

Measurement, Reporting & Verification of Chinese Mitigation Commitments

Qiuyan Zhao¹

Contents

Acronyms	2
I. Introduction	3
II. China's Position on MRV	4
III. China's Emerging Regulatory Framework for MRV	7
IV. The Progress and Challenges of China's MRV	11
A. The MRV System of SO ₂ and COD Emissions	
B. The MRV System of Energy Intensity	
V. Public Disclosure	20
A. Legislation on public disclosure of Environmental Information	
B. Law Enforcement related to public disclosure of Environmental Information	
VI. Conclusion	24

¹ Qiuyan Zhao, associate professor of School of Economics and Business Administration of Beijing Normal University, visiting scholar (2009-2010) at Columbia University School of Law, Center for Climate Change Law. This paper is supported by the project (10AFX012) "A Study on China's Legislative issues for Addressing Climate Change" of China's Social Science Foundation and by the International Program "Excellent Young Teachers" of China Scholarship Council, Ministry of Education, P.R.C.
The author would like to express her highly appreciation to Professor Michael B. Gerrard, Professor Yanfang Li, Hannah Chang, Travis Annatoyn, Yefan Liu, Xinlin Li and Angela Chung for their valuable comments on earlier drafts of this paper.

WORKING PAPER,
Please submit comments on this draft
to qz2155@columbia.edu

COLUMBIA LAW SCHOOL
CENTER FOR CLIMATE CHANGE LAW

Acronyms

ALRC Association of Local Railroads of China

CAAC Civil Aviation Administration of China

CCTAD China Coal Trade and Development Association

CEC China Electricity Council

CO₂ Carbon dioxide

COD Chemical oxygen demand

EPA Environmental Protection Agency

GHGs Greenhouse gases

MOC Ministry of Commerce

MEP Ministry of Environmental Protection

MOF Ministry of Finance

MOR Ministry of Railways

MRV Measurement, Reporting & Verification

NAMAs Nationally Appropriate Mitigation Actions

NEA National Energy Administration of NDRC

NBS National Bureau of Statistics

NDRC National Development and Reform Commission

SEPA State Environmental Protection Agency (currently MEP)

SO₂ Sulfur dioxide

UNFCCC United Nations Framework Convention on Climate Change

I. Introduction

China produces close to a quarter of the world's global greenhouse gases (GHGs) emissions. China's participation is thus indispensable to any international strategy on climate change. Indeed, China has pledged that by 2020 it will reduce its carbon intensity by 40 to 45 percent over a 2005 baseline.² Notably, the Bali Action Plan requires that any nationally appropriate mitigation actions (NAMAs) be "measurable, reportable and verifiable" (MRV).³ How China implements the MRV is therefore crucial.

This paper discusses China's new transparency pledge—MRV as it relates to Chinese mitigation commitments—as laid out in the non-legal binding agreement reached at the United Nations Climate Change Conference in Copenhagen on December 18, 2009. Specifically, this paper compares China's position on MRV with relevant mechanisms and requirements under the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol, the Bali Action Plan, and the Copenhagen Accord. Furthermore, this paper seeks to answer several questions pertinent to the progress and challenges of China's MRV regime: Are China's GHGs emissions measured continuously? Are there review mechanisms to ensure quality control of the data and analyses? What information is made available to the public? This paper then develops some preliminary insight for decision-makers on the potential role of the MRV in policy design, structure of regulations and system of

² 'China announces targets on carbon dioxide emission cuts', <http://www.ccchina.gov.cn/en/NewsInfo.asp?NewsId=22218>.

³ Bali Action Plan, Decision 1/CP.13 (Dec. 14-15, 2007), 1(b)(i)-(ii), in COP Report No. 13, Addendum, at 3, UN Doc. FCCC/CP/2007/6/Add.1 (reissued Mar. 14, 2008).

responsibility.

II. China's Position on MRV

China has formulated and implemented a series of strong policies to that end.⁴ In particular, the Implementation of the Bali Roadmap—China's Position on the Copenhagen Climate Change Conference (hereinafter referred to as "Implementation of the Bali Roadmap")—was issued by Chinese Government on May 25, 2009.⁵ The Implementation of the Bali Roadmap expounded China's position for the upcoming Copenhagen Conference, demonstrated China's willingness and determination to promote positive results out of the Conference, and declared China's position and principles with regard to MRV.

The UNFCCC sets up the principles of "Common but differentiated responsibilities and respective capabilities"⁶ and establishes a MRV framework requiring parties to develop, periodically update, publish and make MRV information available to the public through national communications.⁷ The international community generally views the UNFCCC as the basis of MRV. The implementation of the Bali Roadmap stresses that the Copenhagen Conference should adhere to the

⁴ These measures include Initial National Communications on Climate Change (October, 2004), National Assessment Report of Climate Change (December, 2006), National Climate Change Programme (June, 2007), China's Scientific & Technological Actions on Climate Change (June, 2007), China's Energy Conditions and Policies (December, 2007), China's Policies and Actions for Addressing Climate Change" (October, 2008), Implementation of the Bali Roadmap--China's Position on the Copenhagen Climate Change Conference" (May, 2009), Resolution of the Standing Committee of the National People's Congress on Making Active Responses to Climate Change (August, 2009) and China's Policies and Actions for Addressing Climate Change(November, 2009).

⁵ Implementation of the Bali Roadmap: China's Position on the Copenhagen Climate Change Conference, May 20, 2009, <http://www.china-un.ch/eng/bjzl/t564324.htm>.

⁶ United Nations Framework Convention on Climate Change, May 9, 1992, 1771 U.N.T.S. 107, <http://unfccc.int/resource/docs/convkp/conveng.pdf>

⁷ United Nations Framework Convention on Climate Change, art 4 & 12.

framework of the UNFCCC, its Kyoto Protocol and the Bali Action Plan.

Building upon UNFCCC principles, the Kyoto Protocol points out that transparency is a core value of MRV, and further mandates that nations report the sources of GHGs emissions—and the removal of GHGs emissions by sinks—in a transparent and verifiable manner. The Protocol also requires separate reviews for the actions taken by Annex-I parties and non-Annex I parties during the 2008—2012 commitment period.⁸ In accordance with the Guidelines for the Preparation of Initial National Communications by Parties Not Included in Annex I to the Convention, China has completed the Initial National Communication on Climate Change in 2004,⁹ and is currently working on the Second National Communication.

Article III of the Implementation of the Bali Roadmap also endorses the Bali Action Plan's elaboration on MRV requirements.¹⁰ Both not only impose MRV requirements for NAMAs undertaken by developed nations, but also extend that requirement to include some NAMAs in developing nations. NAMAs in developing nations are subject to MRV requirements only where the relevant action is supported and enabled by technology, financing and capacity-building from developed nations, and where that assistance is subject to MRV.¹¹ China has actively implemented MRV

⁸ Kyoto Protocol to the United Nations Framework Convention on Climate Change, art. 3.3, Dec. 11, 1997, 37 I.L.M. 22, available at <http://unfccc.int/resource/docs/convkp/kpeng.pdf>.

⁹ This report (covering calendar year 1994) covers essentially all dimensions of China's position with respect to climate change, and specifically describes China's national greenhouse gas inventory; the impacts of climate change and adaptation; policies and measures related to climate change mitigation; research and systematic observation related to climate change; education, training and public awareness; and the need for funds, technologies and capacity building. See Initial National Communication on Climate Change of the People's Republic of China, foreword.

¹⁰ The Implementation of the Bali Roadmap, art III, a & b

¹¹ Bali Action Plan to the United Nations Framework Convention on Climate Change, *supra* note 3, 1(b)(i)–(ii). Implementation of the Bali Roadmap, *supra* note 5, art. III. §§ 2(a)–(b)

for sustainable development and has already made a significant progress in the NAMAs of energy conservation and emission reduction aspects.¹²

Hoping to improve international cooperation on climate, including implementation of MRV, the Copenhagen Accord provides the international community with detailed conditions for MRV and introduces the concept of a standardized “international MRV” for the first time. According to the Copenhagen Accord, and unlike the Bali Action Plan, *any* NAMAs will be subject to MRV. In particular, any NAMAs supported by developed nations should, under the Copenhagen Accord, be conducted in accordance with international MRV.¹³ The key difference between China’s position and the Copenhagen Accord centers on this expansion of the MRV requirement.

Many observers have debated the whether Copenhagen’s international MRV is an appropriate and effective way to improve transparency and enhance international trust. Some scholars suggest that China would rather adhere to voluntary emission reductions only, not going to accept the MRV by developed countries.¹⁴ Other experts argue that it is essential and feasible accepting sort of MRV system notwithstanding concerns about state sovereignty.¹⁵ Whatever the differences between the Copenhagen Accord and China’s previously stated position, China should continue to embrace MRV as an indispensable tool in the fight against climate change. With that principle in mind, China should place less emphasis on the precise

¹² Bali Roadmap: What is China going to do-Director of the office of National Leading Committee on Climate Change is at “ People In the News”, <http://www.ccchina.gov.cn/WebSite/CCChina/UpFile/File236.pdf>.

¹³ Conference of the Parties Fifteenth Session, Copenhagen, Copenhagen Accord, 5, U.N. Doc. FCCC/CP/2009/L.7 (Dec. 18, 2009), http://unfccc.int/files/meetings/cop_15/application/pdf/cop15_cph_auv.pdf.

¹⁴ Tan Yangfang, ‘Competition in Copenhagen’, Marxism Research, 2010(2).

¹⁵ Yan Shuangwu, Xiao Lanlan, ‘Evolution of China’s Position in International Climate Talks’, Contemporary Asia-Pacific Studies, 2010 (1).

wording of the Copenhagen Accord, and more emphasis on the specifics of its own MRV regime.

III. China's Emerging Regulatory Framework for MRV

Beyond the Implementation of the Bali Roadmap, China's Government Work Report¹⁶ (2007) requires the Government at all levels to set up the indicators system, monitoring system, and assessment system for energy conservation and emission reduction, and to fully implement an accountability system.¹⁷ Furthermore, the 11th Five-year Plan¹⁸ for Environmental Protection (for the years 2006-2010) emphasizes the "use of market-based energy saving mechanism in order to reduce the GHGs emissions . . . and to enhance the monitoring and statistic analysis on the emissions of GHGs".¹⁹ Most importantly, China has explicitly declared that its goal is to establish an MRV regime amongst the best in the world.²⁰

On the issue of climate change more broadly, China has already established

¹⁶ Wen Jiabao, Premier of the State Council, Report of the Work of the Government, Delivered at the Fifth Session of the Tenth National People's Congress (Mar. 5, 2007), http://www.gov.cn/english/official/2007-03/16/content_552995.htm. The Government Work Report reviews the prior year and previews the next with respect to the nation's deficit; loans; employment; property market; income distribution; agriculture; education; science; technology; social safety net; healthcare; and national defense.

¹⁷ *Id.*

¹⁸ China's Five-year Plan, approved by the National People's Congress, normally contains detailed economic and social development guidelines for all the nation's regions. According to the Plan, the State Council's ministries and commissions are responsible for issuing Five-year Plans for their respective areas of expertise. Relevant examples include the Five-year Plan for Environmental Protection and the Five-year Plan for Energy Development.

¹⁹ The 11th Five-year Plan for Environmental Protection (2006-2010), worked out by the State Environmental Protection Agency (SEPA) and National Development and Reform Commission (NDRC), and approved by the State Council on Nov 22 2007, art 3.2, Nov 22, 2007. The mission of the MEP (formally the State Environmental Protection Agency) is to prevent and control environmental pollution, safeguard public health and environmental safety. The NDRC is a very influential department with jurisdiction over planning and approving key construction projects.

²⁰ The Interim Measures for Emission Reduction of Major Pollutants of Central Government Special Funds, art 4.2.2, Ministry of Finance (MOF), May 11, 2007. The mission of MOF is to manage the overall national finances through the administration in the interests of the people as taxpayers, and promote the sustainable growth of the economy. More detailed information is available at the official website: <http://www.mof.gov.cn/>

several pertinent legal regulations,²¹ and will take a further step with the proposed amendment to the Law on Prevention and Control of Atmospheric Pollution. The Amendment was examined and approved by the Ministry of Environmental Protection (MEP) on December 30, 2009, and will be reported to Standing Committee of the National People's Congress to consider after further revision.²² Despite several articles specifically relating to climate change, however, the proposed amendment has little to say about MRV.

Conversely, the "Environmental Monitoring and Management Regulations (Draft)" has much to say about MRV-related issues. After examination and approval by the MEP, the Draft was submitted to the State Council for consideration on November 26, 2009. The Draft includes seven chapters: (1) the institutional management of environmental monitoring; (2) the legal effect of environmental monitoring data; (3) the appraisal system of the environmental quality; (4) environmental monitoring agencies; (5) social monitoring organizations; (6) technician management of environmental monitoring; and (7) management and

²¹ Relevant laws include the "Environmental Protection Law;" "Marine Environmental Protection Law;" "Energy Conservation Law;" "Renewable Energy Law;" "Cleaner Production Promotion Law;" "Environmental Impact Assessment Law;" "Circular Economy Promotion Law;" "Forest Law;" "Grassland Law;" and "Water Law." China is also developing an "Energy Law" and is modifying "Law on Prevention and Control of Atmospheric Pollution." There is, however, no law specializing in MRV of GHG emissions.

²² The Amendments, with a total of eight chapters and 132 articles, include basic principles of prevention and control of atmospheric pollution; atmospheric pollution control measures; pollution incident and emergency handling; liability of atmospheric pollution; and supplementary provisions. Across the Amendments, atmospheric pollution control measures fall into five separate parts: general provisions; industrial atmospheric pollution; transportation atmospheric pollution; urban and regional atmospheric pollution; ozone layer protection and addressing climate change. *See* The Law on the Prevention and Control of Atmospheric Pollution was examined and approved by MEP, China Environment News, December 30, 2009.

sharing mechanism of monitoring data".²³ As the chapter titles indicate, the Draft would be an important component of a Chinese MRV regime. While the draft does not explicitly mention GHGs, it may reach those emissions under the Draft definition of "ambient air." The effect of the Draft may ultimately be limited, however, because—as an administrative rule—it carries less force than laws and administrative regulations.²⁴

As is well-known, GHGs emissions from oil, coal, natural gas and mineral resource combustion is the leading cause of global warming. Cutting down on energy consumption is, beyond a doubt, one of the major strategic measures. With an incumbent responsibility to respond to global warming, China has stated that during the 11th Five-year Plan period (2006-2010), China will reduce per unit GDP energy consumption by twenty percent and reduce emissions of major pollutants by ten percent.²⁵ From these goals emerged the "Circular of the State Council on Approving and Forwarding the Plan and Measures for Implementing the Statistics, Monitoring and Assessment of Energy Conservation and Pollution Reduction" (hereinafter

²³ 'MEP approved the Environmental Monitoring and Management Regulations (Draft) and Regulations on Environmental Safety Assessment of import and export of Environmentally-friendly Microbial Agent (draft)', China Environment News, November 27, 2009.

²⁴ Generally speaking, the Chinese legal system includes [THE CONSTITUTION], [STATUTES], administrative regulations, administrative rules and local laws. [STATUTES] are [CREATED] by the National People's Congress and its Standing Committee and are preempted only by the [CONSTITUTION]. Administrative regulations are enacted by the State Council, and administrative rules are enacted by the ministries and commissions under the State Council. The National People's Congress and its Standing Committee have the power to annul the administrative regulations and rules that contradict [the Constitution] and [laws]. Local laws and regulations are created by the people's congresses of provinces, municipalities, autonomous areas and cities. To be valid, local laws and regulations must not be preempted by [THE CONSTITUTION], [LAWS], [REGULATIONS].

²⁵ The 11th Five-year Plan(2006-2010).

referred to as “Three Systems”).²⁶ Three Systems was released by the State Council on November 17, 2007 and points out a guideline for implementing MRV in energy conservation and pollution reduction including:

- *Measures for the Statistics of Reduction of Total Emissions of Major Pollutant*

(Hereinafter referred to as “Statistics Measures”)

Statistics Measures are formulated in order to ensure accuracy, timeliness and reliability of statistical data of the Sulfur dioxide (SO₂) and the Chemical oxygen demand (COD) Emissions.

- *Measures for the Monitoring of Reduction of Total Emissions of Major Pollutant*

(Hereinafter referred to as “Monitoring Measures”)

Monitoring Measures aim to accurately assess the SO₂ and COD Emissions from a pollution source.

- *Measures for the Assessment of Reduction of Total Emissions of Major Pollutant*

(Hereinafter referred to as “Assessment Measures”)

Assessment Measures apply to assessment the performance of total emissions reduction of the SO₂ and COD

Emissions by government at all levels

- *Schemes for the Statistics of Per Unit GDP Energy Consumption*

(Hereinafter referred to as “Statistics Schemes”)

Statistics Schemes aim to establish and improve energy statistical survey system from both the energy supply

and energy consumption aspects

- *Schemes for the Monitoring of Per Unit GDP Energy Consumption*

²⁶ It made by the NDRC, the National Bureau of Statistics (NBS), and the SEPA in conjunction with the relevant departments, such as the National Energy Administration of the NDRC (NEA), [No.15 Document of the State Council (2007)]. As an agency directly under the State Council, the NBS is in charge of statistics and economic accounting in China. More detailed information is available at the official website: <http://www.stats.gov.cn/english/>. The NEA launched in 2008, is a department of NDRC and carries the routine work of the National Energy Commission (NEC). On January 22, 2010, the State Council announced the establishment of the NEC, led by Premier Wen Jiabao, it consisted of 23 commission members representing 19 agencies. The NEC determines national energy development strategy and coordinates major programs of domestic energy development and global cooperation. The ‘Circular of the General Office of the State Council on the establishment of the National Energy Commission’, the State Council, 2010

(Hereinafter referred to as “Monitoring Schemes”)

Monitoring Schemes highlight how to conduct comprehensive monitoring the data quality of energy consumption indicators, and assessment the data quality of energy consumption

- *Schemes for the Assessment of Per Unit GDP Energy Consumption*

(Hereinafter referred to as “Assessment Schemes”)

Assessment Schemes set up the target and responsibility of assessment system for energy conservation

As the foundation for Chinese MRV, Three Systems has achieved progress. However, the 11th Five-year Plan neither establishes targets for cuts in GHGs emissions, nor covers relevant indicators of those cuts (such as carbon intensity). Without such guidelines, three Systems have not been effective at providing accurate, direct indicators of GHGs. Statistics Measures, Monitoring Measures, and Assessment Measures, for instance, cover SO₂ and COD, but not GHGs emissions. Statistics Schemes, Monitoring Schemes, and Assessment Schemes aim for energy intensity instead of carbon intensity. New MRV legislation related to GHGs emissions is imperative to correct these loopholes for this purpose.

IV. The Progress and Challenges of China’s MRV

This section provides an overview of how MRV operates in practice under existing regulations. In particular, it examines Three Systems from multiple perspectives as a means of highlighting the progress and perils of China’s MRV. It then gives a general overview of the European Union and United States versions of MRV.

A. The MRV System of SO₂ and COD Emissions

Under the Statistics Measures, the MRV of SO₂ and COD emissions are based upon the total emissions of pollutants from industrial sources and residential sources. The monitoring itself consists of automatic monitoring of a pollutant source and the supervisory monitoring of a pollutant source (including manual monitoring and laboratory comparison monitoring). This monitoring serves mainly to control the types, concentrations and volumes of pollutants emitted by a pollutant source.

Generally speaking, the competent authority for environmental protection *at the county level* is responsible for the monitoring SO₂ and COD emissions, and the competent authority for environmental protection *at the provincial level* is responsible for verification of the monitoring. More specifically, key state-monitored pollution sources²⁷ are actually monitored by the authorities at the municipal (or prefecture) level, and the verified at the provincial level. Special key state-monitored pollution sources, meanwhile, are monitoring by the authorities at provincial level and verified by the State Council.²⁸ Table 1, 2 and 3 show the detailed measurement, reporting and verification regimes of SO₂ and COD emissions respectively.

Table 1: Measurement of SO₂ and COD emissions²⁹

measurement subject	measurement method	measurement frequency
pollutant discharging unit	automatic monitoring devices	continuously
	qualified monitoring entity ³⁰	

²⁷ “Key state-monitored pollution sources” refers to industrial pollution sources and city sewage treatment plants under state monitoring. Together these sources account for more than 65% of the national industrial emission load of major pollutants

²⁸ “Special key state-monitored pollution sources” refers to a thermal power plants with an installed capacity of more than 300,000 kilowatts.

²⁹ Monitoring Measures , art 2,3,4 & 5

³⁰ The monitoring data shall be provided by a qualified monitoring entity if a pollution source lacks automatic monitoring devices.

	as per the methods for environmental statistics ³¹	
key state-monitored pollution source	automatic monitoring devices	
special key state-monitored pollution sources	automatic monitoring devices	

Table 2: Reporting of SO₂ and COD emissions³²

reporter	report to	reporting frequency
pollutant discharging unit	to the competent authority for environmental protection of the government at the county level	monthly
key state-monitored pollution source	to the competent authority for environmental protection of the government at municipal (or prefecture) level	
special key state-monitored pollution sources	to the competent authority for environmental protection of the government at provincial level	

Table 3: Verification of SO₂ and COD emissions³³

measurement method	verification subject/method/ frequency	
	the competent authority for environmental protection of the government at provincial level	the competent authority for environmental protection of the State Council
qualified monitoring entity	regularly conduct the manual verification (at least quarterly for key state-monitored pollution source)	irregularly spot-check
as per the methods for environmental statistics		
automatic monitoring devices	internet-linked real time transmission quarterly conduct laboratory comparison verification	

Table 4 shows actual reductions of SO₂ and COD emissions in the 11th Five-year Plan period, and the target cuts for 2010.

Table 4: Reduction of SO₂ and COD emissions (2005-2010)³⁴

pollutant /Yr.	2005	2006	2007	2008	2009	2010 (target)
SO ₂	0	+1.8%	3.2%	5.95%	13.14%	10%

³¹ The emissions shall be calculated as per the methods for environmental statistics if a pollution source where the automatic monitoring devices can not be installed or the monitoring conditions are not ready

³² Monitoring Measures, art 4, 5 & 6.

³³ Monitoring Measures, art 7.

³⁴ Source comes from NBS "Statistics Bulletin of the National Economic and Social Development of the People's Republic of China" (2005, 2006, 2007, 2008 & 2009)

Decrease (%) (million tons)	25.494	25.944	24.681	23.212	22.14.4	22.944
COD decrease (%) (million tons)	0 14.142	+1.2% ³⁵ 14.313	2.3% 13.818	4.42% 13.207	9.66% 12.775	10% 12.728

Although these emissions reductions represent a significant drop in SO₂ and COD, they say nothing about reductions in other GHGs, such as CO₂, methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆).³⁶ The disparity highlights a weakness in Three Systems. A new MRV system should at least cover these six kinds of GHGs emissions throughout China.

Additionally, China should accelerate the use of pilot projects to measure GHGs emissions outside SO₂ and COD. Where conditions permit, the competent authority for environmental protection should actively monitor CO₂ and other GHGs emissions as required by the Key Work Point for Environment (2010).³⁷ Pilot units already in place include thirty-one GHGs monitoring positions and four GHGs regional representative stations: Wuyishan station of Fujian, Changdao station of Shandong, plateau station of Qinghai, Hulun Buir station of Inter Mongolia. The latter three stations are responsible for monitoring CO₂, CH₄ and N₂O. The stations monitor emissions automatically and continuously, and the data quality will comply with

³⁵ As used in these tables, the figure “+” refers to an increase in emissions.

³⁶ Reductions in SO₂ and COD emissions also contribute to reductions in GHG emissions. As used here, however that the term “emissions reduction” refers to the reduction of the six kinds of GHG emissions listed in the Kyoto Protocol. China “Initial National Communication on Climate Change” (reporting year 1994) listed three kinds of GHG: CO₂, CH₄ and N₂O emissions. With The Second National Communication (for the year 2005), China is likely to report on these six gasses.

³⁷ The Key Work Point for Environment 2010, MEP, art 2.5.

“Automated Monitoring technical specification for Ambient Air Quality

(HJ/T193-2005) ”.³⁸

B. The MRV System of Energy Intensity

Through efforts in recent years, China has achieved significant progress in energy conservation. The resulting decrease in GHGs emissions equals 800 million tons of CO₂.³⁹ The Statistics Schemes and the Monitoring Schemes establish the MRV corresponding to the intensity of energy supply and energy consumption. The content, scope, method and frequency of energy production statistics, energy circulation statistics, and energy consumption statistics appear in Tables 5, 6, and 7, respectively.

Table 5: Energy Production Statistics⁴⁰

Statistics	industrial enterprises below the scale
survey content	coal production, sales volume, inventory; power generating capacity
survey scope	scale below coal producers and power-generating enterprises
survey frequency	quarterly, effective since the second half of 2007
survey method	NBS is in charge of organizing a full investigation

Table 6: Energy Circulation Statistics⁴¹

statistics	survey content	survey scope	survey frequency	survey method
coal	sub-regional coal sales volume	all coal production and circulation enterprises	quarterly, implemented since the Annual Report of 2007	CCTAD ⁴² is in charge of organizing a full investigation

³⁸ These stations are located in Beijing, Shanghai, Tianjin, Chongqing, Shijiazhuang, Zhengzhou, Jinan, Nanjing, Urumqi, Shenyang, Changchun, Haerbin, Yinchuan, Huhhot, Guangzhou, Kunming, Chengdu, Lhasa, Wuhan, Hefei, Nanchang, Hangzhou, Fuzhou, Taiyuan, Changsha, Xian, Xinning, Guiyang, Nanjing and Haikou. See National Environment Monitoring Plan 2010, section 2, art 17.

³⁹ Li Yanqiu, Wenjia Bao, ‘China Emission Reduction, Promises must be kept and action must be resolute’, The Morning News, December 19, 2009.

⁴⁰ Statistics Schemes, art II.

⁴¹ Statistics Schemes, arte III.

⁴² “CCTAD” refer to China Coal Trade and Development Association. The CCTAD is an entity dedicated to serving China’s coal industries and to conducting scientific research.

crude oil		in accordance with relevant indicators of existing customs statistics and industrial enterprises in energy statistics report			
refined oil	wholesale	purchased, purchased from outside the province, sales volume, and out-of-province sales, sales to wholesale and retail enterprises, inventory	wholesale enterprises	quarterly, implemented since the Annual Report of 2007	NBS is in charge of organizing a full investigation
	retailing	sales volume and inventory	retailing enterprise		
natural gas		the natural gas management agencies of the three major oil companies provide volumes of inter-provincial gas inflow and outflow			
electricity		CEC ⁴³ provides the volume of inter-provincial electricity transmission and distribution			
other energy sources		washing coal, coke, other coking products, liquefied petroleum gas, refinery gas, other petroleum products, liquefied natural gas products, calculate from relevant indicators of existing customs statistics and industrial enterprises in energy statistics report			

Table 7: Energy Consumption Statistics⁴⁴

statistics		survey content	survey scope	survey frequency	survey method
industrial		coal, coke, natural gas, gasoline, diesel, fuel oil, electricity and etc	below scale and individual enterprises ⁴⁵	quarterly, implemented since Annual Report of 2007	NBS is in charge of organizing sampling survey
agriculture		coal, gasoline, diesel, fuel oil, electricity	legal persons	annual report, implemented since Annual Report of 2007	NBS in charge of key-point investigation
construction industry		through full investigation to be taken by census year, and the projection method when it is non-census year			
tertiary industry	catering	coal, gas, natural gas, liquefied petroleum gas,	above-limit ⁴⁶	quarterly, implemented since Annual	NBS is responsible for a full survey
			below-limit		key-point survey

⁴³ “CEC” refers to China Electricity Council. The CEC is a consolidated, non-profit organization of all China’s power enterprises and institutions.

⁴⁴ Statistics Schemes, art V.

⁴⁵ Improve the existing statistical survey system of energy purchase, consumption, inventory, processing in the above scale industrial enterprises and establish the statistical survey system of energy consumption in below scale enterprise and individual industrial enterprises. These enterprises consume about 10% of all industrial energy and have relatively lower technology and older equipment and consume more energy. The investigating of their energy consumption is significant for guiding the elimination of low production capacity and reflecting the results of energy-saving emission reduction.

⁴⁶ “Above-limit catering enterprises” refers to catering enterprises with more than forty employees and an annual turnover of two million or more Yuan.

		electricity		Report of 2007	
	transportation	coal, coal gas, gasoline, kerosene, diesel, fuel oil, natural gas, liquefied petroleum gas, electricity	railway, aviation, pipeline transport	quarterly, implemented since annual report of 2007	MOR, ⁴⁷ ALRC, ⁴⁸ the CAAC, ⁴⁹ and three major oil pipeline transport sector organizations are responsible for a full investigation
		gasoline, diesel, and fuel oil etc	roads, water transport and ports		NBS is responsible for a full survey to key professional transport companies and port, and a typical investigation to individual
	others	electricity consumption of other sectors of tertiary sector accounts for about 90% of the energy consumption in all tertiary industry, CEC is responsible for documents for accounting through improving electricity consumption statistics			
civil		coal, gasoline, diesel oil, city gas, natural gas, liquefied petroleum gas, electricity and etc	urban residents	quarterly, implemented since Annual Report of 2007	NBS is responsible for sample survey
			rural residents		
main building		Ministry of Construction in conjunction with NBS will take charge of setting up of the corresponding statistical system applying for restaurants, hotels, commercial buildings, office buildings, offices, schools, hospitals and other units of large buildings.			
energy efficiency		unit production energy consumption and unit portfolio energy consumption			
new energy and renewable energy statistical rules		statistical rules of some kind of energy except nuclear power, hydropower is not sound			

⁴⁷ “MOR” refers to Ministry of Railways. The MOR is responsible for the planning, administrative management, and international cooperation related to railways.

⁴⁸ “ALRC” refers to the Association of Local Railroads of China. The ALRC is responsible for railway consultation research project, training program.

⁴⁹ “CAAC” refers to the Civil Aviation Administration of China. The CAAC is responsible for the regulations, administrative management, market development, and international cooperation related to civil aviation.

The Monitoring Schemes assesses quality of data of energy consumption and nationwide energy efficiency by establishing statistical indicators of energy consumption. More information is in Tables 8 and 9.

Table 8: Monitoring the Progress of Energy Efficiency⁵⁰

monitoring object	monitoring indicators
various regions of the country	Per Unit GDP energy consumption, per unit industrial added value energy consumption, Per Unit GDP power consumption and reduction rate; unit product energy consumption, output and its growth rate of key energy-consuming etc
major energy-consuming industries ⁵¹	unit value added energy consumption, unit product energy consumption
key energy-consuming enterprises ⁵²	unit energy consumption, energy conversion efficiency, energy-saving investments
recycling utilization of resources and ten key energy-saving construction program	resource recycling indicators energy saving of ten key energy-saving program

Table 9: Monitoring Data Quality of Energy Consumption and its Reducing Rate of Regional Per Unit GDP⁵³

monitoring object	monitoring indicators
GDP	regional total GDP reverse indicator for the testing the normal of total GDP
	indicators related to the regional GDP growth rate for testing the normal growth rate of current prices GDP
	indicators related to added value of the tertiary industry for testing the normal of tertiary industry
total energy consumption	Electricity consumption accounts for the proportion of final energy consumption
	Energy consumption of above scale industry accounts
	Conversion efficiency of thermal power, heating, coal washing, coal products processing, oil refining, coking, gas and other processing
	Growth rate of energy consumption of the third industries and growth rate of industrial added value
	the main product output, unit product energy consumption

Under the 11th Five-year Plan, China pledged to cut energy consumption per unit of GDP by twenty percent by 2010 compared with 2005 levels. Table 10 shows

⁵⁰ Monitoring Schemes, art II

⁵¹ “Major energy-consuming industries” refers to the coal, steel, nonferrous metals, building materials, petroleum, chemical, thermal power, paper making, and textile industries.

⁵² “Key energy-consuming enterprises” refers to energy-consuming enterprises that consume more than 10,000 tons of standard coal per year.

⁵³ Monitoring Schemes, art III.

China's energy consumption and energy intensity for the years between 2005 and 2010. According to the NBS, China's per unit GDP energy consumption had, by 2009, fallen only 14.38 percent from the 2005 level.⁵⁴ Further efforts are needed to cut emissions and conserve energy to meet the country's target. That is certainly a tough task, but a worthwhile one.

Table 10: Energy Consumption and Energy Intensity (2005-2010)⁵⁵

indicator/Yr		2005	2006	2007	2008	2009
total energy consumption		9.5%	9.3%	7.8%	4.0%	6.3%
increase (%)		2.22	2.46	2.65	2.85	3.1
(billion tons standard coal)						
energy consumption increase (%)	coal (billion tons)	10.6%	9.6%	7.9%	3.0%	9.2%
		2.14	2.37	2.58	2.74	30.2
	crude oil (billion tons)	2.1%	7.1%	6.3%	5.1%	7.1%
		0.3	0.32	0.34	0.36	0.38
	natural gas (billion cubic meter)	20.6%	19.9%	19.9%	10.1%	9.1%
		50	55.6	67.3	80.7	88.7
	electricity ⁵⁶ (billion kwh)	13.4%	5.0%	14.1%	5.6%	6.2%
		401	416.7	3263.2	3450.2	3697.3
		3.7%	2.4%			
		52.3	54.3			
steel (billion tons)	20.1%	17.2%	17.4%	4.2%	22.4%	
	0.3	0.45	0.52	0.54	0.69	
refined copper (million tons)	21.7% ⁵⁷	-4.0%	13.0%	6.9%	39.7%	
	15.61	3.72	3.99	5.38	7.53	
electrolytic aluminum (million tons)		32.1%	27.6%	4.3%	14.4%	
		8.65	11.12	12.60	14.39	
ethylene (million tons)		23.9%	11.4%	-2.9%	8.0%	
		9.39	10.48	9.98	10.66	
cement (billion tons)	9.0%	14.5%	10.5%	3.5%	17.0%	
	1.05	1.2	1.33	1.37	1.63	
Energy intensity: decrease (%)	NA	1.23%	3.66%	4.59%	2.2%	
(ton standard coal)	1.43	1.21	1.16	1.102	NA	

⁵⁴ the Statistics Bulletin of the National Economic and Social Development of the People's Republic of China, 2009.

⁵⁵ Source comes from NBS "Statistics Bulletin of the National Economic and Social Development of the People's Republic of China" (2005, 2006, 2007, 2008 & 2009).

⁵⁶ Hydropower and nuclear power indicators are reported as of 2005 and 2006.

⁵⁷ The alumina indicator is reported as of f 2005.

V. Public Disclosure

China's disclosure of MRV-related information can be generally described from both an enforcement aspect.

A. Legislation on public disclosure of Environmental Information

While China's legislation on this point has become perfected gradually, full publication of data on the conditions, content and form of GHGs requires new legislation.

The Regulation on the Disclosure of Government Information (2008) was formulated to ensure legal access to government information by citizens, legal person, and other organizations.⁵⁸ Specially, this regulation stresses the disclosure of environmental information as one of eleven key disclosures.⁵⁹ In this case, "Environmental Information" refers to government environmental information and enterprise environmental information.⁶⁰

The Measures on Open Environmental Information (for Trial Implementation) (2008) aim to maintain the rights and interests of citizens, legal persons, and other organizations to obtain environmental information and promote the public's

⁵⁸ The regulation was adopted at the 165th executive meeting of the State Council on January 17th, 2007 and come into force as of May 1st, 2008

⁵⁹ These eleven key disclosures are: (1) Administrative regulations, rules, and regulatory documents; (2) Plans for national economic and social development, plans for specific projects, plans for regional development and related policies; (3) Statistical information on national economic and social development; (4) Reports on financial budgets and final accounts; (5) Items subject to an administrative fee and the legal basis and standards therefore; (6) Catalogues of the government's centralized procurement projects, their standards and their implementation; (7) Matters subject to administrative licensing and their legal bases, conditions, quantities, procedures and deadlines and catalogues of all the materials that need to be submitted when applying for the administrative licensing, and the handling thereof; (8) Information on the approval and implementation of major construction projects; (9) Policies and measures on such matters as poverty assistance, education, medical care, social security and job creation and their actual implementation; (10) Emergency plans for, early warning information concerning, and counter measures against sudden public events; (11) Information on the supervision and inspection of environmental protection, public health, safe production, food and drugs, and product quality. *See* the Regulation on the Disclosure of Government Information, art 10.

⁶⁰ "Government environmental information" refers here to information made or obtained by environmental protection departments in the course of exercising their environmental protection responsibilities and that is recorded and stored in a given form. "Enterprise environmental information" refers to information related to the environmental impacts of enterprises and that is recorded and stored by those enterprises. . *See* the Measures on Open Environmental Information (for Trial Implementation), art. 2.

involvement in environmental protection.⁶¹ Generally speaking, Citizens, legal persons and other organizations may request government environmental information from environmental protection departments, although disclosure requires approval in certain cases.⁶²

The scope, forms, procedures and seventeen aspects⁶³ of disclosure related to MEP's information was defined by the Guideline on the Disclosure of MEP's Information released by the MEP following those regulations on May 7, 2008. Furthermore, the MEP is currently developing Rules on information disclosure of public Enterprises and Institutions related to Environmental Protection.

The Draft Guideline on Environmental Information Disclosure of Listed Companies was issued on September 14, 2010. This guideline regulates these companies that listed on the A share market in Shanghai Stock Exchange and Shenzhen Stock Exchange, and requires them to make information public regularly and temporarily. Particularly, heavy polluted industries⁶⁴ should disclose environmental information regularly and publish annual environmental reports. Interim environmental report should be released when environmental emergencies happen. Other listed companies in the industry refer to disclose environmental information in this guide.

According to the Three Systems, the assessment information of energy intensity and the reduction of SO₂ and COD emissions are potentially open to the public after

⁶¹ The measures were adopted by the State Environmental Protection Administration of China on February 8, 2007, and became effective on May 1, 2008.

⁶² The Measures on Open Environmental Information (for Trial Implementation), art 5 & 9.

⁶³ These seventeen aspects of environmental information are: (1) laws and regulations; (2) environmental plans; (3) environmental quality; (4) statistics and surveys; (5) emergent environmental incidents; (6) major pollutants and pollutant discharging licenses; (7) solid waste in large and middle cities; (8) environmental impact statements; (9) charges for disposing pollutants; (10) charging item; (11) public complaint and petitions; (12) the implementation of the administrative penalties; (12) administrative reconsideration, administrative proceedings, and compulsory administrative measures; (13) enterprises list of over proof emissions of major pollutants; (14) enterprises list of environmental incidents and the administrative penalties for non-execution; (15) approval results; (16) organizations, responsibility and contact information; (17) others. *See* the Guideline on the Disclosure of MEP's Information, art 2

⁶⁴ These heavy polluted industries refer to thermal power, steel, cement, electrolytic aluminum, coal, metallurgy, chemical, petrochemical, building materials, paper making, brewing, pharmaceutical, fermentation, textile, leather and mining. The Draft Guideline on Environmental Information Disclosure of Listed Companies art 15.1.

examination and approval by the NBS and the SEPA.⁶⁵ In addition, the annual performance reports on fulfillment for targets and measures of energy conservation and emissions reduction are issued to public by the NDRC and the MEP after verification by the State Council.⁶⁶ The rewards and punishments are carried out in accordance with the assessment results.

In the past, information related to reductions in the emissions of major pollutants, and to gains in energy intensity, has been disclosed by means of government websites, press conferences, as well as through newspapers and other mass-media.⁶⁷

B. Law Enforcement related to public disclosure of Environmental Information

China has enforced its requirements for information disclosure, but must do more to ensure full transparency.

The Annual Report on disclosure of Government Environmental information in 2009 show that the MEP's performance was generally active in 2009.⁶⁸ Firstly, the MEP made 885 instances of government information and 4, 758 instances of other information to the public. Those numbers represented an increase of 21% over the number of disclosures in 2008. Secondly, MEP's website is visited, on average, 130 million times per month, with 17 million page views over the same time-frame.

⁶⁵ The Circular of the State Council on Approving and Forwarding the Plan and Measures for Implementing the Statistics, Monitoring and Assessment of Energy Conservation and Pollution Reduction, art 2

⁶⁶ The Assessment Measures, art VIII, and the Assessment Schemes, art III, (B)

⁶⁷ Relevant examples include MEP official website available at www.mep.gov.cn and <http://english.mep.gov.cn/>, China Environmental News available at <http://www.cenews.com.cn/>, MEP Communiqué available at <http://www.mep.gov.cn/zxbd/rdzl/xxgk/hbbgb/index.htm>, the Announcement on the First National Census on Pollution Sources (February 6, 2010) available at http://www.mep.gov.cn/gkml/hbb/bgg/201002/t20100210_185698.htm?, the Performance Assessment Report on energy conservation and emission reduction in 2009" (June 21, 2010) available at http://www.sdpc.gov.cn/zcfb/zcfbgg/2010gg/t20100624_356266.htm

⁶⁸ The Annual Report on disclosure of Government Environmental information, 2009

Thirdly, the MEP received 72 requests for information and responded to 71 one of those requests, with the final request pending. Fourthly, the MEP reviewed 9 administrative reexaminations of government environmental information including 6 related to the MEP and 3 related to local government. No lawsuits and appeals associated with it occurred in the whole year. Finally, the MEP conducted 181 consultations with individuals, including 3 in person, 130 over telephone and 48 online. The Annual Report points out the next steps would include expanding the scope of information disclosure, establishing local legal systems on government environmental information, and guiding the work on information disclosure of local government.

Conversely, we would have to take a rather dim view of the performance of the local authorities for environmental protection and enterprises.

A “Pollution Information Transparency Index” (PITI index) was jointly developed by the Institute for Public and Environmental Affairs (IPE) and the Natural Resources Defense Council (NRDC).⁶⁹ Through quantitative and qualitative analysis, the agencies conducted a preliminary evaluation of the availability of supervisory information from 113 cities in 2008.⁷⁰ The average score is just over 30. Only 4 cities received scores of 60 or greater and 32 cities received scores of less than 20.⁷¹

⁶⁹This case was listed one of the Top Ten Environmental Events in 2009. *See* Chen Hongwei, China Economic Times Choose 2009 Top Ten Environmental Events, China Economic Times, December 31, 2009

⁷⁰ The study utilized eight indicators including: (1) when cities exceeded the daily pollution limit, illegal record information publicity (28 points) ; information disclosure of control of pollution points resources(8 points); information disclosure of approval of clean production(8 points); information disclosure of overall evaluation of

A second, more detailed report was issued in June, 2010. This report provides seven findings and four suggestions relating to the availability of environmental information in China. According to the report, China has achieved significant progress in environmental information disclosure, and has proved that such disclosure is feasible. Disclosure, however, remains in a nascent stage: private enterprises often prohibit disclosure by claiming that environmental data is a “business secret,” some cities with high emissions intensity are insufficiently open to the public, and the report links both problems with insufficient disclosure of environmental information. The report thus suggests that China create an information sharing platform, improve the quality of information disclosure, amend “the Measures on Open Environmental Information (for Trial Implementation)”, and establish a Pollutant Emission Release and Registration System.⁷²

VI. Conclusion

The Government Working Report (2010) points out that China is willing, in the service of sustainable development, to craft industrial systems and consumption patterns with low-carbon emissions.⁷³ Both China’s governments and its business community have paid increasing attention to balancing social economic growth with

environmental practices by enterprises (8 points); information disclosure of the complaint letters, petition and its disposition on environmental issues or environment pollution by enterprises (18 points); information disclosure of the cases accepted of environmental impact assessment documents on construction project and the acceptance results of construction project for environmental protection(8 points); information disclosure of charges for disposing pollutants (4 points); Pursuant to apply for a public situation(18 points). These cities are mostly in China's eastern, central and western regions and include 110 national key environmental protection cities such as Harbin, Jinan, Shijiazhuang, Changsha, Guangzhou, Chengdu and Urumqi. *See* PITI, *supra* note 70, at 10-15.

⁷¹ This assessment is scored on a scale of 100 points. More than sixty percent of the of the score is based on regulations, and the rest are based primarily on the needs of the public advocacy groups. *See* PITI, *supra* note 70, at 10.

⁷² PITI, *supra* note 70, at 6.

⁷³ Government Work Report, art. 2.2, Mar 5, 2010.

adaptation to climate change. Although China has already provided a rich set of such policies, many of those policies are new or only now reaching implementation.

Looking forward, three measures will ensure that MRV in China continues upon an even keel.

The first and the most important measure is consideration of MRV in the 12th Five-year Plan (2011-2015). As part of that Plan, I believe that China will unveil new economic and industrial policies to tackle climate change, including GHGs emissions targets as part of the country's development roadmap. These policies would present a perfect opportunity to shift debate away from how China's MRV fits within the UNFCCC, and towards the design of a domestic MRV regime.

Secondly, China needs to expand legislative efforts and to improve the system of responsibility for law enforcement to address MRV. The Resolution of the Standing Committee of the National People's Congress on Making Active Responses to Climate Change indicates that stronger climate change legislation will be incorporated into the country's legislative agenda.⁷⁴ To that end, a MRV-related amendment would be extremely useful. Such an amendment would include: (1) expanding the existing treatment of SO₂ and COD emissions to GHGs emission; (2) deploying the automatically and continuously monitoring devices and stations of GHGs emissions; (3) improving environmental information disclosure by building a sharing information system and further mandating the enterprise environmental information disclosure. China should tighten supervision over law enforcement and promote the exercise of administrative functions according to law.

⁷⁴ Resolution of the Standing Committee of the National People's Congress on Making Active Responses to Climate Change, art 4, August 27, 2009.

Finally, to further impel development and perfection of MRV system with Chinese characteristics, referring to the advanced experience of other countries in legislation and enhancing international cooperation is also crucial. The European Parliament and of the Council establishes guidelines for the monitoring and reporting of greenhouse gas emissions by a series of directives including 2007/589/EC,⁷⁵ 2009/73/EC,⁷⁶ and 2009/339/EC.⁷⁷ U.S.' MRV system is developing involving in the Greenhouse Gas Reporting Rules (2009),⁷⁸ Greenhouse Gas Reporting Rules Amendments and Source Additions (2010),⁷⁹ and Guidance on Reporting Options for Sections 311 and 312 and Some Interpretations (2010).⁸⁰

⁷⁵ This directive highlights legislative requirement, understood principles, explanation of requirements, standard forms and guidance, approved monitoring methodology, tier system, quality control and assurance, proportional checks and inspections and verification of reported data and attaches 18 Annex :Annex I: Definitions; Principles; Monitoring (calculation and measurement options); Uncertainty requirements; Reporting; Retention (of information); Control and Verification; Reference emission factors; Biomass; Activity-specific data/factors; Reporting format; Reporting categories; Small emitters, Annexes II-XI: Sector specific guidelines, Annex XII: Guidelines for CEMS, Annex XIII: Nitrous oxide (N₂O), Annexes XIV & XV: Aviation, Annexes XVI-XVIII: Carbon capture and storage (CCS). *See* Commission Decision of 18 July 2007 establishing guidelines for the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council, 2007/589/EC

⁷⁶ Commission Decision of 17 December 2008, amending Decision 2007/589/EC as regards the inclusion of monitoring and reporting guidelines for emissions of nitrous oxide, 2009/73/EC

⁷⁷ Commission Decision of 16 April 2009, amending Decision 2007/589/EC as regards the inclusion of monitoring and reporting guidelines for emissions and tonne-kilometre data from aviation activities, 2009/339/EC

⁷⁸ Greenhouse Gas Reporting Rules, Environmental Protection Agency (EPA), September 22, 2009

⁷⁹ EPA proposed four rules to make amendments and additions to the Greenhouse Gas Reporting Rule on March 22, 2010. These rules will have a 60-day public comment period after their publication date in the Federal Register and are expected to be finalized in September 2010. These four new rules are: (1) Subpart A - General Provisions: Corporate Parent/NAICS Amendments, Proposed Rule: Prepublication Preamble and Rule; (2) Subpart W - Petroleum and Natural Gas Systems, Proposed Rule: Prepublication Preamble and Rule; (3) Subpart RR - Carbon Dioxide Injection and Geologic Sequestration, Proposed Rule: Prepublication Preamble and Rule; (4) Subparts I, L, DD, OOb, and SS - Electronics Manufacturing, Fluorinated Gas Production, Imports and Exports of Equipment Pre-charged with Fluorinated GHGs or Containing Fluorinated GHGs in Closed-Cell Foams, Use of Electric Transmission and Distribution Equipment, Manufacture of Electric Transmission and Distribution Equipment

⁸⁰ EPA provided draft guidance in the preamble to the June 8, 1998 proposed rule (63 FR 31268) to streamline the reporting requirements for facilities under sections 311 and 312 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), EPA 500-F-1001, June 2010.