
Towards the Sino-American Trade Organization for the Prevention of Climate Change (STOP-CC)

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Introduction

There is an adage in China ‘吳越同舟 (Wú Yuè tóng zhou)’, which translates as ‘Wu and Yue in the same boat’. This purportedly refers to events during the Spring and Autumn Period (770–221 BC) of the Zhou Dynasty that forced two rival states, the Wu and the Yue, to cooperate in dealing with widespread flooding. The phrase characterizes situations in which adversaries must join forces to overcome a common challenge, and is possibly the etymological foundation of the English phrase ‘to be in the same boat’. Certain scholars contend that the axiom exemplifies the political relationship between the United States and China.¹

Yan Xuetong has recently introduced in the *Chinese Journal of International Politics* the genesis of a fruitful discussion that has been carried forward by Alastair Iain Johnston in regard to explaining the Sino-American relationship.² Essentially, Yan has put forth a theory of ‘superficial friendship’ wherein he argues that mutually unfavourable interests exceed mutually favourable interests in the Sino-American relationship.

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¹ For examples see Feng Huiyun, ‘Is China a Revisionist Power?’, *Chinese Journal of International Politics*, Vol. 2, No. 3 (2009), pp. 313–34; and Barry Buzan, ‘China in International Society: Is “Peaceful Rise” Possible?’, *Chinese Journal of International Politics*, Vol. 3, No. 1 (2010), pp. 5–36.

² Yan Xuetong, ‘The Instability of China-US Relations’, *Chinese Journal of International Politics*, Vol. 3, No. 3 (2010), pp. 263–92; Alastair Iain Johnston, ‘Stability and Instability in Sino-US Relations: A Response to Yan Xuetong’s Superficial Friendship Theory’, *Chinese Journal of International Politics*, Vol. 4, No. 1 (2011), pp. 5–29.

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This, coupled with high expectations that both nations have in regard to support from one another, engenders the development of a ‘superficial friendship’.³ Yan further posits that superficial friendships are unstable relationships that propagate exaggerated highs and lows, which helps to explain why the Sino-American relationship tends to exhibit wild oscillations.⁴

Subsequently, Johnston provides a three-part critique of Yan’s theory for understanding the oscillating nature of the Sino-American relationship. He starts by asserting that explaining this phenomenon is subject to epistemic bias, and introduces insights from psychological research that offer a compelling alternative explanation for this phenomenon. He further suggests that Yan’s approach to coding may be open to interpretative challenge and that issues are ‘missing from the lists’, arguing that these two threats to internal validity potentially undermine Yan’s classification of the relationship. Finally, he cobbles together an alternative explanation for the oscillating nature of the Sino-American relationship that incorporates elements of security dilemma theory, attribution theory, national identity theory and media influence theory.⁵

Although Johnson challenges Yan’s interpretation, his critique of Yan’s Coding of Interests implies a degree of acceptance of Yan’s taxonomy which posits that the net balance between favourable and unfavourable interests, along with the level of expectations that two nations have in regard to support from one another, delineate the level of friendship or enmity that exists.⁶ In addition to Johnson, a number of scholars would agree with Yan that an imbalance of unfavourable over favourable interests plays a critical role in influencing the Sino-American relationship.⁷

One of the practical contributions of Yan’s ‘Friendship-Enmity’ taxonomy is that it graphically depicts how bilateral relationships might be improved. It suggests that enhancing mutually favourable interests represents a strategy for improving bilateral relationships that are characterized as either ‘superficial friendships’ or ones possessing ‘enmity’. Indeed, Yan himself argues for ‘enlarging mutually favourable interests’ as a strategy for improving the Sino-American relationship.⁸

The intent of this article is to explore the potential for practical application by examining how Sino-American cooperation in climate change mitigation could be structured to ‘enlarge mutually favourable interests’, while avoiding the acrimonious interactions that have marked Sino-American

³ Yan Xuetong, ‘The Instability of China-US Relations’, pp. 263–92.

⁴ *Ibid.*

⁵ Alastair Iain Johnston, ‘Stability and Instability in Sino-US Relations’, pp. 5–29.

⁶ *Ibid.*

⁷ For example, see Feng Huiyun, ‘Is China a Revisionist Power?’, pp. 313–34; Barry Buzan, ‘China in International Society’, pp. 5–36; Zhang Chuanjie, ‘Affective US Image Predicts Chinese Citizens’ Attitudes Toward United States’, *Chinese Journal of International Politics*, Vol. 3, No. 3 (2010), pp. 293–323.

⁸ Yan Xuetong, ‘The Instability of China-US relations’, pp. 263–92.

interactions throughout the Kyoto Protocol negotiation process. Section 2 begins by highlighting the importance of enhanced Sino-American collaboration. Sections 3 and 4 review the climate change policy perspectives in China and the United States to lay the foundations for an understanding of the dynamics influencing Sino-American cooperation to reduce greenhouse gas (GHG) emissions. Section 5 examines how ideological and political barriers influence collaborative options between the two nations, and provides justification for the proposed creation of a Sino-American Trade Organization for the Prevention of Climate Change (STOP-CC), which focuses on supporting commercial collaborations to 'enlarge mutually favourable interests'. The scope and structure of such an organization is explicated in Section 6 and specific areas for commercial collaboration are outlined in Section 7. Section 8 provides a conclusion.

The Imperative for Enhanced Sino-American Commitment to Climate Change Mitigation

As climate change progresses, it threatens to wreak widespread economic and ecological damage of an extent that scientists are only beginning to fully fathom. Current estimates are that economic losses alone could range between 4–20% of global GDP, while the World Bank estimates global adaptation costs at US \$75–\$100 billion per year between 2010 and 2050.⁹ According to the Intergovernmental Panel on Climate Change (IPCC), even achieving the widely endorsed warming target not exceeding 2°C would expose hundreds of millions to increased water stress, increased damage from floods and storms and species extinctions of up to 30%.¹⁰ Conversely, actions to mitigate climate change would provide global benefits estimated in the trillions of dollars.¹¹

Problematically, though, climate change mitigation is time-sensitive. Many scientists contend that there is a 50-year window in which to facilitate 50% reductions in 1990 levels of greenhouse gas in order to abate the worst consequences attributed to climate change.¹² As the IPCC summarizes, 'Mitigation efforts and investments over the next two to three decades will have a large impact on opportunities to achieve lower stabilisation levels.

⁹ For some comparative estimates, see Valentina Bosetti, et al., 'Climate Change Mitigation Strategies in Fast-Growing Countries: the Benefits of Early Action', *Energy Economics*, Vol. 31, Supplement 2 (2009), pp. S144–51; Cabinet Office - HM Treasury, *The Stern Review: Report on the Economics of Climate Change* (London, UK, 2006); 'The Global Climate Change Imperative', *Business Week*, April 16, 2007; and R. S. Dimitrov, 'Inside UN Climate Change Negotiations: The Copenhagen Conference', *Review of Policy Research*, Vol. 27, No. 6 (2010), pp. 795–821.

¹⁰ Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2007: Synthesis Report* (Geneva, Switzerland, 2007).

¹¹ Cabinet Office - HM Treasury, *The Stern Review: Report on the Economics of Climate Change*.

¹² 'The Global Climate Change Imperative', *Business Week*, April 16, 2007.

Delayed emission reductions significantly constrain the opportunities to achieve lower stabilisation levels and increase the risk of more severe climate change impacts.¹³

Despite the imperative for expedient, robust GHG emission abatement, international efforts have been phlegmatic. The centrepiece of mitigation efforts is the United Nations Framework Convention on Climate Change (UNFCCC) which has been signed by 193 member nations and aims to ‘achieve stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.’¹⁴ As part of the UNFCCC process, member nations drafted the Kyoto Protocol (KP) at the third conference of the parties to the UNFCCC (COP3), held in Kyoto in 1997. Member nations agreed that industrialized nations (Annex I nations) would take the lead in reducing GHG emissions on the premise that current atmospheric concentrations of GHG are the cumulative result of past emissions emanating primarily from industrialized nations. Following a first round (2008–12) of GHG emission reduction commitments from Annex I nations, all nations would then commit to reduction targets, given their capacities to do so. KP member nations also acknowledged that developing countries do not possess the resources necessary to adequately finance the transition to alternative technologies for reducing GHG emissions; therefore, financial mechanisms were established to assist developing nations in this regard.¹⁵ As of February 2011, 193 Parties (192 States and 1 regional economic integration organization) have ratified the Kyoto Protocol. In 2011, the global percentage of Annex I nation emissions was estimated at 63.7%.¹⁶

Thirteen years after the KP was drafted, continuing support for the UNFCCC process is vociferously debated due to alarm that insufficient progress in curtailing GHG emissions is pushing climate change past a point of effective intervention. UNFCCC advocates argue that negotiations are complex and time-consuming; yet, there are signs of progress. The UNFCCC COP13 meeting in Bali in 2007 adopted a roadmap for guiding future negotiations;¹⁷ the COP15 meeting in Copenhagen in 2009 established a goal of keeping global warming to 2°C;¹⁸ and the COP16 meeting in

¹³ Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2007: Synthesis Report*.

¹⁴ *United Nations Framework Convention on Climate Change (1992)*.

¹⁵ *Kyoto Protocol to the United Nations Framework Convention on Climate Change* (London, UK: United Nations, 1998).

¹⁶ United Nations Framework Convention on Climate Change (UNFCCC), *Kyoto Protocol: Status of Ratification 2011*.

¹⁷ Raymond Cléménçon, ‘The Bali Road Map’, *The Journal of Environment & Development*, Vol. 17, No. 1 (2008), pp. 70–94.

¹⁸ C. Hedegaard, ‘Cancún Must Take us Towards a Global Climate Deal’, *European View*, Vol. 9, No. 2 (2010), pp. 175–79.

Cancun in 2010, commitments of financial support were made and strategies advanced for enhancing technological transfer and capacity building. Clearly, therefore, there are signs of progress, albeit slothful.

Detractors argue that, eighteen months before round two GHG emission reduction targets are supposed to come into effect, targets have not been agreed upon and parties are as far apart as ever. Only voluntary post-2012 commitments encouraged under the Copenhagen Accord exist. As Christoff critically notes, 'The mitigation actions and 2020 targets nominated by Annex 1 states by 31 January 2010 total perhaps a 12–19% reduction below 1990 levels by 2020, substantially less than the 40% for developed countries that scientific estimates suggest are required if there is to be a reasonable chance of meeting the global stabilization goal of 2°C.'¹⁹ Macintosh adds, 'if developed countries adopt a combined target for 2020 of 20% below 1990 levels, global CO₂ emissions would probably have to be reduced by more than 5%/year, and possibly greater than 10%/year, post-2030 (after a decade transitional period) in order to keep warming to 2°C. If aggressive abatement commitments for 2020 are not forthcoming from all the major emitting countries, the likelihood of warming being kept within the 2°C limit is diminutive.'²⁰

As UNFCCC negotiations continue to lurch forward, a host of supplemental initiatives have materialized. Climate change mitigation has penetrated the agenda of numerous multilateral bodies, including the G-8 and the G-20. Moreover, new multilateral forums and partnerships have evolved. The United Nations have acknowledged over 330 'partnerships for sustainable development.'²¹

Involvement in climate change mitigation is no longer a 'government only' issue, as the uncertainties and complexities of global carbon governance have fragmented the policy system.²² This web of 'transnational multi-actor governance' ranges in scale from global to regional to sub-regional to local.²³ In addition to broader involvement of various subsets of civil society, the scope of initiatives has expanded considerably. Specialized groups have emerged to provide enhanced information dissemination, to elevate

¹⁹ Peter Christoff, 'Cold Climate in Copenhagen: China and the United States at COP15', *Environmental Politics*, Vol. 19, No. 4 (2010), pp. 637–56.

²⁰ Andrew Macintosh, 'Keeping Warming Within the 2°C Limit after Copenhagen', *Energy Policy*, Vol. 38, No. 6 (2010), pp. 2964–75.

²¹ Frank Biermann, 'Beyond the Intergovernmental Regime: Recent Trends in Global Carbon Governance', *Current Opinion in Environmental Sustainability*, Vol. 2, No. 4 (2010), pp. 284–88.

²² *Ibid.*

²³ Benjamin K. Sovacool and Marilyn A. Brown, 'Scaling the Policy Response to Climate Change', *Policy and Society*, Vol. 27, No. 4 (2009), pp. 317–28.

civic pressure on national governments, to encourage adaptation planning and to advance technological transfer.²⁴

Nevertheless, the aggregate impact of all the climate change mitigation initiatives is not currently sufficient to avoid the most catastrophic impacts associated with global temperature rise in excess of 2°C.²⁵ Given past performance, one can surmise that the UNFCCC process will continue to lumber towards setting second-round emission reduction targets which, if established, will likely fail to elicit the requisite aggregate GHG emission reductions necessary to avert widespread ecological disaster. One could also surmise that in the interim these other polycentric initiatives will continue to foster action and encourage greater (albeit insufficient) progress. Something is still missing.

The majority of climate change policy experts would agree that inadequate GHG reduction commitments from the United States and China represent the pre-eminent challenge to improving the efficacy of international climate change mitigation efforts. The two nations are the world's largest aggregate GHG emitters, responsible for over 40% of total global emissions.²⁶ Without tangible commitments from the United States and China, whatever the rest of the world does to mitigate GHG emissions will be insufficient.²⁷

Unfortunately, the United States and China have been two of the least accommodating nations in international climate change negotiations.²⁸ Some analysts have even gone so far as to suggest that for these two nations, international climate change negotiations are more about global power politics than climate change.²⁹ Afionis highlights this in recounting COP15, 'negotiations between the US and China were largely about making sure

²⁴ For examples of the scope of initiatives, see Frans Berkhout, 'Reconstructing Boundaries and Reason in the Climate Debate', *Global Environmental Change*, Vol. 20, No. 4 (2010), pp. 565–69; and G. Robbert Biesbroek et al., 'Europe Adapts to Climate Change: Comparing National Adaptation Strategies', *Global Environmental Change*, Vol. 20, No. 3 (2010), pp. 440–50; Xinyuan Dai, 'Global Regime and National Change', *Climate Policy*, Vol. 10, No. 6 (2010), pp. 622–37; and Heleen de Coninck, et al., 'International Technology-oriented Agreements to Address Climate Change', *Energy Policy*, Vol. 36, No. 1 (2008), pp. 335–56.

²⁵ Supported by assessments from R. S. Dimitrov, 'Inside UN Climate Change Negotiations', pp. 795–821; Peter Christoff, 'Cold Climate in Copenhagen', pp. 637–56; and Andrew Macintosh, 'Keeping Warming Within the 2°C Limit after Copenhagen', pp. 2964–75.

²⁶ Peter Christoff, 'Cold Climate in Copenhagen', pp. 637–56.

²⁷ Strong arguments in support of this contention are found in Valentina Bosetti, et al., 'Climate Change Mitigation Strategies in Fast-Growing Countries', pp. S144–51 and Carmen Richerzhagen and Imme Scholz, 'China's Capacities for Mitigating Climate Change', *World Development*, Vol. 36, No. 2 (2008), pp. 308–24.

²⁸ Michèle B. Baettig, et al., 'Measuring Countries' Cooperation Within the International Climate Change Regime', *Environmental Science & Policy*, Vol. 11, No. 6 (2008), pp. 478–89.

²⁹ Peter Christoff, 'Cold Climate in Copenhagen', pp. 637–56.

they were not seen to be stepping too far ahead of each other.³⁰ Not only has this power struggle stymied commitments from the two nations, there is evidence that it has also undermined EU efforts to fill the leadership void.³¹

Although leaders of both nations have acknowledged the perils associated with unabated climate change, opposition to setting GHG emission reduction targets appears to be a case of short-term national economic interests trumping long-term global environmental stability. Leaders from both nations have expressed opposition to targets that might undermine national competitiveness. Consequently, it is worth considering whether or not an alternative approach to climate change mitigation which focuses on exploiting favourable mutual interests could achieve substantial GHG reductions while avoiding Sino-American strife. As Christoff emphasizes, ‘Until their relationship changes, the United States and China – and international climate negotiations – will continue to remain captured and constrained by domestic institutions and circumstances. To transcend these limitations requires the United States and China to foster a more substantial transformative “climate collaboration” than currently exists – one that directly addresses their respective political and economic needs while rapidly de-carbonizing their entwined economies.’³²

Given the political animosity that exists between the two nations, some may question the feasibility of enhanced Sino-American cooperation in climate change. Indeed, as Yan has documented, over the past two decades, Sino-American political ties have been closer to adversarial than collegial.³³ As this article will argue, however, the feasibility of enhanced cooperation should not be considered to be a product of path-dependent political goodwill, but rather of strategic diplomacy which aims to leverage vested-interests to advance cooperation in climate change mitigation, and in doing so serve as a critical analysis of the feasibility of using Yan’s ‘Friendship-Enmity’ taxonomy to guide strategy to improve Sino-American relations.

The remainder of this paper examines what a transformative climate collaboration might entail, given the extant political ideologies and economic constraints in both nations. In order to provide perspective on collaborative limits, it is necessary first to understand the dynamics which influence climate change mitigation policy in both nations.

³⁰ S. Afionis, ‘The European Union as a Negotiator in the International Climate Change Regime’, *International Environmental Agreements: Politics, Law and Economics*, 2010, pp. 1–20.

³¹ For an interesting description of this secondary effect, see Peter Christoff, ‘Cold Climate in Copenhagen’, pp. 637–56 and S. Afionis, ‘The European Union as a Negotiator in the International Climate Change Regime’, pp. 1–20.

³² Peter Christoff, ‘Cold Climate in Copenhagen’, pp. 637–56.

³³ Yan Xuetong, ‘The Instability of China–US Relations’, pp. 263–92.

Climate Change Mitigation Perspectives and China

Escalation of GHG emissions in China is seemingly indomitable, having grown 80% between 1990 and 2006.³⁴ In 2007, China surpassed the United States as the largest emitter of GHG emissions,³⁵ and emissions are projected to increase a further 60–80% by 2020.³⁶ Although emissions per capita in China are only one-quarter of US emissions per capita, Chinese citizens are rapidly closing ground. A projected 100 million Chinese citizens will reach US levels of emissions per capita and a projected 300 million Chinese citizens will reach EU levels of emissions per capita by 2030.³⁷ By 2040, even though aggregate per capita emissions will remain lower than in advanced nations, China's total historical contribution to global GHG emissions is projected to overtake that of the United States.³⁸

China's leadership is aware of the notoriety that China is ascending to in this regard. Domestically, it has adopted ambitious policies to reduce GHG emissions.³⁹ A prominent example is an aggressive system of taxation designed to encourage consumers to purchase more fuel-efficient cars.⁴⁰ China also boasts the highest growth rate of installed renewable energy capacity.⁴¹ The government realizes that current levels of environmental degradation jeopardize China's capacity for long-term growth.⁴² Furthermore, public pressure to adopt more sustainable development policies is clearly evident.⁴³ In the past 10 years alone, environmental disasters have purportedly affected 8% of China's population.⁴⁴ Owing to China's large coastal population, a projected 50 million or more people will be affected by escalating consequences of climate change, exacting an economic loss estimated at US\$260 billion. As China's Assistant Foreign Minister highlighted in 2007, 'China has one-fifth of the world's population. It means that for all of the people affected by climate change, more than one-fifth of them will be Chinese.

³⁴ Peter Christoff, 'Cold Climate in Copenhagen', pp. 637–56.

³⁵ Benjamin K. Sovacool and Scott Victor Valentine, 'The Socio-Political Economy of Nuclear Energy in China and India', *Energy*, Vol. 35, No. 9 (2010), pp. 3803–13.

³⁶ Peter Christoff, 'Cold Climate in Copenhagen', pp. 637–56.

³⁷ Valentina Bosetti et al., 'Climate Change Mitigation Strategies in Fast-Growing Countries', pp. S144–51.

³⁸ Peter Christoff, 'Cold Climate in Copenhagen', pp.637–56.

³⁹ J. Delman, 'China's 'Radicalism at the Center': Regime Legitimation through Climate Politics and Climate Governance', *Journal of Chinese Political Science*, Vol. 16, No. 2 (2011), pp. 183–205.

⁴⁰ Zhongxiang Zhang, 'China in the Transition to a Low-carbon Economy', *Energy Policy*, Vol. 38 (2010), pp. 6638–53.

⁴¹ The Pew Charitable Trusts, *Who's Winning the Clean Energy Race?: Growth, Competition and Opportunity in the World's Largest Economies* (Washington, USA, 2010)

⁴² Carmen Richerzhagen and Imme Scholz, 'China's Capacities for Mitigating Climate Change', pp. 308–24.

⁴³ J. Delman, 'China's "Radicalism at the Center"', pp. 1–23.

⁴⁴ Fang Rong, 'Understanding Developing Country Stances on Post-2012 Climate Change Negotiations: Comparative Analysis of Brazil, China, India, Mexico, and South Africa', *Energy Policy*, Vol. 38 (2010), pp. 4582–91.

That is why the Chinese government takes this issue seriously.⁴⁵ In short, accusations that China is not interested in playing a role in climate change mitigation are misguided.⁴⁶

Unfortunately, China's rapid economic rise has exacerbated the challenge of controlling GHG emissions. Despite efforts to improve energy efficiency, particularly at the industrial level, China's energy intensity actually increased 3.2% during the first quarter of 2010.⁴⁷ One of the primary causes is China's coal dependence. Between 1998 and 2008, coal production in China doubled, reaching an astonishing 46% of total world output.⁴⁸ With an estimated 160 years of coal reserves remaining, it is anticipated that in 2020, coal will still account for 54–65% of China's primary energy use.⁴⁹

The prime driver behind this ecologically unsound trend is the Chinese government's conviction that economic growth must take priority. Christoff refers to this as a Faustian policy trap wherein the government deems it imperative to maintain economic growth of around 8% per year to foster social and political stability.⁵⁰ In doing so, however, it risks siring ecological disasters that may ultimately disrupt social and political stability. Evidence of China's prioritization of economic development is manifest in its refusal to commit to binding emission reduction targets. As Premier Wen Jiabao has emphasized, 'action on climate change must be taken within the framework of sustainable development and should in no way compromise the efforts of developing countries to get rid of poverty.'⁵¹

Although, critics have attributed China's negotiating stance to obstructive behaviour⁵², the reality is more complicated. Chinese leaders feel ethically and morally justified in China's climate change negotiation approach.⁵³ In a nutshell: (i) China is unwilling to make commitments that will restrict economic development, (ii) it contends that developing countries should be allowed 'controlled increased emissions' to enable economic growth, (iii) it expects developed nations to take leadership by committing to GHG

⁴⁵ Ming Yang, 'Climate Change and Energy Policies, Coal and Coalmine Methane in China', *Energy Policy*, Vol. 37 (2009), pp. 2858–69.

⁴⁶ Zhongxiang Zhang, 'Is It Fair to Treat China as a Christmas Tree to Hang Everybody's Complaints? Putting its Own Energy Saving into Perspective', *Energy Economics*, Vol. 32, Supplement 1 (2010), pp. S47–56.

⁴⁷ An overview of the challenge facing China can be found in Peter Christoff, 'Cold Climate in Copenhagen', pp. 637–56 and J. Delman, 'China's "Radicalism at the Center"', pp. 1–23.

⁴⁸ Ming Yang, 'Climate Change and Energy Policies, Coal and Coalmine Methane in China', pp. 2858–69.

⁴⁹ Carmen Richerzhagen and Imme Scholz, 'China's Capacities for Mitigating Climate Change', pp. 308–24.

⁵⁰ Peter Christoff, 'Cold Climate in Copenhagen', pp. 637–56.

⁵¹ *Ibid.*

⁵² J. Delman, 'China's "Radicalism at the Center"', pp. 1–23.

⁵³ Zhongxiang Zhang, 'Is It fair to Treat China as a Christmas Tree to Hang Everybody's Complaints?', pp. S47–56.

emission reductions equal to 40% below 1990 levels by 2020, and (iv) it expects development assistance from developed nations. In return, China is willing to work on reducing emissions relative to economic growth, to strengthen its mitigation measures and to endeavour to make the investments necessary to attenuate CO₂ emissions associated with coal-fired power.⁵⁴ Although on the surface these appear to be numerous demands for very few concessions, one must understand that China still struggles with poverty alleviation. Approximately 340 million people, concentrated in rural China, remain in abject poverty.⁵⁵ Alleviating poverty is considered both a moral imperative and a strategic necessity if China is to avoid social and political instability.

The tension that exists between forces for economic growth and aspirations to tackle growing GHG emissions is clearly evident in China's 12th Five-year Plan (2011–15) which includes goals to reduce energy consumption per unit of GDP by 16% and reduce CO₂ emissions per unit of GDP by 17%, as well as plans to further increase forest stocks by 600 million cubic metres and aspirations to satisfy at least 11.4% of primary energy consumption from non-fossil fuel sources. Given that the plan also envisions an economic growth goal of 7% per year, one can infer that aggregate increases in energy consumption and CO₂ emissions can be expected, if the plan is achieved.

The energy sector faces particularly notable challenges. Although China possesses the second highest installed wind power capacity in the world, and in the first half of 2010 led the world in newly installed capacity,⁵⁶ unused wind-generated electricity purportedly amounted to 2.8 billion kilowatt-hours in the first half of 2010 because of insufficient grid infrastructure.⁵⁷ Although China also announced an ambitious and potentially contentious program of reaching 60 GW of installed nuclear power capacity by 2020,⁵⁸ it is feared that uranium resource limitations may wind up being the factor that constrains further nuclear power development.⁵⁹ Furthermore, as mentioned earlier, despite rigorous attempts on the part of the government to improve energy intensity, conditions actually worsened in the first quarter of 2010.⁶⁰ It is becoming apparent from reports spanning

⁵⁴ J. Delman, 'China's 'Radicalism at the Center': Regime Legitimation through Climate Politics and Climate Governance', pp. 1–23.

⁵⁵ Peter Christoff, 'Cold Climate in Copenhagen', pp. 637–56.

⁵⁶ World Wind Energy Association, *World Wind Energy Report 2010* (Bonn, Germany, 2011)

⁵⁷ 'Grid Shortcomings Taking Wind out of Energy Plan's Sails', *China Daily*, February 19, 2011.

⁵⁸ Information on China's nuclear program can be found in Valentina Bosetti et al., 'Climate Change Mitigation Strategies in Fast-Growing Countries', pp. S144–51; and Benjamin K. Sovacool and Scott Victor Valentine, 'The Socio-Political Economy of Nuclear Energy in China and India', pp. 3803–13.

⁵⁹ Zhongxiang Zhang, 'China in the Transition to a Low-carbon Economy', pp. 6638–53.

⁶⁰ Carmen Richerzhagen and Imme Scholz, 'China's Capacities for Mitigating Climate Change', pp. 308–24; and J. Delman, 'China's "Radicalism at the Center"', pp. 1–23.

numerous green development sectors that although China has the engineering competencies to design solutions for mitigating GHG emissions,⁶¹ the nation lacks the capacity to implement initiatives in an efficient, expedient manner.⁶²

China's climate change mitigation challenges stem in part from policy integration challenges. At the national level, there is a degree of overall coordination in that the National Coordination Committee on Climate Change (NCCCC) purportedly coordinates the activities of the National Reform and Development Commission (NDRC), the Ministry of Foreign Affairs (MOFA), and 13 other ministries and agencies.⁶³ Once policies are developed, however, encouraging implementation by recalcitrant regional authorities tends to produce sub-optimal results.⁶⁴ Richerzhagen and Scholtz conclude, 'In China, climate policy has not diffused much beyond central policy-making bodies, and the core group of relevant policymakers and experts is quite small.'⁶⁵

Climate Change Mitigation Perspectives and the United States

Despite being displaced by China in 2007 as the world's largest emitter of GHG, the United States stands a clear second, although it is still the world's largest consumer and producer of energy. Differences in technological efficiency mainly explain why GHG emissions in China exceed those in the United States. US GHG emissions in 2007 amounted to 7150 tetragrams of CO₂ equivalent—a 17% increase over 1990 levels.⁶⁶

Like China, the United States is concerned that pursuing climate change mitigation measures may inflate production costs and compromise commercial competitiveness. Consequently, many of the government-sponsored GHG emission reduction initiatives focus on improving energy efficiency. More than eighty government policies have recently been adopted to promote investment in 'end-use efficiency, clean energy development, and reductions in agricultural GHG emissions'.⁶⁷ Thanks to policy support at national and state levels, the US boasts the world's highest level of installed renewable energy capacity.⁶⁸ Energy efficiency improvement programs

⁶¹ Valentina Bosetti, et al., 'Climate Change Mitigation Strategies in Fast-Growing Countries', pp. S144–51.

⁶² Carmen Richerzhagen and Imme Scholz, 'China's Capacities for Mitigating Climate Change', pp. 308–24.

⁶³ *Ibid.*

⁶⁴ J. Delman, 'China's "Radicalism at the Center"', pp. 1–23.

⁶⁵ Carmen Richerzhagen and Imme Scholz, 'China's Capacities for Mitigating Climate Change', pp. 308–24.

⁶⁶ US Department of State, *US Climate Action Report 2010* (Washington, USA, 2010).

⁶⁷ *Ibid.*

⁶⁸ The Pew Charitable Trusts, *Who's Winning the Clean Energy Race?*

purportedly have the United States on track to achieve the Bush administration's goal of reducing GHG emission intensity by 18% of 2002 levels by the year 2012.⁶⁹ In short, US climate change mitigation strategy is not radically dissimilar from the Chinese approach. Both nations currently embrace 'no regret' climate change strategies which favour initiatives that reduce GHG emissions without impairing economic standing.⁷⁰

Stakeholder opposition also complicates implementation of GHG reduction initiatives. Powerful stakeholders in the United States, such as conventional energy special-interest groups, oppose clean energy development, and this translates into opposition from political representatives of coal and oil producing states.⁷¹ There is an ideological rift (largely along party lines) over alternative approaches to mitigating GHG emissions which tends to stymie concrete action. Despite the introduction of 235 bills, resolutions and amendments between 2007 and 2008, the contentious nature of GHG abatement in US political circles is evident in most of the proposals having remained mired in committee, never even reaching the House or Senate floors.⁷²

After President Obama's inauguration in January 2009, there were signs that the Democrats, who enjoyed majorities in both houses, were about to embark on a more proactive and cooperative approach to climate change negotiations. The global financial crisis, however, usurped financial resources, political support and national attention.⁷³ By the time the COP15 conference in Copenhagen rolled around, it became evident that despite good intentions, political support was insufficient to allow the Obama administration to commit to formal GHG emission reduction targets under the UNFCCC process. Christoff eloquently summarizes the situation in the United States regarding climate change policy:

There are manifest continuities with Bush-era US climate policy. First, the United States has continued to promote separate climate negotiations between the major-emitter states. Second, the US government remains hostage to its political institutions. Without (at minimum) a super-majority of 67 votes in the Senate, the Obama administration cannot muster support for ratification of Kyoto or any new major international climate deal framed under the umbrella of the Protocol. Ratification of the Protocol – or any new binding agreement – still requires China (and probably India) to commit to substantial, binding and verifiable emissions reduction measures. Moreover the continuing

⁶⁹ US Department of State, *US Climate Action Report 2010*.

⁷⁰ Peter Christoff, 'Cold Climate in Copenhagen', pp. 637–56; and Carmen Richerzhagen and Imme Scholz, 'China's Capacities for Mitigating Climate Change', pp. 308–24.

⁷¹ For an overview of current political currents in US energy, see Tora Skodvin, "'Pivotal politics'" in US Energy and Climate Legislation', *Energy Policy*, Vol. 38 (2010), pp. 4214–23 and Morgan Bazilian, et al., 'Opinion: An Energy Policy Approach to Climate Change', *Energy for Sustainable Development*, Vol. 14, No. 4 (2010), pp. 253–55.

⁷² Tora Skodvin, "'Pivotal politics'" in US Energy and Climate Legislation', pp. 4214–23.

⁷³ Peter Christoff, 'Cold Climate in Copenhagen', pp. 637–56.

recession, a national political agenda that places domestic issues (such as health-care, education, the budget deficit and social security) higher than combating global warming, and wavering public support for action on climate change, have made it ever harder for Obama to pursue a strong climate agenda.⁷⁴

In November 2010, the Obama administration suffered another set-back when Republicans regained control of the House of Representatives. This change of political fortunes has virtually guaranteed that many of the bills, resolutions and amendments related to climate change will face a much rockier road to enactment.⁷⁵ To quote Christoff, ‘ultimately, the US is as constrained as China by its domestic institutions.’⁷⁶

One positive aspect, however, of US climate change policy is that the Obama administration views solutions for reducing GHG emissions as opportunities for revitalizing the US economy. In February 2009, the American Recovery and Reinvestment Act (ARRA) became law. Under ARRA, US\$90 billion was earmarked for investments in clean energy technologies. In April 2009, the United States initiated the Major Economies Forum on Energy and Climate (MEF), which is intended to support development and deployment of clean energy technologies. In June 2009, the House of Representatives passed the American Clean Energy and Security Act which includes further commitments for major investments in clean energy technologies. The same month, the United States announced the Partnership on Clean Energy and Climate of the Americas, which is an initiative to promote clean energy technologies across the western hemisphere. The United States also played a key role in consolidating agreement on the financial support package for developing countries that was announced at COP15 in Copenhagen.⁷⁷ In short, the Obama administration has created several pools of financing for green technologies, particularly in the energy sector, and this can be expected to attract private investment.

Facilitating Collaboration

The ‘no regret’ climate change mitigation strategies, which the two nations favour implies, that collaborations focusing on market development would attract the most interest from both sides. The agreement to enhance Sino-American relations which Barack Obama and Hu Jintao signed in November 2009 demonstrates that both sides recognize the benefits of collaboration. A clash of disparate national interests, however, has attenuated collaborative intent and generated considerable political animosity.⁷⁸

⁷⁴ *Ibid.*

⁷⁵ Tora Skodvin, ‘“Pivotal Politics” in US Energy and Climate Legislation’, pp. 4214–23.

⁷⁶ Peter Christoff, ‘Cold Climate in Copenhagen’, pp. 637–56.

⁷⁷ US Department of State, *US Climate Action Report 2010*.

⁷⁸ Yan Xuetong, ‘The Instability of China-US Relations’, pp. 263–92.

Insights from negotiation theory provide guidance on how to structure a more effective collaborative Sino-American relationship.

China and the United States possess ideologically disparate frames—defined as ‘organizing principles that shape the way people conceptualize an issue’⁷⁹—through which they conceptualize responsibilities for abating climate change. China contends that the United States and other advanced nations must make significant reduction progress prior to soliciting any commitments from developing nations. The United States, meanwhile, contends that China’s current level of GHG emissions is significant enough to warrant immediate commitments to reduce emissions.⁸⁰ In such ideological clashes, opposing parties must endeavour to make themselves aware of ideological differences and try to repress emotionally-induced responses, because attempting to change established ‘frames’ is untenable.⁸¹ In the context of Sino-American relations, collaborations must be structured in a way that avoids the mudslinging evident between the two nations at COP15 in Copenhagen.⁸²

One strategy for ingraining a collaborative spirit in the presence of competing interests is to agree on the superordinate goal of only discussing and endorsing initiatives that both nations agree will enhance self-interests. Such a ‘promotion orientation’ leads parties to anticipate positive outcomes and induces cooperation.⁸³ By seeking mutual benefit, actors learn to trust one another to communicate honestly and to reciprocate positive behaviour.⁸⁴ This allows the relationship to move beyond formal compliance towards a more creative alliance. Over time, the trust established provides the foundation for tackling more conflicting issues at later stages.⁸⁵ Applied to Yan’s taxonomy, the process of achieving mutual benefit helps move bilateral relations from superficial friendship to value-added friendship.

Participants also need to be assured that collaboration is indeed producing fruits of labour. Any collaborative structure, therefore, should include mechanisms for managing communications and communicating successes. As Ostrom cautions, ‘any policy that tries to improve levels of collective action to overcome social dilemmas must enhance the level of trust by

⁷⁹ Joop de Boer, et al., ‘Frame-based Guide to Situated Decision-making on Climate Change’, *Global Environmental Change*, Vol. 20, No. 3 (2010), pp. 502–10.

⁸⁰ See Peter Christoff, ‘Cold Climate in Copenhagen’, pp. 637–56; and Barbara Buchner and Carraro Carlo, ‘US, China and the Economics of Climate Negotiations’, *International Environmental Agreements*, Vol. 6, No. 1 (2006), pp. 63–89.

⁸¹ M. Thompson and S. Rayner, *Cultural Discourses* (Columbus: Battelle Press, 1998).

⁸² Peter Christoff, ‘Cold Climate in Copenhagen’, pp. 637–56.

⁸³ E. Tory Higgins, ‘Making a Good Decision: Value From Fit’, *American Psychologist*, Vol. 55, No. 11 (2000), pp. 1217–30.

⁸⁴ Andrew H. Kydd, ‘Learning Together, Growing Apart: Global Warming, Energy Policy and International Trust’, *Energy Policy*, Vol. 38 (2010), pp. 2675–80.

⁸⁵ John Vogler, ‘The Institutionalisation of Trust in the International Climate Regime’, *Energy Policy*, Vol. 38 (2010), pp. 2681–87.

participants that others are complying with the policies, or many will seek ways of avoiding compliance.⁸⁶

A further insight for facilitating effective cooperation between the United States and China relates to the nature of animosity exhibited between the two nations. At the political level, animosity is rife; but at the socio-cultural level, relations are decidedly more congenial.⁸⁷ This suggests that collaborative structures which minimize political involvement and maximize participation from non-government stakeholders will be most effective.⁸⁸

Finally, current financial constraints caused by the global economic slowdown suggest that both sides would be more amenable to collaborations designed to elicit short or medium term economic gain. In the United States, the Obama Administration continues to pare down domestic programs in response to a fiscal budget deficit, which makes it difficult for the United States to justify United States financing of a transition to greener technologies in any foreign nation, including China. Financial constraints also exist in China, where extensive infrastructure upgrades are required in impoverished rural regions. Heated competition for funds encourage top level economic planners to support projects which exhibit short-term return profiles in order to generate additional funds to fuel rural redevelopment.

Exploiting Mutually Favourable Interests

The analysis presented in the previous section implies that a strategy specifically designed to facilitate mutually beneficial commercial opportunities to reduce GHG emissions in the two nations would hold the most appeal and enhance prospects of both economic and political success. Using Yan's terms, it may be possible to encourage a transition from 'superficial friendship' to actual friendship between the two nations through efforts to harness economic opportunities inherent in climate change mitigation programs.⁸⁹

Critics may note that the two nations agreed in June 2008 on a Ten Year Framework (TYF) for Cooperation on Energy and Environment, so another collaborative agreement is superfluous.⁹⁰ The framework suffers, however, from three structural weaknesses that make it ill-suited to supporting commercial-focused, GHG emission reduction collaborations. First, the

⁸⁶ Elinor Ostrom, 'Polycentric Systems for Coping with Collective Action and Global Environmental Change', *Global Environmental Change*, Vol. 20, No. 4 (2010), pp. 550–57.

⁸⁷ Chuanjie Zhang, 'Affective US Image Predicts Chinese Citizens' Attitudes toward United States', pp. 293–323.

⁸⁸ Karlijn Morsink, et al., 'Multi-stakeholder Partnerships for Transfer of Environmentally Sound Technologies', *Energy Policy*, Vol. 39 (2011), pp. 1–5.

⁸⁹ This argument has been echoed by C. Hedegaard, 'Cancún Must Take us Towards a Global Climate Deal', pp. 175–79 and Jared C. Carbone et al., 'The Case for International Emission Trade in the Absence of Cooperative Climate Policy', *Journal of Environmental Economics and Management*, Vol. 58, No. 3 (2009), pp. 266–80.

⁹⁰ US State Department, *U.S.-China Ten Year Framework for Cooperation on Energy and Environment* (Washington: The US Department of State, 2011).

TYF lacks formal organizational structure, which implies that overall effectiveness will be influenced by political winds of change and undermined by low levels of accountability and managerial oversight. To ensure that political goodwill generates on-the-ground results, a formal organizational structure is required. This should include (i) an organization-specific mission, (ii) quantifiable organization objectives, (iii) an annual strategic plan based on and reviewed according to quantitative outcomes, (iv) formal job descriptions designed to support the organizational goals, (v) outreach, HR, finance and marketing departments designed to enhance organizational effectiveness, (vi) organizational performance standards, (vii) performance management systems, and (viii) autonomous budgetary control. Second, the TYF lacks the GHG emission reduction focus that is of paramount concern in this paper. As the adage suggests, one cannot manage what one does not measure. Third, the TYF is geared towards macro achievements, as the numerous MOUs under the TYF attest. It is not specifically designed to comprehensively facilitate commercial collaborations of the sort proposed in this paper. In fact, one could argue that the framework introduced in this article could actually fit under the TYF umbrella, and in doing so provide it with an implementation mechanism.

In other words, the proposal put forth in this paper should not be misconstrued as suggesting that a different model should supplant the TYF (and partnership plans that fall under the TYF), other Sino-American cooperative agreements on climate change (i.e. initiatives falling under the Initiative for U.S.-China Cooperation on Energy and Climate), or other multi-national initiatives (such as the Asia-Pacific Partnership on Clean Development and Climate or the G20 climate change negotiations). Rather, this paper argues that Yan's taxonomy has been insightful in identifying the inherent weaknesses in current bilateral agreements between China and the United States. It advocates in response that, rather than trying to modify an existing framework that is ill-suited to the challenges put forth in this paper, a new entity should be established through a formal bilateral agreement specifically to manage collaborative cross-border commercial initiatives for reducing GHG emissions. This new body, referred to hereafter as the Sino-American Trade Organization for the Prevention of Climate Change (STOP-CC), would have a specific remit to maximize GHG emission reduction through facilitating Sino-American commercial collaborations, and in the process, accumulate small wins which should help to improve the nature of the Sino-American friendship.

STOP-CC could be structured in a manner similar to the Japan External Trade Organization (JETRO), except that the entity would be staffed by trade development experts from two nations—China and the United States—instead of one. JETRO is a Japanese 'government-related organization that works to promote mutual trade and investment between Japan and

the rest of the world'. It promotes foreign direct investment (FDI) in Japan, facilitates economic growth in developing countries through trade promotion, assists Japan's small and medium-sized enterprises (SMEs), supplies Japanese commercial interests with foreign economic information, promotes cross-border business links in targeted industry sectors, and helps Japanese firms expand overseas. These JETRO activities are precisely the type that STOP-CC could perform, but under a contextual theme limited to facilitating commercial collaborations that facilitate GHG reduction in some way or another.

There are admittedly a number of structural challenges that would likely need to be decided through negotiation. The most difficult in regard to staffing would be that of leadership structure. The least contentious approach would most probably be to set up a rotating director general post accountable to a board of directors that carries equal representation from both nations, and which incorporates board directors from both the commercial and political sectors. Leadership aside, management of the operation is a less contentious matter because operational and linguistic needs would favour the development of collaborative teams staffed with individuals from both countries.

STOP-CC funding may also need to be decided through negotiation. Costs could conceivably be shared during the first year of operation, but in subsequent years funding would have to be performance-based and metrics created for evaluating effectiveness, both in terms of establishing alliances and reducing GHG emissions through collaborative ventures. Although a complex issue, it is not unlike the challenges that many organizations, such as JETRO, face in allocating funding to industry sectors or evaluating organizational performance. The overall point is that establishing performance management systems represents a first step towards program efficacy, and this cannot be done without a unified organization.

There are a number of specific benefits inherent in the creation of an inter-governmental organization such as STOP-CC. First, in contrast to signing another bilateral memorandum of intent, creating a bilateral organization enables the consolidation of mission statements, organizational objectives, reporting lines of authority, budget control and staffing and operational activities, thereby improving operational efficiency. In short, it unifies goals and minimizes political interference. Second, a bilateral organization of this type allows initiatives to be guided down to implementation levels.⁹¹ This helps avoid the accumulation of ineffective MOUs currently all too common under the TYF. Third, establishing one pre-eminent

⁹¹ For further insights on challenges related to policy implementation, see Elinor Ostrom, 'Polycentric Systems for Coping with Collective Action and Global Environmental Change', pp. 550–57; David G. Ockwell, et al., 'Intellectual Property Rights and Low Carbon Technology Transfer: Conflicting Discourses of Diffusion and Development', *Global Environmental Change*, Vol. 20, No. 4 (2010), pp. 729–38.

organization that provides financial support, know-how, business experience, collaborative contacts and local knowledge creates an effective one-stop shop of access to services that are essential for supporting many types of GHG mitigation initiatives.⁹² Fourth, focusing on commercial collaborations engenders the ‘promotion orientation’ described earlier as being essential to enhancing goodwill between parties that also have competing interests.⁹³ Fifth, the focus on enhancing mutual economic benefits mitigates the risk that changing political or economic circumstances will result in funding cut-backs.⁹⁴ Less economically-focused initiatives such as the TYF run a greater risk of diminished funding as a result of political change.

Perhaps most important, it makes intuitive sense that the two nations most responsible for global GHG emissions should consolidate efforts to expedite GHG emission reductions, especially in view of their close trade ties. In 2008, the United States was China’s largest trade partner, and China was the United States’ second largest.⁹⁵ Therefore, an inter-governmental organization designed to support commercial collaborations in regard to GHG mitigation represents a logical extension of an entrenched trade relationship. There are already signs that the two nations understand that their fates are entwined on the matter of climate change mitigation. When the United States announced in 2009 a plan to reduce GHG emissions by 17% of 2005 levels by the year 2020, China responded the next day with the announcement that it would cut its carbon intensity per unit of GDP by 40–45% of 2005 levels by 2020.⁹⁶

STOP-CC would also sire notable indirect benefits. First, climate change is but one manifestation of the impact that unsustainable economic activities have on global ecosystems.⁹⁷ An organization dedicated to encouraging commercial collaborations that mitigate GHG emissions could be broadened in the future to facilitate similar collaborations geared to mitigating other forms of environmental damage. In short, STOP-CC represents a prototype for an intriguing model; for an inter-governmental organization aimed at encouraging sustainable forms of trade. Second, the political animosity between the United States and China exhibited in climate change negotiations underscores intensifying economic and political rivalry⁹⁸ which, if left unchecked, could deteriorate into a state of outright ‘enmity’. According to Yan’s taxonomy, transitioning to a state of enmity could

⁹² Karlijn Morsink, et al., ‘Multi-stakeholder Partnerships for Transfer of Environmentally Sound Technologies’, pp. 1–5.

⁹³ E. Tory Higgins, ‘Making a Good Decision’, pp. 1217–30.

⁹⁴ Gregory F. Nemet, ‘Robust Incentives and the Design of a Climate Change Governance Regime’, pp. 7216–25.

⁹⁵ Yan Xuetong, ‘The Instability of China-US Relations’, pp. 263–92.

⁹⁶ J. Delman, ‘China’s “Radicalism at the Center”’, pp. 1–23.

⁹⁷ Scott Victor Valentine, ‘Disarming the Population Bomb’, *International Journal of Sustainable Development & World Ecology*, Vol. 17, No. 2 (2010), pp.120–32.

⁹⁸ Peter Christoff, ‘Cold Climate in Copenhagen’, pp. 637–56.

occur simply as a result of deteriorating expectations of support between the nations.⁹⁹ As the Cold War demonstrated, enmity between superpowers undermines global and economic security. Collaborative efforts such as that characterized by STOP-CC help attenuate political animosity and may forestall a Cold War II. Third, many of the KP member nations exhibit a timorous approach to GHG emission reduction commitments, in part because the Sino-American standoff discourages acceptance of accountability. STOP-CC may encourage other nations to replicate collaborative efforts. Fourth, a successful collaborative relationship could provide both nations with more confidence in achieving substantial GHG emission reductions, and consequently encourage both nations to make bolder emission reduction efforts than would otherwise be achievable through multilateral negotiations.

Areas for Collaboration

One of the drivers behind China's economic resurgence has been the Chinese government's encouragement of joint ventures (JV) between domestic and foreign firms. In the 1980s, JVs were instrumental in providing access to the resources and knowledge necessary to upgrade China's manufacturing sector.¹⁰⁰ As Chinese technological prowess has improved, the value of JVs and other alliances has arguably changed from the Chinese perspective, wherein value now lies in acquiring enhanced market development insight and the management prowess necessary for driving overseas market development.¹⁰¹ On the other side of the JV ledger, foreign firms that have engaged in alliances with Chinese firms have acquired knowledge of local markets and gained political connections critical to success in China's evolving marketplace. Moreover, foreign manufacturers have reduced production costs by shifting assembly operations to China. In short, commercial JVs and other alliances between American and Chinese firms promise continuing wide-ranging synergic benefits.

Synergies are particularly evident between firms from developing and developed nations because core competencies tend to differ.¹⁰² Collaborations between firms from developed and developing nations stand to gain the most from commercial collaborations because major competency gaps are

⁹⁹ Yan Xuetong, 'The Instability of China-US Relations', pp. 263–92.

¹⁰⁰ For a generic overview of the Chinese approach to technology capacity building, see Philippe Lasserre and Hellmut Schutte, *Strategies for Asia Pacific: Meeting New Challenges* (New York: Palgrave Macmillan, 2006); and Charles W. Hill, *International Business: Competing in the Global Marketplace* (New York: McGraw-Hill/Irwin, 2007).

¹⁰¹ G. Hammond and A. Stapleton, 'Exergy Analysis of the United Kingdom Energy System', *Proceedings of the Institution of Mechanical Engineers, Part A: Journal of Power and Energy*, Vol. 215, No. 2 (2001), pp. 141–62.

¹⁰² Christopher Bartlett, et al., *Transnational Management* (Boston: McGraw-Hill/Irwin, 2003).

more likely to be filled by the partner firm. This section will consider a few business sectors where competency gaps appear most resolvable by synergies harnessed through Sino-American collaborations.

Transport Sector

The automotive industry in China is booming. By 2015, China is projected to have become the world's largest automotive market and its firms to be the world's largest automobile producers.¹⁰³ The nation is also financially incentivizing commercial purchases of more fuel-efficient vehicles.¹⁰⁴ In short, there is an emerging market niche in China for fuel-efficient or electric vehicles that requires tailored responses. US automobile manufacturers, meanwhile, are struggling to enhance competitive success in overseas markets where Japanese and European manufacturers excel.

American automotive firms are characterized by advanced engineering proficiency, comprehensive supply networks, global market coverage and superior access to financing; however they have historically missed the mark when it comes to product development for foreign markets. Over the past three decades, Chinese automotive firms have learned through JVs with foreign firms (including American automotive manufacturers) and have become adept at producing automobiles of reasonable quality. As the government has progressively tightened up its standards on fuel efficiency, Chinese automobile manufacturers have responded by developing more economical models. However very few Chinese automobile manufacturers have had impact in international markets because they lack requisite financing, uniform engineering quality and sufficient supply and distributor networks. In short, American firms possess competencies in product engineering, supply chain management and access to finance and market development that Chinese firms covet. Conversely, Chinese firms possess core competencies in Chinese market access, low-cost manufacturing bases and enhanced Chinese customer knowledge that US firms covet. Although it should be acknowledged that a number of JVs between US and Chinese automotive firms already exist, many opportunities remain for further alliances between smaller automobile manufacturers (particularly in hybrid technologies) and parts suppliers.

Transport Fuel Production Sector

Capacity shortfalls, volatile gasoline prices and dependence on supplies from politically unstable regions represent major threats to fuel consumers and

¹⁰³ Carmen Richerzhagen and Imme Scholz, 'China's Capacities for Mitigating Climate Change', pp. 308–24.

¹⁰⁴ Zhongxiang Zhang, 'China in the Transition to a Low-Carbon Economy', pp. 6638–53.

producers from all segments of the transport sector.¹⁰⁵ Given the agricultural diversity found within the two nations, joint-development of advanced fuel stocks could be a way of minimizing these threats. Moreover, for China in particular, encouraging commercialization of biofuel operations could (if planned in a sustainable manner) help to revitalize China's impoverished agricultural hinterlands.

China's biofuel firms enjoy access to farming cooperatives and scientific know-how but suffer from financial and operational deficiencies that inhibit expansion of production operations. American biofuel firms enjoy access to government financing and competencies in commercializing technologies but lack the access to agricultural land necessary for large scale development. This, therefore, sets the stage for a synergic coupling of Chinese and American biofuel interests.

Energy Efficiency Technology Sector

Another attractive area for collaboration relates to technologies for improving energy efficiency in industrial and commercial processes. There are in China significant opportunities to collaborate on improving industrial energy efficiency because industry currently consumes approximately 70% of electricity generated.¹⁰⁶ With the United States having already experienced some of the technological transitions that are now happening in China, American firms have products and solutions that could be easily marketable in China. Conversely, JVs represent a strategy that Chinese firms could employ to access the millions of dollars that the US government has earmarked for supporting domestic energy efficiency R&D and clean energy project development.

Clean Coal, Methane Capture, and Smelting Operations

Enhancing the diffusion of clean coal technology is another promising area for commercial collaboration. In China, coal-fired power plants account for approximately 75% of total generating capacity, and a degree of coal dependence is expected to last for decades. Consequently how to use coal more efficiently is a key challenge in China.¹⁰⁷ The United States leads China on the experience curve in this regard. American technology for reducing the sulphur content and abating CO₂ emissions associated with coal-fired power constitutes a valuable source of proven commercial knowledge.

A related collaborative opportunity involves coal-mine methane capture. Methane emissions from Chinese coal mines represent an enormous source

¹⁰⁵ Kurt M. Campbell and Jonathon Price, *The Global Politics of Energy* (USA: The Aspen Institute, 2008).

¹⁰⁶ Carmen Richerzhagen and Imme Scholz, 'China's Capacities for Mitigating Climate Change', pp. 308–24.

¹⁰⁷ Zhongxiang Zhang, 'China in the Transition to a Low-Carbon Economy', pp. 6638–53.

of GHG. Currently billions of cubic meters of coal-mine methane are simply being released into the atmosphere to reduce the threat of coal-mine explosions.¹⁰⁸ Given that state-owned and local government-owned coal mines still constitute more than 60% of total coal output in China, there is significant opportunity for Sino-American JVs to work with government authorities to help provide the technologies and commercialization know-how to harness methane for power generation.

Similarly, advanced smelting technology in the United States could play a significant role in helping Chinese iron and steel smelters reduce CO₂ emissions. This represents an important initiative because iron and steel factories purportedly account for 35–40% of total CO₂ emissions in many major Chinese cities.¹⁰⁹

Carbon Capture and Sequestration

Carbon capture and sequestration (CCS) initiatives in both the United States and China are benefiting from government financial support.¹¹⁰ Given the complexity of developing commercially-viable, environmentally-benign CCS technologies, a collaborative development effort is warranted. This is not a technology that the world can afford to get wrong if it becomes commercialized. China is well down the road to piloting CCS technology and has already collaborated with Australian partners on domestic trial projects. Moreover, the Xian Thermal Power Research Institute has developed a system purportedly capable of recovering more than 85% of CO₂ emissions using equipment that has been entirely designed and manufactured in China.¹¹¹ In this field, US firms are arguably playing catch-up. Collaborations in this field could combine Chinese technology with American private sector finances and commercial know-how to nurture globally dominant CCS firms.

Built-Environment Energy Efficiency

The Chinese government has been aggressively elevating construction standards in China's built-environment sector. In December 1995, it passed a standard requiring that new buildings be 50% more energy-efficient by

¹⁰⁸ Ming Yang, 'Climate Change and Energy Policies, Coal and Coalmine Methane in China', pp. 2858–69.

¹⁰⁹ Shaojun Zeng, et al., 'Mitigation Paths for Chinese Iron and Steel Industry to Tackle Global Climate Change', *International Journal of Greenhouse Gas Control*, Vol. 3, No. 6 (2009), pp. 675–82.

¹¹⁰ *Ibid.*; José D. Figueroa, et al., 'Advances in CO₂ Capture Technology—The U.S. Department of Energy's Carbon Sequestration Program', *International Journal of Greenhouse Gas Control*, Vol. 2, No. 1 (2008), pp. 9–20.

¹¹¹ Shaojun Zeng, et al., 'Mitigation Paths for Chinese Iron and Steel Industry to Tackle Global Climate Change', pp. 675–82.

Table 1 Forecasted Growth in Installed Renewable Energy Capacity in China

	Actual Installed Capacity 2008 (MW)	Projected Installed Capacity 2020 (MW)	Increase (%)
Wind	12 200	30 000	146
Biomass	2880	30 000	942
Solar PV	140	1800	1186

Source: The Pew Charitable Trusts, *Who's Winning the Clean Energy Race?*.

2010 and 65% more efficient by 2020.¹¹² In the United States, similar initiatives are underway, financed both through national and state funded research programs. Sino-American collaborations afford preferred access to the world's two most lucrative markets, thereby providing enhanced economies of scale for global dominance in this sector.

Clean Energy Sector

There is significant government financial support of renewable energy in both the United States and China. In 2009, US dominance in renewable energy investment was eclipsed by another nation (China) for the first time in 5 years, with China purportedly investing a whopping US\$34.6 billion in renewable energy development, compared to the US\$18.6 billion invested in the United States.¹¹³ Unsurprisingly, the two nations boast world leadership in renewable energy capacity. As of 2009, installed renewable energy capacity in the United States amounted to 53.4 GW and in China to 52.5 GW. By comparison, Germany boasted the third highest capacity of 36.2 GW.¹¹⁴ China, however, is perched to become the dominant market for renewable energy development. In the past five years, US renewable energy capacity increased by 24.3% while capacity in China increased by 78.9%, and there are no signs of abatement in China's development pace. As [table 1](#) illustrates, huge increases in installed renewable energy capacity are expected over the next decade.

US firms boast competitive advantage in the venture finance and technology innovation segments of the renewable energy sector but, aside from GE, exhibit weaknesses in manufacturing. Conversely, Chinese firms enjoy manufacturing strengths (particularly in wind and solar PV) but lack the financial access and market development competencies necessary simultaneously to keep up with domestic demand and make inroads into overseas markets.¹¹⁵ In other words, Chinese manufacturing strengths complement US

¹¹² Zhongxiang Zhang, 'China in the Transition to a Low-Carbon Economy', pp. 6638–53.

¹¹³ The Pew Charitable Trusts, *Who's Winning the Clean Energy Race?*

¹¹⁴ *Ibid.*

¹¹⁵ *Ibid.*

manufacturing weakness, while American strengths complement the financial shortcomings that Chinese firms face.

Criteria for Guiding STOP-CC Support

It should be noted that in regard to each of the collaborative areas proposed, there are also opportunities to collaborate on projects that would make no contribution to GHG emission reductions. STOP-CC, however, would not support such initiatives; STOP-CC would support initiatives based on the premise that they are commercially profitable while also demonstrably reducing GHG emissions.

This nevertheless raises some interesting ideological questions regarding the operational criteria guiding STOP-CC activities. For example, should STOP-CC be involved in initiatives to help China build more fuel-efficient cars which will ultimately emit CO₂—albeit to a lesser extent than if business-as-usual trends continue? Similarly, what balance should be sought in regard to commercial profitability versus contribution to GHG reduction when STOP-CC officials are prioritizing collaborative ventures to support? Should a highly profitable advanced technology gas plant in Beijing receive more support from STOP-CC than a small community wind turbine in a rural Chinese province? This paper is not the proper medium for evaluating these complex operational issues. However, it should suffice to say that (i) some difficult choices will need to be made in determining which types of initiatives to support, yet (ii) regardless of the choices made, as long as the project contributes in some way to GHG emission reductions (compared to business-as-usual practice), the project should meet the basic STOP-CC support criteria. It is important to reiterate that STOP-CC is not intended to be the sole organization for driving climate change mitigation measures; it is a commercial trade support organization designed to elicit the ‘small wins’ necessary to contribute to GHG reductions in a manner which will also, one hopes, help to move the Sino-American friendship from a ‘superficial friendship’ to one of valued ‘friendship’.

Conclusion

It is notable that the opportunities outlined in the previous section are far from an exhaustive account of the potential opportunities for collaboration. The intent was to provide the reader with a cursory understanding of how core competencies of firms from developed nations (such as the United States) and developing nations (such as China) can be combined through commercial collaborations to enhance competitiveness. The underlying point is that despite inevitable challenges in regard to establishing a

STOP-CC, there are substantial economic benefits for supporting such an initiative.¹¹⁶

Critics of this approach might be tempted to point to policy evidence which suggests that regulation or outright prohibition is the most appropriate policy response to exigent environmental challenges that require substantial behavioural or technical change.¹¹⁷ Such criticism overlooks three very important points. First, climate change is a global commons problem and as such, the coercive power needed to regulate behaviour cannot be easily harnessed.¹¹⁸ The trials associated with UNFCCC negotiations attest to this. Second, regardless of whether or not GHG emission disincentives are applied, reductions in economically powerful nations will ultimately have to be achieved through technological substitution or efficiency improvements, both of which are facilitated through commercial initiatives. Third, the proposal to establish a STOP-CC does not preclude the implementation of disincentive programs (such as national regulations) or other broader agreements (such as the TYF or the KP). The STOP-CC represents a solution to a clear gap in efforts to encourage greater participation by the United States and China, given the constraints posed by their respective climate change policy perspectives. It works within the boundaries set by existing ideologies rather than attempting the more difficult task of trying to change ideologies.

In addition to economic opportunities, such an organization could serve as a model for similar collaborations. For example, similar agreements between the EU and India or Japan and Brazil could significantly enhance the pace at which global GHG emissions are reduced. Moreover, both the United States and China could pair with other nations to establish similar organizations. If not the United States, then perhaps Western Europe could slot in as a partner for China.¹¹⁹ If not China, then perhaps Brazil could fit the bill as a suitable partner for the United States.

A Sino-American collaboration, however, represents the best possible scenario because many firms from the two nations complement one another's needs, and Sino-American collaborations will have the largest impact on climate change mitigation (and global and economic stability). In an economic analysis, Buchner and Carraro agree, 'the climate regime that provides the highest economic incentives to the cooperating countries is

¹¹⁶ For further discussion of benefits, see R. S. Dimitrov, 'Inside UN Climate Change Negotiations', pp. 795–821; C. Hedegaard, 'Cancún Must Take us Towards a Global Climate Deal', pp. 175–79.

¹¹⁷ The following sources provide an overview of theory related to policy instrument design and efficacy: Marie-Louise Bemelmans-Videc, et al., *Carrots, Sticks, and Sermons: Policy Instruments and Their Evaluation* (London: Transaction Publishers, 2003); and Christopher Hood, *The Tools of Government* (Chatham: Chatham House, 1986).

¹¹⁸ Garrett Hardin, 'The Tragedy of the Commons', *Science*, Vol. 162 (1968), pp. 1243–48.

¹¹⁹ Jared C. Carbone et al., 'The Case for International Emission Trade in the Absence of Cooperative Climate Policy', pp. 266–80.

the one in which China and the United States cooperate bilaterally, with the Annex B countries remaining within the Kyoto Protocol.¹²⁰

Furthermore, a Sino-American collaboration of the type presented by STOP-CC represents a concrete initiative for advancing Sino-American relations from a 'superficial friendship' to a genuine 'friendship'. Given the importance to the global economy of encouraging improved ties between these two superpowers, this in itself is of sufficient justification to prioritize Sino-American collaboration.¹²¹ In the final analysis, a successful STOP-CC may not fully restore Sino-American relations to 'friendship' but it does represent one positive strategic initiative that contributes to the solution rather than exacerbating the problem.

In other words, in a globalized environment, the United States and China are not the only foes who could replicate the actions of the Wu and Yue, but they would be wise to do so. Ultimately, failure to transition to cleaner (more efficient) technologies will force laggard nations to play catch-up with pioneering nations that recognize that there are first-mover advantages associated with sought-after ground-breaking technologies.¹²² As the legend of the Wu and Yue demonstrate, crisis begets opportunity for foes to cooperate to mutual advantage, and in the process creates the conditions necessary for improving relations and establishing lasting friendship.

This brings us back to Yan's 'Friendship-Enmity' taxonomy, its applications and its limitations. As this paper has demonstrated, Yan's taxonomy has value as a diplomatic tool for guiding strategic efforts to alter relationships. The analysis presented in this paper suggests that Sino-American relations can be improved from a state of 'superficial friendship' to a state of 'friendship' simply by focusing diplomatic efforts on accentuating collaborative ventures that appeal to mutual-interests. This implies that it may be possible to 'force' change even upon relationships where, in aggregate, mutually unfavourable interests exceed mutually favourable interests by accentuating mutually beneficial collaborations and downplaying areas of potential conflict until suitable goodwill is built up through collaborative success. Therefore, the research presented in this paper advances Yan's taxonomy by providing an analysis which suggests that it can be used as a passive tool for evaluating bilateral relations and also as a strategic diplomatic tool for enhancing diplomatic relations.

This insight conflates well with the spectrum of conflict management theory from macro to micro levels. From a macro-level, the strategy

¹²⁰ Barbara Buchner and Carraro Carlo, 'US, China and the Economics of Climate Negotiations', pp. 63–89.

¹²¹ Yan Xuetong, 'The Instability of China-US Relations', pp. 263–92.

¹²² Scott Victor Valentine, 'Reframing Global Warming: Toward a Strategic National Planning Framework', in Lin Heng Lye, et al, eds., *Sustainability Matters: Environmental Management in Asia* (Singapore: World Scientific Publishing, 2010), pp. 1–32.

of focusing on accentuating mutual interests agrees with the top five perspectives on managing intractable conflict. The first – the realist perspective – emphasizes the need to find methods to minimize negative interactions and bolster a sense of harmony.¹²³ Accentuating mutual interests most certainly contributes to both goals. The second – the human relations perspective – identifies fear, distrust and misunderstanding as primary obstacles to constructive conflict resolution.¹²⁴ Accentuating mutual interests can reduce fear and mistrust, especially if formal processes are put in place to ensure that collaborations yield success stories. The third – the medical paradigm – sees conflict as a disease to be treated with ‘vaccine’ campaigns.¹²⁵ Accentuating mutual interests represents one way to build up resistance to relationship erosion stemming from conflict in other areas. This has been demonstrated most vividly in the case of Taiwan and China, where positive economic links between the two entities provide a degree of insulation from conflict that arises due to different political ideology. The fourth—the postmodern perspective—views conflict as arising from the subjective manner in which parties define and approach a situation.¹²⁶ In this respect, the choice to adopt a strategy of accentuating mutual interests instead of focusing on resolving points of ideological contention represents a valid strategy for conflict abatement. The fifth—the systems perspective—stresses the interdependent nature of elements that cause conflict between parties.¹²⁷ From this perspective, a strategy of accentuating mutual interests that focuses on strengthening commercial ties can have trickle-down effects on other elements (such as political relations), and in doing so, help alleviate conflict.

From a micro-level of conflict management, Stephen Covey’s concept of an ‘emotional bank account’ suggests that between individuals, positive relations can be strategically created by ensuring positive interactions exceed negative interactions and by adopting an ‘abundance mentality’ that strives to seek out mutual gain amid apparent conflict.¹²⁸ This is in accord with Higgins’ ‘promotion orientation’ discussed in section 5.¹²⁹ Essentially, Covey’s emotional bank account, which can be applied to nations, groups or individuals, provides the sociological justification for a strategy of accentuating mutual interests.

¹²³ Peter T. Coleman, *Intractable Conflict* (Hoboken: Jossey-Bass, 2006).

¹²⁴ Morton Deutsch, *The Resolution of Conflict: Constructive and Destructive Processes* (New Haven: Yale University Press, 1977).

¹²⁵ Michael Wessells and Carlinda Monteir, *Psychosocial Intervention and Post-war Reconstruction in Angola: Interweaving Western and Traditional Approaches* (Englewood Cliffs: Prentice-Hall Publishing, 2000).

¹²⁶ John Paul Lederach, *Building Peace: Sustainable Reconciliation in Divided Societies* (Washington, D.C.: US Institute of Peace, 1998).

¹²⁷ Peter T. Coleman, *Intractable Conflict*.

¹²⁸ Stephen R. Covey, *The 7 Habits of Highly Effective People* (New York: Simon and Shuster Inc., 1989).

¹²⁹ E. Tory Higgins, ‘Making a Good Decision’, pp. 1217–30.

Although Yan's 'Friendship-Enmity' taxonomy presents an intriguing ontological perspective on how to strategically enhance bilateral relationships, more work clearly needs to be done in establishing parameters for success. For example, it has been argued in this paper that a formal bilateral organization likely represents the most effective approach to harnessing mutual commercial interest, but this is an intuitive assertion that requires empirical validation should such an organization ever materialize. Moreover, this paper has focus on commercial collaborations, leaving unaddressed the question of whether or not such collaboration can be solely designed between government bodies.

In terms of limitations, the most significant question that would still need to be addressed is, can Yan's taxonomy be applied to nations that harbour deep enmity for one another and if so, can the process of moving the relationship from deep enmity to friendship be managed through the same basic strategic approach.

These lacunae that represent opportunities for further research in no way undermine the underlying message of this paper—that accentuating mutual interests while de-emphasizing areas of conflict constitutes a valid strategy for moving bilateral relations from positions of superficial friendship or outright enmity towards true friendship. This is not to say that conflicting interests should never be addressed; only that a strategy of first engendering a degree of goodwill through shared success goes a long way towards improving the receptiveness of parties in the face of contentious negotiations. This held true in the past in regard to relations between the Wu and the Yue and it holds true today in regard to Sino-American relations, in the context of climate change mitigation efforts.