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Negotiating a Low Carbon Transition in China:
Aligning Reforms and Incentives in the 12th Five Year Plan

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Abstract:

This paper analyzes the content and incentives for low carbon reforms in China's 11th and 12th Five Year Plans. The analysis finds that China adopted a progressive slate of command-control reforms in the 11th Five Year Plan and strengthened their implementation with performance-based compliance incentives. In the 12th Five Year Plan China appears likely to adopt a more varied set of command-control and *market-oriented* reforms that would benefit from a more varied set of national and *international* compliance incentives. The paper concludes that it is therefore in both China and the international community's interest to come to a mutually agreeable accommodation on the MRVing of unilateral NAMAs. Moreover, the paper suggests that provisions for international consultation and analysis (ICA) and fast track financing in the Copenhagen Accord could help advance climate negotiations at COP 16 and enable a low carbon transition in China.

Key Word: Low Carbon Development, Five Year Plans, Nationally Appropriate Mitigation Actions (NAMAs), International Consultation and Analysis (ICA)

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1. Introduction

Last year's 15th Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC) solidified China's status as a pivotal player in climate negotiations. But with growing recognition of China's ascendance came contrasting reviews of its negotiating positions. For some observers, China's voluntary pledge to reduce the carbon intensity of its emissions between 40-45% by 2020 was a welcomed step forward. For others, China's unwillingness to accept international measurement, reporting and verification (MRV) of unilateral nationally appropriate mitigation actions (NAMAs) was an unwelcomed step back (Broder and Kanter, 2009; Hood, 2009; Levi, 2009).[1]

This paper seeks to reconcile these contrasting views by analyzing the content and incentives for low carbon reforms in China's 11th and 12th Five Year Plan. The paper shows that China adopted a progressive slate of command-control reforms in the 11th Five Year Plan and strengthened their implementation with performance-based compliance incentives. In the 12th Five Year Plan China appears likely to adopt a more varied set of command-control and *market-oriented* reforms that would benefit from a more varied set of national and *international* compliance incentives. The paper concludes that it is therefore in both China and the international community's interest to come to a mutually agreeable accommodation on the MRVing of unilateral NAMAs. Moreover, the paper suggests that linking provisions for international consultation and analysis (ICA) to fast track financing (mentioned in the Copenhagen Accord) could help advance climate negotiations at COP 16 and enable a low carbon transition in China.

The paper is the latest in a series of publications on climate change policy in Asia developed by the Institute for Global Environmental Strategies (IGES).[2] The paper draws upon both recent literature and interviews IGES researchers conducted with 20 stakeholders on climate and energy policy in China during the fall of 2010. Interviews were organized around the questionnaire in Appendix 1; related issues were raised during the course of the discussions. Interviews were conducted in Chinese and English.

The paper proceeds as follows. The first section outlines key energy reforms and related compliance incentives during China's 11th five year plan. The second section examines likely energy reforms and potential compliance incentives for the 12th five year plan. The final section concludes with recommendations for aligning institutional incentives at the national and global level.

2. The 11th Five-Year Plan

Over the past five years, China has taken a series of high-profile steps on climate change consistent with leadership support for a "scientific development perspective" (科学发展观). These steps include the submissions of China's Initial National Communication (INC) to the UNFCCC in 2004 and the preparation of a second national communication due in 2012; they also include China's National Climate Change program (CNCCP) released in June 2007 and the White Paper on Climate Change released in 2008. Many of China's national level mitigation actions are listed in the INC, the CNCCP and the White Paper, yet arguably the most important actions were in its 11th Five-Year Plan (See Fei et al, 2009).

China's Five-Year Plans are comprehensive planning documents that provide overall guidance for economic growth, environment and resources, and public goods. Approved by China's chief legislative body, the National People's Congress (NPC), Five-Year Plans often contain specific goals but

[1] For instance, Broder and Kanter cite the remarks from the United States congressman Edward Markey, co-sponsor the American Clean Energy and Security Act of 2009, that "If China or any other country wants to be a full partner in global climate efforts that the country must commit to transparency and review of their emissions-cutting regime."

[2] Previous publications include *The Climate Regime Beyond 2012, Asian Aspirations for Climate Regime Beyond 2012, IGES Briefing Notes on the Post-2012 Climate Regime.* Previous publications can be downloaded at the IGES Enviroscope: http://enviroscope.iges.or.jp/modules/envirolib/index.php

rarely elaborate upon detailed implementing rules. Rather the implementing details are left to the State Council, relevant line ministries, and their subnational subordinates. Both the national plan itself and sector-specific programs have metrics for reporting and, in some case, verification that strengthen their implementation. For instance, the 11th Five-Year Plan sets 22 quantitative targets for economic growth, environment and resources, and public services.

In 2005, the National people's Congress approved its 11th Five-Year Plan (2006-2010). Near the end of the 10th Five Year Plan, the Chinese leadership had become increasingly concerned with the energy security implications of an abrupt change in growth trends. Since the start of China's reform era in the late 1970s, structural changes across the economy and efficiencies gains within industries led to steady improvements in energy efficiency. But by 2000, increased demand for energy-intensive exports and expanded production in heavy industries began to reverse these trends (Zhang, 2010). Concerns over the lost momentum resulted in an 11th Five-Year Plan that called for "push(ing) forward the optimization and upgrading industrial structure", "constructing a resource efficient and environmental friendly society" and a series of more concrete energy conservation targets.

In terms of the concrete targets, the 11th Five-Year Plan specified goals to increase the share of non-fossil fuel use for primary energy from 7.5% to 10% as well as corresponding jumps in hydro, wind, solar, biomass, and nuclear production capacity. The objective in the 11th Five-Year Plan that deservedly received the most attention was a reduction of 20% in energy use per unit of gross domestic product (GDP) between 2005 and 2010 (from 1.22 tonnes to 0.97 tonnes of coal per CNY 10,000 of GDP). The 20% goal "was the first time that a quantitative and binding target ha[d] been set for energy efficiency, and… [it would] translate into an annual reduction of over 1.5 billion tons of CO_2 by 2010, making the Chinese effort one of most significant carbon mitigation efforts in the world today" (Jiang et al, 2007).

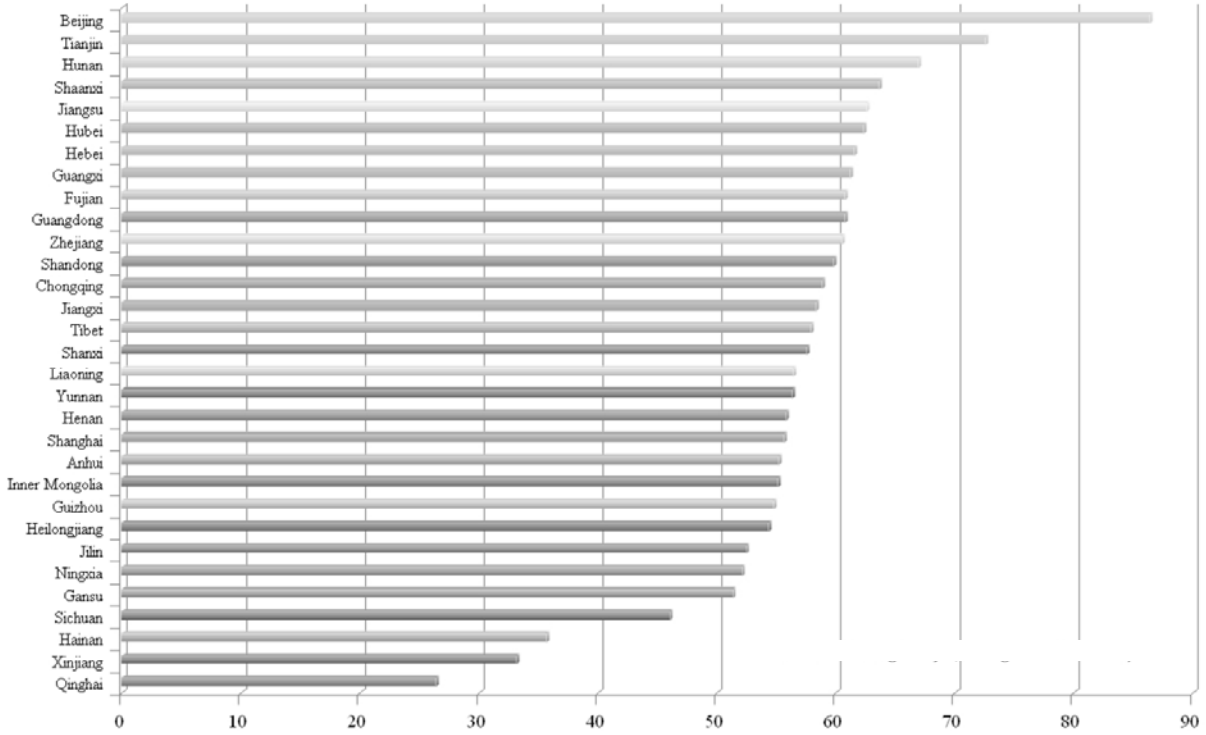
Table 1: China's Climate Related Targets in the 11th Five Year Plan

		Target	Current status
Energy saving		2010, per unit energy consumption reduced by 20% on the base of 2005	Up to 2009 reduced by 15.61%
Non-fossil fuel use		2010, non-fossil occupy the primary energy consumption reach at 10% which was 7.5% in 2005	Up to 2008 raised to 8.9%
	Hydropower installed capacity	2010, 190 million KW	2009, 196.79 million KW
	Wind power installed capacity	2010, 5 million KW	2009, 25.58 million KW
	Solar PV generation installed capacity	2010, 0.3 million KW	2008, 0.15million KW
	Biomass generation installed capacity	2010, 5.5 million KW	2008, 3.15million KW
	Yields from bio-ethanol	2010, 3.02 million tons	2008, 1.6 million tons
	Rural methane use	2010, 190 million cubic meter	2008, 120 million cubic meter
	Nuclear power capacity	2006-2010, constructing 12.44 million KW	Sep. 2010, constructing 27.73 KW
Forest coverage		Raise the rate from 18.2% in 2005 to 20% in 2010	end of 2008, 20.36%

Source: Li, 2010.

Above and beyond its magnitude, China's 20% energy intensity target was important for two reasons. The first is it offered a tangible goal against which to monitor and evaluate progress. This would become increasingly important as the national target was allocated to provincial governments and then became part of the criteria in China's leadership performance evaluation system. The evaluation system used a 100 point scale to rate how well provincial leaders performed in meeting energy efficiency targets (see Table 2). It also encouraged provincial governments to develop their own evaluation system for lower level city and county governments. The results of these evaluations would then be used to determine promotions, honorary titles, and other rewards at both the provincial and lower levels (Wang, 2009; APERC, 2009). Less than a decade ago the same performance system encouraged subnational leaders to pursue growth at all costs. Now it was being used to hold leaders accountable for limiting the externalities of that growth.

Figure 1: China's Energy Intensity Targets Up to 2008 by Province

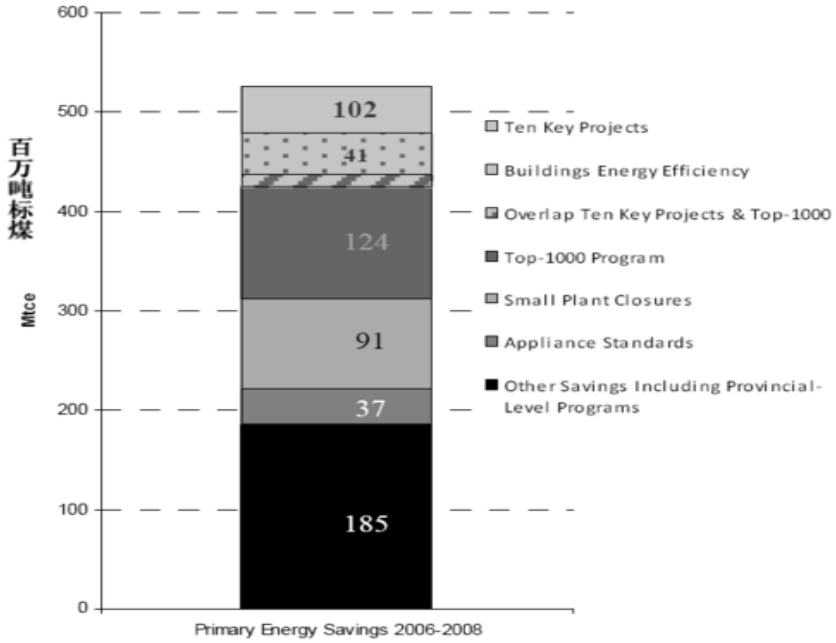


Source: Chandler and Wang, 2009

Note that Wang 2009 argues that the figures above suggests that many provinces will not reach their targets; the commentary neglects the fact that many of the improvements are for a two year rather than three year period because it took Chinese officials close to a year to agree on the allocation of targets.

The second reason the 20% target merited attention was the sector-specific programs adopted to support it, especially programs for energy-intensive industries. The industrial sector accounts for about 70% of China's total energy consumption. Hence policies and measures to support industrial emissions reductions such as the program to close small enterprises, the energy conservation power generation dispatch program, and the top 10 energy conservation projects were integral to the energy efficiency target. This applied most notably to the program that led to the greatest reductions in GHG emissions, the 1000 Energy-Consuming Enterprises Program (Top-1000 Program).

Figure 2. China's Energy Savings in the 11th Five Year Plan-Featuring the Top 1,000 Program



Source: Price et al., 2007

The Top-1000 Program was an initiative intended to improve efficiencies in large scale industries. The program allocated China's 1000 highest energy-consuming enterprises energy-saving targets. In line with these targets, selected enterprises were called upon to establish an energy conservation organization, energy efficiency goals, energy utilization reporting systems, energy conservation plan, energy conservation incentives, and energy efficiency improvement options. Further strengthening the 1,000 enterprise program was that participating entities were required to make quarterly energy consumption reports to the National Bureau of Statistics (NBS) and sign conservation agreements with local governments. Achievement of the energy-saving targets was also linked to the aforementioned performance evaluation system. As such, the program was embedded in a mutually reinforcing set of performance incentives that boosted compliance up and down the chain of command.

Table 2. Energy Efficiency Elements of China's Evaluation System for Provincial Leaders

Assessment Indicator	Points	Examination content	Scoring Standards
Energy Intensity Target	40	Reduction of Energy Consumption per 10,000 RMB of GDP	If the annual target is reached, 40 points will be allocated; if 90% of the target is reached, 36 points will be allocated; if 80% of the target is reached, 32 points will be allocated; if 70% of the target is reached, 28 points will be allocated; if 50% of the target is reached, 20 points will be allocated If the target is exceeded, then for every 10% above target, 3 additional points will be awarded This target takes precedence over the energy consumption targets below
Energy Savings Measures	2	The Energy Efficiency Work of Organizations and Officials	1. Establishing the region's energy intensity statistics, monitoring and evaluation system: 1 point 2. Establishing an energy-efficiency coordination mechanism, a clear division of responsibilities, and regular meetings to study the major issues: 1 point
	3	Allocation and Implementation of Energy Efficiency Target	1. Allocation of energy savings target: 1 point 2. Carrying out an investigation and evaluation of progress in achieving the energy savings target: 1 point 3. Regularly publishing energy consumption indicators: 1 point
	20	Adjusting and Optimizing the Condition of the Industrial Structure	1. If the service sector accounted for an increased proportion of the region's GDP: 4 points 2. If the high tech industry accounted for an increased portion of value-added production: 4 points 3. Developing and implementing energy efficient and review procedures for fixed asset investment projects: 4 points 4. Completing the year's goal of eliminating retrograde production capacity: 8 points
	10	Energy Savings Investment and Implementation of Key Projects	1. Establishing special funds for energy efficiency and sufficient implementation: 3 points 2. Increasing the proportion of fiscal revenue allocated for special energy efficiency funds: 4 points 3. Organizing and implementing key energy efficiency projects: 4 points
	9	The Development and Expansion of Key Enterprises and Industries	1. Including the energy efficient technologies in the annual and science technology plan: 2 points 2. Increasing the annual proportion of fiscal revenue spent on energy efficiency R & D: 3 points 3. Implementing energy efficient technology demonstration projects: 2 points 4. Organizing and developing mechanisms to promote energy-efficient products and technologies and energy efficient services: 3 points
	8	Managing the Energy Efficiency of Key Enterprises and Industries	1. If key energy-intensive enterprises (including the Top-1000 program) meet their annual energy intensity targets: 3 points 2. Implementing the annual energy saving monitoring plan: 1 point 3. Meeting the annual energy efficiency target rate of minimum energy efficiency in newly constructed buildings: 4 points if 80% of the target is achieved than 2 points; if less than 70% of the target is achieved then no points

Table 2. China's Performance Evaluation System (Continued)

Assessment Indicator	Points	Examination content	Scoring Standards
Energy Savings Measures	3	Implementing Laws and Regulations	1. Issuing and improving supporting regulations for the Energy Conservation Law: 1 point 2. Monitoring and enforcing the law with respect to energy efficiency: 1 point 3. Implementing standards that limit energy consumption for energy-intensive industries: 1 point
	5	Implementation of Basic Energy Efficiency Work	1. Strengthening energy-efficiency modeling teams and institutional capacity: 1 point 2. Improving the system for energy statistics and institutional capacity building: 1 point 3. Installing energy measuring devices in accordance with the market mechanisms: 1 point 4. Carrying out energy efficiency awareness and training: 1 point 5. Implementing the energy efficiency incentive system: 1 point

Source: Wang, 2009

There is still some discussion over whether China will meet the 11th Five-Year Plan goal, but there is no doubt it has made significant progress after an initially slow start in allocating the targets Some sources argue of energy efficiency and emission reduction will definitely be fulfilled by 2010. (Shanghai Stock News, 2010). This is also evident in general trends. Energy consumption per unit gross domestic product fell by 2.74% in 2006 and then dipped sharply in 5.04% in 2007 and 5.20% in 2008. The latest 2009 figures show a reduction summing to 15.61%. The reduction is supported by data suggesting that demonstrate from 2006 to 2009, China shut down 60.06 million kilowatts worth of small scale thermal power plants, eliminated 81.72 million tons of backward production facilities in the iron sector, 60.38 million tons in the steel sector, 2.14 hundreds million tons in the cement sector. Through 2010, the Chinese government investments in energy efficiency reached 90000 million RMB and reduced energy consuming to 100 million tons coal.

But even as China made progress toward the goals in its 11th Five Year Plan it also confronted several challenges. For instance, some of the interviewees for this project noted that local level leaders pursued their energy intensity targets with too much enthusiasm. [3] In the case of Hebei and Jiangsu provinces, for instance, heightened pressure to reach the goals led to energy being cut off from residential users in a series of rolling blackouts. In the cases of Zhejiang province, industries were forced to ration their power and alter production schedules to keep up with pressures to conserve energy (Interview File 1, 2010). These examples suggest a clear determination to achieve delegated targets, especially when linked to a performance evaluation system; however it also demonstrates the power of incentives. For what were primarily command-control programs, compliance incentives structured around China's performance evaluation system were clearly effective (in some cases too much so). This raises the question of whether China would be able to get the incentives right in the 12th five year plan as the nature of its energy reforms begins to change.

3. The 12th Five-Year Plan

There were important parallels between the events accompanying the 11th and the 12th Five-Year Plan. For instance, there is currently discussion over a

[3] Chinese Premier Wen Jiabao recently ramped up pressure on carbon-intensive factories to meet the targets with shut down orders and production reduction targets for small coal-fired plants, iron smelting plants, steel production and cement production.

"Law of Addressing Climate Change" suggesting leadership support for proactive steps on climate change. This discussion has been accompanied by efforts to improve a national GHG inventories and creating a statistical system capable of measuring emissions at different levels and within industrial sectors. Yet perhaps the most significant parallel between the 11th and 12th Five-Year Plan is the emphasis on changing the energy structure and improving energy efficiency.

As mentioned at in the introduction, in the lead up to the COP 15 Hu Jintao announced that China would reduce its carbon intensity by 40-45% by 2020 off a 2005 base year. This goal has since been submitted to the UNFCCC, making China one of the over 100 parties listed in the chapeau of the Copenhagen Accord. Though there are still debates on how this goal will be broken down up in the years between now and 2020, interviews for this project suggest the likely goal will vary from 15% to 25% improvements in carbon intensity over the 12th Five Year Plan. This is supported by news that National Development and Reform Commission (NDRC) recently approved a development plan for energy (2011-2020) and national energy development plan of 12th Five-Year Plan that is now being considered by China's State Council. What is further known is that the 12th Five-Year Plan period China would set the target for energy consumption per unit GDP to be reduced 17.3% (in the 13th Five Year Plan the figure would be 16.6%). This would be accompanied by reductions in the percentage of coal use as a proportion of primary energy from the 70% to 62% and a greater reliance on hydro-power (to reach 380 million KW by 2020), nuclear power (to reach 80 million KW by 2020), as well as wind, solar, and biomass (to collectively reach 200 million KW by 2020). (Qin, 2010)

Yet there are also important differences that are likely to become more apparent in the transition to 12th Five Year Plan. Among these differences is a more focused effort to reduce fast growing emissions at the individual household and consumer level.[4] In August 2010, the NDRC issued "The notice to establish and develop low-carbon pilot provinces and cities."[5] The notice clarified China would set up low-carbon models in five provinces (Guangdong, Liaoning, Hubei, Shanxi, Yunnan) and eight cities (Tianjin, Chongqing, Shenzhen, Xiamen, Hangzhou, Nanchang, Guiyang and Baoding). Each province/cities was then called upon to implement plans based on different regional characteristics. For instance, Guangdong province released a series of targets and tasks compatible with its energy structure. Other participating governments have been requested to submit implementation plans that accelerate low carbon industries, establish GHG emission data systems, and advocate low carbon lifestyles and consumption patterns.

Though the low carbon city pilot project has been launched in Guangdong and other pilot provinces and cities are working on implementation plans, many challenges remain. First, there is lack of standards for low carbon development (though the NBS is working on a monitoring system for carbon emissions, low carbon technology, and industrial standards). This will become increasingly important as governments move from low carbon concept to sector specific actions. Second, since pilot regions have different geographic features, development levels and industrial structures, programs will need to be tailored to regional circumstances. In this connection, a lack of planning experience and administrative capacity at the local level may hinder progress. Third, since many of the emissions at the urban level are in the transportation and infrastructure sectors, both standards and monitoring protocols will have to accommodate a wider range of smaller emissions sources. Again sufficient administrative capacity may be at issue as emissions sources become more diffuse.

Another critical difference from the 11th Five Year Plan is China is the consideration of market-driven mechanisms to help reach the new targets. The decision to introduce a trading program was made at a meeting hosted by the NDRC in 2010 (though

[4] Some of these programs had already begun at the end of the 11th five year plan.

[5] China has also begun experimenting with low carbon buildings and low carbon transportation systems.

China's has piloted emissions trading programs for SO_2 at the city and regional level). The proposed system would begin as a pilot on a selected industry such as coal-fired power generation or a defined area such as the coal-dependent Northeast (some of the more developed regions would consider total emission control which was equivalent to a cap). By relying on the market clearing prices rather than administrative dictate, a carbon pricing scheme would be a potentially cost savings departure from current efforts to cut emissions and raise energy efficiency with command-control targets negotiated between the central and regional government (Li, 2010; Carbonpositive, 2010).

But emissions trading also present a series of challenges. First, there will be a need to build system for creating, allocating, and enforcing emissions permits. The design of the supporting infrastructure can be an easily overlooked element of a trading program but it will figure prominently into its effectiveness. Second, carbon intensity target will have to be converted to carbon-related allowances for trading. This will also require some difficult calculations and likely result in hard fought negotiations with participating sources, especially when the current system has focused more on command-control measures. Third, there must be a large enough number of participants with varying abatement costs to ensure the purchase and trading of emissions. The lack of sources and demand hampered China's piloting of SO_2 emissions trading program over the last decade (Interview File 10, 2010). Finally, there are still significant differences between the parties on how to handle these issues. The difficulties of finding an acceptable compromise could delay program roll out, which could undermine faith in the program.

A final area where there may be a departure from the current set of command-control regulations is a carbon tax. As part of the 12th Five Year Plan, China may start levying a carbon tax and further boost prices of fossil fuel for the next five years to cut GHG emissions. The recommended approach is to begin with a levy at $1.45 per tonne of CO_2 emitted, rising incrementally to between $7.30 a ton and $59 per ton by 2020. A portion of the revenue would then be funneled back into energy-saving investments and local governments for their own low carbon initiatives (Young, 2010). The tax reforms may also include concessions for vulnerable industries.

Yet the carbon tax too appears likely to encounter challenges. These include that the tax must be set at a low level enough to be politically acceptable but raised high enough to induce changes in behavior. Second, the tax will need to target the source rather than the symptom of emissions. On this point, some have argued for a tax that aims to abate emissions at the energy source such as the power plant while others have sought to introduce the tax further upstream on the resources themselves—for instance, a resource tax is currently being piloted on fossil fuels in Xinjiang (Interview File 1, 2010). Finally, the tax will have to be accommodated to a regulatory framework that could include command-control regulations on large industrial sources, low carbon pilots in select cities and provinces, and emissions trading programs at the source or regional level. The sheer number of programs presents a non-trivial coordination problem.

This final challenge is worth highlighting because it applies to not only carbon taxes, but the list of options being considered for the 12th Five Year Plan. To a certain extent, the variety of approaches is necessary in view of heightened expectations for steeper reductions. But to a certain extent, they converge on one central difficulty—namely that the diversity in approaches and sources will make it difficult to align existing institutional incentives with emerging low carbon reforms. Fortunately, this paper will argue that developments at the international level may help strengthen this alignment. Transitioning from the "visible hand" of the government to the invisible hand of the market will not be easy; but it may be feasible with support from the international community.

4. The Way Forward

The decade between 2010 and 2020 will be critical

juncture for China. Decisions on industrialization, urbanization and consumption patterns will influence energy consumption for years to come. Some studies have shown that it may be possible for to follow a low carbon path that diverges sharply from business-as-usual (BAU) projections over this period. The most optimistic of these studies sketches an enhanced low carbon (ELC) scenario that entails emissions rising through 2030 and then dropping sharply thereafter. Driving this scenario are the following: 1) new technology development, expanded dissemination of low cost technologies, and lost reduction in existing technologies; 2) research and development and capital investment to support LCS; 3) advanced energy diversification; 4) significant dissemination of clean coal technology and CCS; and 5) enhanced international cooperation (Jiang et al, 2009; Asuka, Li and Lu, 2010).

While it is clear that the first four elements of this scenario will be crucial to China's low carbon transition, the remainder of the paper focuses on international cooperation. At last year's COP 15 negotiations, there was a general sense that negotiations had not moved far enough in defining key terms in the Bali Action Plan. The brevity and ambiguity in the Copenhagen Accord on issues such as NAMAs and MRV contributed to this impression. But when looked at a little more deeply, Copenhagen might have gone further than suggested upon first glance.

To understand the progress it is important to highlight that many of the issues confronting China in its 12th Five Year Plan fall into the category of compliance incentives for low carbon reforms. It is further noteworthy that many of the programs that China is contemplating for the 12th five year plan will not be compatible with the current performance evaluation systems. As China's low carbon strategies move to more diffuse sources and market-oriented mechanisms, it will need to develop more precise measures of emissions and rely on economic forces to drive reductions. As such, it may help to have externally driven market to both standardize MRV and finance investments needed to achieve an enhanced low carbon scenario.

This leads to the potential opening for progress in the Copenhagen Accord. The Copenhagen Accord states that non-Annex Parties will take unilateral NAMAs that will be MRVed according to domestic rules with provisions for ICA. The definition of ICA has since become a stumbling block in negotiations with much of discussion focusing on whether the actual GHG emissions or the process behind calculating them are subject to ICA (Interview File 7, 2010). Yet it may be possible to link those discussions to provisions of fast track financing with the more rigorous ICA attached to concessions on financing (for instance, agreeing to certain portion of fast track financing to come from public funds). This will arguably be a difficult negotiation but one that could build confidence for other issues. It is further important to highlight that for many parties in the China it could also strengthen incentives for what promises to be a more varied regulatory landscape over the next decade. Further, it may be easier for the leadership to negotiate those incentives at the international level than with an increasingly varied set of domestic stakeholders.

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Appendix 1: Interview Questions

Energy Policies and Measures

1. What is the implementation status of China's energy efficiency/renewable energy targets in the 11.5 plan? Which government agencies monitor and evaluate progress toward achieving those targets? What is the process through which these agencies monitor and evaluate progress?

2. Which actions and policy measures in the 12.5 plan will be most important to achieving China's 45% carbon-intensity target? Which government agencies are involved in developing those key actions? What is the process through which those actions are developed?

3. What is the status of China's 1,000 enterprise program? What are the key challenges to implementing the 1,000 enterprise program? How can those challenges be overcome?

4. What is the status of China's pilot low carbon cities program? What are the key challenges to implementing the pilot cities program? How can those challenges be overcome?

5. What is the status of China's pilot emissions trading programs/carbon taxes? What are the key challenges to implementing emissions trading programs/carbon taxes? How can those challenges be overcome?

NAMA MRV

1. Which existing institutional arrangements, incentive structures and data systems could support MRVing of NAMAs (including GHG inventories and NATCOM)? Which arrangements, structures and systems will need to be developed?

2. Might information sharing between central and local governments be a barrier to developing/ implementing NAMAs? Might it be a barrier to MRVing NAMAs? Might information sharing across line ministries/ agencies be a barrier to developing/ implementing NAMAs? Might it be a barrier to MRVing NAMAs?

3. Could international support help overcome barriers to the development of NAMAs? Could international support help overcome barriers to MRVing of NAMAs? Could "international consultation and analysis" help overcome barriers to the MRVing of NAMAs?

4. What are the key challenges to using a new market mechanism such as credited NAMAs to finance low carbon energy resources and technologies? How can those challenges be overcome? What are the key challenges to MRV at the policy, programmatic or sectoral level in the energy sector? How can those challenges be overcome?

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