targets, say 30% cut by 2030, and a 20% cut by 2020.

Relative emissions intensity targets focus on the amount of emissions relative to some unit of economic output, usually stated in dollar or local currency terms. Intensity targets can be interpreted as performance standards. For a company, targets maybe relative to company total sales or relative to units of a good produced. For a country, emissions intensity is typically calculated as tons of carbon dioxide relative to the country's GDP. The choice of exchange rate if emissions intensities across

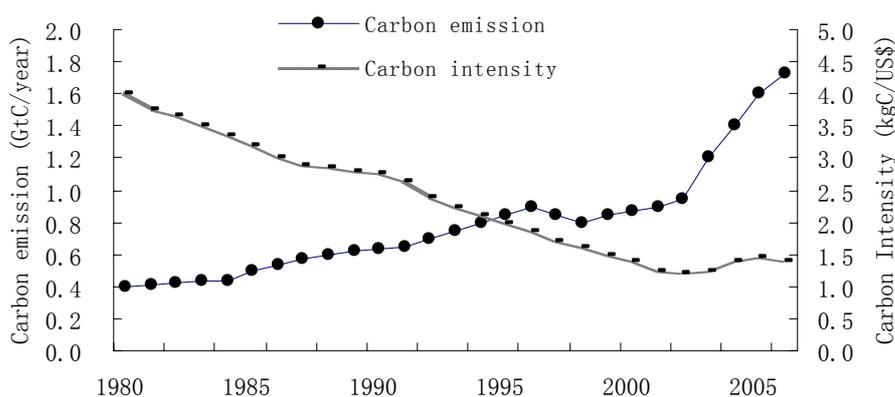
countries are converted into tons of carbon per dollar of GDP becomes a critical issue. This is especially important for China due to large differences in China's dollar measure of GDP depending upon whether or not purchasing power exchange rates are used.

While departures from emission level targets may be viewed as inconsistent with arrangements under the Kyoto Protocol, there is no reason in principle why the form that targets take can not be changed from one environmental negotiation to the other, as has occurred with tariff commitments in GATT/WTO across trade rounds. Also Pizer (2005) has argued that absolute emissions targets are too constraining in face of unexpectedly high growth and too lax in face of unexpectedly low growth, and that intensity targets better accommodate unexpected growth.

For China, using emissions level targets with rapid economic growth can quickly lead to higher costs, even if new, low-carbon technologies are developed and deployed, while intensity targets may not—making intensity targets more attractive for China in the near term (Ellerman and Wing, 2003). Also since 1980 Chinese emissions intensity has been declining (see Figure 1) considerably faster than that of the US and the EU and is forecast to continue to do so with predicted declining energy intensity (Hu Xiulian, 2005).

Shifting negotiations toward intensity targets for China may also make negotiations easier by allowing a range of variants on the central target—including slowing, stopping, and reversing emissions growth—to be discussed. The conventional belief however, remains that intensity levels are difficult to compare across countries due to the issue of at which exchange rates to use, and specifically purchasing power parity exchange rates. Ahmad (2005) shows how the use of the latter greatly reduces emissions intensity in China.

Figure 1 Carbon Emissions and Carbon Intensity for China (1980-2006)



Source: Ning Zeng & Jiahua Pan (2008)

4.2.2 Annual or cumulative emissions

Another key negotiating issue in the Post-Bali process for China is whether emissions are to be calculated on an annual or cumulative basis. Over the last century, China has contributed only 8% of global emissions, while the U.S. with far fewer people has emitted over 4 times the cumulative CO₂ emissions of China during 1900-2005(see Table 3). Estimates by the World Energy Agency are that around 60% of the global increase in emissions in 2006-2030 will come from China & India, but their total cumulative emissions till 2030 are still behind U.S. and EU (see Table 3).

If we instead focus on annual emissions in 2004(Table 1) and take expected incremental emissions between 2006 and 2030 (Table 3), Chinese emissions will be significantly greater than these of the U.S. and EU in this period, despite per capita emissions by China remaining below them.

Table 3 Cumulative Emissions by Country (1990-2030)

	Cumulative carbon emissions (1990-2005) (Billion tones)	% in cumulative global emission (1990-2005)	Predicted cumulative carbon emissions (2006-2030) (Billion tones)
U.S.	320	30%	160
EU-25	250	23%	90
Japan	50	4%	30
China	90	8%	230
India	25	2%	55

Source: World Energy Outlook 2007

These data also imply that actions necessary to limit emission will not be achieved without cooperation among all large emitters, especially China and India, as their incremental emissions from 2006 through 2030 are likely to be as large as those from EU and the United States (see Difulio, 2007). Thus, from a negotiating point of view China has an incentive to make the argument that whatever emissions targets are agreed to as part of the Copenhagen process (and whether they involve absolute or relative targets) they should be based on cumulative emissions by countries over long periods of time, and not on the current annual flow of emissions.

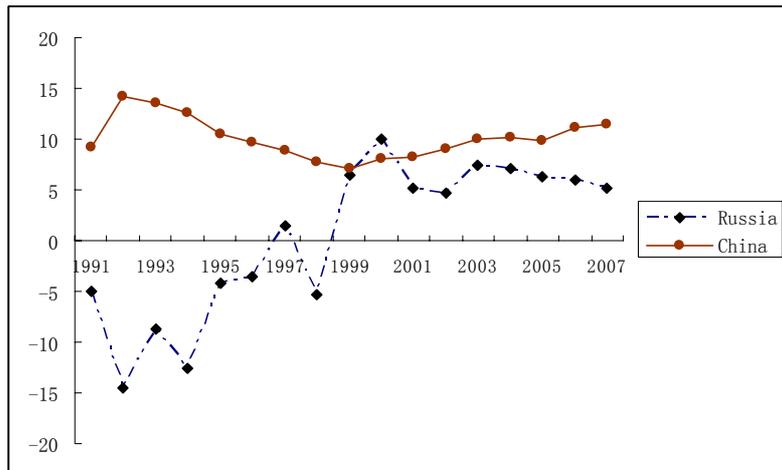
4.2.3 The choice of base year and length of commitment

Another set of issues central to China is the choice of base year for emission reductions and the length of any commitment period implied by the choice of the target year. For China, it makes a significant difference how long the commitment period is. The choice of base date is critically important in different ways for different countries.

Under the Kyoto Protocol emissions levels in the 'base year' are the starting points for tracking of domestic emissions for countries for their emissions reduction target. The base year is not a 'year' per se, but the emission level from which emission reductions will take place. In case of EU, the EU-27 does not have a Kyoto target and an aggregated base year. For carbon dioxide, methane and nitrous oxide 1990 is used as the 'base year' for all EU-15 Member States. But for fluorinated gases, the EU-15 Member States can choose to use the emission levels in 1995 instead. Twelve of the 15 Member States have chosen to use 1995 as their base year for fluorinated gas emissions. In practice, EU-15 base-year emissions can be considered close to 1990 emissions.

Russia for instance, has already indicated their negotiating position to maintain 1990 as the "base year", because of the negative growth in Russia between 1990 and 1998 makes it much easier to meet emission reduction targets (Figure 2). Used of this year, on the other hand, for China, would be a major negative given the rapid growth which has occurred since the 1990s.

Figure 2 China and Russia's GDP Growth Rates From 1991 to 2007



Source: China Data from National Bureau of Statistics, China Statistical Yearbook;

Russia Data from: http://www.swivel.com/data_sets/show/1004019

At this point in the negotiation the target year remains unclear. The G8 discussion of a 50% reduction by 2050 points to a long commitment period. This could be accompanied by intermediate commitments such as by 2020 or by 2030. The longer the timeframe, the larger the negotiating leverage for China given her growth. But equally, the longer the period, the more uncertainty as to cost will be associated with commitments to emission levels.

4.2.4 Innovation and transfer of technology

The post Bali Roadmap process establishes two further negotiations on adaptation and innovation, but both of which involve the establishment of funds. The size of the funds and the criteria to be established for their use and administration are key issues for China. Under the Copenhagen mandate, the following items are negotiable: technology diffusion, technology deployment, technology transfer, technology development and joint technology development. The issue is to precisely define these terms, and in ways which lead to negotiable instruments and concrete agreements. Given its current stage of development, China needs new technologies that can provide for emission reductions in energy and carbon intensive industries in the chemical, steel and concrete sectors. Technological advances are also required in

energy efficiency, renewable energy, hydrogen fuel cells, clean coal and carbon capture and storage. In tackling climate change and reducing emissions, technology is not a solution in itself, but it is an important means to the end.

Development and transfer of technology has been, and is, one of the most difficult issues related to climate change to negotiate on. The COP14 established a consultative process to find a meaningful framework for development and transfer of technologies under Article 4.5 of the Convention. During the consultative process it became clear that developing countries may also have to contribute to the development and transfer of technology. It is also clear that technology transfer under the Convention is quite different from transfers in open markets and distinct from technology transfer that may occur under a CDM project. Technology transfer is, however, aimed at providing opportunities for the private sector to access better technologies leading to GHG emission reductions and also higher production. Negotiating the provision of relevant technical information is seen as one avenue for China to take, but for now, negotiating concrete aids in this area seems lacking.

Another set of issues raised involve special rules on Intellectual Property Rights (IPR). The question being whether special IPR arrangements in the context of climate change are needed remains. What special arrangements might be and how they would operate is unclear. It is also unclear how the WTO TRIPS agreement can be amended without the participation of the WTO. These issues need to be addressed by parties in the two year negotiating process up to Copenhagen. Developing countries like China need to be able to use the best available technology to adapt to climate change to further damage. They don't want to have to rely solely on open source technologies, but be able to access patented technologies in a flexible and affordable manner (Sabina and Oxfam, 2008). How such arrangements are worked out is clearly problematic, as has been also seen in the HIV/AIDS area.

Other issues include facilitating changes in technology, the role of tacit knowledge in the transfer of technologies and the role of subsidies in technology, trade, and sustainable development negotiations. In any discussion of the development and dissemination of environmentally friendly technology, it seems unavoidable to

consider subsidies. As Freymond (2007) notes, subsidies may be non-tariff barriers (NTBs) and impede the flow of technology across borders. Developing countries, which often lack the resources to provide subsidies, may seek financial support for transfer of certain technologies.

In the Post Bali process, the focus is on a new technology fund and on the size and administration of such fund. The perceived need for China is to negotiate arrangements for specific industries and technologies according to China's stage of development. However, China is also not clear exactly what its technological requirements are, and does not have clear knowledge of the technologies that are needed.

4.2.5 Accompanying funds and financing

Financial transfers to China will aid in achieving emission reductions and act as compensation for any environmental restraint that China agrees. These are thus central to China's post-Bali negotiating position. It is also argued that compensation payments will raise the participation of developing countries by lowering their marginal abatement costs (Eyckmans & Michael, 2003). In order to reach an agreement in Copenhagen, developing countries like China will almost certainly call on developed countries to finance technology transfer, this will include well-governed, adequate, predictable and sustainable funds.

Independently of the post Bali process, the World Bank plans to establish a portfolio of climate investment funds (CIFs). Transfer thus is mainly on the basis of joint initiatives of the US, UK and Japan. One of those funds is the Clean Technology Fund. But the CIFs largely focus on mitigation, not on adaptation technologies and are to provide loans as well as grants to eligible developing countries. There are also 'sunset clauses' proposed for the CIFs, a tying the CIFs' termination to the creation of financial mechanisms under the UNFCCC. They are thus seen as interim measures to assist in filling immediate financing gaps with the insertion of 'specific sunset clauses' linked to agreement on a future climate change regime. There is no fixed date for the cessation of the CIFs, rendering the existence of a 'sunset clause' vague.

For China, it will be a priority that efforts be focused on developing genuine multilateral and bilateral funds. Multilateral funds would give developing countries representation and voice within the global governance structure and ensure that resources for climate change are used in accordance with internationally agreed principles and meet the objectives of the multilateral climate change regime (Sabina and Oxfam, 2008). Management and coordination of multilateral funds are more difficult. Bilateral funds are more manageable, but are often small and hence limited in what they can achieve.

During a roundtable discussion in Bonn on June 3, 2008 (Bonn Climate Change Talks, Zou Ji, 2008), China proposed setting up a multilateral technology acquisition fund for climate technologies and argued that the fund could be based on a public private partnership work to financing the development, diffusion and transfer of environmentally sound technologies by linking private and public financing. It was also argued that financial transfer to China need to be tied to the speed of emission reductions, giving incentives to China to achieve such reductions (Kiang and Guan, 2007). China could use such incentives at firm level and also tie them to FDI approvals. Funding for dealing in China with climate change would need to come from the national budget and specialist funds.

In October 2007, China also approved the establishment of a Clean Development Mechanism (CDM) fund. By the end of the same month, the National Development and Reform Commission had already approved 885 CDM projects. If all of these projects are implemented, total emissions reductions due to CDM projects in China will total 1.5 billion tones, and cost US\$15 billion. Over US\$3 billion of this will go into a China CDM Fund. This provides a starting point for funding targeted specifically at tackling climate change. These will need to go well beyond Bali process for the Kyoto Clean Development Mechanism (CDM).

4.3 Non-compliance with Kyoto targets and coalition activity in Copenhagen

A further issue for China in Post-Bali negotiation and seemingly central to the Chinese position concerns the likely non-compliance with Kyoto reduction targets by

a number of OECD economies. In aggregate, the parties of Kyoto Protocol will likely meet their emission reduction targets, but this is in large part because of the substantial compliance by Russia because of the sharply negative growth between 1990, 1991 and 1997, 1998(Figure 2). Individually, a number of key OECD countries will be in significant degree of non-compliance. The most extreme cases probably will be Spain, Portugal⁹, Australia¹⁰ and Canada¹¹ which have each increased emissions by as much as 30% over their target decrease by the end of 2012. For these countries such as Canada, this could imply larger commitment being made to implement Kyoto commitments than commitments possibly undertaken as part of the post Bali and Copenhagen processes.

In turn, a related issue is the lack of enforcement mechanisms in the Kyoto Protocol under the first round of negotiations. Kyoto doesn't set out a procedure for determining non-compliance (which is a huge problem). In UNFCCC, Most of their 300 people spend their time monitoring data from countries as to what their emissions actually are. They consult, examine data, comment and make repeated visits. But at the end of the day there is no mechanism for determining exactly what emissions are and so it will not be possible under Kyoto for there to be a clear determination as to who has met which target and by how much.

This non-compliance and non-enforcement with Kyoto targets represents both major problems for the negotiation and posed issues for china in the development of negotiating positions. In Bali conference, when the draft summit text asked developing countries to make "measurable, reportable and verifiable" cuts in their greenhouse emissions, China and the G77 (a coalition of 132 developing countries)

⁹ Spain and Portugal had targets of an 8% decrease, but both have increased emissions by about 40%.

¹⁰ Australia was granted a limitation of an 8% increase which is specified in Article 4, section 8(h) of the Convention, but only ratified on 3 December 2007 by the new government and took effect in March, 2008. Analysis has projected Australia's greenhouse gas emissions at 109% of the 1990 emissions level over the period 2008–2012, calculated including the effects of Land use, land-use change and forestry (LULUCF). This is slightly above its 108% Kyoto Protocol limitation. As of 2007, the UNFCCC is reporting that Australia's 2004 greenhouse gas emissions were at 125.6% of 1990 levels, calculated without the LULUCF correction.

¹¹ On December 17, 2002, Canada ratified the treaty that came into force in February 2005, requiring it to reduce emissions to 6% below 1990 levels during the 2008-2012 commitment periods. As of 2003, the federal government claimed to have spent or committed 3.7 billion dollars on climate change programmes. By 2004, CO₂ emissions had risen to 27% above 1990 levels (which compares unfavorably to the 16% increase in emissions by the United States during that time).

argued that technology and financial support from developed countries should also be "measurable, reportable and verifiable" and China's commitment, along with other developing countries, to discuss adopting "measurable, reportable and verifiable" measures to slow its emissions is not equivalent to developed nations' undertakings on binding emissions cuts. In Copenhagen, we can imagine that China's argument will still likely be that negotiation on future emission reductions is simply not credible negotiation if targets for the first-round commitments have not been honored.

It is true that there is no enforcement mechanism in Kyoto but here is a provision for carrying forward of any deficit to future negotiations and this has a penalty factor which increases the carrying forward by a further 30%. Hence, the argument for countries in the position of non-compliance with targets from first round would be to find some mechanism to meet these targets as well as taking on fresh commitments as part of Bali and Copenhagen process. From a Chinese perspective, the focus on effective enforcement mechanisms in the negotiation must be a significant element of the negotiation process.

Another issue concerns individual country targets and the EU binding commitment targets. Under the Kyoto Protocol, the EU is required to reduce its greenhouse gas emissions by 8 per cent from 1990 levels during the first commitment period from 2008 to 2012. Member States' commitments of minus 8 per cent in Annex B of the treaty were amended in an EU burden sharing agreement to give national targets (see Table 4). Within the shared Kyoto target, each EU-15 Member State has a differentiated emissions target. The 12 new EU Member States are not part of the joint EU-15 target but all, except Cyprus and Malta, have individual targets under the Kyoto Protocol (see Table 5).

But for all their intense activity such as the EU Emissions Trading Scheme¹², countries are finding it challenging to implement the EU Directive (Table 5). Practical problems remain over data availability, capacity and timing (RIIA Report, 2003).

¹² EU Emissions Trading Scheme is the European Union's climate change policy tool, which helps industries to cut their CO₂ emissions in a cost-effective way. It requires a cap on emissions for all large CO₂ emission sources. In the EU-15, the ETS is estimated to cut 3.4 % from base-year emissions.

Table 4 Annex B Countries to the Kyoto Protocol and Emissions Targets
 (% change in emissions for 2008–12 relative to 1990 base-year levels)¹³

Country	Phase 1 Emission reductions targets
EU*	-8%
US	-7%
Canada, Hungary, Japan, Poland	-6%
Croatia	-5%
New Zealand, Russian Federation, Ukraine	0
Norway	1%
Australia	8%
Iceland	10%

Notes: EU includes EU-15, Bulgaria, Czech Republic, Estonia, Latvia, Liechtenstein, Lithuania, Monaco, Romania, Slovakia, Slovenia, Switzerland.

Source: UNFCCC

Table 5 EU Member States' Individual Kyoto Targets and the Projected Gap with GHG Emission in 2010¹⁴

EU Member states	Individual Kyoto Targets	Gap between Kyoto commitments and projected GHGs in 2010*
Germany	-21	-12.7
Sweden	4	-3.3
UK	-12.5	-1.4
Denmark	-21	3.4
Greece	25	3.9
luxembourg	-28	5.1
France	0	9
Netherlands	-6	12.1
Italy	-6.5	14.6
Finland	0	16.6
Belgium	-7.5	22.9
Austria	-13	24.5
Ireland	13	26.8
Portugal	27	31.1
Spain	15	33.3

Note*: Negative figures represent over-delivery, positive figures show shortfall from emissions target.

Source: Royal Institute of International Affairs (RIIA) Report 2003

¹³ These targets, which range from -8% to +10%, represent either an outright cut in emissions levels for industrialised countries, or a lower level increase from current levels compared to an expected 'business as usual' scenario for less developed countries.

¹⁴ See RIIA Report 2003 Table 2.1 and Figure 2.1.

Thus this raises possibilities for Copenhagen similarly to Kyoto that the EU Commission first negotiates a target(say 10% cut) and then under burden sharing arrangements these get translated into higher targets for some and lower targets for others(say 5%,15%). As a result both EU and individual country targets exist. Both are in the treaty as both are signatories. Another possibility could be that the parties to the Bali and Copenhagen make commitments to funds to be held in central account by an international agency. At the end of the commitment period, if commitments were not be honored, the funds of those countries violating their commitments will not be returned to those countries, and would instead be divided between those countries whose commitments had been met. The majority of the funds would come from the OECD countries, given the sharp differences in income well and capital.

As long as the key negotiation issues concern under matters, China, India and Brazil may have the common interest of not having being in participation in the first round of negotiations and seeking to have growth and development and hence negotiation on emission intensity. They also will jointly focus on the issue of compliance, and dealing with non-compliance and effective dispute settlement procedures. All of these will be central issues for China in dealing with the countries participated in the Kyoto negotiation given that China had taken no commitments.

4.4 Other issues concerning China's participation

The Chinese negotiation position post Bali will also reflect domestic policy initiatives. China is now renewing emission related potential damage from global warming and taking own internal measures to reduce the contributions China makes to global damage through incremental growth of emissions. So, how China wants to go in any unilateral measures and related questions of the costs involved for China incline to global emission targets is the issue. Actually, there is a long way to go for China, and the most difficult part still remains actual implementation of environmental policy. So far, China has been successful in creating an environmental apparatus and has issued environmental policies, laws and regulations. Where it has not been successful is in carrying out policies—there is still a big gap between words

and action. Identifying mechanisms and policy tools to ensure efficient implementation of policies and enforcement of legislation should be a priority both for the Chinese authorities and the UN bodies engaged in environmental efforts in China (Gørild and Ellen, 2007).

A related issue is how other parties grant credit for unilateral actions in the multilateral Copenhagen negotiation. China's commitment to a 20% reduction in energy consumption relative to GDP by 2020 and a 20% target for use of renewable from current of 1% of energy consumption figure are the issue. To some extent, these unilateral measures can be viewed as instruments which can be used to meet multilateral agreed targets, but on the other hand, multilateral targets in emission reduction intensity are different, hence China can be argued to be given some degree of credits for such commitments, particularly commitments on renewable. How that is done and how the credit will be given need negotiation in the round.

Furthermore, how to maintain openness to markets is also a central issue given the pressures now emerging from Europe and else where for systems of adjustments to company significant global environmental commitments. These are based on the argument that environmental commitments raises the cost for domestic producers who need to have offsetting adjustments involving tariff on import and export subsidies. The prospect for China therefore is a global structure in which global markets potentially become closed as environmental commitments are undertaken to offset the cost implications for the domestic producers. How China deals with non environmental but environment induced difficulty is crucial for China. This is also potentially a major negative for China through export growth and FDI impacts linked to these form of trade measures tied to global environmental arguments (see also Lochood & Whalley 2008).

5. Concluding remarks and implications for China's participation in global environmental negotiations beyond Copenhagen

In this paper, we discuss a range of issues concerning China's participation in Post-Bali process. One is that an interpretation of CBDR which reflects developing countries' desire to leave room to grow will be needed for the negotiation to be fruitful. Another is that choices of instruments will be central in the negotiation. Emission intensity, effective technology transfer and financial support and other related issues will be raised by China. Also non-compliance and collaborative activities will be issues for the Post-Bali process and need to be dealt with in the negotiation.

Globally, we see an emerging structure of a sequence of global environmental negotiations which has parallels to trade negotiations in the GATT and WTO. In the WTO case, the ninth rounds of negotiation of GATT/WTO negotiations since 1947 have sequentially moved forward. In the environmental area, we effectively have two rounds negotiation from Kyoto to Bali and Copenhagen. Seemingly inevitably these negotiations will continue with deeper and deeper commitments and the emergence of a more global environmental regime. This global environmental regime is in our view likely to be increasingly linked to other dimensions of international policy coordinated with trade and finance. The result may eventually be linked negotiations between trade, finance and environment, and even potentially a new institution format that goes beyond the current WTO structure and the patchwork quilt of arrangements in the environmental area. For China, therefore, the prospect is of ongoing negotiations after the Bali and Copenhagen which broadly expand on the existing coverage and commitments and also growing linkage to trade and finance. Eventually linkage could be such as to yield a new global organization or body. What the broadening of these negotiations will be at this point is hard to say but could include broadening to other environmental issues including biodiversity and other matters added into broadened climate change negotiations. It could also involve broadening to energy and energy security issues, including nuclear and other matters. The positions that China takes on

in the Copenhagen negotiation thus potentially affects their position in future negotiating rounds.

On the broadening of coverage and linkage to trade and finance, the issues here basically reflect the time warp that global institutional structure of policy coordination currently find itself in. Since the Breton Wood Conference in 1944, through trade and finance arrangements in the GATT/WTO and in the IMF, global activities have been based on the premise that the only links between national economies care those involved in the trade and finance in physical linkage. These physical linkages are now the global emissions which are to be addressed through climate change and global environmental negotiations. The prospect therefore is eventually one of environmental negotiation growing in significance and linkage will thus likely become lager and larger, to the point that these separate negotiations eventually become directly linked.

From China's point of view, linkage is central because the need to maintain growth and development policy is orientated to growth based on trade and FDI. At the same time, commitments made on global environmental negotiations will be central to this. In turn, China will have major role to play in any institutional evolution. There are now arguments being made that the World Trade Organizations are viewed not as a bargaining organization just on trade policy, but effectively a photo type of a global bargaining organization worldwide for all forms of policy coordination including environmental area (Whalley, 2008). Hence the World Trade Organization may evolve as a World Bargaining Organization which encompasses environmental bargaining as well as trade bargaining. China's participation in the potential emergence of such an organization may thus also be on issue in current global environmental negotiations.

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