

This electronic thesis or dissertation has been downloaded from the King's Research Portal at <https://kclpure.kcl.ac.uk/portal/>



FROM ENERGY DIPLOMACY TO GLOBAL GOVERNANCE?
A CASE STUDY ON CHINA'S ENERGY SECURITY IN THE 21ST CENTURY

Yu, Ka Ho

Awarding institution:
King's College London

The copyright of this thesis rests with the author and no quotation from it or information derived from it may be published without proper acknowledgement.

END USER LICENCE AGREEMENT



Unless another licence is stated on the immediately following page this work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International licence. <https://creativecommons.org/licenses/by-nc-nd/4.0/>

You are free to copy, distribute and transmit the work

Under the following conditions:

- Attribution: You must attribute the work in the manner specified by the author (but not in any way that suggests that they endorse you or your use of the work).
- Non Commercial: You may not use this work for commercial purposes.
- No Derivative Works - You may not alter, transform, or build upon this work.

Any of these conditions can be waived if you receive permission from the author. Your fair dealings and other rights are in no way affected by the above.

Take down policy

If you believe that this document breaches copyright please contact librarypure@kcl.ac.uk providing details, and we will remove access to the work immediately and investigate your claim.

**FROM ENERGY DIPLOMACY TO GLOBAL
GOVERNANCE? A CASE STUDY ON CHINA'S
ENERGY SECURITY IN THE 21ST CENTURY**

Ka Ho YU / 0954768

Ph.D. in International Political Economy

**A thesis submitted to the Department of European and International
Studies of King's College London, United Kingdom, December 2015**

Abstract

This thesis explores whether China's energy security in the era of Hu Jintao underwent a policy paradigm transition from going-out energy diplomacy to global energy governance. Following China's rapid economic growth, energy security has become a big concern for the country and international cooperation is considered as a strategy to enhance it. In order to promote international energy cooperation and investment, in the late 1990s China adopted its going-out energy diplomacy strategy, which relied on bilateralism. On the other hand, in its two Energy Policy White Papers in 2007 and 2012, China emphasised global energy governance based on multilateralism as a means of maintaining a stable world energy market. While both academia and policymakers have criticised China for taking an aggressive energy diplomacy stance to increase its power in the international system, the Chinese government purports that it will be actively engaged in global energy governance to contribute to global energy security. The above discussion has raised the question of the extent to which China is willing to adjust its bilateral approach to work within a multilateral system. To explain the policy transition, or lack thereof, in China's energy security strategy during Hu Jintao's era, this thesis applies Hall's theory of policy paradigm shift to three case studies: China's energy cooperation with Central Asia, Europe, and Africa. This thesis argues that despite calls from Chinese authorities for good global energy governance, China's energy security during Hu Jintao's era has not yet undergone a paradigm shift away from the policy paradigm of energy diplomacy to a policy paradigm of global energy governance.

Table of Contents

Abstract.....	2
Table of Contents	3
List of Tables.....	6
Acknowledgements	7
Abbreviations	8
Chapter 1 - Introduction.....	10
1.1 Background.....	10
1.1.1 Energy diplomacy and China	10
1.1.2 Global energy governance and China	13
1.2 Hypothesis, questions and rationale	15
1.2.1 Why is this thesis important?	16
1.2.2 Contribution of this thesis	18
1.3 Methodology	19
1.4 Chapter structure	22
Chapter 2 - Energy Security and Policy Paradigm Shift	25
2.1 Definition of energy security.....	25
2.1.1 What is energy security?	25
2.1.2 Evolution of energy security	27
2.1.3 Integrated dimensions of energy security	32
2.2 Energy security and international relations	34
2.2.1 Energy diplomacy via bilateralism	34
2.2.2 Global energy governance via multilateralism	35
2.2.3 Multilateralism as an important characteristic in global energy governance.....	37
2.2.4 Tension between multilateralism and regionalism	38
2.3 Paradigm shift and energy policy	41
2.3.1 Energy policy paradigm	42
2.3.2 Policy paradigm shift	46
2.3.3 Why profound change occurs.....	47
2.3.4 Five levels of policy paradigm analysis	50
2.4 Chapter summary.....	53
Chapter 3 - Changes in China's energy security paradigm	55
3.1 The structure of China's energy governance	55

3.1.1 The reformation of China's bureaucratic energy sector.....	56
3.1.2 The influential Chinese national oil companies.....	64
3.1.3 Other government institutions in the energy sector.....	66
3.1.4 The fragmentation of China's institutional energy structure	68
3.2 A historical overview of China's energy security	69
3.2.1 From 1949 to 1992: the mentality of self-reliance.....	70
3.2.2 From 1993 to 2002: the supply-oriented concept of energy	72
3.2.3 From 2002 to now: the concept of source opening up and flow regulating.....	74
3.3 Chinese energy policy paradigms: from bilateral to multilateral	80
3.3.1 The policy paradigms of China's energy diplomacy.....	81
3.3.2 The policy paradigms of China's global energy governance.....	84
3.3.3 China's view of international energy organizations	87
3.4 Chapter Summary	91
Chapter 4 - China–Central Asia Energy Cooperation.....	94
4.1 The Foundation of the China–Central Asia Cooperation.....	94
4.2 China's Energy Diplomacy Strategy in Central Asia	96
4.2.1 China's Diplomatic Principles regarding Central Asia	97
4.2.2 China's Energy Diplomacy regarding Central Asia	99
4.3 Energy Cooperation Mechanism between China and Central Asia	104
4.3.1 Oil and Gas Resource Cooperation between China and Central Asia	104
4.3.2 China's Energy Cooperation via the SCO	114
4.4 Analysis of the Paradigm Shift of China–Central Asia Energy Cooperation	121
4.4.1 Policy Goals.....	122
4.4.2 Policy Instruments	124
4.4.3 The Physical Structure of Energy Policy.....	128
4.4.4 Conclusion: No Profound Change to Multilateralism	131
4.5 Chapter Summary	134
Chapter 5 - China–EU energy cooperation	135
5.1 The foundation of China–EU energy cooperation	135
5.2 China's energy relations with the EU and its Member States	141
5.2.1 China-EU energy relationship in different periods	142
5.3 Energy cooperation mechanism between China and the EU.....	149
5.3.1 Official channels in China–EU clean energy cooperation	149
5.3.2 Energy projects in China–EU clean energy cooperation.....	152
5.4 Analysis of the paradigm shift of China–EU energy cooperation.....	156

5.4.1 Policy goal	156
5.4.2 Policy instrument	158
5.4.3 The physical structure of energy policy	162
5.4.4 Conclusion: no profound change to multilateralism	167
5.5 Summary	171
Chapter 6 - China-African energy cooperation	172
6.1 The foundation of Sino-African energy cooperation	172
6.2 China's energy strategy in Africa	175
6.2.1 China's diplomatic principles towards Africa	176
6.2.2 China's energy diplomacy towards Africa	177
6.3 The energy cooperation mechanism between China and Africa	183
6.3.1 The investment of CNOC in Africa	183
6.3.2 Official humanitarian aid	186
6.3.3 China's energy cooperation via the FOCAC	189
6.4 Analysis of paradigm shift of China–Africa energy cooperation	197
6.4.1 Policy goal	197
6.4.2 Policy instruments	200
6.4.3 Physical structure of the energy policy	202
6.4.4 Conclusion: No profound change towards multilateralism	204
6.5 Summary	206
Chapter 7 – Conclusion	208
7.1 Introduction	208
7.2 Five levels of policy paradigm analysis	209
7.3 Chinese energy security and energy policy paradigms	211
7.4 Case studies of China's international energy cooperation	215
7.4.1 1 Case study 1: China–Central Asia energy cooperation	215
7.4.2 Case study 2: China–EU energy cooperation	219
7.4.3 Case study 3: China–Africa energy cooperation	223
7.5 Analysis: No policy paradigm shift	227
7.6 Future research to stem from this thesis	234
Bibliography	236

List of Tables

Table 3.1 Evolution of energy institutions between 1949 and 1982 ...	p.56
Table 3.2 Rankings of SELG members ...	p.60
Table 3.3 Rankings of NEC members (at 2010 when it was formed) ...	p.63
Table 3.4 Government institutions in the energy sector ...	p.66
Table 4.1: Dates when China Established Diplomatic Relations with Central Asian Countries ...	p.97
Table 4.2: Energy Agreements China signed with Central Asian countries ...	p.102
Table 4.3: Joint Energy Projects of SCO Member States ...	p.118
Table 5.1 Agreements and achievements related to clean energy reached in EU–China summits from 2001 to 2012 ...	p.144
Table 6.1: Imported Crude Oil from Africa to China (Years 1992–2012) ...	p.179
Table 6.2: The History of FOCAC Conferences ...	p.194
Table 7.1: Summary of China-Central Asia energy cooperation ...	p.218
Table 7.2: Summary of China-EU energy cooperation ...	p.222
Table 7.3: Summary of China-Africa energy cooperation ...	p.226
Table 7.4: Summary of changes from bilateralism to multilateralism between policy paradigms in each case study ...	p.229

Acknowledgements

Foremost, I would like to gratefully and sincerely thank my supervisor Dr. Ramon Pacheco Pardo for his guidance, understanding and dedication during my graduate studies at King's College London. His continuous support helped me in all the time of writing of this thesis. I could not have imagined having a better Ph.D. supervisor.

I am extremely grateful to my mentors Prof Paik Keun-Wook and Prof Xia Yishan for broadening my horizons with their motivation, enthusiasm, and immense knowledge. I have been very privileged to receive their proper and generous guidance in getting my graduate career started on the right foot. My deep gratitude goes to them.

My sincere thanks also goes to Prof Xu Qinhua from Renmin University for supervising my fieldwork while in Beijing. What I learnt from her is invaluable. I am also grateful to the interviewees who were willing to share their experiences and time with me.

Similarly, I would like to thank the two examiners of my viva, Dr Tat Yan Kong and Dr David Kerr, for their insightful comments and hard questions. Their constructive criticism helped me to think about aspects of my thesis which I had not considered fully.

Ph.D. is a long journey. I get to know and work with many other great people and some became friends. As such, my special thanks go to: Cher Lai, Dmitry Elizarov, Sheri Huang Wei, Shao Junyu, Yang Rui, Michael Gulbankian, Zeng Xingqiu, Meghan O'Sullivan, Chen Weidong, Zha Daojiong, Edward Chow, Philip Andrews-Speed, Meredith Miller, Tom Cutler, Tim Boersma, Jane Nakano, Erica Downs, Ji-Chul Ryu, Michael Chen, Liu Qiang, Zhao Hongtu, Yu Hongyuan, Shi Ze, Zhao Mingwen, Misako Takahashi, Kelvin Tu, Pang Changwei, Zhou Yunheng, Bai Mei, Wang Wei, Xu Xiaojie, Liu Yanhong, Xu Yisheng, Zhang Meng, Liang Jian, Wang Wen, Liu Ying, Frank Umbach, Carola Gegenbauer, Wang Xingyu, Urban Rusnák, Neil Hirst, Nadège Rolland, Alessio Patalano, Daphne Ma, Lu Ruquan, Wang Haiyan, Chris Len, Gong Ting, Kingsley Leung, Leo Byrne, Clare Richardson-Barlow, Karolina Wysoczanska, Wang Zhuwei, Zhu Kai, Bomi An, Yuki Yu, Jeong-ae Choi, Mikolay Murashkin, Miyeon Oh, Philipp Offenberger, Raj Verma, Shamil Yenikeeff, Seong-ok Oh, Jisun Yi, Zhong Jingjing, Xu Xiaozhao, Xu Peiyu, Liu Ningjie, Xu Qiuling Ma Kaiyun, Ma Siyuan, Shen Junzhe, Guy Leung, Wilson Chan, Simon Shen, Suen and Mark Lo.

Finally, my deepest thanks go to my family. I could have never completed this thesis without the patience and understanding of my parents Ng Waiyin and Yu Manfung. They know how grateful I am for being their son. I also want to thank my beloved lovely wife Xu Yifei for her support, tolerance and quiet patience, always. Their love and faith in me allows me to be as ambitious as I wanted.

Abbreviations

Abbreviation	Meaning
ASEAN	Association of Southeast Asian Nations
Bcm	Billion cubic meter
BIT	Bilateral investment treaty
BP	British Petroleum
CCS	Carbon dioxide capture and storage
CGNPC	China Guangdong Nuclear Power Corp
CNOC	Chinese national oil company
CNODC	China National Oil and Gas Exploration and Development Corporation
CNOOC	China National Offshore Oil Corporation
CNPC	China National Petroleum Corporation
CPC	Communist Party of China
DG	Directorate-General
EBRD	European Bank for Reconstruction and Development
EC DG ENER	European Commission Directorate-General for Energy
EC2	China–EU Clean Energy Centre
ECT	Energy Charter Treaty
EEC	European Economic Community
EPC	Engineering, procurement and construction
EU	European Union
FDI	Foreign direct investment
FOCAC	Forum on China-Africa Cooperation
HLME	China–EU High-Level Meeting on Energy
ICARE	Institute for Clean and Renewable Energy
IEA	International Energy Agency
IEF	International Energy Forum
IPR	Intellectual property rights
IRENA	International Renewable Energy Agency
JEEP	Joint Energy and Environment Programme
KMG	KazMunaiGaz
MFA	Ministry of Foreign Affairs
MLR	Ministry of Land and Resources
MOFCOM	Ministry of Commerce
MOST	Ministry of Science and Technology

NATO	North Atlantic Treaty Organization
NDRC	National Development and Reform Commission
NEA	National Energy Administration
NEC	National Energy Commission
NOC	National oil company
NZEC	Near Zero Emission Coal
OECD	Organization for Economic Cooperation and Development
OPEC	Organisation of the Petroleum Exporting Countries
PRC	People Republic of China
R&D	Research and development
SAFE	State Administration of Foreign Exchange
SASAC	State-owned Assets Supervision and Administration Commission
SBPCI	State Bureau of Petroleum and Chemical Industry
SCO	Shanghai Cooperation Organisation
SDPC	State Development and Planning Commission
SEC	State Economic Commission
SELG	State Energy Leading Group
SETC	State Economic and Trade Commission
SinoChem	China Chemical Import and Export Company
Sinopec	Sinopec Group
SPC	State Planning Commission
TCC	China Tianchen Engineering Corporation
UNCOAL	Union Oil Company of California
UNDP	United Nations Development Programme
WB	World Bank
WTO	World Trade Organisation

Chapter 1 - Introduction

Following China's rapid economic growth, energy security has become a big concern for the country. One strategy to enhance energy security is international energy cooperation. Since it became a net oil importer in 1993, China has adopted energy diplomacy to gain more secure national control of overseas resources and to diversify its import sources. As a response to high oil prices in 2006 and possible instability of the energy market, China published China's Energy Policy (2007) White Paper¹ and China's Energy Policy (2012) White Paper², which emphasised multilateral approaches and global energy governance as a means of enhancing international energy cooperation. The above evolution in China's energy policy, from energy diplomacy to global energy governance, has raised the question of whether China is willing to work within a multilateral system instead of a bilateral system. To explore this phenomenon further, this thesis explains the policy transition, or lack thereof, in China's energy security strategy during Hu Jintao's era using the policy paradigm shift model. The focus of the thesis is the Chinese perspective, with other countries concerned analysed only insofar as their policy outcomes shed light on how to study the paradigm shift of energy policy.

In this first chapter key elements of the thesis are introduced. This chapter offers a background discussion on China's energy diplomacy and global energy governance. It also outlines the rationale for this project and details the research questions and the hypothesis to be proven. A summary of the importance and contribution of this thesis is then advanced. Finally, the chapter focuses on the methodology to be used and gives a brief explanation of the structure of the thesis.

1.1 Background

1.1.1 Energy diplomacy and China

Energy has been linked with diplomacy or security throughout human history. Energy issues are related not only to business, but also to politics and national security. In the early 20th century, competition for oil in the Persian Gulf triggered the British–Russian

¹ PRC State Council. 2007. 中国的能源状况与政策 [In English: White Paper on China's Energy Situation and Policy].

² PRC NDRC. 2012. China's Energy Policy (2012) White Paper.

conflict. The Italian invasion of Abyssinia in 1935³ and the German invasion of the Soviet Union in 1941⁴ were also linked to the desire for oil. Diplomatic approaches regarding energy are more often used in modern international relations. For instance, the US has been investing in extensive diplomatic efforts to ensure global oil supplies. Washington attempts to “promote a stable global energy supply by engaging diplomatic partners and private producers to maintain supply, calm markets, and pursue alternative energy options”⁵. In the new millennium, supply–demand balances both in global oil markets and in regional gas markets have tightened again, attracting academic attention on energy diplomacy.

To enhance energy security, China has adopted energy diplomacy, which is an important part of its “going out” strategy and national development strategy.⁶ Feng argues that energy diplomacy is a logical extension of Chinese national interests, as it builds relations with resource-rich countries, develops a favourable environment for Chinese companies in the resource field and establishes alliances for energy cooperation⁷. For China, the ultimate goal of energy diplomacy is to secure national control of overseas resource supplies, particularly oil and gas, and to diversify its import sources. Since the sustainable development of the Chinese economy is closely related to the sustainable development of the world economy, the world has started to keep an eye on China’s actions.

Although Hu Jintao attempted to project “peaceful development”, the going-out strategy has had the opposite effect. Mearsheimer⁸ and Walt⁹ argue that China will not have a

³ Ristuccia, C.A. 1997. “1935 Sanctions Against Italy: Would Coal and Crude Oil Have Made a Difference.” Oxford Economic and Social History Working Papers.

⁴ Crane, K. 2009. *Imported Oil and US National Security*. Washington: RAND Corporation.

⁵ US DOS. 2012. “Energy Diplomacy in the 21st Century.” Accessed on 6 September 2015. <http://www.state.gov/r/pa/pl/2012/200637.htm>

⁶ State Council of PRC. 2011. “An Overview of ‘Going out’ Strategy.” Accessed on 13 September 2013. <http://qwgzyj.gqb.gov.cn/yjyt/159/1743.shtml>; Xu, Q. 2007. “China’s Energy Diplomacy and its Implications for Global Energy Security.” FES Briefing Paper. Accessed on 13 September 2013. <http://library.fes.de/pdf-files/iez/global/04763.pdf>

⁷ Zhu, F. 2005. “A High Price to Pay: China’s Resource Diplomacy Requires Wisdom.” *New Finance*. 18 May. Accessed on 13 September 2013. <http://media.163.com/05/0518/10/1K1FC60A00141A16.html>.

⁸ Mearsheimer, J. 2006. “China’s Unpeaceful Rise.” *Current History* 105(690): 160–162; Mearsheimer, J. 2010. “Australians Should Fear the Rise of China.” *The Spectator*.

⁹ Walt, S. 2011. “Sino-American Rivalry: A Chinese View.” Accessed on December 23, 2012. http://walt.foreignpolicy.com/posts/2011/11/21/sino_american_rivalry_a_chinese_view

peaceful rise, because its growth in power will lead to intense security competition or even potential war. China is perceived to be adopting aggressive energy diplomacy, as it is purchasing energy resources through bilateral deals from Africa and South America instead of buying energy from the open market.¹⁰ Since energy “could be a catalyst for conflict”¹¹, this could lead to resource competition and even military races. This will increase anxiety in East Asia about safe access to overseas sources and sea lanes for transporting resources. For instance, Lim claims that “China’s growing strategic pressure is beginning to cause Japan to become more anxious about its security.”¹² Despite the fact that developing countries may see China’s energy hunt as a boon, other powers, such as the US and Japan, are concerned about the instability and insecurity to which it has led.¹³ The US, in a national report, suggests that China claims to be staying on its peaceful path on the one hand, but on the other acts as if it can somehow ‘lock up’ energy supplies or seek to direct markets and support resource-rich countries without regard to their misbehaviour.¹⁴

Although it is generally understood that energy import-dependent states tend to expand their influence in the global market by increasing relative and absolute power, and China is no exception to this,¹⁵ some argue that China’s intention is always to lock up

¹⁰ Baghat, G. 2006. “Europe’s Energy Security: Challenges and Opportunities.” *International Affairs* 82(5): 961–975; Yergin, D. 2006. “Ensuring Energy Security.” *Foreign Affairs* 85(2): 69–82; Chen, M. & Jaffe, A. M. 2007. “Energy Security: Meeting the Growing Challenge of National Oil Companies.” *The Whitehead Journal of Diplomacy and International Relations* 9–21.

¹¹ Calder, K. 2006. *Pacific Defense: Arms, Energy, and America’s Future in Asia*. New York: William Morrow & Co.

¹² Lim, R. 2005. *Geopolitics of East Asia: The Search for Equilibrium*. New York: Routledge.

¹³ Zweig, D. 2009. “A New ‘Trading State’ Meets the Developing World.” Center on China’s Transnational Relations 1-26; Zweig, D. & Jianbai, B. 2005. “China’s Global Hunt for Energy.” *Foreign Affairs* 84:25-38; Zweig, D. & Herberg, M.E. 2010. “China’s Energy Rise, the US, and the New Geopolitics of Energy.” Pacific Council on International Policy 1-90.

¹⁴ The White House. 2006. “The National Strategy.”

¹⁵ See also Bajpae, C. 2005. “China Fuels Energy Cold War.” *Asia Times*, 2 Mar. Accessed on 13 September 2013. <http://www.atimes.com/atimes/China/GC02Ad07.html>; Karon, T. 2006. “Iran Diplomacy: Why Russia and China Won’t Play Ball.” *Time*, 22 Mar. Accessed on 29 January 2013. <http://www.time.com/time/world/article/0,8599,1175573,00.html>; Mufson, S. 2006. “As China, U.S. Vie for More Oil, Diplomatic Friction May Follow.” *Washington Post*, April 15. Accessed on 13 September 2013. http://www.washingtonpost.com/wp-dyn/content/article/2006/04/14/AR2006041401682_2.html.

resources or harm the international energy supply.¹⁶ Indeed, according to the US Department of Energy, the effect of China's vast investment is economically neutral.¹⁷ Instead of asserting power through energy investments, over 50% of China's overseas oil production in 2008 was sold outside China.¹⁸ Moreover, Chinese energy companies explore energy reserves in regions where no Western powers could or would invest. Such an approach increases the world's available reserves of energy and, hence, instead of harming global energy security, China's energy policy actually enhances it.¹⁹ China's new energy approach has great implications, not only for its own energy security, but also for global energy systems. Yet the question of whether China is willing and able to undergo a policy paradigm shift remains. Is it prepared to develop a clear policy framework shift from energy diplomacy to global energy governance?

1.1.2 Global energy governance and China

In the energy arena, the governance of energy issues beyond the national level is regarded as global energy governance, which relies on a multilateral approach at both global and regional levels.²⁰ Since the late 1970s, the liberalisation of the international energy market, particularly the oil market, has marked a starting point for a paradigm of global energy governance. More explicitly, the oil shocks in the 1970s changed the rules of the game in the international energy market fundamentally.

¹⁶ Garrison, J. 2009. *China and the Energy Equation in Asia: The Determinants of Policy Choice*. First Forum Press; Langenkamp, D. 2010. "Our Friend, The Dragon." Accessed on 29 January 2013. <http://207.41.118.84/articles.cfm?aid=3758>.

¹⁷ U.S. Congress House. 2007. "Energy as a Weapon: Implications for U.S. policy." Washington.

¹⁸ Dittrick, P. 2010. "Chinese Oil Companies Invest Heavily Abroad." *Oil & Gas Journal* 108(5).

¹⁹ U.S. DOE. 2006. "Energy Policy Act of 2005 Section 1837: National Security Review of International Energy Requirements."

²⁰ See Goldthau, A. 2011. "Governing Global Energy: Existing Approaches and Discourses." *Current Opinion in Environmental Sustainability* 3(4): 213-217; for other studies on global energy governance, see Cherp, A., Jewell, J., & Goldthau, A. 2011. "Governing Global Energy: Systems, Transitions, Complexity." *Global Policy* 2(1): 75-88; Christoffersen, G. 2005. "The Dilemmas of China's Energy Governance: Recentralization and Regional Cooperation." *The China and Eurasia Form Quarterly*; Dubash, N. K., & Florini, A. 2011. "Mapping Global Energy Governance." *Global Policy* 2: 6-18; Florini, A. 2011. "The International Energy Agency in Global Energy Governance." *Global Policy* 2: 40-50; Ghosh, A. 2011. "Seeking Coherence in Complexity? The Governance of Energy by Trade and Investment Institutions." *Global Policy* 2: 106-119; van der Hoeven, M. 2012. "IEA vision on international energy governance." *Energy Strategy Reviews*, 1(2): 73-75.

This is well demonstrated by the formation of the International Energy Agency (IEA). Before the first oil shock in 1973, major Western companies dominated the international oil market. These companies had concessions in exporting countries and country-to-country deals. Global traded oil was bound up in long-term bilateral contracts.²¹ Consumers found themselves facing tremendous difficulties in replacing oil supplies lost as a result of the 1973 embargo and the political turmoil in the Persian Gulf region at the end of the decade. As a result, the consumer countries of the Organization of Economic Cooperation and Development (OECD) created emergency sharing mechanisms and combined forces in the IEA.

Since the establishment of the IEA, a number of energy-related international and regional institutions have been established, such as the Energy Charter, the IRENA, the IEF and the energy working group under the G20. A multilateral approach is carried out to deal with energy issues in the form of institutions composed of formal rules, informal constraints and enforcement mechanisms. Global energy governance is being established, developed and advanced as a new and promising approach that relies on governments' commitment to the paradigm of global energy governance.²²

Faced with energy security issues, China has placed more emphasis on bilateral approaches, as discussed above. China remains hesitant about joining major international energy institutions, because it lacks confidence in the capacity of these international frameworks to protect its national interests. China's Energy Policy (2007) White Paper first emphasised the country's contribution to international energy cooperation via bilateral and multilateral approaches,²³ and China's Energy Policy (2012) White Paper further addressed the need for global energy governance. China's top leaders openly called for an effort among countries to tackle energy problems collectively and proposed the establishment of an international institute to govern the energy market.²⁴ They also claimed that China would actively engage in global energy cooperation.²⁵

²¹ Biolsi, Robert. 1995. "Spot, Options, and Futures Oil Markets." In *The New Global Oil Market: Understanding Energy Issues in the World Economy* edited by S. Shojai. Westport, Conn.: Praeger.

²² Goldthau. 2011. op. cit.

²³ PRC State Council. op. cit.

²⁴ PRC NDRC. op. cit.

²⁵ UPI. 2012. "China Urges Global Energy Cooperation." *United Press International*. 16 Jan. Accessed on 13 September 2013. http://www.upi.com/Business_News/Energy-Resources/2012/01/16/China-urges-global-energy-cooperation/UPI-77361326740422.

There has been a long debate as to whether a country should take a bilateral approach to energy security or act within the confines of the multilateral system. All energy import-dependent countries seek to increase their relative and absolute power and influence in the global marketplace. China is no different in this respect. Both academia and policymakers have criticised China's energy diplomacy for taking an aggressive approach²⁶ to increase its absolute and relative power in the international system. By contrast, the Chinese government states that it will be actively engaged in global energy governance; hence, China is contributing to global energy security instead of threatening it. The question is whether China's strategy is seeking to work within the multilateral system as a "responsible stakeholder"²⁷, or outside the system via bilateral approaches. The debate refers to the complex terminology of energy security, which is difficult to define. More importantly, it also leads to the concept of a paradigm shift in China's energy policy, questioning whether there is a transition from bilateralism to a paradigm of global energy governance.

1.2 Hypothesis, questions and rationale

Since this thesis aims to study China's energy policy decision-making during Hu Jintao's era, the time frame of this research is 2002 to 2012, Hu Jintao's term of office. Data before 2002 are included and studied in this thesis, as they are important for understanding the energy policy background of the Hu Jintao era. However, data after 2013 are not included. Key research questions are as follows:

1. What are the rationales underpinning the two policy paradigms of China's energy security – the policy paradigm of energy diplomacy and the policy paradigm of global energy governance – during Hu Jintao's era?
2. Is there a profound change in China's energy security? Can the degree of change in energy policy represent a break from the past?
3. What are the reasons and causes of the policy transition, or lack thereof, in China's energy security?

The principal hypothesis of this thesis is:

²⁶ Baghat. op. cit.; Yergin. op. cit.; Chen & Jaffe. op. cit.

²⁷ Zoellick, R.B. 2005. "Wither China: From Membership to Responsibility?" Remarks presented at the National Committee on U.S.-China Relations, New York, NY, September 21.

Despite calls from Chinese authorities for good global energy governance, China's energy security during Hu Jintao's era did not undergo a paradigm shift away from the policy paradigm of energy diplomacy to a policy paradigm of global energy governance.

1.2.1 Why is this thesis important?

Even though energy is one of the key issues in academic debates, relatively little attention has been paid to the transition mechanisms of energy policy. This thesis applies Hall's theory of paradigm shift to energy policy. Several energy scholars have addressed energy policy transition,²⁸ but it has mostly been studied in an unsystematic way based on particular cases. In existing literature, Hall's theory is widely applied to a range of issues, but seldom to energy. Hall's theory of paradigm shift potentially helps in providing a more dynamic account of how energy security is constructed and how energy policy is transformed over time.

The impact of energy use on politics, economy, environment, health and society has made a country's domestic energy policies and consumption habits a concern in international studies. Moreover, because of its slippery nature, energy security may have different meanings for different countries from one perspective to another over time. Hence, case studies considering energy security of different countries or regions are important.²⁹ In light of these considerations, energy security should be observed empirically in relation to the policies of a particular state. China is chosen as the case in this thesis.

The actions of a great power like China are believed to have a more significant influence on international, regional and bilateral relations with respect to energy. According to the IEA's World Energy Outlook 2012 Executive Summary, China will be

²⁸ Helm, D. 2005. "The Assessment: The New Energy Paradigm", *Oxford Review of Economic Policy*. 21 (1), 1–18; Helm, D. 2007. "The New Energy Paradigm." In *The New Energy Paradigm* edited by D. Helm. Oxford: Oxford University Press. 9–35; Fudge, S. et al. 2011. "Paradigms, Policy and Governance: The Politics of Energy Regulation in the UK Post-2000." *Environmental Policy and Governance*. 21(4): 291–302; Kuzemko, C. 2011. "UK Energy Governance in the Twenty-first Century: Unravelling the Ties that Bind." Warwick University; Tsang, S. & Kolik, A. 2011. "The Evolution of Chinese Policies and Governance Structures on Environment, Energy, and Climate." *Environmental Policy and Governance* 20(3): 180-196; Goldthau, A. 2012. "From the State to the Market and Back: Policy Implications of Changing Energy Paradigms." *Global Policy* 3(2): 198–210.

²⁹ See Chapter 2 for the definition of energy security.

one of the key energy consumers in the next few decades.³⁰ This implies there will be more competition and cooperation for energy, where the Chinese means of securing energy has an influential role. How China pursues its energy security has profound implications for the international energy system and world peace. As such, any revisions or transitions of the current Chinese energy policy need to be addressed seriously. A large body of research has paid attention to China's energy security and overseas investment, particularly the question of whether China can or will fit into the liberal system.³¹ However, less empirical research has been conducted from a Chinese perspective to examine the reasons for and mechanisms behind China's energy policymaking vis-à-vis the choice of bilateral vs. multilateral approaches. This thesis aims to fill this gap.

It is also important to analyse China's international behavior from a Chinese perspective. Since China has increasing involvement in international cooperation, and competition, with other states, it has already become a key research target. The Chinese model, policies, behaviours and actions have been widely studied in academia. Yet, Zheng Yongnian points out that China lacks a proper language to explain its own international behaviour. Meanwhile, theories of Western experiences are insufficient to explain China's experience. Observation of the Chinese mindset from a Chinese perspective is important for understanding China's international approaches.³² Therefore, in order to understand the energy world, in which China plays an important role, a case study on Chinese energy security is important.

Understanding China's behaviour is also important for the field of international relations and international political economy. This importance is set to increase with the ongoing reconfiguration of the international system, where emerging economies play a crucial role. The rise of China during Hu Jintao's era has drawn global attention. China is

³⁰ IEA. 2012. *World Energy Outlook 2012: In-depth Study on Energy-efficiency*.

³¹ Chen & Jaffe. op. cit.; Dittrick, op. cit.; Zweig & Herberg op. cit.; Kong, B. 2009. "China's Energy Decision-Making: Becoming more like the United States?" *Journal of Contemporary China* 18(62): 789-812.; Lee, S. 2010. "China's Energy Security: The Grand 'Hedging' Strategy. School of Advanced Military Studies United States Army Command and General Staff College Fort Leavenworth, Kansas.; Liu, X. 2006. "China's Energy Security and its Grand Strategy." The Stanley Foundation Policy Analysis Briefs, 1–16.; Pennington, J. 2012. "How Peaceful is China's Rise? The Use of Soft and Hard Power in China's Energy Security Strategy in Central Asia." *POLIS Journal* 6: 1-55.; Zweig. op. cit.; Zweig & Jianbai, op. cit.

³² Zheng, Y. 2010. *China and International Relations: The Chinese View and the Contribution of Wang Gungwu*. Routledge.

becoming a central actor in this increasingly multipolar world, reshaping the geopolitical, economic, and diplomatic relationships at both regional and global levels. While China's regional behaviour has influenced the balance of power in the Asia-Pacific Region,³³ China on the world level has participated in most of the intergovernmental organizations and institutions established after 1945.³⁴ At the same time, China lies at the centre of controversy owing to its unique mix of political and economic institutions.³⁵ Introducing new elements and updates in theoretical discussion, China has become an important topic in the field of international relations as well as international political economics.

1.2.2 Contribution of this thesis

This thesis makes two contributions to the existing literature. It is notable that the objective of this thesis is not the creation of a new theory. Instead, it applies an existing theory through a case study to make an empirical contribution to knowledge.

This research investigates China's energy security during Hu Jintao's era via the application of Hall's theory of paradigm shift, which is a relatively new approach in the study of Chinese energy. This thesis advances the literature of policy paradigm shift. Indeed, Hall's theory is insufficient to explain the transition mechanism of China's energy security because of two shortcomings. Hall assumes that a policy paradigm shift is a rational response to the failure of previous policies and pays too little attention to other decisive factors. In addition, his emphasis on ideology neglects implications of change in the physical structure of governance, powerful actors, or elite networks with the authority to decide the ideology behind political behaviour as well as change in policy. As a response to these criticisms, this thesis contributes to the understanding of energy security by expanding Hall's theory, providing reasons for profound policy change and a five-level framework³⁶ of energy aspects for measurement. This approach includes an analysis of certain normative transformations in international

³³ Zhou, Fangyin. 2012. 中国崛起, 东亚格局变迁与东亚秩序的发展方向 [in English: China's rise, the change of East Asia pattern, and the future]. *Contemporary Asia-Pacific Studies*, 5.

³⁴ Pang, Zhongying. 2006. 中国在国际体系中的地位与作用 [in English: China's role in the international system]. *Contemporary International Relations*, 4, pp.17-22.

³⁵ Bajoria, Jayshree . 2009. China's Role in the World. Council on Foreign Relations. Council of Foreign Relations. Accessed on 15 October 2013. <http://www.cfr.org/china/chinas-role-world/p19545>

³⁶ Five levels include ideas about energy and energy security, goals of energy policy, physical structure of energy policy, and policy instruments. Both the concept of policy paradigm shift and an expanded version of it will be discussed in detail in chapter 2.

behaviour as well as a broader institutionalist account of the elements of change and continuity over time. The degree to which the former policy paradigm is willing to change or is resisting change underpins the central research question of this thesis.

This thesis also advances the literature of Chinese energy policy and security empirically. First-hand data are collected via interviews to answer whether China's energy policy has undergone a policy paradigm shift, as well as the reasons and causes for this transition mechanism. The data also reflect the rationales, ideology, structure, and personnel contributing to the process of Chinese energy policy making. This is discussed in detail in the next section.

1.3 Methodology

A revised version of Hall's theory of paradigm shift will be used to test the hypothesis introduced in section 1.2 of this chapter. The hypothesis provides the basis for answering the questions asked in the same section. To test the hypothesis, three diverse case studies are used: China–Central Asia energy cooperation, China–EU energy cooperation and China–Africa energy cooperation.

The objective of the diverse case analysis is to capture the full range of variation along relevant dimensions.³⁷ It requires the selection of a set of cases representing the full range of values or a particular combination of causal factors. The logic of this case-selection strategy follows the logic of typological theorising – “where different combinations of variables are assumed to have effects on an outcome that vary across types”³⁸.

This case study design is useful for the exploration or confirmation of a theory or model. It is chosen to investigate the phenomenon of interest shared among the selected cases through observation of the depth and complexity of multiple events.³⁹ While this

³⁷ Gerring, J. 2009. “Case Selection for Case-Study Analysis: Qualitative and Quantitative Techniques.” In *The Oxford Handbook of Political Methodology* edited by J.M. Box-Steffensmeier, H.E. Brady, and D. Collier. Oxford University Press.

³⁸ Ibid., p.649

³⁹ Anaf, S., Sheppard, L., & Drummond, C. 2007. “Combining Case Study Research and Systems Theory as a Heuristic Model.” *Qualitative Health Research* 17(10): 1309-1315; Stake, R.E. 2000. “Case Studies.” In *Handbook of qualitative research* edited by N.K. Denzin & Y. S. Lincoln. 435-454. Thousand Oaks, CA: Sage.

case selection method offers a stronger basis for evaluating hypotheses than a single case study method,⁴⁰ “the intensive comparative analysis of a few cases may be more promising than a more superficial statistical analysis of many cases”⁴¹. This method allows the researcher to “hold certain things constant while examining and accounting for observed differences”⁴².

The diversity of cases used in this thesis is defined by each region’s different relationship with China, geographical location and proximity to China, and internal economic and sociopolitical structure. Central Asia is a neighbourhood region of China and is a key target in China’s energy diplomacy. China–Central Asia energy cooperation is typical because of China’s transnational gas pipeline with Central Asian countries, which demonstrates a unique possibility for multilateral cooperation via transnational infrastructure. Africa is another key target in China’s energy diplomacy that involves maritime energy transportation because of geographical location. China–Africa energy cooperation is typical because of China’s growing scale of investment and aid in the region, which is part of China’s going-out strategy. Unlike Central Asia and Africa, the EU has almost no oil and gas interdependency with China because of geographical distance. However, China–EU energy cooperation is typical in terms of energy technology transfer. While China has demonstrated the possibility of establishing multilateral energy cooperation with Central Asia, Africa and the EU, its energy relations with these regions rely on different policy goals and instruments.

The two data collection methods used in this study are extensive fieldwork and intensive desktop research. From 2013 to 2015, 53 open-ended interviews with qualified informants were conducted and constituted a major primary source for this thesis. The interviews were in an open-ended and semi-structured format. In an open-ended interview, interviewees can express their viewpoints without being prejudiced by possible biases of the interviewer, while in a semi-structured interview, the interviewer can design specific questions based on the interviewee’s expertise and compare answers to similar questions.

Interviewees include current and former officials, academics and other specialists. The 53 interviewees came from China, Europe, America and Russia. Chinese participants were prioritised because of their direct involvement in or close observation of China’s

⁴⁰ Lijphart, A. 1971. “Comparative Politics and Comparative Method.” *American Political Science Review* 65: 682-93.

⁴¹ Ibid.

⁴² Landman, T. 2000. *Issues and Methods in Comparative Politics: An Introduction*. Routledge.

energy policymaking or energy projects. More explicitly, Chinese interviewees include officials and experts from the State Council, National Development and Reform Committee, National Energy Agency, Ministry of Foreign Affairs, Ministry of Commerce, embassies to countries concerned, national oil companies and government-affiliated think tanks. Informants also included scholars, journalists and representatives of business associations. Foreign energy experts were targeted as well. Due to their experience dealing with or working with Chinese government and companies, these participants were deemed to have excellent knowledge of Chinese behaviour in energy-related sectors. Foreign interviewees included officials and experts from energy companies, energy-related departments, embassies (in Beijing), think tanks of countries concerned and international energy organisations such as the IEA and the Energy Charter.

The actual interviewees were identified by cross-checks via public information (such as official websites) and personal referrals. It is notable that most of the interviewees were highly wary of accepting interviews because of the sensitive nature of the questions asked. Energy information can be politically or commercially sensitive. As a matter of fact, it is particularly difficult to access high-ranking officials. In order to increase interview success rates and encourage in-depth conversation, anonymity was guaranteed. Almost all the interviewees preferred not to disclose their names or professional backgrounds. Therefore, interview conversations were anonymised upon request. The interviews were not recorded, and handwritten notes were taken instead. Under the above protection, interviewees were more willing to converse on sensitive topics.

This thesis also relies on intensive desktop research, which refers to qualitative textual analysis of a wide range of written primary and secondary sources. Written primary sources include official documents, such as policy regulations, white papers, blue books, statements, declarations, speeches and internal reports of relevant official authorities and international organisations. Official documents were identified as being important and were chosen for this research only if they addressed relevant issues and were issued by key authorities, such as the PRC State Council, the PRC NEA, the PRC MFA, national oil companies and key international energy cooperation platforms. They were accessed through the official websites and publications of relevant departments.

Secondary sources include academic journal articles, conference papers, books, theses, working papers and news on related themes (namely on China's energy

security, energy policy and diplomacy, China and Central Asia, China and the EU, and China and Africa). When the above primary sources were unavailable, secondary sources, mainly newspaper articles or academic papers quoting Chinese officials or analysing their statements, were used. Among the above, statistical data were collected from official publications by international organisations (i.e., the WTO and the IEA), energy companies and official authorities of the countries concerned.

Due to limited empirical research on the topic, the analysis of the case studies is rooted in interviews, official documents, relevant governmental and international organisations and NOCs, websites, and media (for example, Bloomberg, Reuters, Xinhua, China Daily and major Chinese newspapers). Collected primary and secondary sources allowed the researcher to uncover relevant information and further integrate the views of all contributors. Interviews are not merely supplementary to the above findings, but are critical in understanding the context, process and synergies in China's energy policy and strategy. Collected data are analysed using process tracing, which is used to uncover traces of hypothesised causal mechanisms within China's energy security in each case.

A combination of the above data collection methods enables triangulation of findings, increasing reliability and validity. Cross-examination and cross-referencing of data collected reduce the possibility of bias that using a single source entails. Therefore, different sources are used whenever possible in the analysis of this thesis. It is also worth noting that Chinese is the official language in China, and most publications of the Chinese government, companies and academics are written in Chinese. Sources in both English and Chinese (traditional Chinese and simplified Chinese) are studied.

1.4 Chapter structure

After the introductory chapter, the second chapter offers a theoretical framework for the discussion throughout this thesis. The main notions, including policy paradigm shift and an expanded version of policy paradigm shift, are addressed in this chapter. It reviews available literature and forms a new theoretical framework. While this framework will be a lens through which to view current energy issues, it will also act as a tool to explain China's energy security and to determine the most appropriate policy.

While chapter 2 focuses on the general conceptual framework of energy security, chapter 3 discusses energy security from a Chinese perspective. More explicitly, it

explores the historical background, governing structure, strategy, policymaking process and rationale behind China's energy security by studying official documents, policy papers and individual reports. In addition, this section outlines the ideologies underpinning the two policy paradigms of China's energy security in the early 21st century and points out the watershed between the two paradigms. These factual and ideological discussions narrow the broader conceptual framework to one with China's characteristics for analysis in the case studies.

Chapter 4 investigates China's energy security in Central Asia, including where China has invested in transnational pipeline projects. China is the largest foreign investor in Central Asia, and its investments include refineries, pipelines and other infrastructure. This chapter introduces an international organisation, the Shanghai Cooperation Organisation (SCO), as an indication of global governance. The SCO was created in 2001 as a regional security provider in Central Asia. It also serves as a platform for China to fulfil its energy objectives of augmenting energy imports from the region. In 2004, SCO started to branch out to the energy sphere, followed by joint energy projects among member states. This chapter studies whether China's role in the SCO, as well as its cooperation with Central Asia in terms of the transnational pipeline, can reveal a change in the country's overall energy strategy.

Chapter 5 studies Sino-European energy cooperation. As China's largest trading partner, the EU would naturally consider China as a mutually beneficial energy partner, and vice versa. Low-carbon sustainable development has become a common ground for cooperation on both sides because of issues like climate change, high global energy consumption and the volatility of international oil prices. While China does not have direct oil and gas trade with Europe, clean-energy technology transfer is the main focus in China–EU energy cooperation. In order to promote cooperation, a number of China–EU multilateral energy initiatives have been established. A case study on China–EU energy cooperation can reveal whether China's energy strategy towards the EU has undergone any change.

Chapter 6 focuses on China–Africa energy cooperation. China's energy investment in Africa focuses on major oil-supply countries like Sudan, Angola and Guinea, where corruption, poor governance and humanitarian problems often occur. While China attempts to increase its energy supply by creating strong ties with Africa, it also increases the world's energy supply, as it approaches countries that the West does not. This chapter discusses the function of the Forum on China–Africa Cooperation (FOCAC) as an indication of China's global governance in the region. FOCAC also

serves as a platform for China to fulfil its energy objectives of augmenting energy imports from the region. This case study explores whether China's investment and behaviour via FOCAC could encourage global energy governance or whether it is merely a strategy of energy competition. This will determine whether or not China's energy strategy in Africa has undergone any change.

Chapter 7 is a single chapter offering the conclusion. It will apply the conceptual framework constructed in chapter 2 to each case study in the empirical section. It analyses the change of policy in each case and compares their differences. The principal hypothesis will be revisited and key questions will be answered in this chapter. The concluding chapter will go through the implications of the findings in this research. This will help to refine the understanding of China's energy policy as well as the literature on China's energy security, global energy governance and policy paradigm shift.

Chapter 2 - Energy Security and Policy Paradigm Shift

This chapter sets out the conceptual framework through which this thesis will develop the analysis of China's energy security in the 21st century. This chapter commences with the definition of energy security with respect to three dimensions: geopolitics, economy and science. It then introduces corresponding concepts, including energy diplomacy, global energy governance, bilateralism and multilateralism, which underpin the rationales for different strategies of energy security. This is followed by Hall's concept of a policy paradigm shift, which includes a five-level framework of energy policy against which change can be measured. By doing so, this section outlines the theoretical context associated with changes in China's energy security policy and offers a review of current literature on energy security. The purpose of this thesis is to apply a theory to explain a phenomenon instead of creating a new theory. Empirical context and the structure of China's energy security are discussed in chapter 3.

2.1 Definition of energy security

2.1.1 What is energy security?

Energy security is a multidimensional concept "taking on different specificity depending on the country, energy source and timeframe"⁴³. Generally speaking, the main interests in energy security lie in the notion that an unobstructed supply of energy is crucial for a nation's economy and development.⁴⁴ While energy-importing countries seek to secure energy supply for their national interest,⁴⁵ energy-exporting countries seek to maintain energy demand to generate government revenues.⁴⁶ Therefore, energy security is closely tied to interruption of supply and blockage of transit routes.⁴⁷ In this sense, energy security can also be viewed as "risk management" that deals with "the risks and

⁴³ Chester, L. 2010 "Conceptualising Energy Security and Making Explicit its Polysemic Nature.", *Energy Policy* 38 (2): 887; Yergin, D. 2006 "Ensuring Energy Security." *Foreign Affairs* 85 (2): 69–82; Kruyt, B., van Vuuren, D. P., de Vries, H. J. M., & Groenenberg, H. 2009. "Indicators for Energy Security." *Energy Policy* 37 (6): 2166–2181.

⁴⁴ Bielecki, J. 2002. "Energy Security: Is the Wolf at the Door?" *The Quarterly Review of Economics and Finance* 42 (2).

⁴⁵ Kovačovská, L. 2007. "European Union's Energy (In)security: Dependence on Russia." *Defence and Strategy* 2: 1–17.

⁴⁶ Yergin, 2006. op. cit., p. 76; Bielecki. op. cit.

⁴⁷ Johnson, D. 2005. "EU–Russian Energy Links: A Marriage of Convenience?" *Government and Opposition* 40(2): 256–277.

consequences of disruptions and adverse long-term market trends”⁴⁸ and aims at achieving the condition of being “free from (these) serious risks”⁴⁹ in “the foreseeable future”⁵⁰. Energy security is evidently important in policymaking and ubiquitous in governmental practice in various domains, including the energy industry, international relations, economic activities, climate change and technology innovation.

While the term “energy security” is discussed widely in academia, government and the media, there is no consensus among researchers on an explicit definition of the term.⁵¹ Alhajji argues that energy security has “different meanings to different people at different moments in time”⁵² and that “even energy literature has failed to come up with a definition that most people can agree on”⁵³. Because of its polysemic nature and sporadic focuses, energy security remains a “slippery”⁵⁴, “vague”, “rather blurry” and “inherently difficult” concept.⁵⁵ Considering its research timeframe and scope, this thesis employs the commonly used UNDP definition of energy security, which is “the availability of energy at all times in various forms, in sufficient quantities, and at affordable prices”⁵⁶.

⁴⁸ IEA. 2007. *World Energy Outlook 2007: China and India Insights*. OECD/IEA, Paris.
http://www.worldenergyoutlook.org/media/weowebiste/2008-1994/weo_2007.pdf.

⁴⁹ Barton, B. 2004. *Energy Security: Managing Risk in a Dynamic and Regulatory Environment*. Oxford: Oxford University Press.

⁵⁰ Spanjer, A. 2007. “Russian Gas Price Reform and the EU–Russia Gas Relationship: Incentives, Consequences and European Security of Supply.” *Energy Policy* 35(5): 2889–2898.

⁵¹ Kruyt, van Vuuren, de Vries, & Groenenberg. op. cit.

⁵² Alhajji, A.F. 2006. “The Meaning of Energy Security.” USAEE Blog. Last modified August 22.
<http://blog.usaee.org/?q=node/8#topS>.

⁵³ Alhajji, A.F. 2007 “What is Energy Security?” *Middle East Economic Survey* L(45).

⁵⁴ Chester. op. cit.

⁵⁵ Isbell, P. 2007. “Security of Supply.” *Oxford Economic Forum*, 71: 3–6; Loßchel, A., Moslener, U., Rußbelke, D.T.G. 2009. “Indicators of Energy Security in Industrialised Countries.” *Energy Policy* in press;

Wright, P. 2005. “Liberalisation and the security of gas supplies in the UK.” *Energy Policy* 33 (17): 2272–2290.

⁵⁶ UNDP. 2000. “World Energy Assessment: Energy and the Challenge of Sustainability.”
<http://www.undp.org/content/dam/aplaws/publication/en/publications/environment-energy/www-ee-library/sustainable-energy/world-energy-assessment-energy-and-the-challenge-of-sustainability/World%20Energy%20Assessment-2000.pdf>; Bielecki. op. cit.;

Yergin, D. 1988. “Energy security in the 1990s.” *Foreign Affairs* 67(1): 110-132; IEA. op. cit.; Robert, K. 1975. *The United States and International Oil*. New York: Praeger Publisher.

2.1.2 Evolution of energy security

While there is no coherent and uncontested set of measurements and methodologies adopted by researchers, the community of energy studies is loosely formed by political scientists, economists, engineers, sociologists and geographers. Generally speaking, energy security in the 21st century is associated with geopolitics, market and science, as explained in this thesis. These three energy concepts underpin much of this research, which considers the mechanism and transition of energy security. It is notable that the purpose of this section is not to find an approach that integrates the above three dimensions in the study of energy security, but to build a profile of issues related to energy security. While energy security covers the above three dimensions, a particular case of energy security often presents only one or two dimensions instead of all three.

Geopolitics

Energy security has been linked extensively with geopolitics, strategy and international relations. In this sense, it focuses on the security of adequate supplies of fuels and resources for national energy consumption, such as the military, industry and transportation sectors, by looking at external threats, such as embargoes, sabotage, malicious market activities or terrorism; the capability to control energy supplies; and alternative energy options and suppliers. It also focuses on the interest and power relations among actors in the supply system, particularly threats from sources such as unreliable suppliers, hostile countries and aggressive energy companies. For example, after the British Navy switched from locally produced Welsh coal to imported Middle East oil in the early 20th century, the importance of energy resource supply and transportation routes was accentuated by battles over oilfields in the Middle East, Central Asia and Southeast Asia.⁵⁷

In the post-war era, energy security is important not only to the military, but also to the transportation sector and associated industries. While most developed countries have to import energy to meet national demand, many developing countries rely on exported energy revenues for political stability and development. This global supply system becomes insecure when there are external threats. This was well illustrated by the oil crisis in the 1970s, when Arab countries cut oil supplies to the US, quadrupling the oil price as a protest against its support for Israel. Similarly, in the 2000s the Russian–Ukrainian gas interruption in cold winters drove EU countries to seek alternative gas

⁵⁷ Yergin, D. 1991. *The Prize: The Epic Quest for Oil, Money, and Power*. New York: Simon & Schuster.

transit routes like the North Stream pipeline. Although these are not military actions, they are hostile enough to raise international tension. Indeed, the oil embargo in 1973 and the Russian gas interruption are described as an “oil weapon”⁵⁸ and political levers⁵⁹ in some studies.

In addition, notions like “peak oil”, implying energy shortage;⁶⁰ “oil glut”, referring to reductions of energy export revenues;⁶¹ and “resource curse”, describing the negative effect of over-dependency on energy exports⁶² and increasing demand from energy import countries in Asia have also drawn the attention of energy policy analysts.⁶³ In order to cope with energy insecurity, countries look to international actions. These include power projections such as the Carter doctrine, which states that “the US would use military force if necessary ... in the Persian Gulf region” for “the free movement of Middle East oil”⁶⁴, and the establishment of international organisations such as the International Energy Agency (IEA), which brings countries together to coordinate emergency energy incidents.

Market

In the 1980s and 1990s, the focus of energy security extended, but did not entirely shift, from the source of fuel to the market for energy.⁶⁵ In contrast to its role in driving the modern economy in the post-World War II period, energy is viewed as “just another

⁵⁸ Paust, J., Blaustein, A. 1974. “Arab Oil Weapon: A Threat to International Peace.” *American Journal of International Law* 68:410.

⁵⁹ Percival, B. 2008. “The Risk of Energy Securitization on the Eurasian Continent.” Clingendael International Energy Programme.
http://www.clingendaelenergy.com/inc/upload/files/The_risk_of_energy_securitization_Eurasia.pdf

⁶⁰ IEA. 2010. *World Energy Outlook 2010*. Paris.
<http://www.worldenergyoutlook.org/media/weo2010.pdf>

⁶¹ Robert, D., Hershey, Jr. 1981. “How the Oil Glut is Changing Business.” *New York Times*, 21 June..<http://www.nytimes.com/1981/06/21/business/how-the-oil-glut-is-changing-business.html>.

⁶² Karl, T. 2005. “Understanding the Resource Curse.” In *Covering Oil: A Reporter’s Guide to Energy and Development*, 21-27. New York: Open Society Institute.

⁶³ IEA. 2012. *World Energy Outlook 2012: In-Depth Study on Energy-Efficiency*.
<https://www.iea.org/media/workshops/2012/energyefficiencyfinance/1aBirol.pdf>

⁶⁴ The American Presidency Project. 1980. “Jimmy Carter.” Last modified 23 January.
<http://www.presidency.ucsb.edu/ws/index.php?pid=33079>.

⁶⁵ Jenny, F. 2007. “Energy Security: A Market Oriented Approach.” Paper presented at the OECD Forum on Innovation, Growth, and Equity, Paris, May 14–15.

commodity” associated with economic interests instead of national interests.⁶⁶ In this sense, terms like price, affordability and economic welfare are stressed in certain definitions of energy security; for example, Yergin⁶⁷ refers to the “availability of sufficient supplies at affordable prices”, while Bohi⁶⁸ talks about “the loss of economic welfare ... as a result of a change in the price or availability of energy”. Being commoditised, energy is traded in an open market where “competition is the rule and economics works”⁶⁹. Energy security is privatised, deregulated and depoliticised, similar to other energy sectors.⁷⁰ Although market failure exists,⁷¹ a market that emphasises efficiency, competition, liberalisation, privatisation and transparency is believed to be able to ensure security of supply⁷² and avoid politically motivated disruptions.

The market focus also stresses international cooperation through international organisations, bilateral agreements and good global governance to enhance energy security.⁷³ For example, the Energy Charter Treaty (ECT) and the Organisation of the Petroleum Exporting Countries (OPEC) are set up to promote cross-border cooperation and to stabilise the energy price. The promotion of international cooperation can provide a better environment and positive economic interdependence for the free trade

⁶⁶ Lawson, N. 1989. *Energy Policy: The Text of a Speech Given in 1982*. Oxford: Clarendon Press.

⁶⁷ Yergin, 2006. op. cit. pp70-71.

⁶⁸ Bohi, D. R. and Toman, M.A. 1996. *The Economics of Energy Security*. Massachusetts: Kluwer Academic Publishers

⁶⁹ Mitchell, J., Morita N., Selley, N. and Stern, J. 2001. *The New Economy of Oil: Impacts on Business, Geopolitics and Society*. London: Royal Institute for International Affairs.

⁷⁰ Jegen, M. 2009 “Framing Energy Security: The Case of the European Union.” Paper presented at the ISA Convention, New York.

⁷¹ For example. the Californian energy crisis. Weaver. 2004. “Can Energy Markets Be Trusted? The Effect of the Rise and Fall of Enron on Energy Markets.” *Houston Bus Tax Law Journal* 4

⁷² Littlechild, S. C.; Vaidya K. G. 1982. *Energy Strategies for the UK*. London: George, Allen and Unwin; Bielecki. op. cit.; Yergin, 2006. op. cit.; Erixon, F. 2009. “Europe’s Energy Dependency on Russia’s Commercial Assertiveness.” Brussels: European Centre for International Political Economy. <http://www.ecipe.org/publications/ecipe-policy-briefs/europe2019s-energy-dependency-andrussia2019s-commercial-assertiveness-what-should-the-eu-do/PDF>.

⁷³ Youngs, R. 2009. *Energy Security: Europe’s New Foreign Policy Challenge*. Abingdon and New York: Routledge.

of energy in which no overly powerful actors exist. A free market is believed to be the best means of achieving energy security.⁷⁴

Science

Science is another important dimension of energy security, related to notions of resource limitations, vulnerability of technological systems, energy efficiency and renewable energy, and climate change. Notions of limited resources refer to anxiety over whether finite resource supplies, which will be exhausted one day, can meet the world demand given the projected growth in population in the coming decades. This notion was first presented in a 1972 book, *The Limits to Growth*, which attempted to simulate the consequences of Earth–human interaction.⁷⁵ Such concerns are widely discussed in “peak theory”, which refers to the bell-shaped curve of the oil production rate. In any region, the rate of oil production will increase because of source discovery and new infrastructure, but will slow down because of resource depletion in the post-peak stage.⁷⁶

Vulnerability of technological systems refers to the failure of energy facilities, and energy accidents caused by human mistakes or unforeseen incidents. Nuclear accidents in the last three decades, notably the Three Mile Island accident in 1979,⁷⁷ the Chernobyl accident caused by operation deficiencies in 1986⁷⁸ and the Fukushima accident caused by an earthquake in 2011,⁷⁹ vividly reflect the vulnerability of

⁷⁴ Mitchell, Morita, Selley, N. & Stern. *op. cit.*; Youngs. *op. cit.*; Lesage, D., Van de Graaf, T., Westphal, K. 2010. *Global Energy Governance in a Multipolar World*. Surrey..

⁷⁵ Meadows, D.H., Meadows, D.L., Randers, J., Behrens, W.W. 1972. *The Limits to Growth*. New York: Universe Books.

⁷⁶ Hubbert, M.K. 1949. “Energy from Fossil Fuels,” *Science*. 109: 103–109; Gallagher, B. 2011. “Peak Oil Analyzed with a Logistic Function and Idealized Hubbert Curve.” *Energy Policy* 39:790-802; Aleklett, K., Höök, M., Jakobsson, K., Lardelli, M., Snowden, S., Söderbergh, B. 2009. “The Peak of the Oil Age: Analyzing the World Oil Production Reference Scenario in World Energy Outlook 2008.” *Energy Policy* 38(3): 1398–1414.

⁷⁷ Rogovin, M. 1980. “Three Mile Island: A report to the Commissioners and to the Public, Volume I.: Nuclear Regulatory Commission, Special Inquiry Group. Accessed February 28, 2015. <http://www.threemileisland.org/downloads/354.pdf>

⁷⁸ IAEA. 1992. “IAEA Report INSAG-7 Chernobyl Accident: Updating of INSAG-1 Safety Series, No.75-INSAG-7”. Vienna: International Atomic Energy Agency. Accessed February 28, 2015. http://www-pub.iaea.org/MTCD/publications/PDF/Pub913e_web.pdf.

⁷⁹ IEEE. 2011. “Spectrum, Explainer: What Went Wrong in Japan’s Nuclear Reactors”. IEEE Spectrum. Accessed February 28, 2015. <http://spectrum.ieee.org/tech-talk/energy/nuclear/explainer-what-went-wrong-in-japans-nuclear-reactors>.

technological systems that have long-term environmental, economic and political impacts. Such accidents also halted nuclear power development globally. Other than nuclear accidents, the vulnerability of technological systems is also manifested in other energy systems.⁸⁰

Energy efficiency and renewable energy are described as “twin pillars of sustainable energy policy”⁸¹. They are understood to contribute to national energy security. While high levels of energy efficiency can lessen the energy used by end users, renewable energy can reduce the amount of imported energy. Technology plays an important role in the development of these two pillars. Innovation in technology is important to increasing energy efficiency.⁸² Renewable technologies can also improve renewable energy facilities, such as solar panels and wind turbines, which are suitable for energy production in rural and remote regions.⁸³ These technologies are attractive to countries with high demands for energy. For example, China, which has poor energy efficiency, wants to cooperate with European countries which have advanced energy technology.⁸⁴

Climate change is the significant change in weather patterns over a long period of time, observed by scientists. It is often used to describe global warming, which is caused by human activities such as the burning of fossil fuels.⁸⁵ Global warming is understood to have a close link with energy insecurity because of the use of conventional fuel for power in modern society. In order to “prevent dangerous human interference of the

⁸⁰ See. Lovins A.B., Lovins L.H. 1982. *Brittle Power*. Andover, MA: Brick House Publishing Company; Farrell, A., Zerriffi, H., & Dowlatabadi, H. 2004. “Energy Infrastructure and Security.” *Annual Review Environment Resource* 29: 421–469; Lukszo, Z., Deconinck, G., & Weijnen, M. 2010. *Securing Electricity Supply in the Cyber Age: Exploring the Risks of Information and Communication Technology in Tomorrow’s Electricity Infrastructure*. New York: Springer.

⁸¹ Prindle, B., Eldridge, M., Eckhardt, M., and Frederick, A. 2007. *The Twin Pillars of Sustainable Energy: Synergies between Energy Efficiency and Renewable Energy Technology and Policy*, ACEEE Report E074. Washington, DC: American Council for Energy Efficiency.

⁸² Diesendorf, M. 2007. *Greenhouse Solutions with Sustainable Energy*. UNSW Press.

⁸³ World Energy Assessment. 2001. Renewable energy technologies.

⁸⁴ Buijs, B. 2012. “China and the Future of New Energy Technologies: Trends in Global Competition and Innovation.” Clingendael International Energy Programme, Netherlands Institute of International Relations.

⁸⁵ National Research Council. 2010. *Advancing the Science of Climate Change*. Washington, D.C.: The National Academies Press.

climate system”⁸⁶, world leaders convened to discuss climate change via the platform of the United Nations⁸⁷ and consequently signed the Kyoto Protocol, agreeing to reduce their greenhouse gas emissions.⁸⁸ Under the Kyoto Protocol, countries are advised to reduce their use of conventional fuels and shift to renewable energy. Since China and India are believed to be responsible for the generation of approximately two-thirds of the overall increase in greenhouse gas emissions, these countries have to “engineer” their development, which relies on “conventional coal-burning technologies”, in order to reduce environmental damage.⁸⁹ As a result, finite energy resources are more limited, and advanced energy technologies are more important to energy security.

2.1.3 Integrated dimensions of energy security

The above three aspects – geopolitics, market and science – are rooted in three different disciplines, which are political science, economics and engineering. These dimensions can be illustrated by the debate surrounding the rise of China. In terms of the political science dimension, key questions would include: will China control the oil in Africa with its power projection? Will China go to war to secure its access to resources? Or is China able to secure its energy transit route in Southeast Asia, particularly the Malacca Strait? In relation to the economics dimension, major questions include: will the rise of China affect the oil price? Or will China join international organisations to stabilise the energy market? With regard to the engineering dimension, the main questions are: how can China enhance energy efficiency? Or how can China develop renewable energy as a response to climate change? These questions require advice from experts from different fields and lead to different methods in policymaking.

Cherp and Jewell argue that these dimensions increasingly interact with each other in contemporary energy security, making an integrated field of studies, instead of separate approaches or categorisations being necessary to understand energy security.⁹⁰ Several studies have attempted to systematically and comprehensively capture the complexity of energy security. Different frameworks and indicators are

⁸⁶ UNFCCC. 2010. *United Nations Framework Convention on Climate Change*.

⁸⁷ Vogler, J. 2000. *The Global Commons: Environmental and Technological Governance*. Chichester: John Wiley & Sons.

⁸⁸ UNFCCC. 2011. *Kyoto Protocol*

⁸⁹ Helm, D. 2007. ‘The New Energy Paradigm.’ In *The New Energy Paradigm* edited by D. Helm, 9-35. Oxford: Oxford University Press.

⁹⁰ Cherp, A. and Jewell, J. 2011. “The Three Perspectives on Energy Security: Intellectual History, Disciplinary Roots and the Potential for Integration.” *Current Opinion in Environmental Sustainability* 3(4): 202-212.

designed for measurements and predictions. Von Hippel and other researchers, for example, propose a conceptual framework of 25 indicators associated with 29 energy-policy issues categorised by six dimensions: energy supply, economic, technological, environmental, social-cultural and military-security dimensions.⁹¹ Vivoda expands this framework to 44 indicators with three more dimensions: human security, international policy and policy.⁹² Based on these insights, Sovacool further proposes 20 dimensions⁹³ with 200 indicators.⁹⁴

Although these measures and indicators look attractive in reflecting how academia studies energy security, they merely group energy issues in a more complex way. Moreover, since different countries have different energy security concerns and policies at different times,⁹⁵ a checklist of energy concerns makes a limited contribution to understanding the policymaking of energy security. Since energy security has a slippery definition and is dependent on different countries at different times, what the term means for a particular country, China in this thesis, is based on the country's ideas, identity and interactions in the region. Therefore, energy security should be studied empirically based on policy concerns. After all, the energy security of a particular country may not be inclusive of all of the above dimensions, but a particular issue could be regarded as energy security.

Notwithstanding the above, finding an integrated framework to study the universality of energy security is not the purpose of this thesis. Different dimensions could be presented in different cases of energy security. In other words, energy security, which refers to "the availability of energy at all times in various forms, in sufficient quantities, and at affordable prices", could be applied to different dimensions depending on the case in question. Instead, the main focus here is the policy mechanism and policy transition of China's energy security with a focus on the causality of conflict and

⁹¹ Hippel, von, D., Suzuki, T., Williams, J. H., Savage, T., & Hayes, P. 2011. "Energy Security and Sustainability in Northeast Asia." *Energy Policy* 39(11): 6719–6730.

⁹² Vivoda, V. 2010. "Evaluating Energy Security in the Asia-Pacific Region: A Novel Methodological Approach." *Energy Policy* 38(9), 5258–5263.

⁹³ 20 dimensions include availability, dependency, diversification, decentralisation, innovation, investment, trade, production, price stability, affordability, governance, access, reliability, literacy, resilience, land use, water pollution, efficiency, greenhouse gas emissions

⁹⁴ Sovacool, B. K. 2011. "Evaluating Energy Security in the Asia Pacific: Towards a More Comprehensive Approach." *Energy Policy* 39(11): 7472–7479.

⁹⁵ Chester. op. cit., p.887; Yergin. 2006. op. cit.; Kruyt, van Vuuren, de Vries & Groenenberg op. cit.

cooperation in the energy realm. Studying the rationale behind policymaking in Chinese international energy cooperation could help explain how China enhances its energy security.

In the next section, bilateralism and multilateralism are used as lenses to study China's behaviour in international energy cooperation, particularly energy diplomacy and global energy governance. Then, a theoretical framework developed from Hall's theory of paradigm shift is used to analyse whether there has been a change in the Chinese approach.

2.2 Energy security and international relations

According to the IEA, there are five basic strategies for ensuring energy security: "developing domestic resources to the maximum possible, creating strategic reserves, seeking foreign technology and investment, establishing reliable and secure oil trading channels, and making strategic investments in upstream production facilities abroad"⁹⁶. These strategies rely on various forms of coordination in international cooperation that refer to the concepts of energy diplomacy, bilateralism, multilateralism and global energy governance.

2.2.1 Energy diplomacy via bilateralism

Energy diplomacy is defined as government-involved foreign activities that aim to secure an energy resource supply and promote energy business cooperation.⁹⁷ It also refers to the rise of national oil companies (NOCs), which have taken the place of private international oil companies as the main actors in international energy markets. NOC behaviours are often cited as evidence that countries are attempting to secure energy supply and revenue with their diplomatic partners.⁹⁸ Because of the special

⁹⁶ IEA. 2005. *China's Worldwide Quest for Energy Security*. Paris.

⁹⁷ See Chen, S. 2008. "Motivations Behind China's Foreign Oil Quest: A Perspective from the Chinese Government and the Oil Companies." *Journal of Chinese Political Science* 13(1); Taylor, I. 2006. "China's Oil Diplomacy in Africa." *International Affairs* 82 (5): 937-959; Jaffe, A.M. and Lewis, S.W. 2002. "Beijing's Oil Diplomacy." *Survival* 44(1): 115-134.

⁹⁸ See Lieberthal, K. and Herberg, M. 2006. "China's Search for Energy Security: Implications for U.S. Policy." *NBR Analysis* 17(1); Xu, X. 2007. "Chinese NOCs' Overseas Strategies: Background, Comparison and Remarks," Paper presented at the James A. Baker III Institute for Public Policy conference on The Changing Role of National Oil Companies (NOCs) in International Energy Markets, Houston, Tx, March 2007.
http://www.rice.edu/energy/publications/docs/NOCs/Papers/ChineseNOCs_Xu.pdf

nature of the energy market, international energy cooperation has relied heavily on bilateral deals. The bilateral strategy is considered to be efficient and flexible. With fewer parties involved, coordination costs are lower and clarity of interest is easier to attain. Moreover, there are different histories, cultures, domestic politics and economic development levels in different regions, which a bilateral approach can address more directly.⁹⁹

Bilateralism refers to the policy coordination between two countries and “differentiates relations case-by-case based principally on a priori particularistic grounds or situational exigencies”¹⁰⁰. This is a broad and straightforward definition, and diplomatic relations or economic agreements, such as foreign direct investment (FDI), made by two countries are a common example of bilateralism. Since most agreements, including energy agreements, are signed with preferential treatment according to the specific conditions of the contracting countries, there is no generalised principle in bilateral relations. Although multilateral diplomacy¹⁰¹ is not a new concept in the modern world,¹⁰² this thesis only considers bilateral energy diplomacy. Multilateral forms of energy diplomacy are considered as global energy governance, as discussed in the next section.

2.2.2 Global energy governance via multilateralism

Global energy governance can be understood under the concept of global governance, which is defined as “the complex of formal and informal institutions, mechanisms, relationships, and processes between and among states, markets, citizens and organisations, both inter- and non-governmental, through which collective interests on the global plane are articulated, duties, obligations and privileges are established, and differences are mediated through educated professionals”¹⁰³. In this thesis, global energy governance is defined as the designation of all multilateral regulations intended

⁹⁹ Heppell, J. M. 1997. “Confidence-Building Measures: Bilateral versus Multilateral Approaches.” In *Peace and Security in Northeast Asia - The Nuclear Issue and the Korean Peninsula* edited by Y.W. Kihl and P. Hayes, 270, Armonk, New York: M E Sharpe.

¹⁰⁰ Ruggie, J.G. 1993. “Multilateralism: The Anatomy of an Institution.” In *Multilateralism Matters: The Theory and Praxis of an Institutional Form*, 11, edited by J.G. Ruggie, New York: Columbia University Press

¹⁰¹ Multilateral diplomacy is defined as the management of international relations among three or more countries through diplomatic representatives

¹⁰² Boisard, M.A., & Chossudovsky, E. 1997. *Multilateral Diplomacy: United Nations System at Geneva - A Working Guide*. Brill.

¹⁰³ Weiss, T. and Thakur, R. 2006. *The UN and Global Governance: An Idea and its Prospects*. Indiana University Press.

for the management of global energy activities. It focuses not only on energy resources, such as oil, gas, coal, renewables and nuclear energy, but also on local and global externalities, such as environment, health and habitats.¹⁰⁴ Global energy governance is “the setting and enforcement of rules and regulations for global collective energy interests”¹⁰⁵.

In the energy arena, governing energy issues beyond the national level is regarded as global energy governance. Global energy governance follows the logic that the creation of “a global public good would require the intervention of a global institution”¹⁰⁶. In recent years, a number of global governance scholars have attempted to explore the conceptual frameworks that could be applied to energy in a global context.¹⁰⁷ Drawing on a global governance framework, scholars can identify cross-border governance and market failures that require governance intervention to achieve the objectives of global energy governance, covering issues ranging from price stabilisation¹⁰⁸ to climate change.¹⁰⁹ Global energy governance relies on multilateral cooperation both at the

¹⁰⁴ Dubash, N. K. & Florini, A. 2011. “Mapping Global Energy Governance.” *Global Policy*. 2:26–18.

¹⁰⁵ Kong, B. 2011. “Governing China’s Energy in the Context of Global Governance.” *Global Policy*. 2:51–65.

¹⁰⁶ Frei, C. 2007. “Blueprint for a Global Energy Authority.” *Europe’s World*.

¹⁰⁷ See Goldthau, A. 2011. “Governing Global Energy: Existing Approaches and Discourses,” *Current Opinion in Environmental Sustainability*, 3(4), 213-217. For other studies on global energy governance, see Cherp, A., Jewell, J., & Goldthau, A. 2011. “Governing Global Energy: Systems, Transitions, Complexity.” *Global Policy* 2(1): 75-88; Gaye, Christoffersen. 2005. “The Dilemmas of China’s Energy Governance: Recentralization and Regional Cooperation.” *The China and Eurasia Form Quarterly* 3(3):55-79; Dubash, & Florini. op. cit.; Florini, A. 2011. “The International Energy Agency in Global Energy Governance.” *Global Policy* 2: 40-50; Ghosh, A. 2011. “Seeking Coherence in Complexity? The Governance of Energy by Trade and Investment Institutions.” *Global Policy* 2: 106-119; Rapley, C., de Cendra de Larragán, J., McDowall, W. & Ekins, P. 2012. “Stemming the Flow: A New Direction for Climate Change Governance.” Paper presented at Planet Under Pressure 2012, London.; van der Hoeven, M. 2012. “IEA Vision on International Energy Governance.” *Energy Strategy Reviews* 1(2): 73-75.

¹⁰⁸ Goldthau, A. 2011. “The Public Policy Dimension of Energy Security.” In *The Routledge Handbook of Energy Security* edited by B.K. Sovacool, Routledge; Goldthau A., Witte. J.M. 2010. *Global Energy Governance: The New Rules of the Game*. Washington, DC: Brookings Press; Goldthau A., Witte, J.M. 2010. “Back to the Future or forward to the Past? Strengthening Markets and Rules for Effective Global Energy Governance.” *International Affairs* 85:373-390.

¹⁰⁹ Florini A., Sovacool, B.K. 2011. “Bridging the Gaps in Global Energy Governance.” *Global Governance* 17: 57-74.; Cherp, Jewell, & Goldthau. op. cit.

global level, such as through the IEA, the International Energy Forum (IEF), the International Renewable Energy Agency (IRENA) and multilateral development banks, and at the regional level, such as through the Agreement on ASEAN Energy Cooperation, the Energy Charter Treaty and the Asia-Pacific Partnership on Clean Development and Climate.

2.2.3 Multilateralism as an important characteristic in global energy governance

In this thesis, multilateralism via institutions is an important indicator to examine if the energy strategy of China is moving towards global energy governance. The importance of multilateralism in global energy governance can be understood via the connection between multilateralism and global governance.

Global governance is not a synonym for multilateralism, but it is a form of multilateralism. In international relations, multilateralism is the “international governance of the ‘many’”¹¹⁰. According to Keohane, multilateralism is “the practice of coordinating national policies in groups of three or more states”¹¹¹. Similarly, Ikenberry defines multilateralism as the “coordination of relations among three or more states according to a set of rules or principles ... contrasted with interactions based on ad hoc bargaining or straightforward power politics”¹¹². Therefore, multilateralism in the energy world can be understood as three or more countries working on a given energy issue according to a set of rules.

According to Higgott, the reputation of multilateralism is considered to be a principal element of global governance.¹¹³ Weiss and Wilkinson point out that coordination in global governance would be non-hierarchical, or, in other words, multilateral.¹¹⁴ The ideology in global governance departs from bilateralism and embraces

¹¹⁰ Kahler, M. 1992. “Multilateralism with Small and Large Numbers.” *International Organization* 46 (3): 681.

¹¹¹ Keohane, R.O. 1990. “Multilateralism: An Agenda for Research.” *International Journal* 45: 731.

¹¹² Ikenberry, G. J. 2003. “Is American Multilateralism in Decline?” *Perspectives on Politics* 1:533-550.

¹¹³ Higgott, R. 2004. “Multilateralism and the Limits of Global Governance.” CSGR Working Paper No. 134/04

¹¹⁴ Weiss, T. G., & Wilkinson, R. 2014. “Rethinking Global Governance? Complexity, Authority, Power, Change.” *International Studies Quarterly* 58(1): 207-215.

multilateralism.¹¹⁵ Global governance could be understood as a revisited form of multilateralism. While the old strategies of multilateralism are based on state-dominated institutions in a top-down approach, new multilateralism strategies “reconstitute civil societies and political authorities on a global scale, building a system of global governance from the bottom up”¹¹⁶. Global governance enriches the content of multilateralism by involving more countries and regions and implementation via institutions.¹¹⁷ In short, multilateralism is a key characteristic in global governance.¹¹⁸

While multilateralism is more about the collective trust of “self-binding” major actors according to their interests,¹¹⁹ global governance shares the definition of governance in political science as a process of interaction and interdependence among social and political actors or societies and institutions.¹²⁰ Although global governance is not entirely the same as multilateralism, or is considered as a reformation of it, multilateralism plays an important role in enhancing global governance, because both are based on multilateral cooperation.¹²¹ In sum, multilateralism is a key component of global energy governance.

2.2.4 Tension between multilateralism and regionalism

A possible criticism lies in the tension between multilateralism and regionalism in case studies arguing that China is moving towards multilateralism – for example, SCO in the case of China–Central Asia energy cooperation. An obvious criticism is that

¹¹⁵ Chen, C. 2002. “A Review of China’s ‘Global Governance Research.’” (in Chinese) *Practice* 11.

¹¹⁶ O'brien, R. 2000. *Contesting Global Governance: Multilateral Economic Institutions and Global Social Movements (Vol. 71)*. Cambridge University Press.

¹¹⁷ Ren, L. 2014. “Global Multilateral Governance: Achieve Effectiveness and Openness.” (in Chinese) *International Relations Survey* 5.

¹¹⁸ Ibid.

¹¹⁹ Martin, L. 2004. “Multilateral Organisations after the US-Iraq War of 2003,” Harvard University, Weatherhead Centre for International Affairs.

¹²⁰ Kooiman, J. 2003. *Governing as Governance*. London: Sage.

¹²¹ Higgott. op. cit.; Calame, P. & Marin, G. 2005. “Main Points for the Discussion with the United Nations Secretariat.” In *Reforming the U.N. and Redefining Global Governance (Report of the meeting on the reform of the U.N. with the U.N. Secretariat on March 3)*; Zhu, P.P.L. 2014. “Conquest, Contest, and Consent: Evolution of Global Governance.” *NUCB Journal of Economics and Information Science* 59(1): 179-196; Zhu, P.P.L. 2014. “Conquest, Contest, and Consent: Evolution of Global Governance.” *NUCB Journal of Economics and Information Science* 59(1): 179-196.

multilateralism and regionalism are not the same, and that China has moved towards regionalism and country-to-region relations rather than multilateralism.

Regionalism refers to the process of the creation and implementation of regional institutions with a shared identity and similar goals within a geographic region.¹²² Nye defines regionalism as “the formation of interstate associations or groupings on the basis of regions”¹²³. Although regionalism or regional cooperation is not global, it does not have to be separated from the concept of global energy governance. The definition of “global” is flexible in scope, and regionalism could fit in.¹²⁴ Global governance could refer to procedures and practices on either the world or regional level.¹²⁵ Moreover, regionalism is the governance of the “many” in a particular region. Therefore, regionalism relies on multilateral approaches as well and could be understood as regional multilateralism. Regionalism could be considered to be a part of global energy governance.

Although there have been long debates about regionalism and multilateralism and their different contributions to globalisation,¹²⁶ regionalism and multilateralism are two components of the same historical process of global governance of different issues, including energy.¹²⁷ Yu Ye points out that global energy governance does not merely

¹²² Ethier, E. 1998. “The International Commercial System.” *Essays in International Finance* 210.

¹²³ Nye, J. 1968. *International Regionalism*. Boston: Little Brown and Company

¹²⁴ Higgott. op. cit.; op. cit.; Zhu. op. cit.

¹²⁵ Weiss & Wilkinson. op. cit.

¹²⁶ See Teunissen, J.J. 1998. *Regional Integration and Multilateral Cooperation in the Global Economy*. FONDAD; Ito, T. & Krueger, A. 1997. “Regionalism Versus Multilateral Trade Arrangements.” *NBER-EASE* 6; Winters, A. 1999. “Regionalism Versus Multilateralism”, Policy Research Working Papers, World Bank; Lawrence, R.Z. 1996. *Regionalism, Multilateralism, and Deeper Integration*. Washington, DC: The Brookings Institution; Mansfield, E. & Reinhardt, E. 2003. “Multilateral Determinants of Regionalism: The Effects of GATT/WTO on the Formation of Preferential Trading Arrangements.” *International Organization* 57(4):829-862.

¹²⁷ See Ruland, J. 2011. “Southeast Asian Regionalism and Global Governance: ‘Multilateral Utility’ or ‘Hedging Utility.’”, *Contemporary Southeast Asia: A Journal of International and Strategic Affairs* 33; Nakagawa, J. 2012. *Multilateralism and Regionalism in Global Economic Governance: Trade, Investment and Finance*. Routledge; Gabriela, S.M. & Zirra, D. 2013. “Regionalism Versus multilateralism: Important Pieces in Reforming the Global Economic Governance.” In *Advances in Fiscal, Political and Law Science* edited by Vladimir Marascu-Klein; Behr, T. & Jokeia, J. 2011. “Regionalism & Global Governance: The Emerging Agenda.” *Study & Research* 85; The Commission on Global Governance. 1995. *Our Global Neighbourhood*. Oxford: Oxford University Press.

focus on international organisations at the top layer of the world system, but can also include regional coordination from the bottom layer.¹²⁸ More explicitly, beyond mechanisms at the global level, regional coordination can also form the foundation of global energy governance. A study by Jokela and Behr¹²⁹ points out the potential contribution of regionalism to global governance as the world enters a new era of multipolarity. Therefore, in principle, multilateralism and regionalism are not exclusive under the umbrella of global governance.

Moreover, this thesis examines whether China is moving towards “global energy governance” instead of “multilateralism”. As discussed above, global energy governance is not equated with multilateralism. Instead, multilateralism is part of global governance and is used as an indicator of global energy governance. Again, multilateralism is a key component in regionalism, because it is also “the practice of coordinating national policies in groups of three or more states” on a regional level. Since regionalism is also part of global energy governance, it is sensible to use multilateralism as the indicator to examine whether China is moving towards global energy governance via regionalism.

In the case of China–Central Asia relations, one may argue that energy cooperation via SCO is merely regionalism, but it could be identified as evidence of a multilateral approach to promoting global energy governance. However, if the energy cooperation in China–Central Asia relations is in fact based not on multilateralism or a multilateral approach in regionalism, but on bilateral approaches, then it does not point to global energy governance and remains energy diplomacy. In short, multilateralism is used to examine whether the energy strategy of China is moving towards global energy governance.

In the context of international relations, the meaning of the terms “bilateralism” and “multilateralism” is much more complicated. While bilateralism and multilateralism include the participation of two actors and three or more actors respectively, multilateralism is the practice of policy coordination “through ad hoc arrangements or by means of institutions”¹³⁰ on the basis of generalised principles of conduct.¹³¹ Other

¹²⁸ Interview with Ye Yu, Shanghai, 28 May 2014.

¹²⁹ Jokela, J. & Behr, T. 2011. “Regionalism & Global Governance: The Emerging Agenda.” Working Paper, Notre Europe. Accessed February 28, 2015. <http://www.eng.notre-europe.eu/011-2751-Regionalism-Global-Governance-The-Emerging-Agenda.html>

¹³⁰ Keohane. op. cit., p.731

¹³¹ See Ruggie, op. cit.

than the number of actors, institutions and principles are also important in explaining why countries choose to adopt a certain approach.¹³² Therefore, the observation of institutions is important in the analysis of global energy governance, because institutionalisation implies the legitimacy and appropriateness of global energy governance.

According to Keohane, a change in issue density is the reason why a country moves towards the creation of multilateral institutions.¹³³ Martin argues that self-interest will lead countries to multilateralism if it can fulfil their purpose, such as to increase certainty in handling an issue with other countries.¹³⁴ On the other hand, comparative interests could also force countries to choose bilateralism. In order to explain why change occurs, this thesis applies Hall's concept of policy paradigm shift, which is discussed in the next section.

2.3 Paradigm shift and energy policy

As already noted, energy security is a slippery and multidimensional concept that does not deny the possibility of change. Various ways of understanding energy security have resulted in a range of changing governance solutions. This section outlines a theoretical framework to conceptualise the process of change with reference to Hall's concept of the policy paradigm, which is applied to a growing number of policy studies that look at the role of ideas in policymaking.¹³⁵ This section first explains why paradigm

¹³² As John Gerard Ruggie argues, "Norms and institutions appear to be playing a significant role in the management of a broad array of regional and global changes in the world system today." See Ruggie, op. cit., p.3. Also, Keohane says that institutions are significant in contemporary world politics. See Keohane. op. cit., p.733.

¹³³ Keohane. op. cit. p., 744.

¹³⁴ Martin, L. 1993. "The Rational State Choice of Multilateralism." In *Multilateralism Matters: The Theory and Praxis of an Institutional Form*, 93, edited by J.G. Ruggie, New York: Columbia University Press

¹³⁵ Hall, P. 1993. "Policy Paradigms, Social Learning, and the State: The Case of Economic Policymaking in Britain." *Comparative Politics* 25(3): 275-296; Hay, C. 2011. "Pathology Without Crisis? The Strange Demise of the Anglo-Liberal Growth Model." *Government and Opposition* 46(1): 1-31; Hay, C. 1996. "Narrating Crisis: The Discursive Construction of the Winter of Discontent." *Sociology* 30(2): 253-277; Hay, C. 1999. "Continuity and Discontinuity in British Political Development." In *Postwar British Politics in Perspective* edited by David Marsh et al. Cambridge: Policy Press; Hay, C. & Wincott, D. 1998. "Structure, Agency, and Historical Institutionalism." *Political Studies* XLVI: 951-957;

matters in energy policy. Then it presents Hall's concept of a policy paradigm shift, followed by a framework of five levels of energy-policy issues against which change can be measured. It also considers the role of narratives in the previously discussed dimension catalysts and enablers of change.

2.3.1 Energy policy paradigm

The term “paradigm” is widely used to address the changing energy world in studies of policy and governance,¹³⁶ technological innovation,¹³⁷ scenario building¹³⁸ and risk management.¹³⁹ Paradigm means the pattern, referring to a “set of assumptions, concepts, values, and practices that constitute a way of viewing reality for the community that shares them”¹⁴⁰. It is a heuristic tool used to identify a particular process pattern.¹⁴¹ Khun introduced the term as “an accepted model or pattern for a

Campbell, J.L. 1998. “Institutional Analysis and the Role of Ideas in Political Economy.” *Theory and Society* 27(3): 377-409; Schmidt, V. A. 2006. *Democracy in Europe: The EU and National Politics*. Oxford: Oxford University Press.

¹³⁶ Goldthau, A. 2012. “From the State to the Market and Back: Policy Implications of Changing Energy Paradigms.” *Global Policy* 3(2): 198–210; Tsang, S. & Kolk, A. 2011. *The evolution of Chinese policies and governance structures on environment, energy and climate: Environmental Policy and Governance*.; Carson, M., Burns, T., & Calvo, D. 2011. *Paradigms in Public Policy: Theory and Practice of Paradigm Shifts in the EU*.; Lang, P. et al. 2011. “Paradigms, Policy and Governance: The Politics of Energy Regulation in the UK Post-2000.” *Environmental Policy and Governance*. 21(4): 291–302; Kuzemko, C. 2011. *UK Energy Governance in the Twenty-first Century: Unravelling the Ties that Bind*, Warwick University; Flavin, C. & Dunn, S. 1999. “A New Energy Paradigm for the 21st Century.” *Journal of International Affairs* 53(1): 167–190.

¹³⁷ Guerrero, J. et al. 2010. “Distributed Generation: Toward a New Energy Paradigm.” *Industrial Electronics Magazine* 4 (1): 52– 64; Reddy, A. K. N. & D'Sa, A. 1995. “Enron and Other Similar Deals vs New Energy Paradigm.” *Economic and Political Weekly*, 30 (24): 1441–1448.

¹³⁸ Nuttall, W. and Manz, D. 2008. “A New Energy Security Paradigm for the Twenty-First Century”, *Technological Forecasting and Social Change*, 75 (8): 1247–1259; Devezas, T., LePoire, D. Matias, J. C. O. and Silva, A. M. P. 2008. ‘Energy Scenarios: Toward a New Energy Paradigm’, *Futures* 40.

¹³⁹ Decker, D. K. and Michel-Kerjan, E. O. 2007. “A New Energy Paradigm: Ensuring Nuclear Fuel Supply and Nonproliferation through International Collaboration with Insurance and Financial Markets”. Discussion Paper. Belfer: Center for Science and International Affairs.

¹⁴⁰ Agnes, M. E. (ed.) 2004. *Webster's New World College Dictionary, fourth edition*. Cleveland, OH: Wiley-Blackwell.

¹⁴¹ Stanislaw, J. 2004. “Energy Competition or Co-operation: Shifting the Paradigm”, *Economic Perspectives* 9(2): 17-20; Gonzalez, Pablo Rafael 2006. *Running Out: How Global Shortages*

given discipline” with reference to scientific studies.¹⁴² A paradigm provides guidance or common ground with which to interpret the world by locating a given phenomenon shared by the community. Yet these interpretations are self-contained and are neither “objective” nor universally “true”¹⁴³.

The term “paradigm shift” is used to describe a profound change in the models of science, economy or social science triggered by new scientific evidence, groundbreaking ideas and crisis. The most notable example, located in scientific evidence, is the Copernican system, which proposed a shift from Ptolemaism to Heliocentrism in viewing the universe. On the other hand, liberal philosophy, which challenges hereditary social models and divine legitimacy, places importance on the individual and led to democratic governance through an idea shift in the 18th century. More recent examples of crisis are the 9/11 terror attacks and the Chernobyl nuclear disaster. While the former sparked the US anti-terrorism campaign to protect its homeland, the latter brought about the anti-nuclear agenda and green-energy innovation in the Western community.

The above examples present a correlation between paradigms and policy agendas across various sectors. For instance, Hall¹⁴⁴ points out that there are several “paradigms of politics” in UK economic governance. In the context of policy and governance, paradigm is a device to analyse how institutes, which consist of rules and practices, structure policymaking. It is “the framework of ideas and standards that specifies not only goals of policy and the kind of instruments that can be used to attain them, but also the very problems they are meant to be addressing”¹⁴⁵. Although these institutions have no particular legal derivation, they are understood to be more formal than social and cultural norms.¹⁴⁶ In this sense, Hall¹⁴⁷ argues that the UK economic policy was not predetermined and was not structured “simply by economic conditions but also by a political dynamic”. Policy paradigm is an interpretive framework. Hall explains that:

Change the Economic Paradigm. New York: Algora Publishing; Clarke, Duncan 2007. *Empires of Oil: Corporate Oil in Barbarian Worlds*. London: Profile Books Ltd.

¹⁴² Kuhn, T. 1962. *The Structure of Scientific Revolutions* Chicago. University Of Chicago Press.

¹⁴³ Popper, K. R. 1934. *Logik der Forschung*. Wien: Julius Springer Verlag.

¹⁴⁴ Hall, P. 1986. *Governing the Economy: The Politics of State Intervention in Britain and France*. Cambridge: Polity Press.

¹⁴⁵ Hall. 1993. op. cit.

¹⁴⁶ Hall. 1986. op. cit.

¹⁴⁷ Ibid.

“policymakers customarily work within a framework of ideas and standards that specifies not only the goals of policy and the kind of instruments that can be used to attain them, but also the very nature of the problems they are meant to be addressing. This framework is embedded in the very terminology through which policymakers communicate about their work, and it is influential precisely because so much of it is taken for granted and unamenable to scrutiny as a whole. I am going to call this interpretive framework a policy paradigm.”¹⁴⁸

These ideas and standards are important to policy analysis in two ways. Firstly, they are how political leaders interpret issues, problems and policy decisions. In other words, they are the links between context and conduct in policymaking.¹⁴⁹ Knowing the connection between ideas – how a problem is addressed and political decisions as policy choices – could help explain the characteristics of the energy policy paradigm of China. Secondly, Campbell argues that ideas can influence policy decisions in a way that the choices of policymakers are constrained by the norms or appropriate procedures of a paradigm.¹⁵⁰ Hall’s policy paradigm theory suggests that policymakers’ actions are informed by a framework of ideas in which they may well believe, whether or not they are overtly aware of the framework’s influence.¹⁵¹

In this sense, a paradigm is a form of elite policy prescription that reflects the specific course of a political action accurately. While policy paradigms are often applied to analysis of macroeconomic policy, they are also used in other complex policy areas,¹⁵² such as energy. Hall¹⁵³ argues that in energy or other policy areas that involve specialist knowledge and technical issues, policy paradigms are a relatively strong tool for analysis.

¹⁴⁸ Hall. 1993. op. cit.

¹⁴⁹ Hay & Wincott. 1998. op. cit.

¹⁵⁰ Campbell. 1998. op. cit.

¹⁵¹ Hall. 1993. op. cit.

¹⁵² Greenaway, John. 1998. “Policy Learning and the Drink Question in Britain 1850-1950.” *Political Studies*, XLVI: 903-18.; Greener, Ian. 2001. “Social Learning and Macroeconomic Policy in Britain” *Journal of Public Policy* 21(2): 133-152.; Larsen, Christian & Andersen, Jorgen. 2009. “How New Economic Ideas Changed the Danish Welfare State: The Case of Neoliberal Ideas and Highly Organized Social Democratic Interests.”, *Governance: An International Journal of Policy, Administration and Institutions* 22(2): 239-261.

¹⁵³ Hall. 1993. op. cit., p.291.

As mentioned,¹⁵⁴ energy, which is put at the top of domestic and foreign policy agendas, is often observed using a paradigm lens and is subject to paradigm shift. Helms studies how paradigm trends in international energy markets influence the policy of energy security.¹⁵⁵ Similarly, Mitchell uses the paradigm concept to study patterns of UK energy policy, arguing that these patterns can reflect the overall socioeconomic paradigm.¹⁵⁶ Discussion related implicitly to paradigm shift also appears in government documents. For instance, political elites have argued that the UK energy governance on energy policy was undergoing “profound change”¹⁵⁷ and has been “in transition”¹⁵⁸. Goldthau concludes that there have been three main energy policy paradigms in contemporary politics. Energy politics, in general, were in a statist paradigm in the 1970s, shifting to a liberalist paradigm in the 1980s. The current paradigm has shifted to interventionism, where state control has again emerged in energy governance patterns. While different energy policy paradigms share a common objective of securing energy supply for national interests, they involve different coordinating policy arrangements.

Resonating with the changing definition of energy security dependent on different political leaders, the above energy paradigms are not necessarily universal. In light of the broad application of paradigm in energy studies, paradigm is considered to be fundamental to understanding the policy of China’s energy security. Paradigm does not merely provide a device for viewing China’s energy governance; it also serves as a starting point for examining policy change. As discussed in Section 2.1, energy security is a multidimensional concept “taking on different specificity depending on the country,

¹⁵⁴ See Goldthau. 2012. op. cit.; Tsang & Kolk. 2011. op. cit.; Fudge, S., Peters, M., Mulugetta, Y., & Jackson, T. 2011. “Paradigms, Policy and Governance: The Politics of Energy Regulation in the UK Post-2000.” *Environmental Policy and Governance* 21(4): 291–302.; Kuzemko. op. cit.; Flavin & Dunn. op. cit.

¹⁵⁵ Helm. 2007. op. cit.

¹⁵⁶ Mitchell, Catherine. 2008. *The Political Economy of Sustainable Energy*. Basingstoke and New York: Palgrave Macmillan.

¹⁵⁷ DTI. 2003. *Energy White Paper: Our Energy Future – Creating a Low Carbon Economy*. London: HMSO.

¹⁵⁸ DECC. 2009. *The Low Carbon Transition Plan: National strategy for climate and energy*. London: TSO; DECC. 2009. *The UK Renewable Energy Strategy*. London: HMSO; DECC. 2011. *Planning our electric future: a White Paper for secure, affordable and low-carbon electricity*. London: HMSO.

energy source and timeframe”¹⁵⁹. Therefore, it is sensible to investigate the most suitable paradigm to use to view Chinese energy policy, as set out in Chapter 3.

2.3.2 Policy paradigm shift

According to Hall, “policy paradigm shift” is an ideational change in policy. Since a paradigm is a set of ideas and standards associated with policy, a paradigm shift is “a dramatic departure in policy goals, based on a new theoretical and ideological framework”¹⁶⁰. A paradigm shift can be understood as “the emergence of an alternative framework of common and shared analysis”¹⁶¹.

Hall¹⁶² further identifies three kinds of change: first order, second order and third order change. First order change refers to changes in “levels (or settings) of the basic instruments of (public) policy”. Second order change means that changes in the “basic techniques used to attain (policy goals are) altered”. Yet these two kinds of change are just “process(es) that adjust policy without challenging the overall terms of a given policy paradigm, much like ‘normal science’”¹⁶³. What leads to a fundamental change or a “paradigm shift” in policy is third order change, which includes changes in “the hierarchy of goals behind policy”, reflecting “a very different process, marked by the radical changes in the overarching terms of policy discourse”¹⁶⁴. It is essential that goals and ideas of a policy are changed. If only instruments of the policy are changed, this is not considered to be a third order change. In light of Hall’s definition, a policy paradigm shift consists not merely of a change in policy mechanism or a policy instrument replacement, but of a change in the ideas and rationales behind the policy, with adjustment in policy goals and techniques in response to new perspectives and past experience. In other words, a policy paradigm shift has taken place when all variables of policymaking have changed.

Yet Coleman points out that without a fundamental shift in the third order, an incremental policy change in the context of the first and second orders could also lead

¹⁵⁹ Chester. op. cit., p. 887; Yergin. 2006. op. cit.; Kruyt, van Vuuren, de Vries & Groenenberg op. cit.

¹⁶⁰ Coleman, W., Skogstad, G. & Atkinson, M. 1997. “Paradigm Shifts and Policy Networks: Cumulative Change in Agriculture.” *Journal of Public Policy* 16(3): 273-301.

¹⁶¹ Helm. 2007. op. cit., p. 9.

¹⁶² Hall. 1993. op. cit., 278-279.

¹⁶³ Ibid., p.279.

¹⁶⁴ Ibid., p.279.

to a broader shift in policy paradigm. Hall¹⁶⁵ argues that a paradigm has to be shared among crucial social actors to have a significant impact; hence, he describes the process of a paradigm shift as “social learning”. Similar to historical change in scientific disciplines, in this process it is “often impossible for the advocates of different paradigms to agree on a common body of data against which a technical judgment in favour of one paradigm over another might be made”¹⁶⁶. The implications of a process of “social learning” are that policy paradigm shift tends to be a sociological process, that disputes over who is identified as the authoritative group of policy experts are likely to happen during the shift and that past policy experience is influential to the success of a policy paradigm.¹⁶⁷

2.3.3 Why profound change occurs

Scholars point out that change is considered as diachronic, taking place over a period of time. While some consider change as a revolutionary process, others view it as an evolutionary process. The difference between them is the continuity, pace and degree of change. It is notable that, in the long term, an evolutionary change is considered to be able to lead to as profound a change as revolutionary change.¹⁶⁸ Both types of change are relevant in paradigm shifts, although the degree of relevance differs across countries.

The notion of change has been associated with periods of crisis in literatures ranging from economics to sociology to human biology, drawing distinctions in regard to the formation of new institutions, social transformations, new economic behaviour or biological adaptation between moments.¹⁶⁹ A common understanding about human behaviour among these applications of crisis is that change can come about when

¹⁶⁵ Ibid., pp. 270-276.

¹⁶⁶ Ibid., p. 280.

¹⁶⁷ Ibid., p. 280.

¹⁶⁸ Marsh, David. 1999. “Introduction: Explaining Change in the Postwar Period” *In Postwar British Politics in Perspective*, edited by David Marsh. Cambridge: Policy Press. p.10; Campbell, John L. 2004, *Institutional Change and Globalization*. Princeton and Oxford: Princeton University Press. p. 33-35; Mahoney, James & Thelen, Kathleen. 2010. *Explaining Institutional Change: Ambiguity, Agency, and Power*. Cambridge: Cambridge University Press. 23-31

¹⁶⁹ Mahoney, J. 2000. “Path Dependence in Historical Sociology.” *Theory and Society* 29: 507-548, p.1; Lang, K., Lang, P., Bauer, C., Duranton, C., Wieder, T., Huber, S. & Lang, F. 2005. “Mechanisms of Suicidal Erythrocyte Death.” *Cellular Physiology and Biochemistry* 15(5): 195-202; Klein, N. 2008. *The Shock Doctrine: The Rise of Disaster Capitalism*. London: Penguin Group.

everyday life is perceived as being disrupted. A crisis could be an abrupt change in external circumstance, new scientific evidence found in mainstream knowledge or the emergence of revolutionary ideas.

The understanding of crisis here is not merely as an external condition, but as a moment that could lead to “decisive intervention”¹⁷⁰. A crisis in which agency decisively acts against structure could arise in different ways, representing shock or insecurity.¹⁷¹ In short, crisis causes change when “the historical context changes to a sufficient degree, making it increasingly hard to reconcile the existing mindset of policymakers, with the evidence leading eventually to new objectives and new policy instruments”¹⁷². Therefore, Hay argues that large-scale policy change could occur during a crisis.¹⁷³

A consistent perception across energy security, covering different moments in different countries, is that energy has entered a period of crisis. The Chernobyl disaster and the Fukushima incident have triggered a paradigm shift from pro-nuclear to anti-nuclear in most developed countries. The abrupt cutting of the Russian gas supply to Europe in the mid-2000s took geopolitics back to the discussion of energy, which was dominated by market principles at that time. Scientific proofs of the anthropogenic causes of climate change have triggered a shift to green energy.

Philip Andrews-Speed examines transitions in paradigms or institutions¹⁷⁴ with an institutionalist lens and argues that there are two drivers of change in energy policy: exogenous and endogenous.¹⁷⁵ Exogenous drivers refer to actors, either individuals or

¹⁷⁰ Hay, Colin. 2001. “The ‘Crisis’ of Keynesianism and the Rise of Neoliberalism in Britain: an Ideational Institutional Approach” in *The Rise of Neoliberalism and Institutional Analysis*, edited by John L. Campbell and Ove K. Pedersen, Princeton: Princeton University Press.

¹⁷¹ Hall. 1993. op. cit., pp. 278-279.; Mahoney & Thelen. 2010. op. cit., p. 494; Blyth, Mark. 2002. *Great Transformations: Economic Ideas and Institutional Change in the Twentieth Century*. New York: Cambridge University Press.; Chwioroth, Jeffrey M. 2010. “How do Crises Lead to Change? Liberalizing Capital Controls in the Early Years of New Order Indonesia.” *World Politics* 62(3): 496-527.; Widmaier, Wesley, Blyth, Mark & Seabrooke, Leonard. 2007. “Exogenous Shocks or Endogenous Constructions? The Meanings of Wars and Crises.” *International Studies Quarterly* 51, pp. 747-759.

¹⁷² Helm. 2007. op. cit., p. 9.

¹⁷³ Hay. 1996. op. cit.

¹⁷⁴ Andrews-Speed defines institutions as “humanly devised constraints, formal and informal, and their enforcement characteristics”

¹⁷⁵ Andrews-Speed, P. 2012. *The Governance of Energy in China Transition to a low-carbon economy*. New York: Palgrave Macmillan.

organisations, that seek to change institutions in order to favour their own interests in reaction to changing environments, prices, assets, power or the emergence of new actors. Endogenous drivers refer to changes in long-term trends in a society, such as population, wealth distribution and economic structure. On top of these drivers, Andrews-Speed also highlights the importance of ideas in transition, as they provide the framework for governance and underpin the behaviours of actors in policymaking processes.

Scholars from the Copenhagen School have also worked on the connection between crises (security threats) and policy action with the theory of securitisation. They question how an actor can transform a certain matter into a crisis or an issue of security in order to act beyond normal political practices to tackle the problem.¹⁷⁶ When a subject is securitised as a threat to national security, it is politicised and politicians become more involved.¹⁷⁷ An important idea is that the fear of insecurity can generate a sense among policymakers that something has gone wrong and that a counter-measure is needed.¹⁷⁸ This implies that crisis or insecurity is the point at which change is triggered.

Scholars argue that crisis is not a self-existent phenomenon and requires further narrative or explanation.¹⁷⁹ One has to demonstrate the existence of crisis before linking it with change.¹⁸⁰ In other words, narratives, or explanations of an event, are important in understanding crisis and change. For a narrative to prevail, it has to be able to appeal to norms and values in a cognitively convincing way.¹⁸¹ Narratives have two roles in the process of profound change. The first relates to the forming of the idea that a crisis or policy failure exists in the political community. The second relates to the explanatory power of the narratives. These two roles imply that, for a profound change to occur, an idea must be able to identify the crisis, provide evidence of policy failure

¹⁷⁶ Barry Buzan, Ole Waever, & Jaap de Wilde, 1998. *Security: A New Framework for Analysis*, Boulder: Lynne Rienner Publishers.

¹⁷⁷ Wæver, Ole. 1995. "Securitization and Desecuritization." in *On Security*, edited by Ronnie D. Lipschutz, New York: Columbia University Press.

¹⁷⁸ Widmaier, Blyth, & Seabrooke. op. cit.

¹⁷⁹ Blyth. op. cit.; Hay. 1996. op. cit.; Widmaier, Blyth & Seabrooke. op. cit.

¹⁸⁰ Hay. 1996. op. cit., p.261.

¹⁸¹ Hay, Colin. 1999. "Continuity and Discontinuity in British Political Development", in *Postwar British Politics in Perspective*, edited by David Marsh et al., Cambridge: Policy Press; Schmidt. op. cit.

and diagnose the required actions. Such an idea can offer a normative critique of current policy and a blueprint for future policy.¹⁸²

In response to changing context, a policy paradigm shift requires a change in ideas.¹⁸³ An important factor here is that there is a perception of an existing alternative policy choice that is based on an entirely different set of ideas addressing the narratives of crisis; hence, it is important to look at the discussion and debates about policy preceding a paradigm shift. For instance, the re-emergence of the peak-oil debate held a wide appeal, spreading fear of energy supply insecurity, and is understood to have contributed to the dominance of geopolitical understandings of energy.¹⁸⁴

Indeed, another reason why narrative is important in understanding energy policy is that energy security has a multidimensional definition that keeps changing. In order to understand what energy security means to a specific country, it is necessary to analyse how the political elites of that country perceive it. However, unlike discourse analysis, which tends to emphasise the strategic role of narrative in achieving political ends,¹⁸⁵ this thesis understands narratives in a more ideological sense – as being populated by sets of ideas believed by political elites. In other words, what is important for profound change in Chinese energy governance is not merely the events that have occurred, but how they are interpreted by Chinese political elites.

2.3.4 Five levels of policy paradigm analysis

Although there might be different policy paradigms leading to different governing methods, Hall points out that the policymaking process is made up of several common variables, which are “overarching goals that guide policy in a particular field, the techniques or policy instruments used to attain these goals, and the precise setting of these instruments”¹⁸⁶.

Taking Chinese energy diplomacy as an example, the goal of China’s energy diplomacy in Africa is to secure a sufficient and diversified supply of oil. The techniques or policy instruments adopted to achieve this object were centred initially on the “going

¹⁸² Blyth. op. cit.

¹⁸³ Helm. 2007. op. cit., p. 15.

¹⁸⁴ Simmons, M. 2005. *Twilight in the Desert: The Coming Saudi Oil Shock and the World Economy*. John Wiley.

¹⁸⁵ Wæver. op. cit.; Leggett, J. 2005. *Half Gone: Oil, Gas, Hot Air and the Global Energy Crisis*. Portobello Books.

¹⁸⁶ Hall. 1993. op. cit., p. 278.

out” strategy and establishment of bilateral relations with the oil-rich countries in Africa. The precise setting is carried out by national oil companies that deal with the overseas investments in Africa.

However, there are at least two criticisms pointing to fundamental problems with Hall’s paradigm shift. Firstly, Hay argues that, in the social learning process, policy failure does not always produce learning, and governments are not always able to revise their policy goals in response to failure. For instance, Zha Daojiong points out that the Chinese government has failed to identify policy problems in decision-making on energy conservation policy, and that although the need for a fuel tax was endorsed by government-controlled media in 1996, China is still discussing the opportune time to set such a tax after nearly a decade of discussion with academia and the public. This reveals that Hall’s social learning approach neglects contestation and consensus-making in the policy process. Instead, it assumes that policymakers are always rational and that policy paradigm shift is a rational process of failure identification, deliberation and reaction.

Secondly, as discussed above, Hall emphasises ideas, policy goals and policy instruments in policy paradigms, but this approach does not place enough emphasis on the physical structure of governance, such as institutions, powerful actors, property controllers or informal elite networks. These governance institutions or actors reinforce ideas in a policy paradigm and limit the entry of new ideas. These actors can “set the parameters of what people talk about as well as of who talks to whom in the process of policy-making”¹⁸⁷, thereby allowing or restricting “the access of social groups to political leaders and bureaucratic officials”¹⁸⁸. These actors are important in understanding policymaking in the sense that they have the authority to reinforce and decide upon the appropriate ideas or rationales behind a policy. Their influence could be even more significant if changes in structure occur. In short, Hall’s concept has failed to address the reason for change and the authority to decide what to change.

The above two criticisms reveal the weakness of Hall’s concept, which is refined in this thesis accordingly. In response to the first criticism, this thesis emphasises the political dimensions of why profound change occurs. In relation to the second criticism, this

¹⁸⁷ Schmidt, V.A. and Radaelli, C. M. 2004. “Policy Change and Discourse in Europe: Conceptual and Methodological Issues.” *West European Politics* 27(2): 183-210. p.197

¹⁸⁸ Yee, A. S. 1996. “The Causal Effects of Ideas on Policy.” *International Organisation* 50(1), p.92

thesis takes the physical structure of governance into account in analysing the policymaking process, because it represents the appropriation or legitimacy of ideas.

Based on the above variables suggested by Hall, Kuzemko argues that it is possible to separate the policymaking process into five levels:¹⁸⁹

- Ideas about energy;
- Ideas about energy security;
- Goal of energy policy;
- Policy instrument;
- Physical structure of energy policy.

In this five-level framework, each level is considered to be important in understanding how the energy policy paradigm operates, and this thesis follows such treatment. Ideas, goal of energy policy and policy instruments are the three variables that Hall suggests, as discussed above. Physical structure of energy policy is added as a new level, because, as discussed above, it represents the appropriation or legitimacy of ideas. A change in physical structure could alter the ideas in the policy paradigm. These structures are important in the sense that they identify the power actors in China's energy governance who are understood to have the authority to reinforce which ideas are legitimate or appropriate. It is notable that variables regarding ideas about energy and energy security are essential in examining profound change, as changes in them could lead to third order change. They make up the interpretive framework about energy itself, energy security and how these should be governed. These two levels are understood to be highly influential to the other three levels: goal of policy, policy instrument and physical structure of energy policy.

This set of levels of different variables, including ideas, goals and instruments as well as the addition of physical structure, offers an accurate method of measuring change. These levels are adopted in this thesis to analyse change in China's energy security. The following chapters measure changes against the five levels of variables of China's energy security in different case studies. Taking the case of Central Asia as an example, this thesis studies China's energy security approach towards Central Asia by separating it into two paradigms: the energy diplomacy paradigm and the global energy governance paradigm. The energy policy practice in these two paradigms is analysed and compared to measure change against the five levels of variables. A profound

¹⁸⁹ Kuzemko. op. cit., pp.66-68.

change from previous policy practice is required at each level for the case study to claim a policy paradigm shift in China's energy security approach towards Central Asia. In other words, other than first- and second order change in policy instruments and goals, a third order change in ideas informing policy and change in physical governance structure is necessary for a paradigm shift to occur.

A notable point is that it is unrealistic to expect a government to entirely rely on or rule out a particular approach. It is normal for particular bilateral approaches to exist in the global energy governance paradigm, and such a finding is not strong enough to discount a paradigm change. Instead, a policy paradigm shift from energy diplomacy to global energy governance is more about how China's top leaders understand global energy governance and include multilateral approaches in the country's energy security strategy. Therefore, if evidence of a multilateral approach is obvious in the paradigm of global energy governance, the existence of a bilateral approach does not negate the possibility of a profound change in policy, unless it remains the key approach.

If there are changes in the basic instruments or techniques of Chinese energy policy towards Central Asia, for example from bilateral diplomatic approaches to multilateral collaboration approaches, these are considered first order or second order changes. Nevertheless, the most important change is the change in ideas. How China's top authorities change their views on China's energy policy goals reflects the radical changes in the overarching terms of policy discourse. If there is a change in the ideas and goals of China's authorities which is reflected in its energy policy towards Central Asia – for example, an ideological change from bilateralism to multilateralism – this is considered to be third order change and it could be claimed that there has been a policy paradigm shift in China's energy policy approach towards Central Asia. In addition, if China attempts to handle its energy issues in Central Asia via multilateral organisations, this is considered a change in the physical structure of governance, which reflects the appropriation and legitimacy of new ideas. In the contrary, if no obvious changes occur in the above variables, especially in the ideas, goals and physical structure of governance, then it could not be claimed that there has been a policy paradigm shift.

2.4 Chapter summary

This chapter sets out the conceptual framework for this thesis' analysis of China's energy security in the 21st century. In short, energy security is "the availability of energy

at all times in various forms, in sufficient quantities, and at affordable prices”¹⁹⁰ and can be understood with respect to three different dimensions, which are geopolitics, economics and science. International energy cooperation is an approach to enhance energy security and refers to the concepts of energy diplomacy, bilateralism, multilateralism and global energy governance. The difference between energy diplomacy (a bilateral approach) and global energy governance (a multilateral approach) is not only the number of actors involved, but also the institutions and principles in policy coordination. There has been a long debate as to whether China has a tendency to move from bilateralism to multilateralism.

To analyse the change of ideas regarding Chinese energy security, this chapter suggests applying Hall’s concept of a policy paradigm shift and a framework of five levels of variables against which change can be measured, including ideas, policy goals, policy instruments and physical governance structures. In this framework, while the narratives among political elites are studied to understand ideas behind policies as well as the reasons for a profound change, the physical structure of Chinese energy governance is included. In the context of Hall’s concept, a policy paradigm shift could occur when there is crisis, but can only be claimed if there is more than first and second order change in policy instruments: a third order change in ideas and policy goals as well as in the physical governance structure must also occur. The purpose of this thesis is to apply a paradigm shift approach to explain a phenomenon instead of creating a new theory. By discussing the ideas, rationale and characteristics of China’s energy policy, the next chapter goes on to investigate the energy policy paradigm with a focus on China’s energy policy. The physical structure of and key players in China’s energy governance are also discussed in the next chapter.

¹⁹⁰ UNDP. op. cit., p. 113. See also, Bielecki. op. cit.; Yergin. 1988. op. cit.; IEA. 2007. op. cit.; Robert. op. cit.

Chapter 3 - Changes in China's energy security paradigm

Chapter 3 will review Chinese energy security policy in different periods. Through a historical overview of China's energy security, this chapter will analyse the characteristics, ideology and rationale behind China's energy policy. As explained in Chapter 1, the analysis in this chapter is based on data from official documents, communications and interviews with senior experts in the Chinese energy field. While publicly available data are collected from official documents and communications, new primary data are gathered from interviews with senior Chinese energy experts who are involved in the planning or implementation of China's energy security. The data collected to analyse Chinese energy security in this chapter are original and depart from existing works. The chapter begins with a discussion of the energy governance structure in China, which is important for understanding the logic and key players in China's energy policy-making. The chapter goes on to review the historical background of energy development in China and the concepts behind China's energy security policy in different periods. Although the main focus of this thesis is the 2000s, when China adopted a "going out" strategy, it is also important to look into its energy security strategy from the 1950s to the 1990s, which has influenced the ideas of Chinese leaders in more recent times. Finally, the chapter discusses Chinese energy security in different paradigms that lay the foundation for discussion in the empirical chapters.

3.1 The structure of China's energy governance

Before discussing Chinese energy security and policy, it is important to explain the energy governing structure of China. Without a clear grasp of China's governance structure in relation to energy, it is difficult to understand the logic behind and key players in its energy policy-making. China's energy governance structure, particularly its fragmented nature, determines how energy policy decisions are made and helps explain China's attitude and approach towards multilateralism in regard to energy cooperation.

China has been trying to figure out a proper institutional framework to manage its energy sector but no advanced development has been achieved after a number of reformations. In China, there is no single body that governs the energy sector or shapes energy policy as a whole at the national level. Involving a number of ministries and government agencies in the governance of the energy sector results in overlapping duties and inefficient coordination.

3.1.1 The reformation of China's bureaucratic energy sector

China has experienced several rounds of reform in the energy sector since its establishment.¹⁹¹ In the early period from 1949 to the 1980s, key energy institutes in China's energy governance included the Ministry of Petroleum Industry, the State Energy Commission, the State Planning Commission and the State Economic Commission.

Table 3.1 Evolution of energy institutions between 1949 and 1982

Year	Key event
1949	The Ministry of Fuel Industry is established.
1950	The Bureau of Petroleum Administration was established under the Ministry of Fuel Industry. China Chemical Import and Export Company (SinoChem) was established under the Ministry of Trade.
1955	The Ministry of Fuel Industry was divided into the Ministry of Petroleum Industry, the Ministry of Coal Industry and the Ministry of Electrical Power.
1970	The above three Ministries were combined into the Ministry of Fuel and Chemical Industry.
1975	The Ministry of Fuel and Chemical Industry was divided into the Ministry of Petroleum and Chemical Industry and the Ministry of Coal Industry.
1978	The Ministry of Petroleum and Chemical Industry was divided into the Ministry of Petroleum Industry and the Ministry of Chemical Industry.
1980	The State Energy Commission was established to manage the above three Ministries.
1982	The State Energy Commission and the Energy Bureau were placed under the State Economic Commission. The State Council took over the role of managing the three Ministries.

Source: Zhang, J. 2004.¹⁹²

¹⁹¹ For the evolution of energy institutions before 1982, see Table 3.1.

¹⁹² Zhang, J. 2004. *Catch-up and competitiveness in China: the case of large firms in the oil industry*. London, New York: Routledge Curzon

3.1.1.1 Restructure in 1983 – Chinese national oil companies and the Ministries

In the early 1980s, because of increased oil demand and the need for a modernized institutional framework, China restructured its energy sector. The energy industry was divided into upstream and downstream business¹⁹³ and state-owned energy companies were established.¹⁹⁴ Chinese national oil companies (CNOCs), particularly China National Petroleum Corporation (CNPC), Sinopec Group (Sinopec) and China National Offshore Oil Corporation (CNOOC), took over the business functions of the Ministry of Petroleum Industry from that point. These CNOCs had a governmental origin; for example, CNPC, Sinopec and CNOOC took over the upstream business, downstream business and offshore assets of the Ministry of Petroleum Industry respectively.¹⁹⁵

While energy businesses were taken over by CNOCs, governmental duties were assigned to the Ministry of Energy, which was established in 1988. The Ministry of Energy was not created from scratch but was instead a merger of a few energy-related ministries, including the Ministry of Coal Industry, the Ministry of Nuclear Industry, the Ministry of Hydro and Electrical Power and the Ministry of Petroleum Industry. Among them, electrical and coal sectors were more influential in the government and supervised the energy industry in general. Furthermore, the function of the Ministry of Energy overlapped with the State Planning Commission (SPC)¹⁹⁶ and CNOCs. Therefore, the Ministry was abolished five years later in 1993, with its function taken over by the Ministry of Coal Industry and the Ministry of Hydro and Electric Power Industry.¹⁹⁷

From 1993 to 1998, the SPC dominated the supervision of China's energy industry and was in charge of long-term energy plans, authorization of construction projects, final production schemes, distribution of energy commodities and setting import levels.¹⁹⁸ Comparatively, the administrative power of CNOCs remained weak. Since CNOCs were not powerful enough to control and manage the whole energy industry, regional production units like oil fields and refineries tended to be influenced by and relied on local government. Moreover, different parts of the Chinese energy industry were

¹⁹³ Upstream business refers to exploration and production and downstream business refers to refinery.

¹⁹⁴ Zhang. op. cit.

¹⁹⁵ In 1998, CNPC and Sinopec's control of the industry was geographically divided into the north and south of China.

¹⁹⁶ Changed into the State Development and Planning Commission (SDPC) in 1998.

¹⁹⁷ Zhang. op. cit.

¹⁹⁸ Ibid.

broken down into a number of companies, which resulted in inefficient allocation of resources and information flows. The above sets the background to the fragmented governance of China's energy sector.¹⁹⁹

3.1.1.2 Restructure in 1998 – SEC, SETC and SBPCI

In the mid 1990s, China continued to reform its energy sector by separating government from companies' business to create an integrated energy production chain.²⁰⁰ The Chinese government realized the need for effective energy governance and increasing dependence on oil imports.

In 1998, the State Economic Commission (SEC) and Ministry of Domestic Trade merged to become the State Economic and Trade Commission (SETC).²⁰¹ The Ministry of Coal Industry, the Ministry of Power Industry and the Ministry of Chemical Industry were abolished and re-established as the State Bureau of Petroleum and Chemical Industry (SBPCI) under the administration of SETC.²⁰² Taking over the function of the abolished ministries, SBPCI was responsible for energy policy shaping, guideline drafting and supervision of both upstream and downstream business at domestic level as well as energy trade policy coordination at international level. Such arrangement turned SETC to be the most influential authority in China's energy governance.²⁰³ In the same year, the Ministry of Land and Resources (MLR) was formed by merging the Ministry of Geology and Mining, State Administration of National Land, State Oceanic Administration and State Bureau of Surveying and Mapping. It was responsible for the regulation and management of natural resources including mines and shale gas.²⁰⁴

¹⁹⁹ Lin, K.C. 2006. "Disembedding socialist firms as a statist project: restructuring the Chinese oil industry, 1997–2002." *Enterprise & Society* 7(1): 59–97.

²⁰⁰ Guo, S. 2007. *The business development of China's national oil companies: the government to business relationship in China*. The James A. Baker III Institute for Public Policy, Rice University.

Smyth, R., Qingguo, Z. and Wenguo, H. 2001. "Restructuring China's petrochemical enterprises: a case study of the Fushun Petrochemical Company." *Post-Communist Economies* 13(2): 243–61.

²⁰¹ PRC SETC. 2000. *中国工业五十年: 1949-1999 [in English: Fifty years of China's Industry]*. China Economy Publishing.

²⁰² Ibid.

²⁰³ Zhang. op. cit.

²⁰⁴ PRC MLR. 2010. "The main functions." Accessed on 21 August 2013.
http://www.mlr.gov.cn/bbgk/zyzn/201009/t20100908_762243.htm.

It is notable that, in order to handle concerns over energy security, such as increasing oil dependency, the Chinese central government allowed CNOC's presence among the top elite circle in Beijing, increasing the influence of the Chinese oil industry in the country's energy governance.²⁰⁵

3.1.1.3 Restructure in 2003 – NDRC, Energy Bureau and SELG

The restructure of China's energy sector in 1998 was not considered a successful one in improving effectiveness because of poor management and unbalanced interests among all the parties involved.²⁰⁶ The Chinese central government pushed for another restructure of the Chinese energy industry, which followed the broader footprint of the country's governmental reorganization.

In 2003, the National Development and Reform Commission (NDRC) was formed by merging State Development and Planning Commission (SDPC, formerly SPC), part of SETC and restructuring the Economic System Office at State Council. SBPCI and other energy-related bureaus were abolished. Consequently, NDRC became one of the most powerful authorities in Chinese government as well as energy sector. In regard with energy, NDRC is responsible for industry supervision, guideline drafting, policy shaping, oil-reserve management, coordination of international cooperation, etc.²⁰⁷ To facilitate the implementation and monitor of the above duties, the Energy Bureau was set up under NDRC.

However, this Energy Bureau lacked both political and administrative power in coordinating Chinese energy policy. Since different functions were shared by different actors in the Chinese energy sector, the Energy Bureau had to work with other governmental actors and CNOCs' ministry-level ranking. Politically speaking, the ranking of the Energy Bureau was much lower, and hence it was difficult for the Bureau to coordinate policy among these actors.²⁰⁸ Besides, the Bureau was relying on a team of less than 60 officers to deal with energy issues from those that occurred on a daily basis to broader strategy. Therefore, it had to rely on the capacity of other departments

²⁰⁵ Meidan M., Andrews-Speed P., and Xin M. 2009. "Shaping China's energy policy: actors and processes." *Journal of Contemporary China* 18(61): 591–616.

²⁰⁶ Andrews-Speed, P., Dow, S., and Gao, Z. 1998. A provisional evaluation of the 1998 reforms to China's government and state sector: the case of the energy industry. Draft version. Centre for Energy, Petroleum and Mineral Law and Policy, University of Dundee.

²⁰⁷ Meidan, Andrews-Speed & Xin. op. cit.

²⁰⁸ Downs E. 2006. *China's Energy Security Series*. The Brookings Foreign Policy Studies.

in NDRC²⁰⁹ as well as other ministries and CNOCs. The passive and ineffective position of the Energy Bureau is the epitome of the China's energy governance.

A supra-ministerial body, the State Energy Leading Group (SELG) was established in 2003 in face of the above obstacles to the Energy Bureau as well as worsening domestic power shortages.²¹⁰ As shown in table 3.2, most of the members of SELG held ministry- or national-level rank. With its special status²¹¹, SELG was expected to balance interest among CNOCs, build consensus in the sector and provide recommendations to the State Council at critical moments.²¹² This reflects the Chinese leadership's tendency to rely on the experience and knowledge of authorities in handling discrete energy issues. However, at the operational level, the efficacy of SELG was under question as it lacked expertise and daily involvement.²¹³

Table 3.2 Rankings of SELG members

Name	Position in Central Government at the time of joining SELG
Wen Jiabao	Premier
Huang Ju	Vice Premier
Zeng Peiyan	Vice Premier
Ma Kai	Minister, National Development and Reform Commission
Li Zhaoxing	Minister of Foreign Affairs
Xu Guanhua	Minister of Science and Technology
Zhang Yunchuan	Minister, Commission of Science, Technology and Industry for National Defence

²⁰⁹ Including The Department of National Economy, The Bureau of Economic Operation Adjustment, The Department of Fixed Asset Investment, The Department of Foreign Capital and Overseas Investment, The Department of Basic Industries, The Department of Resource Conservation and Environmental Protection, The Department of Trade, The Department of Price, The Office of Key Projects Inspectors.

²¹⁰ Pop, I.I. 2010. "China's energy strategy in Central Asia: interactions with Russia, India and Japan." UNISCI Discussion Papers 24: 197–220.

²¹¹ Table 3.3 shows the list of members of SELG and their ranking.

²¹² Meidan, Andrews-Speed & Xin. op. cit.; Downs, E. 2006. China's Energy Security Series. The Brookings Foreign Policy Studies.

²¹³ Tobin, Damian. 2008 "From Maoist Self-Reliance to International Oil Consumer: A Resource-Based Appraisal of the Challenges Facing China's Petrochemical Sector." *Journal of Chinese Economic & Business Studies* 6 (4). pp. 363–383

Jin Renqing	Minister of Finance
Sun Wensheng	Minister of Land and Resources
Du Qinlin	Minister of Agriculture
Bo Xilai	Minister of Commerce
Li Rongrong	Minister, State-owned Assets Supervision and Administration Commission
Xie Zhenhua	Director, State Environmental Protection Administration
Li Yizhong	Director, State Administration of Work Safety
Chai Songyue	Chairman, State Electricity Regulatory Commission
Ge Zhenfeng	Deputy Chief of the General Staff of the People's Liberation Army

Source: Downs. 2006.²¹⁴

3.1.1.4 Restructure 2008 – NEA and NEC

In 2008, the National Energy Administration (NEA) was created under NDRC to replace the Energy Bureau. NEA holds vice-ministerial ranking and is headed by the vice-minister of NDRC²¹⁵. It is responsible for the supervision of all energy sectors and deals with both domestic and international energy issues, including formulation of energy plans, implementation of the policies, promotion of institutional reform and coordination of international cooperation. However, it is not easy for NEA to fulfil its mandate because of obstacles similar to those the Energy Bureau faced, such as lack of autonomy to coordinate energy policy, overlapping duties with other ministries and NOCs and limited manpower of around 200 staff. The list below explains the broad duties of NEA.²¹⁶

- promoting institutional reform in the energy sector;
- administering energy sectors including coal, oil, natural gas, power (including nuclear power), new and renewable energy;
- taking charge of energy conservation;
- comprehensive utilization of resources in the energy sector;

²¹⁴ Downs. 2006. op. cit.

²¹⁵ In 2008, the vice-minister of NDRC was Zhang Guobao.

²¹⁶ PRC NDRC. 2008. National Energy Administration (NEA) Accessed on 19 December 2014. http://en.ndrc.gov.cn/mfod/200812/t20081218_252224.html.

- guiding scientific and technological advancement;
- organizing and carrying out the R&D of important equipment and guiding the assimilation and innovation of imported complete sets of major equipment;
- organizing and coordinating key energy-related demonstration projects and promoting the deployment of new products, new technologies and new equipment;
- approving, reviewing or examining fixed-asset investment projects for the energy sector within national plans and the scale of annual plans in accordance with the authority stipulated by the State Council;
- energy forecasting and precautions and participating in energy operation coordination and emergency preparedness;
- formulating and implementing national oil reserve plans and policies;
- taking the lead in launching international energy cooperation;
- participating in the formulation of policies related to energy such as resources, finance and taxation, environment protection and addressing climate change;
- making recommendations on energy price adjustment and imports and exports aggregate; and
- undertaking the daily work of the National Energy Commission.”

Although China needs a single authority overseeing all energy issues, the Chinese central government have failed to set up a ministry of energy due to strong opposition from NDRC and CNOCs who are concerned about their maintaining their own influence in the government.²¹⁷ Instead, NEC, an ad hoc high-level advisory body, has been established. Similar to SELG, NEC offers advice about the country’s domestic and international energy policies but has no specific decision-making role. Table 3.3 shows the member list of NEC and their high rankings. It demonstrates that the Chinese leadership tends to rely on the experience and knowledge of authorities in handling discrete energy issues but, similar to SELG, it lacks expertise and daily involvement at the operational level. By comparing NEA with the Energy Bureau and NEC with SELG, it can be seen that the Chinese government has not made any substantial restructuring progress in the management of the energy sector since 2008.

²¹⁷ Downs. E. 2008. “China’s new energy administration.” *China Business Review*, November–December.

Table 3.3 Rankings of NEC members (at 2010 when it was formed)

Name	Position in NEC	Current position in government
Wen Jiabao	Director	Premier
Li Keqiang	Deputy Director	Executive Vice Premier
Zhang Ping	General Office Director	Minister of the NDRC
Zhang Guobao	General Office Deputy Director	Deputy Minister of the NDRC/Director of the NEA
You Quan	Member	Deputy Secretary General of the State Council
Zhu Zhixin	Member	Director of the Central Finance General Office
Yang Jiechi	Member	Minister of Foreign Affairs
Wan Gang	Member	Minister of Science and Technology
Li Yizhong	Member	Minister of Industry and Information Technology
Geng Huichang	Member	Minister of State Security
Xie Xuren	Member	Minister of Finance
Xu Shaoshi	Member	Minister of Land and Resources
Zhou Shengxian	Member	Minister of Environmental Protection
Li Shenglin	Member	Minister of Communication and Transport
Chen Lei	Member	Minister of Water Resources
Chen Deming	Member	Minister of Commerce
Zhou Xiaochuan	Member	Governor of the People's Bank of China
Li Rongrong	Member	Director of the State-owned Assets Supervision and Administration Commission
Xiao Jie	Member	Chief of the State Administration of

		Taxation
Luo Lin	Member	State Administration of Work Safety
Liu Mingkang	Member	Chairman of the China Banking Regulatory Commission
Wang Xudong	Member	Chairman of the National Electricity Regulatory Commission
Zhang Qinsheng	Member	Deputy Chief of the General Staff Department

Source: PRC State Council²¹⁸.

3.1.2 The influential Chinese national oil companies

CNOCs, particularly CNPC, Sinopec and CNOOC, are influential in China's energy sector and policy-making.²¹⁹ Their origins as the ministries in the 1980s and their direct informal access (or *guanxi*) to top Chinese leaders (for example Zhou Yongkang, a former Politburo Standing Committee member who was also once the gatekeeper of China's oil and gas sector) made them key actors in Chinese energy sectors. Another two key factors are their position in the government's political economic agenda and their increasing power as autonomous economic entities.²²⁰

CNOCs receive high attention from the Chinese top leaders due to their significant function in energy security, geopolitics and national development. The growing energy demand has forced China to list oil as a strategic resource for social and economic development, and CNOCs are the key body responsible for obtaining resources.²²¹ CNOCs also have an important role in the Chinese "going out" policy which has been implemented and developed since the 1990s, when Deng Xiaoping was working hard on reform and opening up. Beyond energy security, the policy was meant to establish Chinese companies that could compete with leading international companies.

CNOC's political economic importance can also be measured by its profit-making ability. In 2010, the three largest CNOCs, CNPC, Sinopec and CNOOC, together

²¹⁸ PRC State Council. 2010. "Notification of the State Council on the establishment of the National Energy Commission." Accessed on 13 August 2013. http://www.gov.cn/zwgk/2010-01/27/content_1520724.htm.

²¹⁹ Meidan, Andrews-Speed & Xin. op. cit.

²²⁰ Interview with Paik Keun-wook, London, 29 July 2014.

²²¹ Kong. B. 2005. "An anatomy of China's energy insecurity and its strategies." Pacific Northwest Laboratory for the United States Department of Energy.

accounted for 45% of revenues in China's petroleum and petrochemical industry. As an industrial driver, the contribution of CNOCs has been extended to other domestic areas, such as training specialized expertise, increasing revenues and offering job opportunities.²²² Since economic reform, balanced development and social welfare are prioritized in the agenda of Chinese top authorities, CNOCs are expected to facilitate the Chinese economy. As a result, CNOCs and their subsidiaries enjoy a favourable policy and market environment created by large capital injections, tax benefits, below-market interest rates on loans from state-owned banks.

Since the 1990s, the Chinese central government has allowed CNOCs to enjoy more administrative and financial autonomy to boost their productivity. In other words, the Chinese government's direct control over the energy sector has decreased. Easy access to the government's top leadership enables CNOCs to better implement their own plans. The formation of the State-owned Assets Supervision and Administration Commission (SASAC) in 2003 further strengthened CNOCs' power and provided them with more financial independence.²²³ Since the purpose of SASAC is to protect the state's economic interests, CNOCs enjoy more financial independence and more assets as long as their business is based on economy but not politics.²²⁴

It is notable that although CNOCs enjoy strong autonomy, they are not fully independent because the central government controls them by deciding their top leadership appointments and approvals of their projects and investments. As is a norm in Chinese bureaucratic circles, the careers of the members of a CNOC's leadership heavily depend on how well they go along with the Party's guidelines, interest and priorities. In other words, China's top leaders could terminate the appointment of a CNOC's leaders by judging that they are not in alignment with the country's interest.²²⁵ In addition, the central government could withhold, delay or even disagree the approval of CNOC's project and investment. For example, a CNOC has to seek approval from at least four governmental bodies, NDRC, Ministry of Commerce (MOFCOM), the State

²²² CPCIF. 2011. *China Petroleum and Chemical Industry Federation Annual Report 2010*.

²²³ B. Naughton. 2008. "SASAC and rising corporate power in China." *China Leadership Monitor* 24: 1–9.

²²⁴ Liou. C. 2009. "Bureaucratic politics and overseas investment by Chinese state-owned oil companies: illusory champions." *Asian Survey* 49(4): 670–90.

²²⁵ Deng, Y., Morck, R., Wu, J. and Yeung, B.. 2011. "Monetary and fiscal stimuli, ownership structure, and China's housing market." NBER Working Paper No. 16871, Cambridge, MA: National Bureau of Economic Research, March.

Administration of Foreign Exchange (SAFE) and SASAC, if it plans to submit an investment application that exceeds \$300 million.²²⁶

Consequently, China's energy security concern has made the government more reliant on the power of its oil companies, and the important role of CNOCs is expected to continue.

3.1.3 Other government institutions in the energy sector

Besides the above key actors, there are 19 other government departments as shown in Table 3.4 that deal with energy issues in China, including the Ministry of Foreign Affairs, the Ministry of Commerce, the Ministry of Science and Technology and the Ministry of Transportation. Historically, the Ministry of Foreign Affairs was one of the most powerful actors among all other governmental institutes had a influential role in Chinese energy policy making.²²⁷ However, the need for Chinese domestic economic reform and broader global economic environment increased the importance of the Ministry of Commerce, the Ministry of Finance and also NDRC, China Development Bank and the Export-Import Bank of China in policy-making, especially in trade, economic and energy issues. Besides, the role of local governments cannot be neglected, because of their autonomy to refuse to follow the central policies made by the above bodies.²²⁸ The complex structure involving too many bodies leads to easily changeable, ineffective and lengthy policy-making and consequently impedes the implementation of a coherent energy strategy.

Table 3.4 Government institutions in the energy sector

Government Institution	Function and duties
Ministry of Commerce	Issues licences for energy imports and exports Provides regulations for foreign energy investors in China's energy market and for Chinese investors in overseas energy markets
Ministry of Finance	Formulates tax and fiscal policies in regard to the energy sector

²²⁶ Liou. op. cit.

²²⁷ Jakobson L., and Knox D. 2010. "New foreign policy actors in China." SIPRI Policy Paper No. 26, September.

²²⁸ Liberthal, K. and Oksenberg, M. 1988. *Policy making in China: leaders, structures and process*. New Jersey: Princeton University Press.

Ministry of Foreign Affairs	Establishes commercial and political relations with other countries Supports Chinese investors in overseas energy markets Supervises the overseas activities of Chinese companies to ensure they are in line with foreign policy objectives
Ministry of Land and Natural Resources	Surveys natural resources in China Issues and sets exploration and production licences
Ministry of Water Resources	Responsible for hydro-related management including hydroelectric power Reviews and approves dam projects and hydroelectric power projects
Ministry of Transportation	Supervises and coordinates transportation of energy via road (except rail way) and waterway
Ministry of Railways	Supervises and coordinates coal transportation via railway
Ministry of Agriculture	Supervises and coordinates the use of energy for agricultural purposes in rural areas
Ministry of Human Resources and Social Security	Supervises the employment, income and pension plans of state-owned energy companies
Ministry of Personnel	Makes managerial appointments and decides the personnel structure of state-owned energy companies
Ministry of Science and Technology	Supervises and coordinates research and development of new technology in the energy sector
Ministry of Environmental Protection	Overseas environmental issues in regard to energy sectors
Ministry of Housing and Urban-Rural Development	Supervises and coordinates energy issues such as energy efficiency in urban planning
State-owned Assets Supervision and Administration Commission of the State Council	Overseas state-owned energy companies Appoints top leaders of state-owned energy companies

State Administration of Taxation	Sets and collects income tax from energy companies
State Administration for Industry and Commerce	Supervises energy market and regulations
State Electricity Regulatory Commission	Supervises the electricity and power industry Coordinates the development of electricity markets
Export-Import Bank of China	Allocates Chinese energy-related foreign aid Promotes Chinese trade in energy sectors
China Development Bank	Provides loans for energy projects

Source: Author's own, information collected from official websites of the above departments

3.1.4 The fragmentation of China's institutional energy structure

China's energy administration system has a fragmented structure with constant changes, decentralization and bureaucratic ineffectiveness.²²⁹ As shown in Table 3.1, since the abolition of the Ministries of the Petroleum and Chemical Industry in 1955, China's energy administration system has undergone more than ten reforms and remains unstable. Such changes have not only wasted a lot of resources but also harmed the consistency of energy planning and policy, and they were not beneficial to the macro arrangement of energy development. The current governance structure and the way it is formed have led to an inconsistent and ad hoc management of the energy sector.²³⁰

China's energy administration system is decentralized. As shown in Table 3.4, there are over 20 agencies and institutions that exercise some administrative function related to energy at the same time, and they are each responsible for different issues. As a result, the functions of government and companies in China's energy governance are often mixed. This leads to the disintegration of policy-making in China's energy sector. The same government decree is issued by several government sectors, and different departments could be involved in carrying it out. Since the control of the energy sector has been transferred from the Chinese central government to and distributed among ministries, commissions, CNOCs and local governments,²³¹ the effectiveness in policy planning has been reduced.

²²⁹ Interview with David Zweig, Hong Kong, 1 May 2013.

²³⁰ Kong. B. 2006. "Institutional insecurity." *China Security*, Summer: 65–88.

²³¹ Ibid.

The bureaucratic ineffectiveness of China's energy governance structure has negative impacts on the management and development of its energy sector. The formulation and implementation of energy policy has become a process in which different parties struggle for their own interests.²³² Under such circumstances, CNOCs could enhance autonomy and alter their operations. Constant trade-offs undermine the government's objectives and could lead to a waste of administrative time and resources, which eventually hinders energy development.

Although energy retains a key position in Chinese national strategy, China has not been able to establish a proper energy governance structure for decades. Therefore, it is unrealistic to expect that further reformation could "magically transform China's energy industry".²³³ Obstacles remain not only at the executive level, but also at the institutional level. Competing ministries and government agencies with overlapping functions and ambitious CNOCs with more political importance and financial autonomy have made it more difficult to set and implement consistent and substantial policies. No effective central institution has been successfully created to supervise the energy sector due to the difficulty in balancing interests and building consensus among several different key actors. More importantly, the energy strategy setting relies on the experience and views of senior elites, but the close relationship between top leaders in CNOCs and the Chinese government complicates the policy-making process. As the case of domestic gas market reform showed, while the Chinese central government tries to liberalize the market by lowering the price of gas, the CNOCs prefer a high gas price to maintain their profit. Therefore, Chinese energy governance remains fragmented and ineffective²³⁴.

3.2 A historical overview of China's energy security

Traditionally, the concept of Chinese energy security has highly strategic, economic and geopolitical considerations.²³⁵ Impelled by the objective of every country to survive

²³² Interview with David Zweig, Hong Kong, 1 May 2013.

²³³ Zha, Daojong. 2006. "China's energy security: domestic and international issues." *Survival: Global Politics and Strategy* 48(1): 179–90.

²³⁴ Interview with Zhang Meng, Beijing, 30 October 2014.

²³⁵ Chen, Liuqing. 2013. "能源安全是最重要的战略目标" [in English: Energy security is the most important strategic target], *China Energy Journal*, 28 January, 2013.

and to develop, energy production has become the focus of competition in the world, especially China, whose energy demand increased rapidly following the blooming of the country's economy. It needs a stable and sufficient supply of energy to support its rapid economic development, socio-political stability and sovereignty.²³⁶

While Chinese energy security is closely related to Chinese national security, it is essentially equated to oil security because of China's increasing reliance on "foreign oil" and the desire for self-sufficiency.²³⁷ Since 1993, when China became a net oil importer, Mr Fan Bi, a director from PRC State Council Research Office, points out that Chinese scholars have carried out research into energy security. From the perspective of political realism, most Chinese scholars think that oil is an important part of the security strategy of countries, especially the big energy-consuming countries.²³⁸ Therefore, geopolitical energy competition is the main factor affecting the relations between major countries. On the other hand, they also pay attention to the influence of international energy coordination mechanisms on the promotion of energy security.²³⁹ In terms of its overseas strategy, Chinese energy security emphasizes a "going out" policy. Chinese interaction with both developing and developed countries in accessing resources includes strengthening cooperation with countries that produce, transport and consume oil.²⁴⁰ This section reviews the historical background of China's energy development, the dominant ideology of Chinese energy security and the rationale behind Chinese energy policy in different periods, including 1949 to 1992, the 1990s and the 2000s.

3.2.1 From 1949 to 1992: the mentality of self-reliance

When China was first founded, the oil supply basically relied on imports, and the external dependence rate was very high because the oil industry was in recovery and

²³⁶ In order to maintain its authority, the CPC needs to meet people's economic and nationalistic expectations. As Breslin argues, "it is an unwritten social contract between the party and the people whereby the people do not compete with the party for political power as long as the party looks after their economic fortunes." See Breslin, S. 2005. "Power and production: rethinking China's global economic role." *Review of International Studies* 31 (04), 735.

²³⁷ Interview with Zhao Hongtu, Beijing, 3 November 2014.

²³⁸ Fan, Bi. 2014. *世界能源新格局--美国"能源独立"的冲击及中国应对* [in English: *The new world energy order –The impact of US "energy independence" and China's response*]. China Economy Publisher.

²³⁹ Ibid.

²⁴⁰ Ibid.

in an exploratory stage.²⁴¹ While China's energy security has maintained an intensive focus on securing its oil supplies, the rationale and boundaries of energy security have transformed over the years, but the mentality of self-reliance (zili gengsheng) was the dominant concept in China's energy security from 1949 to 1992.

In the 1950s and 1960s, China relied heavily on imported oil. The US oil trade embargo and the termination of the Soviet oil supply left Chinese leaders with a painful and indelible memory. They learned the lesson that the supply of imported oil is not reliable and can easily be interrupted by hostile parties for political reasons. The breakdown in China–Soviet Union relations resulted in China adopting a comprehensive self-sufficiency policy and formulating an energy security strategy.²⁴²

In order to change this situation and get rid of the impression of being a “lean-oil country”, from the 1950s to the 1970s China discovered and developed several oil fields, including Yumen, Shengli, Liaohe, Daqing and North China oil fields. The discovery of the Daqing and Shengli oil fields in 1959 and 1962 marked a new phase for China's oil industry. What followed was the discovery and exploration of more oil fields, such as Huabei, Dagang, Liaohe, Changqing, Henan, Zhongyuan and Jiangnan. China's oil production skyrocketed, and China became self-sufficient in oil in 1963.²⁴³ A rapid rise in oil production eased the tensions of energy supply fundamentally and changed the backward situation in China's oil industry.

²⁴¹ Since the foundation of the PRC, coal has been the major energy source consumed and occupies almost 70% of China's energy mix nowadays. Chinese authorities pay less attention to coal in China's energy security because China has abundant coal reserves, but the situation is different in relation to oil. Moreover, currently, coal and oil are used in different sectors: power generation and transportation respectively. Since the Westernisation Movement (1861–1894) in the late Qing Dynasty (1644–1977), coal has been the main energy source in the energy consumption structure in China. This only started to change from the 1960s. So far, the proportion of coal in China's energy consumption structure still fluctuates around 70%, while oil only accounts for about 20%, so China is still in the coal era. Because of concerns about energy security, China adopted a negative attitude towards its energy structure, which is actually against the trend to optimise the use of energy. Before the “Eleventh Five Year Plan”, China continued to emphasise a “coal-based” energy structure due to coal's fundamental and strategic position; after the “Eleventh Five Year Plan”, because of the pressure due to climate change, China has not mentioned the “coal basis”, but will still maintain a “coal-based” energy structure for a long time.

²⁴² Leung, Guy. 2011. “China's energy security: perception and reality.” *Energy Policy*.

²⁴³ Zha, Daojiong. 2005. *中国石油安全的国际政治经济学分析* [Analysis of the international political economy of China's oil security], 当代世界出版社.

After 1973, for the purpose of earning foreign income, China began to export crude oil to Japan, Thailand, the Philippines, Romania, etc. According to the China Energy Statistical Yearbook, at its peak, in 1985, China exported 30.03 million tons of oil. However, China began to witness a decrease in oil exports due to the slowing down of oil production and the increasing demand for oil resulting from fast domestic economic development. According to the China Energy Statistical Yearbook, China turned from a net oil exporter into a net oil importer in 1993.²⁴⁴ Although there was no significant disruption in the oil market after the 1970s, supply security remained the core objective of China's energy policy in the next few decades. The People's Liberation Army Navy never forgot or underestimated the US's capability to control Asian shores.²⁴⁵ As a result, the major discourse among Chinese leaders was that as long as China was a net importer, hostile powers would be able to block oil imports by disrupting the trade route in a conflict. This highlights the importance of the mentality of self-reliance, which became a driving force of China's energy strategy.

3.2.2 From 1993 to 2002: the supply-oriented concept of energy

When China became a net oil importer in the 1990s, the global oil market was very different from the time of the oil embargoes in the period from the 1950s to the 1970s. After the reform and opening up, China's economy developed rapidly, but the annual growth rate of oil production in China was still far lower than that of consumption. In 1993, China changed from a net oil exporter to a net importer. The external dependence continued to increase in accordance with the annual increase of import volume. From 1993 to 1996, China's dependence on foreign oil remained at less than 10% and in 1999 it grew to over 20%.²⁴⁶

In the early 1990s, China's energy security policies focused on oil, with the overall goal of increasing domestic output and avoiding imports. This rationale echoed the mentality of self-reliance (*zili gengsheng*).²⁴⁷ Another concern was the price of oil imports, because the country had exported oil to gain hard currency in the 1970s and 1980s. Turning into an oil importer meant that China lost a great deal of foreign income. China tried to increase its domestic production by stabilizing eastern oil fields, developing western and offshore oil fields, increasing the efficiency of oil consumption and imposing temporary import bans on crude oil and oil products. Since none of the above

²⁴⁴ PRC NBS. 2013. *China Energy Statistical Yearbook 2013*, China Statistics Press.

²⁴⁵ Fan. op. cit.

²⁴⁶ Ibid.

²⁴⁷ Leung, Guy. 2014. "Securitization of energy supply chains in China." *Applied Energy*.

measures reversed the growing dependence on foreign oil, China continued to import oil. The concerns about supply security grew because of increasing tension between China and the US on the Taiwan issue, US opposition to China's World Trade Organization (WTO) entry, US renewal of China's most favoured nation (MFN) status and North Atlantic Treaty Organization (NATO) bombing of the Chinese embassy in Belgrade.²⁴⁸

With such a background, the supply-oriented concept of energy became the dominant one from 1993 to 2002. China put forward a goal for energy security, which was to "ensure a stable long-term oil supply".²⁴⁹ China's energy policy during this period was closely in accordance with this goal. As a result, Chinese energy companies started to implement a "going out" strategy.

In March 1993, CNPC was entitled to exploration and operation rights in Bang Yai, Thailand, which was the first time that an oil company from China had been entitled to such rights. Such action marked the Chinese oil companies' entry into the global energy market as well as the commencement of the "going out" energy strategy.²⁵⁰ In July 1993, CNPC obtained a share of the North Twining Oil Field in Alberta, Canada, and, for the first time, produced a barrel of oil abroad.²⁵¹ From 1993 to 1996, Chinese energy companies' foreign investment mostly comprised small-scale projects, such as cooperation on production sharing, improvements in oil field exploration and service, and increasing the production-restoring rate of old oil fields. However, through such cooperation, Chinese energy companies were familiarized with the international energy investment environment, acquired the skill for bidding and obtained useful experience.²⁵²

In 1997, the development of China's foreign energy business progressed into a stable phase. Energy companies cast their attention to the energy market in Central Asia, signing contracts with Kazakhstan, Sudan, Venezuela, etc. on oil and gas exploration and with Turkmenistan, Azerbaijan, Oman, Iraq, Thailand, Myanmar, Canada, etc. on production sharing, joint ventures and leases. These collaborations covered the fields of pipeline construction, oil and gas exploration, ground infrastructure, the

²⁴⁸ Fan. op. cit.

²⁴⁹ Chang, Felix K. 2001. "Chinese Energy and Asian Security." *Orbis* 145, no. 2. 233.

²⁵⁰ Interview with a senior researcher from CNPC, Beijing, 3 September 2014.

²⁵¹ According to statistics from the website of CNPC.

²⁵² Interview with Chen Weidong, Beijing, 8 October 2014.

petrochemical industry, petroleum refining, petroleum sales, etc.²⁵³ Among them, CNPC's exploration project in Sudan and the China–Kazakhstan pipeline project were two large-scale projects. During this phase, China's energy strategy consisted of exploring and investing, with the aim of increasing supply, and encouraging investment in energy construction. Investment in construction was especially remarkable during the 1990s.²⁵⁴ Fixed-asset investment in the energy industry increased by 30 billion yuan each year, with investment in the electric power industry enjoying the greatest increase and the oil industry enjoying the second greatest.

On 1 June 1998 the price formation mechanism of petroleum products was reformed. Through the reform, a connection between the price of domestic and international petroleum was established, marking the internationalization of China's oil production.²⁵⁵ As a result of the Chinese government's long-term policies and mass investment caused by the “going out” strategy, the development of China's energy industry achieved marked progress and expanded overseas. This highlights the importance of the supply-oriented concept of energy, which became a driving force of China's “going out” strategy and influenced China's energy strategy.

3.2.3 From 2002 to now: the concept of source opening up and flow regulating

In the 2000s, the energy security landscape of China was changing. In general, Chinese scholars' discussion on energy security problems became deeper and more integrated. Fan points out that the oil energy challenges that China is currently facing mainly come from three sources: (1) the fierce energy competition among major countries; (2) “China energy threat” discourse in the Western world and the strategic constraints to Chinese overseas energy investment; and (3) limits on the energy supply caused by the instability in energy supply regions in China.²⁵⁶

(1) China gave up its oil isolationism and associated with global oil markets parallel to its entry into the WTO in 2001. It began to deal not only with its oil importers but also with regional and global oil markets. The US invasion of Iraq in 2003 triggered the Chinese belief that if the US was anxious enough to launch a full-scale invasion as an

²⁵³ Zha. 2005. op. cit.

²⁵⁴ Interview with a senior researcher from CNPC, Beijing, 3 September 2014.

²⁵⁵ Shi, Dan. 2000. “我国能源政策回顾与未来的政策” [“China's energy policy and future policy review”], *经济研究参考* [Economic Research Reference], 20:20–27.

²⁵⁶ Fan, Bi. 2014. *世界能源新格局--美国“能源独立”的冲击及中国应对* [The new world energy order - The impact of US “energy independence” and China's response]. China Economy Publisher.

aggressive attempt to gain control of Iraqi oil, then energy security and future oil availability must have been very important and urgent. The 9/11 terrorist attack also complicated Russian attitudes towards pipeline cooperation with China and hence the energy security in Eurasia.²⁵⁷ According to Fan, China's dependence on imported oil started to rise sharply, with its proportion of imported oil increasing from 30% in 2002 to 40% in 2009 and over 50% in 2004. By 2011, the proportion had reached 56.5%.²⁵⁸ Although China is currently the fifth-largest oil producer in the world, Organization of the Petroleum Exporting Countries (OPEC) predicts that it will become the world's largest crude oil importer by 2014.²⁵⁹ The dependence on imported oil in China remained high throughout the first decade of the 21st century due to unabated rises in oil demand in the transportation sector (averaging 9% per year during 2000–2009) and in industry (averaging 5% per year), depletion of domestic reserves and the lack of substitutes for oil as a liquid fuel.²⁶⁰ Therefore, oil security has become one of China's most important focuses.

(2) China's global hunt for oil has triggered the so-called "China energy threat" discourse among other major energy consumers, resulting in broad academic discussion on topics such as the implication of China's external oil strategy, the potential Chinese revisionism in the global political economy and the "resource wars".²⁶¹²⁶² On the other hand, China and its national energy companies believe that foreign countries, particularly in the West, often have a negative perception towards, and hence impose strict regulation on, Chinese overseas energy and resource investment. For instance, the Chinese oil company CNOOC dropped its bid to buy the US oil firm Union Oil Company of California (UNOCAL) in 2005 since the US considered such a deal as a national security threat and a violation of fair trade.²⁶³

²⁵⁷ Gaye, Christoffersen. 2005. "The Dilemmas of China's Energy Governance: Recentralization and Regional Cooperation." *The China and Eurasia Forum Quarterly* 13(3) p.64.

Constantin, Christian. "China's Conception of Energy Security: Sources and International Impacts." Working Paper, no. 43, March 2005.

²⁵⁸ Fan. op. cit.

²⁵⁹ Loder, A. 2013. China to surpass U.S. as world's top crude importer, OPEC says. *Bloomberg*, 2 April. Accessed on 13 December 2014. <http://www.bloomberg.com/news/2013-04-02/china-to-surpass-u-s-as-world-s-top-crude-importer-opec-says.html>.

²⁶⁰ Leung, G., Li R. and Walls, WD. 2012. "Transitions in the Chinese market for refined petroleum products." *OPEC Energy Review* 2012.

²⁶¹ Interview with David Zweig, Hong Kong, 1 May 2013.

²⁶² The China threat is not a new concept and it goes back the late 19th century. This school of thought is now renewed with energy issues.

²⁶³ Interview with researcher from CNOOC, Beijing, 8 August 2014.

Similarly, in the face of increasing foreign direct investment (FDI) from China, Canada and Australia imposed a strict stance on state-owned energy investments in their recent investment guidelines.²⁶⁴

(3) Another important safety concern regarding energy security in Chinese academia is the safety of maritime traffic.²⁶⁵ According to Fan, some scholars expound that the increasingly saturated carrying capacity of the Malacca Strait is the most important long-term factor that influences energy transport security, with piracy and terrorism being the major threats to strait security in peaceful times; in non-peaceful times, the US and the strait countries are capable of making use of the strait to restrict China. Therefore, the “Malacca dilemma” represents an issue not only of economic security but also of political and military security. In 2003, President Hu Jintao publicly claimed that “certain powers” were attempting to control the Malacca Strait, through which over 80% of Chinese imported oil travels, and hence were threatening the security of China’s oil supply.²⁶⁶

Based on this understanding, Zhang Wenmu points out that “the energy security problem in China does not primarily lie in the contradiction between the general supply and demand, but the structural contradictions caused by rigid increase of clean energy demand and the notable lack of energy supply, which is the principal contradiction of China’s energy security; while oil shortage is a major aspect of the primary contradiction in China’s energy security. In the process of globalization, a country’s energy security is not only an economic issue, but also a political and military issue: it is associated with not only the domestic supply and demand contradiction and the external dependence, but also the country’s diplomatic, military influence and the control force to the resource-rich regions in the world.”²⁶⁷ Therefore, Zhang Wenmu put forward the specific policy choices for China: based on the energy advantage, to develop and promote clean coal technology; to substantially increase the nuclear energy consumption proportion; and, finally, to accelerate the construction of the navy and expand international cooperation.

²⁶⁴ Wong, S. et al. 2008. “Mining for China’s Outbound Direct Investment.” *China Law & Practice*. 37–40.

²⁶⁵ Fan. op. cit.

²⁶⁶ Lanteigne, Marc. 2008. “China’s Maritime Security and the ‘Malacca Dilemma’.” *Asian Security*, 4:2, 143–161.

²⁶⁷ Interview with Zhang Wenmu, Beijing, 4 May 2013.

The Chinese authorities did not simply associate restrictions in Chinese energy security with US led geopolitical factors, but also actively explored how to integrate itself into the global energy cooperation system.²⁶⁸ The Chinese government started to adopt the “source opening up and flow regulating” concept for energy security in 2003, which became the dominant concept from the beginning of the 11th Five Year Plan in 2003 to 2010²⁶⁹. This concept was formulated in several official meetings, embodied by official development plans and implemented by Chinese oil companies.

Firstly, such a concept was formulated and confirmed in several meetings. During the Third Plenary Session of the 16th Communist Party of China (CPC) Central Committee in October 2003, the Scientific Outlook on Development was comprehensively introduced, emphasizing a harmonious balance between the development of society and nature.²⁷⁰ This pointed out that the formulation and implementation of the country’s energy security strategy should be guided by the Outlook.

The Fifth Plenary Session of the 16th CPC Central Committee in October 2005 passed the CPC Central Committee’s Advice on the 11th Five Year Plan for the Development of National Economy and Society. The objectives mentioned were “to significantly improve the utilization efficiency of resources and to reduce the energy consumption per unit of GDP by 20%; to accelerate the construction of an environmentally friendly and resource saving society, to intensify environmental protection efforts, to practically protect natural ecology, to develop a cyclic economy, to resolve the prominent environmental problems that hinder economic growth and jeopardize people’s health, to form within the society a healthy and civilized consumption pattern and economical growth pattern”.²⁷¹

In October 2007, during the CPC’s 17th National People’s Congress, the proposals raised included “to thoroughly apply the Scientific Outlook on Development, to establish

²⁶⁸ Fan. op. cit.

²⁶⁹ Gaye, Christoffersen. 2005. “The Dilemmas of China’s Energy Governance: Recentralization and Regional Cooperation.” *The China and Eurasia Forum Quarterly* 13, no. 3 64.

Constantin, Christian. 2005. “China’s Conception of Energy Security: Sources and International Impacts.” Working Paper no. 43.

²⁷⁰ Hu Jintao speech at the third Plenary Session of the 16th CPC Central Committee in October 2003.

²⁷¹ PRC CPC. 2005. 中共中央关于制定 “十一 五” 规划的建议 [CPC Central Committee on the development of the “Eleventh Five-Year Plan”]

<http://cpc.people.com.cn/GB/64162/64168/64569/65414/4429220.html>.

an ecological civilization, to formulate a basic growth pattern, industrial structure and consumption pattern that are environmentally friendly and economical; to stick to a comprehensive, balanced and sustainable development mode ... to build an environmentally friendly and resource saving society, to strengthen energy resource saving and ecological environment protection, to improve sustainability”.²⁷²

Secondly, a development plan was formulated by the government to fulfil the concept. In June 2004, the Outline of China's Medium and Long-term Energy Development Plan was passed in the State Council's executive meeting.²⁷³ It set the energy development strategy and policy objectives. The principles put forth in the outline were: “energy saving is the priority while efficiency is the basis; coal is the basis while diversification of energy is encouraged; domestic market is the foothold while the overseas market is to be explored; urban and rural areas should be planned as a whole and the layout should be appropriate; technology is to be depended on and institutional innovation is needed; the environment should be protected while security should be ensured”.²⁷⁴

In the Outline of the 11th Five Year Plan for National Economy and Society Development, which was passed at the Forth Plenary Session of the 10th National People's Congress in March 2006, a chapter was included on optimizing energy development.²⁷⁵ The chapter expounded the objectives, which were “to firmly take resource saving as the priority, to take the domestic market as the foothold, to take coal as the basis, to achieve diversification of energy, to optimize production and consumption structure and to establish a stable, economical, clean and secure energy supply system”. Moreover, the sixth chapter of the outline was about “building a resource saving and environmentally friendly society”. It further emphasized the objective of “implementing the basic national policy of resource saving and environmental protection, establishing a recycling and sustainable national economic

²⁷² PRC CPC. 2007. “為奪取全面建設小康社會新勝利而奮鬥” Accessed on 13 December 2014. <http://cpc.people.com.cn/BIG5/64162/134580/141428/index.html>.

²⁷³ Xinhua News. 2004. “国务院常务会议原则通过《能源中长期发展规划纲要》[“Energy and long-term Development Plan” approved in State Council executive meeting].” *Xinhua News*, 1 July. Accessed on 13 December 2014. http://news.xinhuanet.com/zhengfu/2004-07/01/content_1559228.htm.

²⁷⁴ Ibid.

²⁷⁵ PRC State Council. 2006. “中华人民共和国国民经济和社会发展第十一个五年规划纲要 [People's Republic of China national economic and social development in the Tenth Five-Year Plan].” Accessed on 13 December 2014. http://www.gov.cn/ztl/2006-03/16/content_228841.htm.

system with low input, high output, less energy consumption and less emission and building a resource saving and environmentally friendly society".²⁷⁶

In April 2007, NDRC formulated the 11th Five Year Plan for Energy Development.²⁷⁷ The plan established the Scientific Outlook on Development and the Construction of a Harmonious Socialist Society as the two guiding principles for energy development. Moreover, it emphasized the strategy of "giving priority to energy saving, taking the domestic market as the foothold, encouraging diversification of energy, protecting the environment, strengthening international cooperation" and the effort to "establish a stable, economical and clean energy system and to support the sustainable social and economic development with sustainable development of energy".²⁷⁸

Thirdly, Chinese energy companies' overseas direct investment was in accordance with the concept. Such investment started in the 1990s. According to Zhang Guobao, former Director of NEA, Chinese energy companies signed 131 contracts with 43 countries and regions on oil and gas exploration and refining, pipeline construction and technological service during the period of the 11th Five Year Plan.²⁷⁹ Oil and gas cooperation zones in the Middle East, Africa, Asia-Pacific, South America and Central Asia-Russia were established. Meanwhile, the field of cooperation was expanded from oil and gas to coal, electric power and clean energy. According to NEA, Chinese energy companies' overseas production reached 50 million tons by late 2009, which raised the security level of overseas oil sources for the country.²⁸⁰ In the wave of the economic crisis in 2009, Chinese energy companies took advantage of the decreasing international energy demand and the dropping energy price to improve the domestic industry, strengthen international energy cooperation and establish a secure, stable and clean energy supply system. These efforts helped to maintain the stable development of the energy industry and to support the fast-developing national economy. China turned into a net coal importer in 2009, during which growth of electricity generation and consumption recovered stably, demand for petroleum

²⁷⁶ Ibid.

²⁷⁷ PRC NDRC. 2007. "能源发展"十一五"规划 [Energy development "Eleventh Five-Year" Plan]." Accessed on 13 December 2014.

<http://www.ccchina.gov.cn/WebSite/CCChina/UpFile/File186.pdf>.

²⁷⁸ Ibid.

²⁷⁹ Zhang, Guobao. 2011. Speech in The Observer Forum 2010, Beijing, 1 January 2011.

²⁸⁰ PRC NEA. 2010. 2009 年能源经济形势及 2010 年展望 [2009 Energy Economic Situation and Prospects 2010].

products grew rapidly and construction of key domestic oil and gas networks ran smoothly.²⁸¹

To put it succinctly, the history of China's energy security concepts demonstrates that international cooperation on energy is one of the paths to the realization of China's energy security.

3.3 Chinese energy policy paradigms: from bilateral to multilateral

Based on the history and development of China's energy security policy, international cooperation is understood to be a crucial element in the realization of energy security. Although it is observed that oil supply security and the mentality of self-reliance (i.e. not relying on others or low dependency) has remained a key concept in China's energy security since the 1950s, China unavoidably opened itself up to international cooperation since it became a net oil importer in the 1990s. Since then, the "going out" strategy has been a predominant method used in China's international energy cooperation. It is through this strategy that China achieved its energy goal of the "energy supply oriented concept" in the 1990s and "the source opening up and flow regulating" concept in the 2000s. During the 1990s and early 2000s, China's international energy cooperation was more concerned with bilateral energy cooperation or, in other words, energy diplomacy.

The importance of international cooperation in the form of multilateralism and energy security was first discussed as a special case in the White Paper on China's Diplomacy 2007.²⁸² In that same year, China issued its first China's Energy Policy White Paper (2007),²⁸³ which emphasized international energy cooperation via bilateral and multilateral approaches. Energy issues were mentioned in previous White Papers on China's diplomacy but lacked a structured discussion on the context of multilateral energy cooperation. The White Paper on China's Diplomacy 2008 emphasized the need for international cooperation in both bilateral approaches and multilateral dialogue to achieve energy security.²⁸⁴ The White Paper noted that China was taking on an increasing leadership role in multilateral energy security dialogues.

²⁸¹ Ibid.

²⁸² PRC MFA. 2007. *中国外交(2007)* [in English: *White Paper on China's Diplomacy 2007*].

²⁸³ PRC State Council. 2007. *中国的能源状况与政策* [in English: *White Paper on China's energy situation and policy*].

²⁸⁴ PRC MFA. 2008. *中国外交(2008)* [in English: *White Paper on China's Diplomacy 2008*].

Eventually, China publically called for global energy governance both at the World Future Energy Summit in Abu Dhabi²⁸⁵ and officially in China's Energy Policy (2012) White Paper.²⁸⁶ Emphasizing international energy cooperation in the form of multilateralism can be regarded as a new understanding of energy security for China. If this is the case, 2007 marked a watershed in development for China's energy security and policy. Whereas the period before 2007 can be regarded as a policy paradigm of energy diplomacy that relied on bilateralism, the period after 2007 can be viewed as a policy paradigm of global energy governance that relied on multilateralism. This section examines the rationale behind China's international energy cooperation in the above-noted periods and examines if there has been a change at the policy-making level.

3.3.1 The policy paradigms of China's energy diplomacy

Chapter 2 provided the definitions of energy diplomacy and bilateralism, and they are used to understand China's international energy behaviour in regard to the Chinese paradigm of energy diplomacy. In short, energy diplomacy refers to the bilateral government-involved foreign activities used to secure an energy resource supply and promote energy business cooperation.²⁸⁷ It is the bilateral way of energy policy coordination, including diplomatic relations, economic agreement and FDI, between two countries. It "differentiates relations case-by-case based principally on a priori particularistic grounds or situational exigencies."²⁸⁸

In its earlier years, energy diplomacy did not constitute an important part of China's overall diplomacy. However, since China turned into an oil-importing country, increasing energy imports and diversifying supply channels have become important tasks for China's energy security strategy. The 11th Five Year Plan stated that the security of China's energy supply should be ensured by "expanding international

²⁸⁵ UPI. 2012. "China urges global energy cooperation." *United Press International*. Accessed on 16 January 2014. http://www.upi.com/Business_News/Energy-Resources/2012/01/16/China-urges-global-energy-cooperation/UPI-77361326740422.

²⁸⁶ PRC NDRC. 2012. *China's Energy Policy (2012) White Paper*.

²⁸⁷ See Chen, Shaofeng. 2008. "Motivations behind China's Foreign Oil Quest: A Perspective from the Chinese Government and the Oil Companies." *Journal of Chinese Political Science* 13(1); Taylor, Ian. 2006. "China's Oil Diplomacy in Africa," *International Affairs* 82(5): 937–959; Jaffe, Amy Myers, and Lewis, Steven W. 2002. "Beijing's Oil Diplomacy." *Survival* 44(1): 115–134.

²⁸⁸ Ruggie, John G. 1992. "Multilateralism: The Anatomy of an Institution." *International Organization* 46(3): 561–98.

energy cooperation”, “actively engaging with the international energy system” and “making full use of the international market”.²⁸⁹

In China’s national strategy, energy and political interests are intertwined: “Oil is the key factor in the creation of public wealth and also one of the most important commodity influencing the global political pattern, economic order and military operations.”²⁹⁰ Opening its market to foreign suppliers, China encourages and assists CNOCs and private energy companies gain direct access to overseas resources. While China wants to guarantee its supply in the long run, foreign suppliers attempt to generate maximum profits among their customers. Chinese authorities consider it imperative to gain control over overseas resources in order to guarantee long-term supplies and avoid being overdependent on other actors. This pragmatic “going out” energy strategy is also referred to as energy diplomacy and draws high academic attention.

Pang Zhongying argues that China’s energy diplomacy is carried out as a part of globalization. It is not merely about the market but involves other complicated considerations of geopolitics and strategies.²⁹¹ China’s former Foreign Minister, Li Zhaoxing, claimed, “our diplomatic work should provide vigorous support to those efforts aiming to promote international energy cooperation.”²⁹² This resonates with other Chinese energy experts, who asserted that there is a need for direct access of overseas energy resources. Chen Huai, an energy expert at the Development Research Center of the State Council, emphasized that China should attempt to exploit overseas energy resources with its technology and capital instead of merely purchasing them.²⁹³

Unlike energy trade, which is negotiated among profit-driven firms by cost-benefit analysis, energy diplomacy is achieved by inter-government agreements and relies on

²⁸⁹ PRC State Council. 2001. “China’s 11th Five Year Plan”. Accessed 23 December 2012. <http://politics.people.com.cn/GB/1026/4208451.html>.

²⁹⁰ PRC State Council. 2003. *China’s National Energy Strategy and Policy*, Development Center, State Council, Beijing.

²⁹¹ Pang, Z. 2012. “Peaceful Development and Energy Diplomacy.” *Outlook Weekly*, 95.

²⁹² Chen, J. 2004. “The Five-Circle Energy Diplomacy of China.” *21st Century Business Herald*. 18 Mar. Accessed on 14 December 2014. <http://www.21cbh.com/HTML/2004-3-18/14529.html>.

²⁹³ EID. 2004. “Chinese Oil Firms ‘Go out’ to Resolve the Oil Predicament.” *Economic Information Daily*. 21 Sep. Accessed on 14 December 2014. <http://finance.sina.com.cn/g/20040921/08431037218.shtml>.

the credibility of states. Therefore, other than commercial interest, energy diplomacy serves as an important tool to achieve national objectives, such as ensuring energy security, managing political risk, expanding international influence and improving inter-state relations.²⁹⁴ In other words, while the promotion of energy resource trade is one of the objectives of energy diplomacy, it can also be used to serve other national interests. For instance, Ian Taylor, a specialist on the international relations of Africa, points out that ideological concerns of non-political intervention and the ambition to position itself as a global player are aspects of China's oil diplomacy in Africa.²⁹⁵

The motto of China's energy diplomacy could be summed up as "going out and bringing in". While China's government became well aware that it had to open its market internationally, China developed a strategy of "going out and bringing in" through bilateral means in the late 1990s. Literally understood, "going out" encourages Chinese companies to invest globally (for example, oil investment in Africa) and "bringing in" aims to attract foreign investment (for example, Europe's clean energy investment in China).²⁹⁶ This followed the overall economic strategy of China at the time. In order to satisfy its growing appetite for energy resources driven by industrial productivity, the "going out" strategy was also applied to China's international energy strategy.²⁹⁷

The actual practice of China's energy diplomacy includes bilateral cooperation with oil-rich states through energy diplomacy, diversification of oil suppliers, acquisition of overseas oil assets by CNOCs, the construction of pipelines to tackle the "Malacca Dilemma" and the modernization of the navy to protect sea-lanes.²⁹⁸ Chinese oil and gas companies, with the three major companies being CNPC, Sinopec and CNOOC, have reached out to oil and gas fields in the Middle East, Central Asia, Africa and South America. They are also planning their entrance into the markets of developed countries and regions such as North America, Europe and Oceania. Chinese oil and gas companies' overseas activities mostly fall in the upstream. Besides importing oil and gas in large quantities, these companies are becoming increasingly proactive in overseas mergers and acquisitions. They have emerged as major actors in mergers and acquisitions, and their overseas equities are growing.

²⁹⁴ Khan, H. 2008. "China's Energy Drive and Diplomacy." *International Review* 91–108.

²⁹⁵ Taylor op. cit.

²⁹⁶ Interview with Zhao Hongtu, Beijing, 3 November 2014.

²⁹⁷ This thesis focus only on "going out" strategy.

²⁹⁸ Ibid.

The above practices rely heavily on bilateral initiatives. Since 1982, China's protection of its FDI, including energy trade and investments, has been reliant on bilateral investment treaties (BITs). This type of treaty is one of the most important international legal frameworks. China has already become one of the largest BIT signers in the world, as of 2015. Although China joined the WTO in 2001, it prefers to handle its overseas energy issues through bilateral approaches. China remains outside the realm of major international energy frameworks, which are dominated by the West, due to its lack of confidence in the ability of these international institutions to protect its own national interests. Such conservative behaviour reflects Chinese scepticism towards international systems, which are understood by the Chinese authorities as Western dominated, and Chinese insistence on state sovereignty, which is top priority on the agenda of Chinese authorities.²⁹⁹ Relying on bilateral approaches, China is attempting to avoid over-participation in and maximize its national benefits from the international system. In sum, bilateralism underpins the policy paradigms of China's "going out" energy diplomacy.

3.3.2 The policy paradigms of China's global energy governance

Chapter 2 provided the definitions of global energy governance and multilateralism, and they are used to understand China's international energy behaviour in regard to the Chinese paradigm of global energy governance. In short, global energy governance is "the setting and enforcement of rules and regulations for global collective energy interests".³⁰⁰ It is "the practice of coordinating national (energy) policies in groups of three or more states"³⁰¹ with a foundation that relies on the multilateral regulations intended for organization and centralization of energy activities on a global scale.

In China's Energy Policy (2007) White Paper, ideas of market stability, climate change and sustainable development were added to the concept of energy security.³⁰² Energy is a vital element that extends beyond national interests in terms of economic power and military fuel. Although oil supply security still maintains a very important role, the government calls for the promotion of other energy issues like international pricing

²⁹⁹ Singh, Swaran. 2010. "China's Quest for Multilateralism: Perspectives from India." *Social and Behavioral Science*, 2(5): 720–729.

³⁰⁰ Kong, B. 2011. "Governing China's Energy in the Context of Global Governance." *Global Policy* 51–65.

³⁰¹ Keohane, Robert O. 1990. "Multilateralism: An Agenda for Research." *International Journal* XLV, p. 731; for a definition of the special features of "regional multilateralism" see Michael, Arndt. 2013. *India's Foreign Policy and Regional Multilateralism*. Palgrave Macmillan, 12–16.

³⁰² PRC NDRC. 2007. *China's Energy Policy 2007 White Paper*.

mechanisms, sustainable environment, solutions for energy-related pollution and low-carbon economies. In order to achieve the above objectives, China emphasizes international energy cooperation as an important means.

Since becoming a net oil importer in 1993, China has become increasingly dependent on the world oil market. As China goes into a deeper process of internationalization, its foreign trade and investment have also increased substantially and have already touched on the existing international rules and order. Although China has already become one of the largest BIT signers in the world,³⁰³ it is argued that international law cannot provide China's overseas energy investment with sufficient protection in terms of national treatment standards and arbitration mechanisms. In the BITs signed with major trade partners, such as Australia, Germany, Hong Kong, Russia, Singapore, South Africa, the UK and the US, national treaties were either non-existent or subject to local law.³⁰⁴ Furthermore some of the international arbitration mechanisms were limited to investor-state dispute settlement. Since there are different laws and regulations amongst different countries, such inconsistencies reduce the legitimacy of international investment arbitration.³⁰⁵ When states realize that bilateral approaches are not sufficient or are too costly to coordinate international issues, they opt for a multilateral approach.

Seeking greater protection of its energy supply, China emphasized the importance of a multilateral approach in handling energy issues in the White Papers regarding energy issues.³⁰⁶ The importance of multilateral cooperation with regard to international energy security was first discussed as a special case in the White Paper on China's Diplomacy 2007 as a response to high oil prices in the mid 2000s.³⁰⁷ Since then, international energy cooperation via multilateral approaches has been discussed in China's Energy

³⁰³ UNCTAD. 2012. "Country-specific Lists of Bilateral Investment Treaties." Accessed on 14 December 2014.

<http://unctad.org/en/Pages/DIAE/International%20Investment%20Agreements%20%28IIA%29/Country-specific-Lists-of-BITs.aspx>.

³⁰⁴ Interview with Asia Coordinator at Energy Charter. Beijing, 3 September 2014.

³⁰⁵ Interview with Asia Coordinator at Energy Charter. Beijing, 3 September 2014.

³⁰⁶ See PRC NDRC. 2007. op. cit. and PRC NDRC. 2012. op. cit.

³⁰⁷ PRC MFA. 2007. op. cit.

Policy (2007) White Paper,³⁰⁸ the White Paper on China's Diplomacy 2008³⁰⁹ and the China's Energy Policy (2012) White Paper.³¹⁰

Alarmed by the global financial crisis in the late 2000s, China further addressed global energy governance. There were two important messages regarding global energy governance delivered publicly by top Chinese leaders. On 9 July 2011, the former Deputy Premier of the State Council, Zeng Peiyan, delivered a speech at the Energy, Resources and Sustainable Development Conference at the Boao Forum, pointing out that in order to prevent the new global economic crisis caused by sharp fluctuations in the prices of energy and resources, a stability mechanism in the global energy resource market should be established under the framework of the G20.³¹¹ On 16 January 2012, when Premier Wen Jiabao attended the World Future Energy Summit held in Abu Dhabi, he pointed out the need to consider establishing a global energy market governance mechanism under the framework of the G20 to effectively ensure energy security,³¹² namely, by setting up a mechanism that includes energy-supplying countries, consuming countries and transit countries based on a principle of mutual benefit.

Echoing the above two claims, China's Energy Policy (2012) White Paper emphasized global energy governance, which can be understood as "the setting and enforcement of rules and regulations for global collective energy interests".³¹³ It called for countries to tackle energy problems collectively and proposed the establishment of an international institute to govern the energy market. It also claimed that China would actively engage in global energy cooperation, which focuses not only on energy resources, such as oil, gas, coal, renewable and nuclear, but also on other local and global externalities such as the environment, health and habitats.³¹⁴

The above observation shows how China's energy policy evolved from multilateral energy cooperation to global energy governance. It echoes the argument in Chapter 2 that the process of change is not necessarily revolutionary but could be evolutionary,

³⁰⁸ PRC State Council. *op. cit.*

³⁰⁹ PRC MFA. 2008. *op. cit.*

³¹⁰ PRC NDRC. 2012. *op. cit.*

³¹¹ Zeng Peiyan. 2012. Speech at BOAO Forum for Asia, Beijing, 26–27 November 2012.

³¹² UPI. *op. cit.*

³¹³ PRC NDRC. 2012. *op. cit.*

³¹⁴ *Ibid.*

and it is not always linear or clean cut but can be messy and contingent. In sum, multilateralism underpins the policy paradigms of China's global energy governance.

3.3.3 China's view of international energy organizations

China's transformation into the world's biggest energy consumer and greenhouse gas emitter has already placed it on the international energy policy agenda for issues such as meeting global energy demands, reducing greenhouse gas emissions and transitioning to a low-carbon economy. China is not only affected by global energy governance; rather its behaviour towards multilateralism will also influence the operation and development of global energy governance. As asserted in Chapter 2, while discussion of global energy governance should focus on international organizations which form the top layer of the world system, it should also pay attention to the contribution of regional coordination as a foundation from the bottom layer.³¹⁵ This section discusses China's stance toward the top layer of global energy governance, which refers to the international organizations.

In practice, China is reluctant to participate in the international energy platform although international organizations such as International Energy Agency (IEA) and Energy Charter strongly welcome it.³¹⁶ Currently, it is reasonable to argue that instead of working towards the ideology behind the international framework, China is attempting to avoid over-participation in it and seeks to maximize its national benefit.³¹⁷ Chinese authorities consider bilateral strategies to be efficient and flexible. With fewer parties involved, coordination costs are lower and clarity of interest is easier to attain. Moreover, there are different histories, cultures, domestic politics and economic development levels in different regions, which a bilateral approach could address more directly.³¹⁸

With regard to China's involvement in multilateral platforms like IEA and ECT, the perception and reality in China is multi-layered according to a number of interviews with both senior officers from Chinese energy government and international

³¹⁵ Interview with Ye Yu, Shanghai, 28 May 2014. See also Jokela, Juha and Behr, Timo. 2011. Regionalism & Global Governance: The Emerging Agenda, Working Paper, Notre Europe.

³¹⁶ Interview with a senior officer of an international energy organization, 15 November 2014.

³¹⁷ Ibid.

³¹⁸ Heppell, J. M. 1997. Confidence-Building Measures: Bilateral versus Multilateral Approaches. In *Peace and Security in Northeast Asia - The Nuclear Issue and the Korean Peninsula* edited by Y. W. Kihl, and P. Hayes. Armonk, New York: M E Sharpe. p. 270.

organizations.³¹⁹ Chinese attitudes towards multilateral cooperation are always politically oriented. Despite technical obstacles such as the requirement of being a member of Organisation for Economic Co-operation and Development (OECD) to join IEA, China is hesitant to accept the international standards and requirements found in their legal regulations, emission standards and the strategic oil reserve amongst other aspects.³²⁰ Joining these international energy organizations implies that China falls into the same energy governance system dominated by Western countries. The Chinese decision-makers are not familiar with the 'game' of multilateralism and hence have concerns about the political risks of joining international organizations.³²¹

Such conservative behaviour reflects China's scepticism towards Western led international systems its insistence on state sovereignty. Meanwhile, as mentioned above, China's government and CNOCs share a common viewpoint that foreign countries, particularly in the West, often have a negative perception towards the Chinese actors, and hence, impose strict regulation on their overseas energy and resource investment. As a result, China remains outside major international energy frameworks due to the lack of confidence in the capability of these international institutions to protect Chinese national interests.

Moreover, China's energy strategy does not completely depart from bilateralism, which remains a major component. Actually, in both Energy Policy White Papers in 2007 and 2012, the Chinese authorities did not rule out a bilateral approach in energy cooperation.³²² In other words, China planned to use multilateralism together with bilateralism in its energy strategy. A multilateral approach even becomes a cover for China's bilateral energy diplomacy on some occasions. It is used to gain benefit from the current liberal system. Blanchard points out that "national interests seem to explain much of China's devotion to multilateralism or, where relevant, the lack thereof."³²³

³¹⁹ Interview with a researcher from a CNOC, Beijing, 8 August 2014. Interview with a former officer of IEA, Beijing, 18 November 2013, Interview with an Regional coordinator at Energy Charter. Beijing, 3 September 2014, Interview with a vice-division head of PRC NEA, Beijing, 15 November 2014.

³²⁰ Interview with a senior officer of an international energy organization, 15 November 2014.

³²¹ Interview with a former manager of a CNOC, Beijing, 28 March 2013. Interview with Xu Qinhua, Beijing, 28 March 2013.

³²² PRC State Council. 2007. op. cit., PRC NDRC. 2012. op. cit.

³²³ Blanchard, Jean-Marc F. 2008. "Harmonious World and China's Foreign Economic Policy: Features, Implications, and Challenges." *Journal of Chinese Political Science* 13(2):165–192.

If China were reluctant to join international energy frameworks, then it would be necessary to investigate the Chinese perception towards the consequence of remaining outside such frameworks. 53 interviewees are consistent in that, if condition allows, in general, Chinese authorities prefer a bilateral approach above a multilateral one in international energy cooperation. Another common viewpoint shared by the interviewees is that China should follow its own path rather than the Western one. One interviewee argued that the West does not understand China, and hence should neither criticize China's path nor force China to follow the Western way (global energy governance).³²⁴ Although a few interviews emphasise the importance of China's participation in global energy governance and the need to learn to play the "game of multilateralism", Chinese authorities have a strong preference for bilateral approach in international energy cooperation.

A Chinese senior officer, who was responsible for coordination work with international energy organizations in the past two decades, explicitly claimed that China is feeling very comfortable in not joining international energy organizations and thinks that there is no urgent need join them. However, the same person asserted that China has already contributed a lot to multilateral energy cooperation and one should not be too critical of China's attitude towards global energy governance.³²⁵ This contradiction raises the questions of whether Chinese elites share the same understanding of global energy governance and how China understands its own contribution to global energy governance.

Regarding the first question, how Chinese leaders literally understand international or multilateral cooperation might occasionally be different from the Western understanding and hence results in a "gap of knowledge."³²⁶ According to the interviews conducted for this thesis, almost one third³²⁷ of the interviewees affiliated to China's government, energy companies and think tanks misunderstood multilateralism by presuming that participation in more than one international bilateral cooperation was equivalent to multilateral cooperation. In other words, they thought that if China established three separate bilateral cooperative relationships with for example South Korea, Nigeria and Germany, it was considered as taking part in a multilateral cooperation. Yet, it is notable that the definition of multilateralism used to analyse China's international

³²⁴ Interview with Xu Qinhua, Beijing 20 Mar 2013.

³²⁵ Presentation by a Chinese senior officer, Shanghai, 22 May 2015.

³²⁶ Interview with Zhao Hongtu, Beijing, 3 November 2014.

³²⁷ 17 out of 53 interviewees affiliated to Chinese energy-related governmental department, energy companies and think tanks.

behaviour should not be based on the above misunderstood version of multilateralism among Chinese energy elites. It is because the above interviewees did not reject the definition used in this thesis after explanation. Instead, such a careless misperception among Chinese energy elites helps explain China's ineffective multilateral approach and the different expectations between China and the West.

Besides, Chinese officers are sent on exchange to international energy organizations, such as Energy Charter headquarters, to learn the experience of multilateral energy cooperation, but what can be brought back and delivered to the top authorities is often limited.³²⁸ In most cases, while officers sent abroad to learn about and experience multilateral cooperation are not senior enough to make a real difference in policy setting, seniors who are in such a position are reluctant to change the tradition of a bilateral approach. Comparatively speaking, the circle of Chinese academia and energy elites has a diverse understanding of global energy governance or multilateralism and therefore lacks a common consensus towards any further discussion.³²⁹

Regarding the second question, China's lack of full participation in the international energy organizations does not mean that China is isolated from global energy governance or multilateral energy cooperation. Actually, China is one of the most active participants in global energy governance via IEA among all other non-members.³³⁰ In the process of breaking the traditional pattern, China needs to find a niche and an entry point to participate in global energy governance. Since the current global energy governance system is diversified and multilevel, China should join international organizations at different levels or set up mechanisms of cooperation with such organizations.³³¹

China has not closed its doors to global energy governance, particularly in regions where there is an emergence of multilateral energy relations in areas such as energy markets, gas and oil pipeline systems, cross-border electricity transmission grids and technology transfer. For example, CNOCs would show more interest in the function of the Energy Charter Treaty (ECT) because they are keenly aware of the multinational pipeline risks in Central Asia, which could be potentially reduced by the Treaty.³³²

³²⁸ Interview with a senior officer of an international energy organization, 15 November 2014

³²⁹ Based on the 53 Interviews done.

³³⁰ Interview with a senior officer of an international energy organization, 15 November 2014

³³¹ Interview with a vice-division head of PRC NEA, Beijing, 15 November 2014.

³³² Interview with a senior researcher from CNPC, Beijing, 28 September 2014.

Therefore, approaching oil companies may form a way in for ECT membership expansion into China. Although China prefers bilateralism, it may have to turn to the ECT once it realizes that the risk-management of its Central Asia pipeline project relies on multilateralism.³³³ Instead of joining an existing international framework, China would prefer the establishment of a regional international energy institute to manage its energy problems, and the ECT is an international framework that China could learn from.³³⁴

The above sections have studied the rationales behind the two Chinese energy policy paradigms. More importantly, they have analysed China's view of global energy governance, particularly the obstacles China is facing in joining international energy organizations. Based on these analyses, the next three chapters move to case studies of China's multilateral or regional energy cooperation with Central Asia, the EU and Africa respectively. By looking into China's approach to energy cooperation in different cases, the following chapters attempt to answer if such forms of cooperation in each case could reflect a policy paradigm change in China's energy security approach towards global energy governance and what the reasons and causes of the policy transition, or lack thereof, in China's energy security are.

3.4 Chapter Summary

This chapter has conducted a comprehensive study on China's energy security by exploring its historical background, governing structure, key actors, strategy, policy-making process and rationale. For decades, China has been trying to set up a proper institutional framework to manage its energy sector, but there is limited achievement even after a number of reformations. Involving over 20 ministries, government agencies and national oil companies in the governance of the energy sector, China's energy administration system remained in a fragmented form because of constant changes, overlapping duties, decentralization and bureaucratic ineffectiveness. Traditionally, the concept of Chinese energy security has been linked closely with strategic and geopolitical considerations. It is also essentially equated to oil security because of its increasing reliance on "foreign oil" and desire for self-sufficiency. Key concepts of Chinese energy security include the mentality of self-reliance from 1949 to 1992, the supply-oriented concept of energy from 1993 to 2002 and the concept of source opening up and flow regulating from 2002 to now. Since the late 1990s, Chinese

³³³ Interview with a regional coordinator at Energy Charter, Beijing, 3 September 2014.

³³⁴ Interview with Zhao Hongtu, Beijing, 3 November 2014.

energy security has emphasized a “going out” policy in its overseas energy strategy. International energy cooperation is considered as a means to the realization of China’s energy security. The above discussions have laid the foundation for and provide explanation in further investigation of different case studies in the following chapters.

This section has also outlined the rationales underpinning the two policy paradigms of China’s energy security, namely the paradigm of energy diplomacy and the paradigm of global energy governance, in the early 21st century. More importantly, it pointed out 2007 as the watershed between the two paradigms. In sum, the policy paradigm of China’s “going out” energy diplomacy is underpinned by bilateralism. The motto of China’s energy diplomacy during that time could be summed up as “going out and bringing in” based on bilateral energy cooperation. Multilateral cooperation in regard to international energy security was first discussed by the Chinese authorities in the White Paper on China’s Diplomacy 2007. The importance of this was addressed again in China’s Energy Policy (2007) White Paper, the White Paper on China’s Diplomacy 2008 and China’s Energy Policy (2012) White Paper and delivered publicly by top Chinese leaders in 2011 and 2012. China’s Energy Policy (2012) White Paper further emphasizes global energy governance. China has also modified its policy instrument from a traditional bilateral approach to a multilateral one, paving the way for a policy paradigm regarding global energy governance. In sum, multilateralism underpins the policy paradigms of China’s global energy governance. These factual and ideological discussions narrow down the broader conceptual framework to one with China’s characteristics for analysis in the case studies.

Top Chinese leaders’ attitude towards global energy governance or a multilateral form of energy cooperation is complicated. If condition allows, Chinese authorities have a strong preference for bilateral approach in international energy cooperation. Yet, as discussed in 3.2, although China appears hesitant and cautious in joining a global energy governance, there is a change in the Chinese understanding of energy and energy security from a merely bilateral approach to a multilateral one, as reflected in China’s official energy documents.

By using a five level of paradigm shift theory proposed in Chapter 2, the following three empirical chapters continue the discussion with case studies on China’s energy security in Central Asia, the EU and Africa. China’s stance towards multilateral relationships in energy cooperation as well as its energy policy transition from a bilateral approach to a multilateral approach in different periods, with 2007 as a

watershed within the era of Hu Jintao, is discussed in different case studies in the following three chapters.

Chapter 4 - China–Central Asia Energy Cooperation

Energy cooperation plays an important role in China's relationship with Central Asia in the 21st century. Two key elements in their energy cooperation are the transnational pipeline projects and the Shanghai Cooperation Organisation (SCO). They do not merely indicate the development and changes in the energy cooperation mechanism between China and Central Asia; they also reveal the rationales underpinning Chinese energy security in the region. By studying the case of Chinese–Central Asian energy cooperation, this chapter aims to answer the question of whether China's energy security had undergone a policy transition which has resulted in a paradigm shift away from the "going out" energy diplomacy paradigm to the global energy governance paradigm during Hu Jintao's era.

This chapter first introduces the background of China and Central Asia's energy relationship and the foundation of their cooperation. It then commences with a review of China's energy diplomacy towards Central Asia as well as the ideas and rationales behind it. This is followed by an overview of the mechanisms which underpin energy cooperation between China and Central Asia in terms of projects, specifically oil and gas pipelines and multilateral platforms, and in particular the SCO. The above sections lay the foundation for analysis of the paradigm shift of China's energy strategy, which is fully developed in the next section. This section includes a discussion of the impact of the development of the China–Central Asia transnational pipeline and the SCO in China's energy security strategy in Central Asia. The last section of this chapter examines whether there is a policy paradigm shift in China's energy cooperation with Central Asia by applying the framework of five levels of energy policy aspects against which change can be measured. The discussions in the last two sections are based on a systematic analysis of official documents and communications and original primary data collected from interviews with senior Chinese energy experts who are involved in or have witnessed the China–Central Asia energy cooperation. The method employed to analyse Chinese energy security in this chapter is original and departs from existing works.

4.1 The Foundation of the China–Central Asia Cooperation

The Central Asia region is located in Central Eurasia, and includes the five countries of Kazakhstan, Turkmenistan, Uzbekistan, Kyrgyzstan and Tajikistan. Not only linked by mountains and rivers, China and Central Asia also have the historical origin of the ancient "Silk Road". Since modern times, despite the different social systems,

ideologies and wide gap in national power, China has always sought mutual support and multi-cooperation based on a good-neighbourly relationship with Central Asia.³³⁵ The two sides have solid foundations in the oil and gas resource field and have carried out extensive cooperation and explored many cooperation models.

Adjacent to the Caspian Sea, which is rich in energy reserves, the Central Asia region is known as the “new world of energy”.³³⁶ Since independence from the Soviet Union, countries within the region have all made the resource industry their primary one, promoting the fast development of the oil and gas industry. Since the abundant production of oil and gas in Central Asia is in stark contrast with their limited oil and gas consumption ability, the region has a large amount of surplus oil and gas available for export. Although oil and gas reserves are unevenly distributed across the five countries in the region,³³⁷ the export quantity of oil and gas resources in Central Asia has continued to rise in recent years, with an increase in oil exports from 31.7 million tons in 2001 to 74 million tons in 2012, and in the natural gas export volume from 37.3 billion m³ in 2001 to 60.3 billion m³ in 2012.³³⁸ So Central Asia is increasingly becoming an important driving force to change the global energy trade pattern.

Since the reform and “opening up” of over 30 years ago, China’s economy has achieved rapid development, and correspondingly the consumption of oil and gas resources is also increasing. After 1993, when China became a net oil importer, the net import of oil increased year by year, reaching 271 million tons in 2012.³³⁹ Dependence on foreign oil also rose. Following 2009, when China exceeded the internationally recognized “security line” of 50% for the first time, it rose above this line for four consecutive years and is increasing fast.³⁴⁰

³³⁵ Li, Yazhou. 2007. “The Grand National Strategy.” *Chinese Law and Government* 40(2), 13–36;

Goldstein, L. 2005. “China and Central Asia.” *Fletcher Forum of World Affairs* 29(1), 13–34.

Swanstrom, N. 2005. “China and Central Asia: A New Great Game or Traditional Vassal Relations?”

Journal of Contemporary China 14(45), 569–584.

³³⁶ Wan, Duoyun, Zhang, Xiuying. 2011. *中国油气资源国际合作* [In English: Chinese international oil and gas cooperation], CASS Publishing.

³³⁷ IEA. 2013. *World Energy Outlook 2013*.

³³⁸ BP. 2002. *Statistical Review of World Energy 2001*; BP. 2013. *Statistical Review of World Energy 2013*.

³³⁹ PRC NEA. 2013. *China Energy Statistical Yearbook 2013*.

³⁴⁰ *Ibid.*

Compared to the oil resources, China's gas production is more abundant, with some remaining gas available for export. However, from 2007, when China became a net importer of natural gas for the first time, net import increased rapidly, reaching 36.6 billion m³ in 2012;³⁴¹ at the same time, China's external dependence on natural gas also rose exponentially from only 1.84% in 2007 to a new record of 25.45% in 2012.³⁴² The complementary pattern of oil and gas resources in China and Central Asia makes it possible for the two sides to cooperate. Moreover, the necessity to diversify its energy suppliers has determined the reorientation of China's foreign energy policy towards Central Asia. Carrying out oil and gas cooperation also conforms to the common interests of both sides. All these factors have laid a solid foundation for cooperation between the two sides. Here China has the possibility of securing its energy imports from extraction to terminal, through continental pipelines.

4.2 China's Energy Diplomacy Strategy in Central Asia

The cooperation of China and Central Asia in relation to energy started in the early 1990s. The China–Central Asia energy relationship can be viewed through the broader picture of the China–Central Asia relationship, which started as a strategic partnership. Since the energy interdependence continues to strengthen, diplomacy has become an important means to promote energy cooperation. To ensure a reliable supply of oil in Central Asia, China's top leaders strengthen relations with Central Asia particularly in the field of energy.

When discussing the considerations of China in Central Asia, there are economic and political factors to take into account. The layout can be divided into bilateral and multilateral levels. In terms of layout considerations, China has striven to promote oil source supply in Central Asia. Regarding economic factors, the primary objective is to meet the growing domestic demand for oil in order to maintain sustainable development of the economy, while political factors are related to national security and geopolitics. If China aims to maintain rapid economic development, a stable and peaceful external environment is necessary,³⁴³ especially relating to the border issue

³⁴¹ BP. 2013. *Statistical Review of World Energy 2013*.

³⁴² Ibid.

³⁴³ Munro, Ross H. 2006. "China's relations with its neighbours." *International Journal*, p.327.

and regional security. The US troops in Central Asia, terrorism, separatism, extremism and other issues are all distracting and worrying China.

In terms of the levels of layout, China, as a neighbouring country of Central Asia, naturally pays great attention to cooperation with the region. To further develop energy relations with Central Asia, China is committed to promoting bilateral and multilateral regional cooperation. In bilateral cooperation, China attaches importance to developing economic, trade and security relations with the countries in Central Asia and enhancing their oil security interests through the development of bilateral relations. In addition, multilateral cooperation aims for regional economic and security integration in the framework of the SCO.

4.2.1 China's Diplomatic Principles regarding Central Asia

At present, China adheres to the neighbouring foreign policy of creating an “amicable, secure and prosperous neighbourhood”³⁴⁴ and positively develops friendly bilateral relations with the Central Asian countries. The collapse of the Soviet Union provided China with an opportunity in Central Asia. On the diplomatic stage, in December 1991, China acknowledged the independent status of the Central Asian countries, and since the beginning of January 1992 China has continued to establish diplomatic relations with the Central Asian countries (Table 1).³⁴⁵ After establishing bilateral consultation with the Central Asian countries, China agreed with Russia's proposal of a border cooperation on a multilateral basis. In late 1992, the “4+1 formula” – a working group comprised of including Russia, Kazakhstan, Kyrgyzstan and Tajikistan plus China – was set up. Under the Shanghai Five group, China further signed agreements³⁴⁶ promoting good neighbourhood relations, friendship and cooperation with Russia (2001), Kazakhstan and Kyrgyzstan (2005), as well as a strategic partnership with Kazakhstan (2005), and agreements on border demarcation with Kazakhstan (2002), Kyrgyzstan (1996, 1999) and Tajikistan (2002).

Table 4.1: Dates when China Established Diplomatic Relations with Central Asian Countries

³⁴⁴ Li, Zhaoxing, 2005, “Peace, Development and Cooperation – Banner for China's Diplomacy in the New Era”, *Chinese Journal of International Law*, 4(2): 677–683.

³⁴⁵ Umarov, Adiljan and Dmitriy Pashkun. 2006. “Tensions in Sino–Central Asian Relations and their Implications for Regional Security.” Conflict Studies Research Centre, Central Asian Series, p. 4.

³⁴⁶ Dwivedi, Ramakant. 2006. “China's Central Asia Policy in Recent Times”, *China and Eurasia Forum Quarterly* 4(4):145–157. p.149.

Country	Date
Kazakhstan	3 January 1992
Kyrgyzstan	5 January 1992
Uzbekistan	3 January 1992
Turkmenistan	6 January 1992
Tajikistan	4 January 1992

Sources: Website of Chinese MFA

In April 1994, when China's Premier Li Peng visited Central Asia, he put forward the four diplomatic principles³⁴⁷ to Central Asian countries: first, adhere to the principle of good-neighbourly relations and peaceful coexistence; second, expand mutually beneficial cooperation and promote common prosperity; third, respect the choice of people in all countries and never interfere in their internal affairs; and fourth, respect independent sovereignty and promote regional stability. In the late 1990s, China was concerned with new threats to its western borders from the intensifying of the Uyghur separatism in Xinjiang and the instability in Afghanistan. As a response, China increased the measure of security in the region and got the support of the Central Asian countries, inclusively within the Shanghai Five.

The anti-terrorist campaign of the US in Afghanistan from 2001 complicated the prospect of China's economic expansion in Central Asia and, more importantly, its twin concerns of its own sovereignty and control of Xinjiang.³⁴⁸ On 15 June 2001, China obtained the Convention on the Fight against Terrorism, Extremism and Separatism in the SCO to transfer military resources and equipment to its neighbours and to launched joint exercises. Geopolitically speaking, China did not want to be contained by the increasing power of the US and its alignment with India and Japan in Central Asia.³⁴⁹ Consequently, China promoted the SCO and enhanced economic cooperation with the Central Asian countries.

³⁴⁷ Xinhua News. 2004. 中亞關係四項基本政策和六點主張 [In English: Four basic policy and six claims in Sino-Central Asian relations], *Xinhua News*. 29 Feb. Accessed on 16 June. http://news.xinhuanet.com/ziliao/2003-02/19/content_735901.htm; Garnett, Sherman W. 2000. *Rapprochement or Rivalry? Russia–China Relations in a Changing Asia*, Washington D. C., Carnegie Endowment for International Peace, 392–393.

³⁴⁸ Interview with former Counsellor in Chinese embassies in Central Asian countries and Russia, Beijing, 21 November 2013.

³⁴⁹ SCO. 2001. "Shanghai Convention on Combating Terrorism, Separatism and Extremism." Accessed on 8 October 2014. <http://www.sectsco.org/EN123/show.asp?id=68>

In 2004, when China's President Hu Jintao visited Uzbekistan, he further proposed four suggestions based on the deepening relations between China and Central Asia.³⁵⁰

To strengthen the friendly neighbourhood interaction and enhance political mutual trust, and on the important issues related to national sovereignty, territorial integrity and national dignity, maintain a good-neighbourly and cooperative relationship;

To strengthen security cooperation, maintain regional stability and jointly combat extremism, terrorism, separatism and other factors that would destabilize the region;

To insist on mutual benefits and promote pragmatic cooperation, expanding mutual investment, promoting energy and transportation cooperation, and adjusting trade structure to make it conform to the development of multilateral economic cooperation; and

To expand cultural exchanges and consolidate traditional friendship, as well as support and encourage bilateral cultural, media, academic, sightseeing and social exchange and strengthen cooperation.³⁵¹

4.2.2 China's Energy Diplomacy regarding Central Asia

Central Asia has been one of China's key targets in its energy diplomacy strategy. China has been involved in the energy geopolitics of Central Asia through political, military and financial instruments. The Chinese government supports the investment of its CNOCs in Central Asia bilaterally and multilaterally in at least four ways.

(1) Leaders pay frequent visits to the Central Asia region

In energy diplomacy, relevant diplomatic conferences are always used to promote the signing of energy cooperation agreements.³⁵² Since establishing diplomatic relations with the Central Asian countries, China has been committed to developing friendly and cooperative partnerships. China has agreements of strategic partnership with Central Asian countries. It supported Kazakhstan to join the WTO and sustained Uzbekistan in the Andijan episode.³⁵³

³⁵⁰ Xinhua News. 2004. “胡錦濤在烏演講:睦鄰安鄰富鄰建言與中亞關係” [In English: Hu Jintao's Speech in Uzbekistan: Good neighbour and Sino-Central Asian relationship]. *Xinhua News*. 16 Jun. Accessed on 8 October 2014. <http://news.sina.com.cn/c/2004-06-16/19592825117s.shtml>.

³⁵¹ Ibid.

³⁵² Interview with Xia Yishan, Beijing, 22 October 2014. Interview with former Counsellor in Chinese embassies in Central Asian countries and Russia, Beijing 21 November 2013.

³⁵³ Mariani, Bernardo. 2013. *China's role and interests in Central Asia*. Saferworld, London. 8–12.

Chinese leaders pay frequent visits to Central Asian countries, and the exchange of high-level officials has backed up various energy deals that the Chinese have pursued to obtain long-term agreements. Besides the president, other high-level officials such as the vice president, premier and vice premier, and minister of foreign affairs have all paid intensive visits to Central Asia. For example, two presidents, Jiang Zemin and Hu Jintao, visited Central Asian countries almost every two years, and in all the visits, Kazakhstan was visited the most frequently.³⁵⁴ Therefore, during high-level visits, China often takes the opportunity to discuss cooperation issues and sign important agreements, thus enhancing bilateral relations and laying the foundation for China's oil cooperation with Central Asia.

For example, in 2003, after Hu Jintao became the president, his first visit was to Kazakhstan. The two sides issued a joint statement announcing the strengthening of oil and natural gas cooperation and signed an agreement to jointly develop the China–Kazakhstan oil pipeline.³⁵⁵ Moreover, take China's visit to Turkmenistan as an example. In return, during the visit to China of Kazakhstan's president, Nazarbayev, in February 2011, China and Kazakhstan signed several agreements concerning cooperation on energy.³⁵⁶ For example, the Development Bank of Kazakhstan signed a loan agreement with the Export-Import Bank of China on the joint infrastructure construction. KazMunaiGaz (KMG) and CNPC signed an agreement in principle regarding cooperation on the Urikhtau project.³⁵⁷ Kazphosphate signed a framework agreement with Sinochem on strategic cooperation, etc.³⁵⁸

In 1994, when Premier Li Peng visited Turkmenistan, he promoted cooperation between CNPC and the Turkmen Ministry of Oil and Natural Gas and signed the oil and gas cooperation letter of intent. To deepen the energy cooperation of the two

³⁵⁴ Source: MFA website.

³⁵⁵ China Daily. 2004. "China, Kazakhstan Discuss Cross-border Gas Pipeline". *China Daily*. 25 Aug.

³⁵⁶ Hook, Leslie. 2011. "Kazakhstan embraces Chinese investment" *Financial Times*. 22 Feb. Accessed on 8 October 2014. <http://www.ft.com/cms/s/0/8c25e008-3e5e-11e0-9e8f-00144feabdc0.html#axzz3rjEj5jc6>

³⁵⁷ Wong, Jacqueline. 2011. "KazMunaiGas in deal to tap Urikhtau gas field". *Reuters*. 23 Feb. Accessed on 8 October 2014. <http://uk.reuters.com/article/2011/02/23/china-kazakhstan-gas-idUKTOE71M04Z20110223>.

³⁵⁸ PRC SASAC. 2011. 中化集团与哈萨克磷公司签署战略合作框架协议 [In English: Sinochem signed framework agreement with KPC]. Accessed on 8 October 2014. <http://www.sasac.gov.cn/n86114/n326638/c958714/content.html>.

countries, in early July 2000 President Jiang Zemin visited Turkmenistan and promoted the signing of the oil and gas cooperation memorandum.³⁵⁹ As for China and Uzbekistan, in 2004 Hu Jintao visited Uzbekistan and contributed to the signing of the oil and gas mutual cooperation agreement between CNPC and Uzbekistan National Oil and Gas Company, enhancing the oil cooperation between the two countries.

(2) Strengthening bilateral economic and trade relations

In 1994, when Premier Li Peng visited four countries in Central Asia, in addition to the basic diplomatic principles regarding Central Asia, he also proposed six points focusing on the bilateral economic and trade relations:³⁶⁰ (1) adhere to equality and mutual interest principles and follow the economic principles; (2) diversify cooperation forms; (3) make full use of local resources; (4) improve transport conditions and construct the “New Silk Road”; (5) provide financial assistance to the Central Asian countries; and (6) develop multilateral cooperation and promote common development. To implement the above points, China’s economic and trade activities in Central Asia focused on trade, investment and providing loans. Generally, since the establishment of diplomatic relations in 1992, China’s trade volume with Central Asian countries shows a growing trend. Especially in recent years, the trade volume continues to create new records.

Currently, Kazakhstan is still China’s most important trading partner in Central Asia. In 1992, the total trade volume was \$ 369.1 million. In 1999, it exceeded \$ 1 billion for the first time and amounted to \$ 1.1 billion. Then it increased year by year and totalled \$ 3.2 billion in 2003. In 2005, the bilateral trade volume was recorded at \$ 6.8 billion, of which China enjoyed \$ 1 billion trade surplus. The economic interaction between China and the Central Asian states has grown rapidly. Between 2001 and 2005,³⁶¹ China’s trade grew by 429% in Kazakhstan, 718% in Kyrgyzstan, 1,368% in Tajikistan and 1,067% in Uzbekistan. In the same year,³⁶² China was the fourth-largest exporter to Kazakhstan (9.9%) and the second-largest importer (15.4%). Furthermore, China was Kyrgyzstan’s third-largest exporter (12%) and the largest importer (26.3%), and

³⁵⁹ PRC MFA. 2007. Bilateral relationship between China and Turkmenistan. Accessed on 8 October 2012.

<http://www.mfa.gov.cn/chn/wjb/zzjg/dozys/gjlb/1781/default.htm>.

³⁶⁰ Xinhua News. 2004. 中亞關係四項基本政策和六點主張 [In English: Four basic policy and six claims in Sino-Central Asian relations].

³⁶¹ Szadziwski, Henryk. 2009. “How the West was Won: China’s Expansion into Central Asia.” *Caucasian Review of International Affairs* 3(2): 210-218. p.214.

³⁶² CIA. 2005. “World Factbook.” Accessed on 3 May 2012.
<http://www.cia.gov/cia/publications/factbook/index/html>.

Uzbekistan's second-largest exporter (14.7%) and the sixth-largest importer (5.8%). The Central Asian states export mainly raw materials to China,³⁶³ such as energy (Kazakhstan, Turkmenistan, Uzbekistan), metals (Kazakhstan, Kyrgyzstan) and textiles (Kyrgyzstan, Turkmenistan, Uzbekistan).

As seen from the trade structure between China and Central Asia, the two sides have strong economic complementarity. Central Asia exports energy resources to China and China exports consumer goods to Central Asia, while China mainly invests in the energy industry in Central Asia. In short, China intends to obtain necessary energy by strengthening its economic and trade ties with Central Asian countries.³⁶⁴

(3) The legal basis intergovernmental agreement

China attaches great importance to friendly cooperation with Central Asian countries. Together they have signed plenty of intergovernmental cooperation agreements in the fields of energy, economy and trade, culture and education, etc. In the field of energy, China and Central Asian countries have already signed some guiding agreements, such as joint declaration, intergovernmental economic and trade agreements, and other agreements that concern concessional loans and investment in energy. Other specific agreements China has signed with Central Asian countries on energy cooperation are:

Table 4.2: Energy Agreements China signed with Central Asian countries

Countries	Date of Signing	Name of Agreement
Kazakhstan	9/1997	Agreement on Oil and Natural Gas Cooperation
	5/2004	Framework Agreement on Comprehensive Oil and Gas Cooperation
	7/2004	Agreement on Geological and Mineral Cooperation (altogether eight agreements)
	12/2006	Outlook on Economic Cooperation between the People's Republic of China and the Republic of Kazakhstan

³⁶³ Paramonov, Vladimir. 2005. "China and Central Asia: Present and Future of Economic Relations." Conflict Studies Research Centre, Central Asian Series. p.3–7.

³⁶⁴ Pham, J. Peter. 2006. "Beijing's Great Game: Understanding Chinese Strategy in Central Eurasia." *American Foreign Policy Interests*. 28:54-67. p.58.

30 Jiang, Wenran. 2006. "China makes great leaps outward in regional diplomacy." *International Journal*. 61(2): 329-340. p.338.

Kyrgyzstan	6/2002 9/2004	China–Kyrgyzstan Energy Cooperation Agreement Outlines of China–Kyrgyzstan Cooperation, 2004–2014
Tajikistan	5/2002	Agreement on Energy Cooperation
Turkmenistan	4/1994 7/2000	Letter of Intent on the Cooperation between CNPC and Turkmenistan Natural Gas Department Memorandum of Understanding on Oil and Gas Cooperation between CNPC and Turkmenistan Natural Gas Department
Uzbekistan	6/2004	Agreement on Mutual Beneficial Cooperation in Oil and Gas between CNPC and Uzbekistan National Petroleum Corporation, etc.

Source: Zhang, Ning. 2009. “Central Asia Energy and the Game between Major Economies”, Changchun Press, pp. 229–230.

(4) Multilateral platforms

Although China preferred the bilateral approach in its energy investments in Central Asia, it is also involved in multilateral platforms such as the SCO to build mutual trust with other Central Asian countries and maintain its influence in the region: “The purposes of the SCO are: strengthening mutual trust and good-neighbourly friendship among the member states; encouraging effective cooperation among the member states in political, economic and trade, scientific and technological, cultural, educational, energy, communications, environment and other fields; devoting themselves jointly to preserving and safeguarding regional peace, security and stability; and establishing a democratic, fair and rational new international political and economic order.”³⁶⁵

In order to retain regional security for its economic expansion, China also provides military support to Central Asian countries through conventional arms transfers, training and joint military exercises, especially with Kazakhstan and Kyrgyzstan.³⁶⁶ Within the SCO, common military exercises took place in October 2002, August 2003, August 2006, September 2007, etc.³⁶⁷ Chinese financial support was represented by

³⁶⁵ SCO. 2006. “Declaration on Establishment of SCO.” Accessed on 8 October 2015.
http://english.scosummit2006.org/en_bjzl/2006-04/20/content_85.htm.

³⁶⁶ Cornell, Svante E. 2004. “The United States and Central Asia: In the Steppes to Stay?”
Cambridge Review of International Affairs, 17(2): 239-254. p. 249.

³⁶⁷ Plater-Zyberk, Henry. 2007. “Who's Afraid of the SCO?” Conflict Studies Research Centre,
Central Asian Series. p. 4.

investments in a variety of local sectors, aid packages and loans with low interest rates, offered by the Export-Import Bank of China and China Development Bank. Other than oil and gas sectors, CNOC also made investments in the hydroelectricity sector, mineral industry (gold, aluminium and uranium) and infrastructure sector (roads, tunnels and railways) in Central Asia. China's energy diplomacy via multilateral platforms in Central Asia is discussed in the following sections.

4.3 Energy Cooperation Mechanism between China and Central Asia

As the energy initiative progresses with official promotion, China and Central Asia have by now preliminarily established a structured cooperation mechanism. Such a mechanism involves joint energy projects between the two big powers in both bilateral and multilateral approaches. The Central Asia–China transnational pipeline and SCO are the main national channels facilitating China–Central Asia energy cooperation.

4.3.1 Oil and Gas Resource Cooperation between China and Central Asia

At present, the oil and gas cooperation between China and Central Asia mainly includes resource exploitation and the construction of transportation pipelines, and the cooperating countries are mainly Kazakhstan, Turkmenistan and Uzbekistan. Since the proposal of the “going out” strategy in the 1990s, China has actively participated in the investment in and development of international oil, and Central Asia is one of the key strategic areas.³⁶⁸ Since China's oil companies are state-owned enterprises, they can cooperate fully with the government's policies.³⁶⁹ CNPC and Sinopec have been performing actively in obtaining the operation rights of overseas companies.³⁷⁰ Under the guidance of the government, China's cooperation operating practices with Central Asia in energy mainly comprise: (1) equity merger and acquisition; (2) building pipelines; and (3) new energy cooperation. The key work is to participate in constructing a relative oil source infrastructure and oil and gas pipelines for continent entrance, seeking to diversify the source of oil through investment.

4.3.1.1 Cooperation in Equity Merger and Acquisition

³⁶⁸ Wu, Xuxin. 2006. 經濟全球化下中亞石油國際合作和中國石油國際合作之比較 [In English: Comparison between Sino-Central Asian oil cooperation with China's international oil cooperation under the globalized economy]. *Journal of Shengli Oilfield Party School* 19 (1), 102.

³⁶⁹ Taylor, Ian. 2006. “China's Oil Diplomacy in Africa,” *International Affairs* 82(5): 937–959. p. 942.

³⁷⁰ *Ibid.* p. 943.

The CNOCs arrived late in the Central Asian energy market, but they attempted to develop a methodical strategy of acquisitions. China has actively participated in exploring and developing oil and gas resources in Central Asia, especially in Kazakhstan, Uzbekistan and Turkmenistan, and CNPC is the key player.

In June 1997, CNPC and the Kazakhstan government signed an agreement for the acquisition of 60.3% stock of AktobeMunaiGas.³⁷¹ It obtained a 20-year user licence for the Zhanazhol gas site and the Kenkiyak oil site. Since 2002, China has made a variety of other acquisitions in Kazakhstan. In 2002, CNPC bought 50% of Salejan field in Kazakhstan.³⁷² In June 2003, according to the agreement of CNPC to expand investment in Kazakhstan, CNPC acquired another 25.12% stake of the AktobeMunaiGas with \$ 150 million, thus capturing 85.6% stock of the Aktyubinsk field.³⁷³ In August 2003, CNPC first bought 35% stock of the North Buzachi oil and gas field from the Nimir Petroleum Company of Saudi Arabia³⁷⁴, and then acquired the remaining 65% from Chevron of the US in October the same year.³⁷⁵ The North Buzachi oil field, located in Western Kazakhstan, became the first overseas oil field that was 100% held by CNPC.³⁷⁶

In December 2004, CNPC acquired 100% equity of the ADM oil stock company and renamed it CNPC International ADM Co., Ltd. This company owned the exploration licence for Aris and Brinov exploration blocks with recoverable reserves of about 10.42 million tons.³⁷⁷ In the same month, CNPC completed another acquisition in Central Asia, purchasing 50% stock of KAM Company's Konys and Bektas oil fields in Kazakhstan by sharing the interests with Zhenhua Oil Company Limited. The recoverable reserve of the oil field is 21.64 million tons.³⁷⁸ In 2005, CNPC acquired PetroKazakhstan Oil Company for the total price of \$ 4.18 billion. Through the acquisition, CNPC owns a

³⁷¹ CNPC. "CNPC in Kazakhstan." Accessed on 3 March 2012.

<http://classic.cnpc.com.cn/en/cnpcworldwide/kazakhstan>.

³⁷² Blank, Stephen J., 2005. "China, Kazakh Energy and Russia: An Unlikely Ménage à Trois." *China and Eurasia Forum Quarterly* 3(3):99-109. p.103.

³⁷³ CNPC. "CNPC in Kazakhstan."

³⁷⁴ Ibid.

³⁷⁵ Ziegler, Charles E. 2008. "Competing for Markets and Influence: Asian National Oil Companies in Eurasia." *Asian Perspective* 32(1): 129-163. p.146.

³⁷⁶ CNPC. "CNPC in Kazakhstan."

³⁷⁷ Ibid.

³⁷⁸ Ibid.

second overseas refinery and made breakthrough in their oil and gas exploration.³⁷⁹ In the same year, CNPC together with CNOOC signed a joint agreement with KazMunayGas, a Kazakh national oil and gas company, for exploitation in Darkhan oil field in the Caspian Sea.³⁸⁰

In late 2007, CNPC signed an agreement with KazMunayGas to export 5 bcm of gas annually to China. Both parties confirmed the construction of the Kazakhstan–China gas pipeline which became part of the great Sino–Central Asia gas pipeline.³⁸¹ In April 2009, CNPC and KazMunayGas purchased MangistauMunaiGas for \$ 3.3 billion and eventually acquired 100% of MangistauMunaiGas shares in the same year. In this purchase, CNPC extended a \$ 5-billion line of credit to KazMunayGas.³⁸²

On the other hand, another CNOC, Sinopec, acquired the American First International Oil Company (FIOC) in 2004 for around \$ 160 million. Such an acquisition allowed Sinopec to access the user licences of small fields like Begaidar, Fedorov, Mezhdurechensk, Sagiz and Sazankurak.³⁸³ Yet, CNOCs' acquisitions in Central Asia have not always been successful. CNPC and Sinopec failed in their bid for British Gas's 16.67% stake in Agip KCO International Consortium in 2005. Participation by CNOC was refused by the other members of the consortium, including Agip, ConocoPhillips, ExxonMobil, Shell and TotalFinaElf.³⁸⁴

CNOC's energy investment is not limited to Kazakhstan. In 1992, CNPC and Mitsubishi proposed the gas export from Turkmenistan to China. They agreed to conduct a feasibility study together with Exxon, which was completed in 1996.³⁸⁵ In 2004, China Petroleum Technology and Development Corporation and TurkmenGas signed a \$

³⁷⁹ Ibid.

³⁸⁰ Reuters. 2005. "CNOOC, CNPC and KazMunayGas to team up in Caspian sea exploration" *Reuters*, 8 Sep.

³⁸¹ Peyrouse, Sébastien, "China's recent advances in Central Asia." CACI Analyst. Accessed 12 November 2008. www.cacianalyst.org/?q=node/5001; China National Petroleum Corporation (CNPC). www.cnpc.com.cn/en.

³⁸² Seaman, John. 2010. *Energy Security, Transnational Pipelines and China's Role in Asia*. Paris: Institut Français des Relations Internationales, p. 24.

³⁸³ Peyrouse, Sébastien. 2007. "Economic Aspects of the Chinese–Central Asia Rapprochement." *Central Asia–Caucasus Institute & Silk Road Studies Program – A Joint Transatlantic Research and Policy Center*, p. 55.

³⁸⁴ Ibid. p. 52.

³⁸⁵ Tønnesson, Stein and Åshild Kolås. 2006. *Energy Security in Asia: China, India, Oil and Peace*. International Peace Research Institute 31–32.

14.5-million contract regarding equipment supply and, two years later, another agreement about the delivery of 30 bcm of Turkmen gas to China in 2009.³⁸⁶ CNPC further signed a production agreement in 2007 in Bagtyarlyk field in eastern Turkmenistan as well as a development contract in Turkmenistan's South Yolotan onshore gas field. These deals were announced in June 2009.³⁸⁷

In Uzbekistan, CNPC obtained participation in Uzen oil field in 1997, but it withdrew from the project in 1999.³⁸⁸ In 2003, CNPC entered the oil development market of Uzbekistan, and in the same year, the Petroleum Logging Co., Ltd of CNPC took over the exploratory operation of Kokedumalak oil field in Uzbekistan. During the visit of China's President Hu Jintao to Uzbekistan in June 2004, CNPC and Uzbekneftegaz concluded several oil and gas contracts. In June 2006, CNPC and Uzbekneftegaz signed an oil and gas exploration agreement in which CNPC would drill 27 exploration wells in Uzbekistan by 2011.³⁸⁹

In August of the same year, CNPC signed another two contracts with Uzbekneftegaz to explore and develop natural gas deposits in the Aral Sea.³⁹⁰ After the discovery of oil and gas resources, the two sides would form joint ventures (each holding 50% of shares) to further explore oil and gas fields. In addition, in July 2005, Sinopec signed a memorandum of cooperation with the Ukrainian national Oil and Gas Company and established a joint venture to work together on exploration and development programmes in Andizhan oil field in Uzbekistan.³⁹¹ Furthermore, in October 2008, the two companies signed a cooperation agreement to develop a joint venture in the Mingbulak oil field.³⁹² The cooperation between CNPC and Uzbekneftegaz extended

³⁸⁶ Peyrouse, 2007. op cit., pp. 64-65.

³⁸⁷ See Seaman, op cit., p. 24.

³⁸⁸ Peyrouse. 2007. op cit., pp. 50–51.

³⁸⁹ Dwivedi, Ramakant. "China's Central Asia Policy in Recent Times." *China and Eurasia Forum Quarterly* 4, no. 4 (2006), 145-157; 148.

³⁹⁰ Ziegler, op cit. p. 157.

³⁹¹ OGJ. 2006. "Russian-Chinese competition may marginalize US, European influence." *Oil and Gas Journal*. Accessed on 13 March 2013. <http://www.ogj.com/articles/print/volume-104/issue-10/exploration-development/central-asia-oil-and-gas-2-russian-chinese-competition-may-marginalize-us-european-influence.html>.

³⁹² Roantree, Anne Marie. 2008. "CNPC, Uzbekistan tie up to develop Mingbulak oilfield." *Reuters*. 20 Oct. Accessed on 13 March 2013. <http://www.reuters.com/article/2008/10/20/cnpc-uzbekistan-idUSPEK30407220081020#PYvrPJeGSUgImJgx.97>.

via a framework agreement on the purchase of 10 bcm per year of natural gas in June 2010.

4.3.1.2 Cooperation in Constructing Oil and Gas Transportation Pipelines

The cooperation between China and Central Asia in constructing oil and gas transportation pipelines mainly includes the construction of the Kazakhstan-China oil pipeline and the Central Asia–China gas pipeline.

(1) Kazakhstan-China Oil Pipeline

The Kazakhstan–China oil pipeline was developed by CNPC and the Kazakh oil company KazMunayGas.³⁹³ Currently capacity of the pipeline is at 14 million tons per year, and it could reach nominal capacity of 20 million tons per year in 2014.³⁹⁴ The idea of an oil pipeline between Kazakhstan and China was launched in 1993 and was agreed by CNPC and KazMunayGas in 1997 when both parties started energy cooperation. The two parties signed the memorandum of understanding to build an eastward oil pipeline to China with an estimated cost of \$ 3.5 billion. The Chinese side postponed the construction due to oil prices and the competition from the Baku–Tbilisi–Ceyhan project. Yet, the first visit of China’s President Hu Jintao to Kazakhstan in June 2003 renewed China’s momentum in building the oil pipeline³⁹⁵ because of the increase of Kazakhstan’s oil production, the increase of world oil prices and the Angarsk failure.

Started in September 2004, this 2,228-km-long pipeline stretches from the oil city Atyrau in the western part of Kazakhstan to Alashankou in China’s Xinjiang Province at the border of the two countries.³⁹⁶ The Kazakhstan–China oil pipeline is supplied from the Aktobe region’s oil fields and Kashagan field in Kazakhstan.³⁹⁷ The first phase of

³⁹³ Xinhua News. 2006. Kazakhstan-China oil pipeline opens to operation, 12 Jul, *Xinhua News*. Accessed on 13 March 2013. http://news3.xinhuanet.com/english/2006-07/12/content_4819484.htm.

³⁹⁴ Rehn, Cecilia. 2012. “Kazakhstan–China oil pipeline could start operating at its full capacity by 2014”. *Energy Global*. Nov 9. Accessed on 13 March 2013. http://www.energyglobal.com/pipelines/business-news/09112012/Kazakhstan_to_China_oil_pipeline_could_start_operating_at_its_full_capacity_by_2014/

³⁹⁵ Handke, Susann. 2006. “Securing and Fuelling China’s Ascent to Power – The Geopolitics of the Chinese–Kazakh Oil Pipeline.” Clingendael Institute of International Relations, Energy Programme, pp. 43-44.

³⁹⁶ Xinhua News. 2006. op cit..

³⁹⁷ Sukhanov, Alexander. 2005. “Caspian oil exports heading east.” *Asian Times*. Accessed 15 March 2008.

the Kenkiyak-Atyrau pipeline, originally in Kazakhstan, was officially put into operation in March 2003 with a length of 448 km and the design stipulating an oil transportation capacity of 6 million tons/year; the second phase of the Atasu-Alashankou pipeline connecting China's Xinjiang Province was started in September 2004 and put into commercial operation in July 2006 with a length of 965 km and the design stipulating an oil transportation capacity of 10 million tons/year; the third phase of the Kenkiyak-Atasu pipeline was constructed in May 2008 and put into commercial operation in October 2009 with a length of 1,344 km and the design stipulating an oil transportation capacity of 10 million tons/year.³⁹⁸

The above phases jointly were built and are operated by both Chinese and Kazakh parties. The Atasu-Alashankou section of the pipeline, which is near to the Chinese-Kazakh border, is operated by MunaiTas, a joint venture between CNPC and KazMunayGas.³⁹⁹ The Kenkiyak-Kumkol section in Kazakh territory was built and is operated by a joint venture between China National Oil and Gas Exploration and Development Corporation (CNODC) and KazTransOil JSC.⁴⁰⁰ At the Chinese end, the Kazakhstan-China oil pipeline is connected to Dushanzi District in Xinjiang Province of China via the Alashankou-Dushanzi crude oil pipeline. The pipeline was constructed and is operated by CNPC and supplies mainly the Dushanzi refinery.⁴⁰¹

(2) Central Asia-China Gas Pipeline

The Central Asia-China gas pipeline is China's largest overseas natural gas project. It was prepared by the Chinese side from 2000, through agreements regarding the development of infrastructure and loans with low interest rates.⁴⁰² The initial proposal for this pipeline was presented as the Kazakhstan-China gas pipeline when the agreement was signed in June 2003, during China's President Hu Jintao's visit to

³⁹⁸ Peyrouse. 2007. op cit., pp. 56-59; Li, Cunhui. 2010. 中哈原油管道合作双赢开辟能源通道 [In English: Win-Win Situation in Sino-Kazakhstan oil pipeline open energy corridor] *China Petroleum Daily*. 17 Dec.

³⁹⁹ People's Daily. 2006. "Kazakhstan-China oil pipeline to open in May." *People's Daily Online*, 27 Feb.

⁴⁰⁰ CNPC. 2009. "CNPC announces Kenkiyak-Kumkol section of Kazakhstan-China Oil Pipeline becomes operational" (Press release).

⁴⁰¹ Peyrouse. 2007. op cit..

⁴⁰² Paik, Keun-Wook; Valerie Marcel; Glada Lahn; John V. Mitchell, and Erkin Adylov. 2007. "Trends in Asian National Oil Company Investments Abroad: An update." Royal Institute of International Affairs, Chatham House, Working Background Paper, March 2007. p. 6 at http://www.chathamhouse.org.uk/files/6427_r0307anoc.pdf.

Kazakhstan.⁴⁰³ The cooperative of CNPC and the KazMunayGaz planned to start construction of the Kazakhstan natural gas pipeline in 2008,⁴⁰⁴ following along the Kazakhstan–China oil pipeline. KazMunayGas and CNPC conducted the feasibility study in February 2005. The pipeline project between Kazakhstan and China laid the foundation for expanding the pipeline network to other Central Asian countries.

In 2006, China and Turkmenistan signed a framework agreement on pipeline construction and long-term gas supply.⁴⁰⁵ In 2007 the two parties announced that Turkmenistan was joining the Kazakhstan–China gas pipeline and a transnational gas pipeline would be built to export natural gas to China.⁴⁰⁶ Although the energy cooperation between China and Turkmenistan started late, it developed fast. In the same year, China and Uzbekistan signed an agreement on the construction and exploitation of the pipeline's Uzbekistan section.⁴⁰⁷ The construction of the Turkmen section of the pipeline started on the right bank of the Amu Darya in 2007.⁴⁰⁸ This section was built by Sroytransgaz, a subsidiary of Gazprom⁴⁰⁹ and key contractors included China Petroleum Pipeline Bureau, China Petroleum Engineering and Construction Corporation and Zero-Max.⁴¹⁰ This was followed by the start-up of the Chinese section in February 2008 and the Uzbek section in June 2008. The Uzbek section was built by Asia Trans Gas, which is a joint venture between CNPC and

⁴⁰³ China Daily. 2004. "China, Kazakhstan Discuss Cross-Border Gas Pipeline." *China Daily*, 25 Aug.

⁴⁰⁴ Golovkina, Maria. 2007. "Kazakhstan, China agree to press ahead with pipeline." *Reuters*. 8 Nov. Accessed on 13 October 2013. <http://uk.reuters.com/article/2007/11/08/kazakhstan-china-pipeline-idUKL0888292120071108>

⁴⁰⁵ Forbes AFX News. 2007. "Turkmenistan to join China, Kazakhstan pipeline project – KazMunayGas EP CEO." *Forbes, AFX News*, 4 Jul.

⁴⁰⁶ Daniel Kimmage. 2006. "Central Asia: Turkmenistan–China Pipeline Project Has Far-Reaching Implications." *Radio Free Europe/Radio Liberty*, 10 Apr. Accessed on 8 October 2013. <http://www.rferl.org/content/article/1067535.html>

⁴⁰⁷ CNPC. "Central Asia-China Gas Pipeline." Accessed on 8 October 2013. http://www.cnpc.com.cn/en/CentralAsia/CentralAsia_index.shtml.

⁴⁰⁸ Davis, Jonathan. 2007. "Turkmen break ground on China pipe", *Upstream Online*, 30 Aug. Accessed on 8 October 2013. <http://www.upstreamonline.com/live/article1145401.ece>

⁴⁰⁹ Gurt, Marat. 2008. "Russian company wins Turkmen China pipeline tender." *Reuters*, 19 February. Accessed on 8 October 2013. <http://uk.reuters.com/article/2008/02/19/turkmenistan-china-idUKL194546920080219>

⁴¹⁰ Eurasianet. 2009. "Kazakhstan: Workers Complete Section of Turkmenistan–China Pipeline.", *Eurasianet*, 10 Jul. Accessed on 8 October 2013. <http://www.eurasianet.org/departments/news/articles/eav071009a.shtml>

Uzbekneftegaz.⁴¹¹ The Kazakh section was started the latest, in July 2008,⁴¹² by Asia Gas Pipeline company, a joint venture of CNPC and KazMunayGas,⁴¹³ with KazStroyService and China Petroleum Engineering and Construction Corporation as key contractors.⁴¹⁴

The Kazakh section of the pipeline was inaugurated and ventilated in late 2009 during China's President Hu Jintao's visit to Kazakhstan⁴¹⁵ with the leaders of Turkmenistan, Uzbekistan and Kazakhstan. Later in 2010, China and Kazakhstan signed an agreement on an additional branch line to China from Western Kazakhstan.⁴¹⁶ The Central Asia–China gas pipeline has dual lines A and B in parallel, each running for 1,833 km.⁴¹⁷ It starts at the Turkmen–Uzbek border and runs through central Uzbekistan and southern Kazakhstan before reaching China's northwest region of Xinjiang, following the route Turkmenistan–Uzbekistan–Kazakhstan–Erdos–Urumqi–Lanzhou–Xian–Shanghai. Line A became operational in late 2009 and Line B started running in 2010.

According to the initial sales and purchase agreement between CNPC and Turkmen gas signed in 2007, China could receive 30 bcm/year Turkmen gas via Lines A and B for 30 years, supplied via natural gas of 13 bcm/year from the Amu Darya project, and natural gas of 17 bcm/year from Turkmen gas State Concern.⁴¹⁸ In 2012, the construction of Line C of the pipeline, parallel to A and B, was started, and this additional line was designed to deliver 25 bcm/year gas to China. Line C is supplied by natural gas of 10 bcm, 10 bcm and 5 bcm per year from Turkmenistan, Uzbekistan and

⁴¹¹ Hydrocarbons Technology. 2013. "Central Asia–China Gas Pipeline, Turkmenistan to China." *Hydrocarbons Technology*, 25 Sep. Accessed on 8 October 2013.
<http://www.rferl.org/content/article/1067535.html>

⁴¹² Upstream Online. 2008. "Kazakhstan gets cracking on China pipe", Upstream Online 9 Jul. Accessed on 8 October 2013. <http://www.upstreamonline.com/live/article1159922.ece>

⁴¹³ Upstream Online. 2008. "Beijing digs in with Kazakh pipes", *Upstream Online*, 9 Apr.

⁴¹⁴ Steel Guru. 2009. Construction cost of Kazakhstan to China gas pipeline increases." *Steel Guru*, 13 Jul.

⁴¹⁵ Nurshayeva, Raushan; Zhumatov, Shamil. 2009. "China's Hu boosts energy ties with Central Asia." *Reuters*. 12 Dec. Accessed on 13 October 2013.
<http://www.reuters.com/article/2009/12/12/china-kazakhstan-idUSGEE5BB01D20091212>

⁴¹⁶ Wan Zhihong. 2010. "China, Kazakhstan sign new gas pipeline deal." *China Daily*.

⁴¹⁷ CNPC. "Central Asia-China Gas Pipeline."

⁴¹⁸ CNPC. "Flow of natural gas from Central Asia." Accessed on 8 October 2013.
<http://www.cnpc.com.cn/en/FlowofnaturalgasfromCentralAsia/FlowofnaturalgasfromCentralAsia2.shtml>.

Kazakhstan, respectively.⁴¹⁹ The construction of the fourth pipeline, Line D, started in 2014. It will receive its gas supply from the Galkynysh gas field in Turkmenistan and be routed via Uzbekistan, Tajikistan and Kyrgyzstan to China.⁴²⁰

The Central Asia–China gas pipeline is China’s first and largest cross-border gas pipeline. According to CNPC, all four lines of the pipeline network will be able to supply China with 85 bcm/year of gas, accounting for at least 40% of China’s total imported gas supplies in the next three decades.⁴²¹ Aside from fostering economic cooperation between China and Central Asian countries, the pipeline will also be a source of prosperity for the region, promoting the development of and investment in local natural gas resources, stimulating the growth of local equipment manufacturing and construction industries, and creating employment opportunities.

The China–Central Asia pipelines mentioned above were all connected to China’s domestic gas pipeline network, the West–East Gas Pipeline, with the farthest scope to the Yangtze River Delta, Pearl River Delta and Hong Kong and Macao. In summary, the construction of transnational oil and gas pipelines, for China, is very consistent with the strategic considerations of energy security and reduced dependence on sea transport modes. With a total length of almost 10,000 km, the natural gas pipeline connecting the two countries passes through Turkmenistan, Uzbekistan, Kazakhstan and China, ranking as the world’s longest natural gas pipeline.

4.3.1.3 Cooperation on other energy

Although China–Central Asia energy cooperation has a key focus in the oil and gas sector, it is extended to the other fields of energy. Particularly, China, Kazakhstan and Uzbekistan are witnessing a favourable trend in electrical and nuclear power cooperation.

China attaches equal importance to the exploration of uranium resources in Central Asia and is involved in mutually beneficial cooperation with Kazakhstan in this field. In this cooperation, Kazakhstan will be eligible to join the construction of China’s nuclear station once China is granted permission to explore uranium mines in Kazakhstan. Through such cooperation, Kazakhstan will be able to learn the core technology for

⁴¹⁹ Ibid.

⁴²⁰ Ibid.

⁴²¹ Ibid.

independent development of their nuclear power.⁴²² In order to access uranium resources, China National Nuclear Corp and China Guangdong Nuclear Power Corp (CGNPC) would hold 49% of the shares of a uranium company in Kazakhstan, with Kazatomprom holding the remaining 51%. In exchange, Kazatomprom would acquire the shares of China's nuclear fuel processing plant or power plants.⁴²³ The trade was a breakthrough for the seemingly mysterious Chinese nuclear industry, and it marked its active strategy in obtaining energy. It is on the Chinese government's blueprint to complete 40 nuclear stations by 2020 to reduce the country's dependence on coal-burning electricity generation.

China is also actively carrying out nuclear energy cooperation with Ulba Metallurgic Plant, the affiliate of Kazakhstan State Corporation for Atomic Power and Industry and a world-famous uranium fuel manufacturer. The powder pellets from Ulba Metallurgic Plant are mainly used by nuclear stations and in beryllium, tantalum and niobium products. Kazakhstan is devoted to exporting finished uranium fuel and is active in nuclear fuel certification.⁴²⁴ Ulba Metallurgic Plant passed the certification in China for uranium fuel and uranium powder pellets respectively in September and December 2010 and began exporting uranium fuel pellets to China in late 2011. The plant planned to export two tons of uranium fuel to China per year from 2014 and will gradually increase the volume to 200–400 tons from 2020.⁴²⁵ President Nazarbayev's visit to China in February 2011 further expanded the energy cooperation between the two countries. During his visit, Kazatomprom and CGNPC signed a memorandum of understanding on an industrial investment fund.⁴²⁶

⁴²² Qiu, Lin. 2010. “日本为能源向中亚示好 [In English: Japan approach Central Asia for energy]”, *中亚信息* 8: 33–34

⁴²³ FT. 2007. “中國與哈薩克斯坦達成核能合作協議 [In English: China and Kazakhstan reach nuclear capability collaboration agreement]”. *Financial Times*. 19 Nov. Accessed on 13 October 2013. <http://big5.ftchinese.com/story/001015591?full=y>

⁴²⁴ Chinese Embassy to Kazakhstan. 2010. “哈薩克完成出口中國鈾粉末芯塊的認證 [In English: Kazakh uranium to complete the export certification Chinese powder slug]” Accessed on 13 October 2013. <http://kz.mofcom.gov.cn/article/zxhz/zhxm/201012/20101207327050.shtml>.

⁴²⁵ Ibid.

⁴²⁶ Chinese Embassy to Kazakhstan. 2011. “納扎爾巴耶夫總統訪華期間中哈簽署系列經貿協議 [In English: President of Kazakhstan Nursultan Nazarbayev signed a series of economic and trade agreements during his visit to China].” Accessed on 13 October 2013. <http://kz.mofcom.gov.cn/article/zxhz/zhxm/201102/20110207417305.shtml>.

In August 2009, CGNPC and Goskomgeo from Uzbekistan established a joint venture, CGN-URC, to explore uranium mines. Two establishers each held 50% of the shares, and the venture was scheduled to be put into operation in 2014.⁴²⁷ On 3 November 2007, during Premier Wen Jiabao's visit to Uzbekistan, CGN and Uzbekistan's State Committee for Geology and Mineral Resources signed a contract on uranium cooperation.⁴²⁸ According to the contract and another agreement on long-term natural uranium procurement, which was signed in February 2007, China can purchase another 8,000 tons of natural uranium from 2019 to 2028 and cooperate with Uzbekistan on exploring sandstone-type or black-shale-type uranium mines.⁴²⁹

4.3.2 China's Energy Cooperation via the SCO

The above examples show how China promotes energy cooperation with Central Asian countries via a bilateral approach, which leads to energy diplomacy. In contrast, this section analyses the case of the SCO, as a platform to promote Sino–Central Asian energy cooperation in a multilateral way, which could lead to global energy governance.

The SCO is a Eurasian political, economic and military organization which was founded in 2001 in Shanghai by the leaders of China, Kazakhstan, Kyrgyzstan, Russia, Tajikistan and Uzbekistan. It was transformed from the Shanghai Five grouping which was originally created in 1996 by the membership of Uzbekistan with the signing of the Treaty on Deepening Military Trust in Border Regions. The SCO is primarily centred on its member nations' security-related concerns in Central Asia regarding terrorism, separatism and extremism. David Kerr identifies three aims of the SCO as “repressing transnational radicalism; stabilizing regional regimes and their foreign policy orientations; and checking US influence”.⁴³⁰ Since the SCO was founded in 2001, its activities in the area of social development of its member states are increasing fast. Both energy cooperation and cooperation in other areas of common interest – such as politics, trade, national defence, law enforcement, environmental conservation, culture,

⁴²⁷ CGNPC. 2009. “中广核集团积极开发利用海外铀资源取得重要进展 [In English: CGNPC overseas uranium resources exploitation overseas achieves important progress]” Accessed on 13 October 2013.

<http://www.cgnpc.com.cn/n1302/n1306/n1358/n1360/n1362/c81077/content.html>.

⁴²⁸ Chinese Embassy to Uzbekistan. 2011. 外国在乌兹别克斯坦开发铀资源新动向 [In English: News trend of foreign development of uranium resources in Uzbekistan].

⁴²⁹ Ibid.

⁴³⁰ Kerr, David, and Swinton, Laura C. 2008. “China, Xinjiang and the transnational security of Central Asia.” *Critical Asian Studies* 40(1): 89–112.

technology, education, traffic, financial credit and so on – have experienced three stages, which include improving the cooperation mechanism, laying down the principles and strategies of cooperation and consolidating the basis of cooperation through projects.

Yet, the Eurasian organization has been variously criticized by external observers as an under-analysed international organization,⁴³¹ an “OPEC” with nuclear power⁴³² and a prospective “Asian NATO” against the US.⁴³³ It is also considered to be an ineffectual and shallow regional “talk-fest” or a transparent cloak for the maintenance and expansion of malignant Chinese influence in Central Asia.⁴³⁴ However, these observations fail to understand the roots of the SCO and the core imperatives of one of its key drivers, China. As discussed in previous sections, China’s foreign policy in Central Asia is important for China’s energy security, and China’s “westward advance” into Central Asia is also determined by its growing need for energy resources.⁴³⁵ This section first discusses the progress of the SCO in energy cooperation.

4.3.2.1 The Progress of the SCO regarding Energy Cooperation

Specifically, in September 2003, the second Prime Ministers’ Meeting of SCO member countries was held in Beijing, and the meeting approved the Outline of Multilateral Economic and Trade Cooperation among SCO member countries, indicating that SCO regional economic cooperation was gradually getting back on track.⁴³⁶ In September 2004, the third Economic and Trade Ministers’ Meeting was held in Moscow and agreed the Measurement Plan draft of the Outline of Multilateral Economic and Trade

⁴³¹ Bailes, A.J.K., P. Dunay, P. Guang, and M. Troitskiy. 2007. “The Shanghai Cooperation Organization, SIPRI Policy Paper 17”.

⁴³² Brummer, M. 2007. “The Shanghai Cooperation Organization and Iran: A Power-Full Union.” *Journal of International Affairs* 60(2), 185–198, p. 185.

⁴³³ Weitz, R. 2006. “Shanghai Summit Fails to Yield NATO-style Defence Agreement.” *Jane’s Intelligence Review* 18(8):42, p. 42.

⁴³⁴ Blank, S. 2002. “China’s Defeats in Central Asia.” *Central Asia-Caucasus Analyst*, 14 Aug; Tisdall, S. 2006. “Irresistible Rise of the Dictators’ Club.” *The Guardian*, 6 Jun.

⁴³⁵ Li. 2007. op. cit.; Goldstein. op. cit.; Swanstrom. op. cit.

⁴³⁶ PRC MFA. 2013. “上海合作组织成员国总理会议 [In English: Shanghai Cooperation Organization (SCO) meeting]”
http://www.fmprc.gov.cn/mfa_chn/wjb_602314/zzjg_602420/dozys_602828/dqzzyos_602832/s_hhz_602834_1/gk_602836.

Cooperation among SCO member countries, which included 11 areas and 127 projects in energy.⁴³⁷

In September 2006, the Economic and Trade Ministers' Meeting was held in Tashkent, the capital of Uzbekistan, and agreed to set up a professional working group aiming to promote energy cooperation. In June 2006, Russia's President Putin delivered a speech at the sixth Meeting of the Council of Heads of State of the SCO in which he pointed out that "the SCO has a sufficient organizational and legal infrastructure to actively engage in promising economic projects" and "the proposal to create an SCO Energy Club is a topical one, as well as expanding cooperation in transport and communications".⁴³⁸

On 16 August 2007, the Council of Heads of State of the SCO meeting was held in Bishkek, the capital of Kyrgyzstan. During the meeting, the heads pointed out that economic cooperation within the framework had entered "project demonstration" stage, which carries out relevant plans and agreements, implements multi-participation in energy, traffic, telecommunication, etc. and gets benefits together from these areas. The industrialist committee and banks association of the SCO should play a significant role in this process. The heads emphasized the importance of close coordination in the energy field and sharing common ground between member countries. The energy mechanism of the SCO should be based on the principles of openness to countries and organizations that agree with the purposes and tasks of the SCO. Meanwhile, the heads noted the importance of taking effective measures to protect the environment and to use natural resources rationally.⁴³⁹

On 2 November 2007, the sixth Prime Ministers' Meeting of SCO member countries was held in Tashkent, the capital of Uzbekistan. At the meeting, the prime ministers of member countries drew particular attention to the outcomes of the SCO Energy Ministers' Meeting which had been held on 29 June in Moscow. They emphasized the necessity of close cooperation, reviewed common ground in the energy field and discussed the future of energy cooperation, which included contrasting problems of

⁴³⁷ Ibid.

⁴³⁸ Putin, Vladimir. 2006. "Speech at the Shanghai Cooperation Organisation Council of Heads of State." 15 June. Accessed on 13 October 2013.
http://archive.kremlin.ru/eng/speeches/2006/06/15/0748_type82914_107181.shtml.

⁴³⁹ PRC MFA. 2007. "Joint Communiqué of Meeting of Council of Heads of SCO Members." Accessed on 13 October 2013.
http://www.fmprc.gov.cn/mfa_eng/wjdt_665385/2649_665393/t355665.shtml.

energy strategy between member countries. At the same time, at the meeting Russia's Prime Minister Zubkov pointed out that "energy cooperation is one of the most important tasks of the SCO". He suggested that SCO member countries should make active preparation for the SCO Energy Club.⁴⁴⁰

In May 2008, Russian Federation President Medvedev accepted an invitation from China's President Hu Jintao and paid a state visit to China. During his stay, Medvedev expressed that "Russian–Chinese energy cooperation represents a very important component of our [the two countries'] business ties".⁴⁴¹ Meanwhile, the two heads of state pointed out that China and Russia will continue to "intensively promote cooperation in oil and gas".⁴⁴² The heads of the two countries believed that developing nuclear cooperation should be taken as one of the priorities of bilateral economic cooperation. The two sides expressed satisfaction over the cooperation outcome and would continue to conduct mutually beneficial cooperation.⁴⁴³

On 28 August 2008, the eighth Meeting of the Council of Heads of State of the SCO was held in Dushanbe. The heads of state welcomed "the positive dynamics which had appeared in a number of areas of common interest in trade and economic cooperation" and emphasized "the creation of favourable trade and investment conditions, development of transportation routes and transit potential, modern information and telecommunication technologies."⁴⁴⁴ Later, on 30 October, the Meeting of the Council of Heads of Government (prime ministers) of the SCO Member States was held in Astana, the capital of Kazakhstan. The prime ministers vowed to implement the consensus reached at the Dushanbe summit to promote sustainable development of multilateral cooperation within the SCO. They agreed to deepen multilateral economic and trade cooperation and boost the cooperation in "enhancing energy efficiency, developing clean energy, utilising renewable energy and ensuring energy security".⁴⁴⁵

⁴⁴⁰ Info summarized from news and official website of SCO and Chinese MFA.

⁴⁴¹ Medvedev Dmitry. 2008. "Interview for Chinese Media: Xinhua news agency, People's Daily newspaper, and China Central Television." Accessed on 13 October 2013.
http://archive.kremlin.ru/eng/speeches/2008/05/22/0718_type82916_201206.shtml.

⁴⁴² Hu Jintao. 2008. Press Statements following Russian-Chinese Talks, Dmitry Medvedev's Official Visit to China, Beijing, 23 May. Accessed on 13 October 2013.
http://archive.kremlin.ru/eng/speeches/2008/05/23/2105_type82914type82915_201246.shtml.

⁴⁴³ Ibid.

⁴⁴⁴ SCO. 2008. "Chronicle of main events at SCO in 2008." Accessed on 13 October 2013.
www.sectsco.org/EN123/show.asp?id=66.

⁴⁴⁵ Ibid.

In conclusion, from the very beginning, with guidance from heads of state and government of member countries, SCO energy cooperation has been implemented by relevant departments and enterprises. Therefore, it has achieved a great deal in promoting energy cooperation in the last decade.

4.3.2.2 Projects under the SCO

The energy cooperation between SCO member countries is moving on as planned. In September 2009, the second Economic and Trade Ministers' Meeting agreed to set up a senior commission and a professional working group, which has provided mechanism guarantees for the realization of various goals of regional economic cooperation. In addition, after rounds of senior commission consultation, the "Measurement Plan" drafts of the Outline of Multilateral Economic and Trade Cooperation among SCO member countries were agreed, including 11 areas and 127 projects in trade, investment, customs, inspection, traffic, energy and information. At that time, 19 energy cooperation projects were initially determined (see Table 4.3).

Table 4.3: Joint Energy Projects of SCO Member States

Project	Participating Countries	Duration	Departments Involved
Energy projects research and implementation among China, Kazakhstan, Russia and Tajikistan	China, Russia, Kazakhstan and Tajikistan	2004–2009	Chinese Ministry of Commerce, Tajik Ministry of Economic Development and Trade and relevant departments of other SCO member countries
Analysis of the prospects of energy fuel complex cooperation for SCO member countries	SCO member countries	2004	Russian Ministry of Industry and Energy, Chinese Ministry of Commerce, Tajik Ministry of Economic Development and Trade, State Energy Company of Uzbekistan, Oil and Gas State-Controlled Companies of Uzbekistan and relevant departments of other SCO member countries

Proposals of energy cooperation priorities and joint plan and projects of mutual interest	SCO member countries	2004–2007	Russian Ministry of Industry and Energy, Chinese Ministry of Commerce, Tajik Ministry of Economic Development and Trade, State Energy Company of Uzbekistan, Oil and Gas Companies of Uzbekistan, Oil and Gas State-Controlled Companies of Uzbekistan and relevant departments of other SCO member countries
Study of the possibilities of consistency among standards, technology and regulations of the current gas transport system	SCO member countries	2004–2006	Russian Ministry of Energy and Industry, Kyrgyzstan's State Assets and Investment Committee, Kyrgyzstan's natural gas company, Tajik Ministry of Energy and Industry, Oil and Gas State-Controlled Companies of Uzbekistan and relevant departments of other SCO member countries
Co-construction of the hydropower facilities for Kyrgyzstan and Tajikistan	Russia, China, Kyrgyzstan and Tajikistan	2004–2005	Russian Ministry of Energy and Industry, "Russian Unified Power System" Company, Kyrgyzstan's State Assets and Investment Committee, Tajik Ministry of Energy and Industry and relevant departments of Russia and China
Study of the possibilities of expanding the transport capacity of existing natural gas pipelines within Kyrgyzstan	China, Russia, Kazakhstan, Kyrgyzstan and Tajikistan	2005	Kyrgyzstan's State Assets and Investment Committee, Kyrgyzstan's natural gas company and relevant departments of China, Russia, Kazakhstan, Kyrgyzstan and Tajikistan
Hydroelectric Power Stations in Kyrgyzstan	China, Russia and Kyrgyzstan	2004–2005	Russian power companies, Kyrgyzstan power companies and relevant departments of Russia and China
Study of the questions about creating conditions for mutual access to the electricity market between SCO member countries and	SCO member countries	2004	Kyrgyzstan power companies, State Grid Corporation of Kyrgyzstan, State Energy Company of Uzbekistan, Tajik Ministry of Energy and Industry and relevant departments of SCO member

barrier-free electricity transit within them			countries
SCO member countries participating in the development of 500 220-kilovolt mains in Kyrgyzstan and Tajikistan in order to improve transmission capacity	Russia, China, Kyrgyzstan and Tajikistan	2004–2005	State Grid Corporation of Kyrgyzstan, Tajik Ministry of Energy and Industry and relevant departments of Russia and China
Information exchange on the reform process of power field markets and the development prospects of the power industry	SCO member countries	Long- term	State Energy Company of Uzbekistan, Tajik Ministry of Energy and Industry and relevant departments of SCO member countries
SCO member countries participating in the bid invitation of concession of “Nortel” Distribution Company in Tajikistan	China, Russia, Kazakhstan, Kyrgyzstan and Tajikistan	2004–2005	“Kyrgyzstan power companies, Tajik Ministry of Energy and Industry and relevant departments of China, Russia, Kazakhstan, Kyrgyzstan and Tajikistan
Co-construction of Rogun Hydropower Station	Tajikistan, China and Russia	2005–2010	Tajik Ministry of Energy and Industry and relevant departments of China and Russia
To study improvement and construction of the new existing natural-gas transport corridor	SCO member countries	2004–2010	Oil and gas state-controlled companies of Uzbekistan, Tajik Ministry of Energy and Industry and relevant departments of SCO member countries
Construction of natural gas pipelines through Kyrgyzstan and Kazakhstan from Turkmenistan, reaching Uzbekistan and ending at Xinjiang Province, China	SCO member countries	2004–2010	Natural gas transportation company of Uzbekistan, oil and gas state-controlled companies of Uzbekistan, Tajik Ministry of Energy and Industry and relevant departments of SCO member countries
Studies on drawing up investment plans for the construction, transformation and renewal of energy projects and the	SCO member countries	2004–2010	State Energy Company of Uzbekistan, Tajik Ministry of Energy and Industry, Kyrgyzstan power companies and relevant departments of SCO member countries

possibilities of solving financing issues			
To explore unconventional renewable energy to obtain sources of electricity	SCO member countries	2004–2010	State Energy Company of Uzbekistan, Uzbek Academy of Sciences, Ministerial Meeting and Technology Center of Uzbekistan, Tajik Ministry of Energy and Industry and relevant departments of SCO member countries
To take advantage of the contracting capability of SCO member countries to initiate reconstruction projects of Afghan hydropower stations	SCO member countries	Since 2004	State Energy Company of Uzbekistan, Tajik Ministry of Energy and Industry and relevant departments of SCO member countries
To study the cooperation possibilities among SCO member countries in terms of jointly exploring and developing oil and gas fields	SCO member countries	Long-term	Oil and Gas Exploration and Development Company of Uzbekistan, oil and gas state-controlled companies of Uzbekistan, Tajik Ministry of Energy and Industry and relevant departments of SCO member countries

Source: Info summarized from news and official website of SCO and Chinese MFA

Between 2004 and 2012, it could be concluded from the SCO that because member countries and observer countries have the advantages of geographic position and convenient transport, many energy projects have been implemented and do bring tangible benefits to relevant countries. They also exchange information on the development and implementation of energy strategies and the development of large-scale energy enterprises. The complement of energy resources promotes the development of economy and transport, the construction of infrastructure, the structure of energy consumption and the improvement of people's living standards for all member countries. All of the relevant countries have realized that only energy cooperation based on mutual benefits can meet the fundamental interests of each country.

4.4 Analysis of the Paradigm Shift of China–Central Asia Energy Cooperation

With increasing cooperation between China and Central Asia in the field of energy, several obvious features and obstacles appear. This section analyses these features in the framework of five levels of energy policy aspects against which change can be measured to answer the question of whether there is a policy paradigm shift from bilateral-based energy diplomacy to multilateral-based global energy governance in China's energy cooperation with Central Asia. It is notable that Chapter 3 marked the year of 2007 as the watershed in the development of Chinese energy security and policy. While the period before 2007 can be regarded as the policy paradigm of energy diplomacy relying on bilateralism, the period after can be viewed as the policy paradigm of global energy governance reliant on multilateralism.

4.4.1 Policy Goals

A number of interviewees point out that China–Central Asian relations are increasingly defined by a dynamic of economic and political dependency, which can be seen through China's trade relationship with Central Asian countries and its major investment in acquiring Central Asian oil and gas.⁴⁴⁶ Dramatic energy investments listed in Section 4.3.1 were the clearest sign that Central Asia figured prominently in China's overall development strategy. However, China's interests in its energy trade relationships with Central Asia go beyond securing the supply of natural resources: in other words, desire for energy security in Central Asia encompasses wider political, economic and strategic interests.⁴⁴⁷

As discussed in Section 4.2, China's interests within its relations with Central Asia are intimately connected to its diplomacy towards Central Asia, and hence embrace the concern about Xinjiang. Since the fall of the Soviet Union, China has shown its intent to develop greater economic and trade relations with the newly independent Central Asian states, particularly Kazakhstan and Kyrgyzstan, through border trade and infrastructural links. Xia Yishan argues that Xinjiang's potential role is becoming the hub connecting China with the Central Asian countries.⁴⁴⁸ The key commodities in this Silk Road are no longer silk, as in the past, but oil and gas. The oil and gas industry in Xinjiang became the pillar industry in the Chinese government's plan in both opening Xinjiang's economy and establishing the region as a transit route and refinery zone for Central Asian oil and gas. Philip Andrews-Speed points out that such an approach

⁴⁴⁶ Interview with Xia Yishan, Beijing, 22 October 2014; Interview with former Counsellor in Chinese embassies in Central Asian countries and Russia, Beijing, 21 Nov 2013; Interview with Zhang Bin, Beijing, 28 May 2013.

⁴⁴⁷ Interview with Xia Yishan, Beijing, 22 October 2014.

⁴⁴⁸ Ibid.

ultimately enmeshed China in the wider geopolitical competition for not only access to Central Asia's oil and gas but also greater political and economic influence in the region.⁴⁴⁹ China's reorientation of its energy strategy toward Central Asia in the early 1990s was very much a strategic manoeuvre rather than a "market" approach to oil and gas resources.⁴⁵⁰

Therefore, China's energy diplomacy towards Central Asia is initially underpinned by China's broader diplomatic strategy towards the region whereby China provides Central Asia with certain economic or political/security goods. China's economic and security concerns with the Central Asian countries are complementary in that the development of their bilateral relations, spurred on by the economic linkages noted above and further strengthened by the identification of common interests in the security sphere.

Through bilateral relations, the nascent multilateral platform of the Shanghai Five, or the subsequent SCO, China has pressured the Central Asian countries to control and suppress the activities of separatists within the Uyghur community in the region. Indeed, anti-terrorism and anti-separatism is a theme in China's participation in the Shanghai Five and subsequent SCO process. Since 2001, China has successfully extradited a significant number of alleged Uyghur "separatists and terrorists" from the Central Asian region, Pakistan and Nepal⁴⁵¹ by a security mechanism through the SCO.⁴⁵² Yet, there are two major obstacles in the development of a stronger China–Central Asian relationship, including the lack of adequate infrastructure, and trade barriers such as tariffs and visa restrictions.⁴⁵³ These concerns have been clear in Chinese policy towards Central Asia since the collapse of the Soviet Union, with Chinese investment in infrastructure both within Xinjiang and in the neighbouring Central Asian regions.

Although China's energy strategy towards Central Asia in the 1990s was very much geopolitically characterized, this does not necessarily mean that energy security is merely a part of China's political manoeuvre in the region. In order to feed the growing

⁴⁴⁹ Interview with Philip Andrews-Speed, Singapore, 3 March 2014.

⁴⁵⁰ Ibid.

⁴⁵¹ Mukhamedov, R. 2004. Uyghurs in Kyrgyzstan under Careful Government Supervision, Central

Asia-Caucasus Analyst, 28 January.

⁴⁵² Ibid.

⁴⁵³ Interview with Xia Yishan, Beijing, 22 October 2014.

economy of China, its energy security strategy of diversification and increased investment and exploration of its state oil corporations has also continued since 2001. Central Asia is one of the key energy cooperation targets, reflected by massive developments and activities in this sphere (listed in Section 4.3.1).

More importantly, China realizes that the increasing of oil and gas production in Central Asia could be one of the ways out of a combination of energy security challenges it has been facing, including the rise of domestic energy demand, an increase in world oil prices and the strategic weakness of China's growing dependency on Middle Eastern energy sources.⁴⁵⁴ This realization is critical for understanding the rationale behind China's energy diplomacy towards Central Asia, because energy cooperation is not just part of the medium for achieving China's diplomatic goal in Xinjiang and Central Asia, as discussed above; energy security has risen to the national level, and energy diplomacy towards Central Asia has become a channel to relieve China from its energy challenge.

Similar to the broader China–Central Asian cooperation, the lack of adequate infrastructure and trade barriers⁴⁵⁵ are the main obstacles in their energy relationship. Therefore, since the first visit of China's President Hu Jintao to Kazakhstan in 2003, China has renewed the momentum of energy cooperation with Central Asia, particularly oil and gas pipelines.⁴⁵⁶ More importantly,⁴⁵⁷ the transnational gas pipeline projects announced in 2007 laid the foundation for multilateral energy cooperation between China and Central Asian countries. The need, if not crisis, of transnational transit management had urged China to look into better energy governance in multilateral ways. This also echoes the analysis in Chapter 3 that 2007 was the watershed for China's energy strategy in shifting from a bilateral to a multilateral approach.

4.4.2 Policy Instruments

In order to achieve its policy goal on energy security, China has adopted a variety of instruments, mainly joint energy projects and energy diplomacy, on both bilateral and

⁴⁵⁴ Ibid.

⁴⁵⁵ Ibid.

⁴⁵⁶ Ibid.

⁴⁵⁷ Chapter 3 marked the year of 2007 as the watershed in the development of Chinese energy security and policy. While the period before 2007 can be regarded as the policy paradigm of energy diplomacy relying on bilateralism, the period after can be viewed as the policy paradigm of global energy governance reliant on multilateralism.

multilateral levels. These instruments are complementary to each other and reveal the change in Chinese policy instruments in Central Asia. Based on the existing energy cooperation between China and Central Asian countries listed in Section 4.3.1, the major cooperation mechanisms of the two sides include the Production Sharing Model, Joint Management Model and Technology Service Model.

(1) The Production Sharing Model

The Production Sharing Model is based on the premise that the resource governments have the ownership and franchise of oil and gas resources and foreign oil and gas companies are responsible for the exploration, development and production costs. When it is time to use the resources, these companies negotiate and sign oil and gas exploration and development contracts on how to share products with the resource governments (or oil and gas companies of resource countries).

Most terms of the Production Sharing Model can be reached through the consultations of the two cooperative sides. The main terms include national participation, signing fees and various taxes, such as production bonus, mining royalty, income tax, etc. The core items are the fiscal and taxation costs related to cost recovery and production sharing.⁴⁵⁸ The actual operation of this model in the oil and gas fields in Central Asia is primarily through the direct investment of foreign oil and gas companies, the establishment of consortiums with oil and gas companies of resource countries, the signing of production-sharing agreements and participation in the development of one or multiple projects. In the oil and gas resources cooperation between China and Central Asia, one of the resource development projects belongs to this model: that is the oil and gas resource development project of the Aral Sea, which belongs to Uzbekistan.⁴⁵⁹ In the project, China is one member of the “Aral Sea Oil and Gas Development Consortium”.

(2) The Joint Management Model

The Joint Management Model can be divided into two categories: namely, the Joint Venture Model and Joint Operation Model. In the Joint Venture Model, national oil and gas companies of resource countries and contractors fund and set up a new company according to a certain percentage. As an independent legal entity, the new company is engaged in oil and gas exploration, development, production, transportation and sales, and the two sides bear the risk of operation, share tax liability and share the revenue in

⁴⁵⁸ Interview with an industrial economist at CASS, Beijing 5 May 2013.

⁴⁵⁹ Ibid.

accordance with the proportions stated in the contract.⁴⁶⁰ Meanwhile, in the Joint Operation Model the two sides need not form joint venture companies, but in accordance with the joint operation agreement they fund, operate and share risk and revenue together. This model is widely applied in the practice of oil and gas resource development in Central Asia. In addition, the tax system is adjusted through the mineral tax system, and the main categories of taxes include corporate income tax, dividend tax, value-added tax, income tax of non-foreign nationals, tax for developing mineral resources, crude oil export income tax, excess profit tax, etc.⁴⁶¹

In Central Asia, this model is mainly operated through forming joint venture companies, transnational mergers and acquisitions, or purchasing shares and joint operations. Within the cooperation between China and Central Asia, this model was commonly seen, including in the Aktyubinsk Projects cooperated by China and Kazakhstan, the Darkhan Block Development Project in the Caspian Sea, the North Buzachi Oil Field Project and the five-year oil and gas development project gained by China to explore the three basins of Ustyurt, Bukhara-Khiva and Fergana in Uzbekistan in the cooperation between China and Uzbekistan.⁴⁶²

(3) The Technology Service Model

The Technology Service Model, intended to provide service, refers to the cooperation in which a party takes their technological knowledge as the carrier to solve specific technical problems for the other party. In this model, when the investing country and resource country cooperate to develop resources, advanced technology support is provided, advanced management experience is brought and the infrastructure to develop resources is improved.⁴⁶³

In Central Asia, this model is mainly achieved through providing advanced exploration and development technology and constructing oil and gas transportation pipelines. The construction of the China and Kazakhstan oil and gas pipeline and the China and Turkmenistan natural gas pipeline are examples of this model.⁴⁶⁴ The main oil and gas resource cooperation models of China and Central Asian countries include the Production Sharing Model, Joint Operation Model, Technology Service Model and a

⁴⁶⁰ Interview with a former Counsellor in Chinese embassies in Central Asian countries and Russia, Beijing 21 November 2013.

⁴⁶¹ Ibid.

⁴⁶² Ibid.

⁴⁶³ Interview with an overseas researcher from CNPC, Beijing, 28 October 2014.

⁴⁶⁴ Ibid.

combination of the three models. The models of China's cooperation with Kazakhstan, Turkmenistan and Uzbekistan are similar to each other but have different characteristics due to the different countries' conditions and development of oil and gas industries. Therefore, when carrying out oil and gas resource cooperation, countries should choose the most suitable model according to their national conditions.⁴⁶⁵

The above three cooperation models are crucial to China–Central Asia cooperation as they solve the two main obstacles in it and could result in a structural transformation in terms of how China approaches Central Asia regarding energy issues. First of all, the models reduce the trade barriers regarding taxes and provide technological development for the infrastructure linking the two sides, such as transportation pipelines. Joint management can also facilitate cooperation between China and different countries in the region. Because of cooperation under these models over time, the groundwork was well established for the initial proposal of transnational oil and gas pipelines from Kazakhstan to China in 2003.⁴⁶⁶ Section 4.2 has clearly illustrated that China relies heavily on a bilateral approach in its energy diplomacy towards Central Asia; indeed, 53 interviewees point out that Chinese authorities prefer the bilateral approach in China-Central Asian energy cooperation if China could make its own choice. Yet, the official announcement of Turkmenistan and Uzbekistan joining the China–Kazakhstan partnership in 2007 marked the moment which brought the China–Central Asian energy cooperation to another level, from bilateral to multilateral.

This also echoes the analysis in Chapter 3 that 2007 was the watershed for China's energy strategy in shifting from a bilateral to a multilateral approach. A transnational pipeline has structurally changed the dynamic of how China approaches Central Asian countries. The transnational pipeline effectively creates long-term interdependencies among multiple actors, including suppliers, consumers and transit countries. The construction of a transnational pipeline requires huge amounts of investment, worth tens of billions of dollars of financial capital, and can only be profitable over the course of many decades. It also raises considerable political cost and benefits, both in the short and long term. The cross-border oil and gas pipelines jointly constructed by China and Central Asian countries demonstrate a win-win situation in which the energy interests of the countries concerned are well served.⁴⁶⁷

⁴⁶⁵ Ibid.

⁴⁶⁶ Interview with Xia Yishan, Beijing, 22 October 2014.

⁴⁶⁷ Ibid.

With respect to the cooperation method, which is the joint construction of the pipeline, it is a special method in international economic cooperation. Firstly, even though the construction period of the pipeline is long and the cost is high, participants will benefit in the long term. Secondly, partners are unlikely to change. The ends of the pipeline are located in specific countries or regions, and once the line is confirmed, countries along the line are constrained. Thirdly, the cost for quitting is high. It will be a total waste if the pipeline is abandoned. As a result, the joint construction is a great challenge to the political trust among the cooperating countries. However, such joint construction has almost, since the beginning, ruled out the possibility of any alternative. Joint construction itself is a commitment from multiple parties to their long-term supply and demand and reflects their willingness to establish an interdependent and mutually constraining partnership.

The Kazakhstan-China pipeline project may not be economically beneficial but could provide safety in terms of geopolitics. Moreover, such cooperation on pipeline construction can enhance the political trust between the countries along the line, and an overflow effect can be created. The political stability and financial viability of China and Central Asia must be weighed and maintained within the context of broader international goals and multilateral platforms.⁴⁶⁸ In short, China–Central Asia cooperation via this transnational pipeline has paved the path for multilateralism in regard to policy instruments.

4.4.3 The Physical Structure of Energy Policy

The SCO was established in 2001 by China, Russia and Central Asian countries. Its origin is based on the issues addressed by the Shanghai Five, primarily focused on security concerns in Central Asian including terrorism, separatism and extremism. The above section points out that the mission of the SCO in its early stages was more about security and paid less attention to energy. Because of the proposal, construction and operation of the transnational pipeline, the Eurasian organization re-drew the attention of Chinese authorities in the mid and late 2000s, who attempted to utilize the SCO as a multilateral energy platform to facilitate energy cooperation in the region.

The logic behind managing energy issues via the SCO is similar to that of removing the threats of terrorism, separatism and extremism, both in Central Asia and Xinjiang through the SCO. In the late 1990s, failing to tackle the transnational terrorism in the region alone, China's motivation for greater regional action was both obvious and

⁴⁶⁸ Interview with a former Counsellor in Chinese Embassy in Central Asian countries, Beijing, 3 November 2015.

pressing, with ongoing incidents of ethnic minority opposition to Chinese rule in Xinjiang.⁴⁶⁹ China realized it had to expand the security issues addressed by the Shanghai Five and produce a further agreement in border areas of common interests, which it did via the 1998 joint statement declaring that the member states would not “allow their territories to be used for activities undermining the national sovereignty, security and social order of any of the five countries”.⁴⁷⁰ This document also contained the “concrete manifestation of the new-type security concept” and stressed the pursuit of common interests, peaceful dialogue, common security for all regional actors and the discouragement of formal, hierarchical alliances.⁴⁷¹ This had become a dominant trope of China’s foreign policy discourse and applied to China’s energy diplomacy towards Central Asia.

Especially after the start of the China–Central Asia transnational pipeline, China together with other member states continued to shift the focus towards establishing a regional response to the interconnected issues of transnational energy investment and transportation. Since 2004, the Council of Heads of State of the SCO, which includes China, has stated that the SCO would prioritize energy cooperation within the SCO framework.⁴⁷² In 2006, adhering to the consensus of the 15 June 2006 Shanghai summit, the prime ministers during the meeting of the six countries studied priority directions of economic cooperation of the SCO member states and proposed that the six countries cooperate in economic, trade, scientific and technological, social, cultural and other areas in the series-specific measures. The prime ministers noted that the SCO economic cooperation has injected new vitality.

To promote economic and trade cooperation, an Energy Working Group on a modern information and telecommunications technology was established within the framework of the organization. Especially in 2006, Russia’s President Putin proposed to establish an “Energy Club”, which was approved by all member countries all immediately. The

⁴⁶⁹ Interview with Wu Daihui, Beijing, 5 November 2015.

⁴⁷⁰ People’s Daily. 2000. “中、塔、俄、哈、吉五国《杜尚别声明》 [In English: Tajikistan, Russia, Kazakhstan, and Kyrgyz signed the Dushanbe Declaration].” *People’s Daily*, 5 July 2000. Accessed on 13 October 2015.

<http://www.people.com.cn/GB/channel1/10/20000705/131545.html>

⁴⁷¹ Lanteigne, M. 2005. *China and International Institutions: Alternate Paths to Global Power*. London: Routledge.

⁴⁷² Xing, Guangcheng. 2009. *上海合作组织发展报告 2009 [In English: Shanghai Cooperation Organization Development Report 2009]*. CASS Publishing. <http://euroasia.cass.cn/news/60976.htm>.

prime ministers instructed the Energy Working Group in conjunction with the Secretariat to study the possibility of establishing the SCO Energy Club.⁴⁷³ It is notable that, although the China–Central Asia pipeline only become officially multilateral in 2007, the proposal and studies of feasibilities of such a huge project were carried out a few years ahead, as listed in Section 4.3.1, and Russia is believed to have been well informed about this. Therefore, the proposal of the SCO Energy Club in the year 2006 does match the timeframe in this chapter, which marks 2007 as the watershed in the development of the Chinese energy strategy as well as the progress of construction of the transnational pipeline.

China and other SCO member states have tried to implement and promote a variety of energy cooperation programmes via the SCO under the Measurement Plan of the Outline of Multilateral Economy and Trade Cooperation listed in Section 4.3.2. The key points to start the long-term cooperation mechanism of energy suppliers and demanders for China, Russia, Kazakhstan and Uzbekistan are to sustain the long-term demand for oil and gas, to guarantee the supply of oil and gas as well as the energy market of each side and to overcome fraud in the multilateral energy cooperation. As the major economies, China and Russia should play a leading role and offer other countries preferential benefits. It is also notable that the headquarters of the SCO are in Beijing, which is very important for the cautious Chinese authorities. Without the physical controlling of the entity, China will not see any comfort in participating in an international organization.⁴⁷⁴ In short, the establishment of the SCO and utilizing it as a platform for energy cooperation indicates a change in the physical structure of energy policy towards multilateralism in Central Asia.

However, when it comes to implementation, cooperation via SCO was not always effective. More importantly, most of the cooperation projects among SCO member states are bilateral and do not really belong to SCO's multilateral framework. Furthermore, China and Central Asian countries do not coordinate key projects such as transnational pipelines via the SCO. Bilateral cooperation remains the main way of energy cooperation at present. In other words, although the SCO is a multilateral institute that covers joint exploration, mining, processing, transportation and cooperative marketing and other business, in practice, its regional energy cooperation is based on bilateral cooperation, including cooperation agreements between both governments and corporate bodies. Such cooperation does not only derive from the national energy policy and strategic cooperation projects with significant influence;

⁴⁷³ Ibid.

⁴⁷⁴ Interview with Paik Keun-wook, London, 29 July 2014.

there are also some business activities starting from commercial cooperation projects. Overall, bilateral energy cooperation has strong operability as it avoids third-party intervention. The multilateral energy cooperation mechanism of the SCO has not been established effectively. In other words, although there is a new physical governance structure in China–Central Asia energy cooperation, the degree of appropriation and legitimacy of the ideas of multilateralism via the SCO is low.

4.4.4 Conclusion: No Profound Change to Multilateralism

The previous sections explain the energy cooperation mechanism between China and Central Asia. This final section attempts to answer whether there was a profound change in China's energy strategy towards Central Asia from bilateral to multilateral during the era of Hu Jintao. Section 4.2 and Section 4.4.1 have explained that the Chinese understanding of energy security in the region was not merely about a channel for achieving geopolitical or security goals in the late 1990s and early 2000s but also expanded with market elements in order to feed China's growing economy. Section 2 and Section 4.4.2 have also illustrated how cooperation between China and Central Asia, particularly in the oil and gas sectors, has expanded from a bilateral one to a multilateral one via pipeline projects. It points out that construction of a China–Central Asian transnational pipeline is the event that triggered the need for a new idea of multilateralism in regard to the regulation of transnational transit. This need, if not management crisis, leads to the evolutionary change in policy instruction of Chinese energy cooperation in the region. An important foundation for multilateral cooperation was laid here.

Section 4.3 and Section 4.4.3 have explained that a physical body, the SCO, has also been established to facilitate multilateral cooperation, which is an unusual practice for China. There are also energy projects conducted by China and other Central Asian countries via the SCO, as discussed in Sections 4.3.1 and 4.3.2. However, the implementation of policy and projects via the SCO was not always effective. Section 4.4.3 points out that most of the projects under the SCO are actually bilateral cooperation projects among SCO member states and not multilateral ones via the SCO. On the other hand, key multilateral projects such as transnational pipelines are not coordinated via the SCO. A multilateral mechanism via the SCO is ineffective and a bilateral approach remains the main way of energy cooperation between China and Central Asia. Therefore, the degree of appropriation and legitimacy of the ideas of multilateralism via the SCO is low.

Such a finding does not necessarily mean that China is turning multilateral energy cooperation down in the long term. Nonetheless, it reveals there were a variety of obstacles to the progress of multilateral energy cooperation in the region during Hu Jintao's era. Energy cooperation within the SCO remaining bilateral is the result of the lack of legal mechanisms in the SCO rather than a lack of willingness to take the multilateral approach. Energy cooperation, particularly transnational pipeline management, can be a very complicated legal issue, involving transit regulation, different energy laws among different countries and huge financial transactions.⁴⁷⁵ Therefore, the SCO is an important regional political and economic organization in the field of energy, with the need for legal documents and internal safeguards to promote regional energy cooperation, as well as practical mechanisms and functions to influence the energy decisions of member states. Yet, coordination of national energy strategy objectives and the energy legislative situation is necessary, as well as the elimination of barriers to mutual trade and investment and the creation of favourable conditions for multilateral cooperation for regional economic development, thereby optimizing energy sector investment and trade flows in the system to give protection.⁴⁷⁶

Due to the lack of legal mechanisms of energy cooperation, the function of the SCO is limited. This is one of the reasons why Putin's proposed "Energy Club" has not made much progress. As a result, it is better to break the framework of the SCO and to establish a new energy cooperation mechanism which allows China, Russia, all the Central Asian countries and even the Caspian Sea countries to get involved. Indeed, Chinese authorities including CNPC, NEA and NDRC are noticing the limitations and showing interest in the ECT. They are keenly aware of the multinational pipeline risks in Central Asia, which could be potentially reduced by transition regulation in the Treaty.⁴⁷⁷ Although China prefers bilateralism, it may have to turn to the ECT once it realizes that the risk management of its Central Asia pipeline project relies on multilateralism. This could lead to potential change in ideas if Chinese agencies start looking at multilateral means such as the ECT.⁴⁷⁸ However, this progress would take decades and could not be finished by the end of Hu Jintao's era.

Moreover, security concerns, domestic problems in Central Asian countries, the great power competition, the multiple energy transport routes, the growing number of Asian NOCs and also the international oil companies, or the Russian and American military

⁴⁷⁵ Interview with a regional coordinator at Energy Charter, Beijing, 3 September 2014.

⁴⁷⁶ Interview with Wu Daihui, Beijing, 5 November 2015.

⁴⁷⁷ Interview with a regional coordinator at Energy Charter, Beijing, 3 September 2014.

⁴⁷⁸ Conversation with a Secretary General at Energy Charter, Beijing, 3 September 2014.

presences represent new challenges for China's interests in Central Asia and complicate the progress of the SCO.⁴⁷⁹ The balance between all these problems will need diplomacy, increased coordination and substantial financial resources. Similarly, Davie Kerr argues that the regional problem of China and unclear future of the SCO results in a fluid environment for energy cooperation in Central Asia.⁴⁸⁰

Nonetheless, China succeeded, in just a decade, to put its mark on the Central Asian energy industry. With the expansion of cross-border transport of energy resources, multilateral energy cooperation could move forward steadily and has a considerable degree of accumulated experience. In particular, the transnational Turkmenistan–China gas pipeline construction – a typical example of the SCO member states' multilateral energy cooperation – laid the foundation for a multinational joint consultation mechanism. From a long-term perspective in the economic globalization and regional integration trends, the SCO's multilateral energy cooperation between countries will be more and more frequent. Yet, it is notable that this progress would take decades and could not be finished by the end of Hu Jintao's era.

Although multilateral elements appeared in all policy goals, policy instruments and the physical structure of policies after the mid 2000s, particularly 2007, they were not solid enough to lead to a profound change in the energy cooperation between China and Central Asian countries during Hu Jintao's era. In terms of policy goals, China's energy policy towards Central Asia followed its overall energy security strategy discussed in Chapter 3. Although there were multilateral forms of cooperation between China and Central Asia, the bilateral diplomatic approach remained an important form of cooperation. In terms of physical structure of governance, the Chinese approach during Hu Jintao's era was far from global energy governance mainly because the function of SCO was limited as discussed above. The degree of appropriation and legitimacy of the idea of enhancing multilateralism via SCO was low. Moreover, the fact that energy projects promoted via SCO were mainly bilateral ones further reflects Chinese top authorities' reluctance towards multilateral forms of cooperation. The China–Central Asia transnational pipeline has changed the cooperation model as mentioned in 4.4.2 and, more importantly, urged the Chinese authorities to look into multilateral means for transnational transit management. Yet, it is an evolutionary progress that takes a considerable amount of time. A number of Chinese experts have already pointed out

⁴⁷⁹ Interview with Xia Yishan, Beijing, 22 October 2014. Interview with a former Counsellor in Chinese embassies in Central Asian countries and Russia, Beijing, 21 November 2013. Interview with Zhang Bin, Beijing, 28 May 2013.

⁴⁸⁰ Kerr and Swinton, op. cit.

that both the full utilization of the transnational pipeline and progress to a multilateralism platform could not have been accomplished within the period of Hu Jintao.

To conclude, first-order change and second-order change in regard to policy instruments and change in physical governance structure did occur in the energy cooperation between China and Central Asia but third-order change regarding ideas and policy goals was not obvious. Therefore, although the development of China–Central Asia energy cooperation seemed to be following the direction towards global energy governance in the long term, the degree of change during the period of President Hu Jintao was not high enough to be claimed as a profound break from the past. This section concludes that China’s energy security strategy in Central Asia during the era of Hu Jintao did not undergo a profound change from a paradigm of bilateral energy diplomacy to a paradigm of multilateral energy cooperation.

4.5 Chapter Summary

This chapter reviews China–Central Asia’s energy relationship and analyses whether China’s energy strategy in the region is moving towards global energy governance. Interest in energy security has laid a solid foundation for energy cooperation between China and Central Asia. The Chinese government supports the investment of its CNOCs in Central Asia bilaterally and multilaterally in at least four ways, including top leaders’ visits, strong bilateral economic and trade ties, intergovernmental agreements with legal basis and multilateral platforms. China and Central Asia have by now preliminarily established a structured cooperation mechanism with official promotion, involving joint energy projects between the two big powers in both bilateral and multilateral approaches. Among them, the China–Central Asia transnational pipeline and the SCO are the key channels facilitating China–Central Asia energy cooperation, and both of them could promote multilateral cooperation. However, the function of the SCO during Hu Jintao’s era was limited and most of the energy cooperation remained in bilateral form. Besides, it took years for the China–Central Asia transnational pipeline to function to full capacity and hence the multilateral impact was limited in Hu Jintao’s era. Therefore, this chapter concludes that energy cooperation between China and Central Asian countries during Hu Jintao’s era did not undergo a profound change from a paradigm of energy diplomacy to a paradigm of global energy governance although a multilateral element appeared in all policy goals, policy instruments and the physical structure of policies since 2007.

Chapter 5 - China–EU energy cooperation

This chapter discusses the development of and changes to China–EU energy cooperation in the 21st century. Energy cooperation plays an important role in China’s relationship with the EU. Two key elements in their energy cooperation are top official exchange platforms and project-based renewable energy technology transfer. These elements do not merely indicate the development and changes in the energy cooperation mechanism between China and the EU, but also the rationales for Chinese energy security strategies in the region. By studying the case of China–EU energy cooperation, this chapter aims to answer the question of whether China’s energy security underwent a policy transition resulting in a paradigm shift away from the “going out” energy diplomacy paradigm to the global energy governance paradigm during Hu Jintao’s era.

This chapter will first commence with the background to the China–EU energy relationship and the foundation of their cooperation. It will then introduce China’s energy policy towards the EU as well as the ideas and rationales behind it. This is followed by a discussion of the mechanisms that underpin China–EU energy cooperation in terms of official channels and project-based channels. The above sections lay the foundation for analysis of the paradigm shift of China’s energy strategy, which is fully developed in the next section. This section includes a discussion of the impact of the development of the China–EU energy projects and official platform in China’s energy security strategy towards the EU. The last section of this chapter examines whether there was a policy paradigm shift in China’s energy cooperation with the EU by applying the framework of five levels of energy policy aspects against which change can be measured. The discussions in the last two sections are based on a systematic analysis of official documents and communications, and original primary data collected from interviews with senior Chinese energy experts who are involved in or have witnessed the China–EU energy cooperation. The method employed to analyse Chinese energy security in this chapter is original and departs from existing works.

5.1 The foundation of China–EU energy cooperation

In a broader strategic perspective that is reflected in the agreements signed by both

parties, the EU⁴⁸¹ sees China as a global partner with equal power to raise its international position.⁴⁸² The actions of a great power like China are believed to have a significant influence on international, regional and bilateral relations. China's energy security is very important to global security, as well as to global energy governance. It is necessary for the EU, as a key leader in the international energy and environmental regime, to encourage China's participation in international frameworks.

Historically, China and EU did not consider each other as sources of energy supply.⁴⁸³ Geographical distance has limited their trade in coal, oil and gas despite increasing energy demand.⁴⁸⁴ Instead, China–EU energy cooperation has a strong focus on clean energy and energy efficiency, particularly technology transfer. China, in its Energy Policy (2012) White Paper,⁴⁸⁵ asserts its attempt to enlarge its reliance on renewable energy and increase its energy efficiency in existing power facilities. Advanced energy technologies are understood to be important for its economic growth, sustainable development, foreign investment and better local environment. Due to the lack of advanced technology in green energy and energy efficiency, China needs a partner that has mastered such technologies and, more importantly, is willing to cooperate with a rising power. For instance, the US and Japan have the technological capability but hesitate to enter into technology exchange with China because of strategic concerns. The EU, by contrast, is understood to be more open to technology cooperation with

⁴⁸¹ In regard with external cooperation, the energy governance structure of the EU is diverse involving three layers of actors. At the top, Directorate-General (DG) for Energy and other DGs of the Commission focuses on developing and implementing the EU's energy policy including external energy policy. At the second, a number of multilateral energy initiatives and projects are launched by the Commission. The next layer is the member states and their ministries. This thesis focuses on the top level rather than the member state level. China's cooperation with EU Member State via the second level channels under the EU is classified as part of multilateralism. Besides, EU Member States use the bilateral channel with China to discuss issues other than energy (e.g., trade and investment). It is also notable that this thesis covers a period of time prior to the Lisbon Treaty which became effective in 2009 and enforce EU as a legal entity.

⁴⁸² Zhao, C. 2008. “中欧关系的现状及其发展趋势 [in English: Sino-EU Relations and its Future].” *新视野* [in English: *New Horizons*] 2: 94-96.

⁴⁸³ Norway is the only European (non-EU) source of oil. See Tian, C. 2011. “China's 2010 Oil Imports and Exports.” *International Petroleum Economics* March: 20.

⁴⁸⁴ Although the EU was not China's major energy partner, some of its Member States had active energy cooperation arrangements with China. More details are discussed later in this section.

⁴⁸⁵ PRC NDRC. 2012. *China's Energy Policy (2012) White Paper*.

China.⁴⁸⁶ In addition to the general strategy of both powers, there are at least two further favourable conditions for clean energy cooperation between China and the EU.

Policy perspective

The governments of China and of the EU Member States have published a series of supporting policies to promote the development of clean energy and which are the policy foundation for the promotion of local clean energy industries through mutual cooperation. During the process of industrial promotion, each nation's government has an influential role. Governments usually publish a series of supporting policies and measures to lead the clean energy market and to promote its industrialization. This applies to both China and the EU, who have been promoting the development of the clean energy industry in recent years.

In February 2005, China published the Renewable Energy Law of the People's Republic of China. This law establishes the basic legal system and policy framework for the development of renewable energy.⁴⁸⁷ In order to ensure the implementation of the Renewable Energy Law, the related departments of the State Council published relevant administrative regulations, administrative rules, technical specifications and standards. In October 2007, the Standing Committee of the National People's Congress ratified the amendment of the Law of the People's Republic of China on Conserving Energy, in order to perfect the basic system of energy conservation, regularize the energy-conserving standards and the supervision system and strengthen policy incentives.⁴⁸⁸

To further the domestic development of clean energy and to activate solutions to the issue of global warming, the Standing Committee of National People's Congress adopted an amendment to the Renewable Energy Law, in December 2009. The amendment came into effect in April 2010.⁴⁸⁹ It regulates the full indemnificatory acquisition system for renewable energy generation, the feed-in tariff management

⁴⁸⁶ Grevi, G.D. & Alvaro, V. 2008. "Partnerships for Effective Multilateralism: EU Relations with Brazil, China, India and Russia." *Chaillot Paper* - No109. Accessed 10 October 2015. <http://www.iss.europa.eu/publications/detail/article/partnerships-for-effective-multilateralism-eu-relations-with-brazil-china-india-and-russia/>

⁴⁸⁷ PRC NPC. 2005. *Renewable Energy Law of the People's Republic of China*.

⁴⁸⁸ PRC NPC. 2007. *Law of the People's Republic of China on Energy Conservation*.

⁴⁸⁹ Xinhua News. 2009. "China Adopts Amendment to Renewable Energy Law." *Xinhua News*, Dec. 26. Accessed 10 October 2015. http://www.china.org.cn/environment/2009-12/26/content_19136273.htm

system and the nationally financed renewable energy development foundation. It also dictates that the government should develop relevant plans for the smooth realization of the national mid- and long-term goal of renewable energy exploitation and usage.

In December 2011, China published its 12th Five-Year Plan on the development of renewable energy, which emphasized quality instead of quantity. If China planned to build up a competitive clean energy industry system, including wind power, solar power, nuclear power and other non-fossil energies. In addition, the Plan stated that China would continue its international cooperation efforts in the field of clean energy in order to break the development bottleneck in technology.⁴⁹⁰

On the issue of promoting the development of a clean energy industry, the EU provided governmental leadership and support at a very early stage. The EU has published a series of policy documents and established a support plan and evaluation mechanism for the implementation of a clean energy policy. The guidance paper on the development of renewable energy as proposed by the EU includes the White Paper for Renewable Energy and its Action Projects and other EU directives concerning the development of renewable energy.⁴⁹¹ EU directives are legally binding documents that guide each EU Member State's legislation, and directives specifically regulate the development of renewable resources. In 2001, the EU published the Renewable Energy Sources-Electricity (RES-E) Directive (Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001), which stated a goal that 22% of the total energy consumed by Member States should be produced from renewable energy resources by 2010.⁴⁹² In 2009, the EU enacted a directive on the promotion of the development of the renewable energy industry and confirmed, by legal form, the 20% ratio of renewable energy consumption and 10% ratio of biofuel consumption by

⁴⁹⁰ PRC NEA. 2012. *中国可再生能源“十二五”规划概览* [In English: *An Overview of China Renewable Energy Twelfth Five Year Plan*].

⁴⁹¹ See: See Europa. 2013. *A 2030 Framework for Climate and Energy Policies*.; Europa. 2006. *A European Strategy for Sustainable, Competitive and Secure Energy*.; Europa. 2005. *Green Paper on Energy Efficiency or Doing More With Less*.; Europa. 1997. *Communication from the Commission - Energy for the future: Renewable sources of energy - White Paper for a Community Strategy and Action Plan*.; Europa. 1996. *Communication from the Commission - Energy for the Future: Renewable Sources of Energy - Green Paper for a Community Strategy*.

⁴⁹² Europa. 2001. *Renewable Energy: The Promotion of Electricity from Renewable Energy Sources*. Accessed 10 October 2015.
http://europa.eu/legislation_summaries/energy/renewable_energy/l27035_en.htm

2020 proposed by the EU Committee in 2007. In addition, the EU published the Energy Roadmap 2050, in which renewable energy plays a vital role. It is estimated by the EU that its desired level of renewable energy is 10% to 55% of all energy demands by 2050.⁴⁹³

Market perspective

While the EU is leading in clean energy technology, China's demand for this technology, particularly renewable energy and energy saving, is high. In 2012,⁴⁹⁴ the primary production of renewable energy in EU was 177.3 million tonnes of oil equivalent (toe), accounting for 22.3% of the total primary energy production from all sources. From 2002 to 2012, the overall production of renewable energy increased by 81.3%. Accounting for almost two-thirds of primary renewables production, biomass and renewable waste was the most important contributor to the EU's energy mix. Hydropower accounted for 16.2% of the total primary renewables production and was another major source of energy. Wind and solar energy accounted for 10% and 5.1% respectively and were undergoing rapid expansion. In 2012, renewable energy sources accounted for 11% of total inland energy consumption in the EU, which seeks to increase this to 20% by 2020. Germany is the largest producer of renewable energy in the EU, followed by France, Sweden and Italy.

Due to differences in climatic conditions and natural factors, the renewable energy mix differs across the EU Member States. For example, in the 2000s, while over 60% of the renewable energy produced in Cyprus was from solar energy, almost half of Ireland's renewable energy production was from wind power. Electricity generated from renewable energy sources accounted for almost one-quarter of the gross electricity consumption in the EU. From 2002 to 2012, there was rapid growth in electricity generated from renewable energy sources, especially from wind turbines, solar power and biomass. The relative proportions of these three sources in the total electricity generated from renewable energy sources rose to 30.4%, 10.5% and 4.1% respectively in 2012. It is notable that electricity from solar power underwent rapid growth from 0.3 TWh in 2002 to 71.0 TWh in 2012, overtaking other renewable sources like geothermal energy, biomass and renewable waste.

⁴⁹³ Europa. 2011. "Roadmap 2050." Accessed 10 October 2015.

http://ec.europa.eu/energy/energy2020/roadmap/index_en.htm

⁴⁹⁴ Europa. 2014. "Renewable energy statistics." Accessed 10 October 2015.

http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Renewable_energy_statistics

China enjoys abundant renewable energy resources, which provide for China's clean energy industry development. Generally, China has realized certain achievements in the fields of solar power and wind power.⁴⁹⁵ However, the share of renewable energy in China's total energy mix is still low, having made a limited contribution to China's energy supply security.⁴⁹⁶ The promotion of renewable energy is more about maintaining the capability of the renewable energy sector for future energy security. In 2011, renewable energy sources accounted for under 7% of China's total energy consumption. Of that, 6% came from hydroelectric sources, and other renewable energy sources accounted for less than 1%.⁴⁹⁷ According to its environmental goals, China aims to produce at least 15% of its energy output from renewable energy sources by 2020.

It is notable that in 2011 China was the second largest wind producer in the world, generating 73 TWh in that year.⁴⁹⁸ This figure is almost two-thirds higher than that in 2010. Its grid-installed wind capacity has almost doubled every year since 2005, but lacks the transmission infrastructure to connect the wind farms to the electricity grid. As a result, the government is promoting grid development to avoid excess wind capability. China also invested in solar power and plans to increase its solar capacity from 3 GW in 2012 to 35 GW by the end of 2015.⁴⁹⁹ In order to achieve these goals, the government has prioritized the expansion of both natural gas and renewable power plants, and the upgrade of the electricity grid to connect remote power sources with population centres.

According to its five-year plan, China is promoting investment in the renewable energy industry and the transmission of energy infrastructure through a variety of financial and economic incentives. It planned to spend US\$473 billion on clean energy investments between 2011 and 2015. In 2012, Chinese companies invested \$65 billion in renewable energy projects, which was an increase of 20% from 2011.⁵⁰⁰ The above developments represent a giant market for China's clean energy, which could attract European investment.

⁴⁹⁵ PRC MOST. 2010. *China's Clean Energy in Progress*.

⁴⁹⁶ EIA. 2014. "China." Accessed 10 October 2015.

<http://www.eia.gov/countries/cab.cfm?fips=ch>

⁴⁹⁷ Ibid.

⁴⁹⁸ Ibid.

⁴⁹⁹ Ibid.

⁵⁰⁰ Ibid.

The above factors have galvanized both European and Chinese interests in technology transfer, the improvement of energy efficiency, the reduction of CO² emissions and a shift to low-carbon economies. Actively promoted by the authorities, China's and the EU's clean energy industries have undergone long-term development. Thus, certain policy, industrial and technical conditions have been provided for China–EU cooperation in both the public and private sectors.

5.2 China's energy relations with the EU and its Member States

With the EU and its Member States becoming increasingly dependent on foreign energy sources, as well as China's total energy consumption growing year by year, security of energy supplies, energy efficiency and conservation have become the key issues in EU–China economic and trade relations, as well as science and technology cooperation. Therefore, studying the development of and changes to EU–China cooperation policies and mechanisms will be of significance in understanding the technology cooperation and the setting up and developing of the concepts of green energy and low-carbon energy. Cooperation between China and the EU in relation to energy started in the early 1980s. The EU–China energy relationship can be viewed through the broader lens of the EU–China relationship, which started as a trading partnership. The development of the EU–China relationship has undergone three phases:⁵⁰¹ (1) exploration and construction of the partnership, (2) deepening and maturing of bilateral ties, and (3) managing the relationship, particularly in the context of cooperation and competition. It is notable that while the EU is the international organization with the highest level of integration in the world, each one of its 28 members, and even different regions of each Member State, differ in their degree of interest in the EU–China energy relationship. The Member States have formulated clean energy policies or developed plans that are unique to each. Therefore, China is facing a group of diversified stakeholders when cooperating in the clean energy field. Its partners can be the EU as a whole, the central government or local governments of each Member State, or companies and academic institutes whose headquarters are situated in Member States. This chapter focuses on the cooperation between China and the EU and its Member States.

⁵⁰¹ Snyder, F. G. 2009. *The European Union and China, 1949-2008: Basic Documents and Commentary*. Hart Publishing.

5.2.1 China-EU energy relationship in different periods

In the 1970s

China started to interact with the rest of the world in the energy sector in the 1950s, but its energy cooperation with certain EU Member States only began after the reform and opening up of China in the 1970s.⁵⁰² After the establishment of a formal diplomatic relationship between China and the European Economic Community (EEC)⁵⁰³ the two parties expand their trade cooperation covering industry, agriculture, energy, environment, transportation, science and development aid. Trade has remained a key platform for the interaction of the two powers, as has the exchange of energy-related technology over the three phases.

Since 1978, the opening-up policy and structural change of China under the leadership of Deng Xiaoping has made trade a driving force in the EU–China partnership, and economic initiatives have shaped their relationship.⁵⁰⁴ In light of its market size, China is the fastest-growing power in the world and became an important target in the EU’s policy agenda in Asia. Yet, both China and the EU Member States did not consider energy as a significant factor in their cooperation in the early 1970s. In 1978, China and EU signed their first key accord,⁵⁰⁵ Agreement between the EEC and the People’s Republic of China, which established a new initiative to regulate trade-related issues between them. This agreement also underpinned the ideology behind EU–China relations and remained at the heart of the bilateral partnership between the two powers.

In the 1980s and 1990s

The earliest concrete cooperation between the two parties, the China–EU Energy Training Programme, was launched a year after a delegation from the European Commission Directorate-General for Energy (EC DG ENER) visited China. Meanwhile, China also began to involve certain EU Member States in its offshore oil

⁵⁰² This is discussed, in part, in Zha. Daojiong. and Weixing, H. 2007. “Promoting Energy Partnership in Beijing and Washington.” *Washington Quarterly* 30(4): 105–115.

⁵⁰³ EEC was an international organisation created by the Treaty of Rome of 1957. It was made to constitute the first of the three pillars of the EU and is today part of the EU.

⁵⁰⁴ De Matteis, P. 2010. “EU-China Cooperation in the Field of Energy, Environment and Climate Change.” *Journal of Contemporary European Research* 6(4): 449-477.

⁵⁰⁵ European Commission. 1978. The Agreement between the People's Republic of China and the European Community. Accessed on 10 October 2015.
http://aei.pitt.edu/8243/1/31735055282234_1.pdf

development.⁵⁰⁶ In 1985, the two powers signed the Agreement on Trade and Economic Cooperation, which can be seen as a new reference for their relationship.

In the early 1990s, the EU began to see China as a rising power and “an unprecedented series of summits between China and some of its key world partners had demonstrated China’s wish to be recognised as a world power”.⁵⁰⁷ A full-scale relationship between the two parties materialized in 1995, when the EU announced its first China policy paper, which stated: “Europe must develop a long-term relationship with China that reflects China’s worldwide, as well as regional, economic and political influence. Europe’s relations with China are bound to be a cornerstone in Europe’s external relations, both with Asia and globally.”⁵⁰⁸

In the 2000s

Because of increasing interdependency in economies, the EU and China became each other’s major trading partner in the 2000s. As of 2015, while China is the EU’s largest source of imported goods, it is also the EU’s major export market.⁵⁰⁹ China and the EU have also carried on policy coordination through EU–China summits, the highest level of political meeting, which started in 1998.⁵¹⁰ Up till now, there have been 17 summits. As described in Table 5.1, the summits play a significant role in developing and deepening the relationship between China and the EU. During each summit, the two sides hold consultations on issues of common concern and discuss the issues in the fields of politics, economics, etc. Table 5.1 also shows that, since 2001, energy, especially the clean energy issue, has become the key focus in the discussions, which can be seen in the agreements signed during the summits and the joint statements issued after each summit.

The Strategic Partnership between China and the EU established in 2003 has enhanced China-EU energy cooperation, which was not a prominent focus in China-EU relationship compared to other areas. While China and the EU have undergone a dramatic transformation in recent decades, their common interests in energy cooperation and environmental issues have expanded because neither China nor any

⁵⁰⁶ This is discussed, in part, in Zha. Daojong and Weixing, H. 2007. “Promoting Energy Partnership in Beijing and Washington.” *Washington Quarterly* 30(4): 105–115.

⁵⁰⁷ European Commission. 1998. *Building a Comprehensive Partnership with China*.

⁵⁰⁸ European Commission. 1995. *A Long Term Policy for China-Europe Relations*.

⁵⁰⁹ Europa. 2015. Countries and regions China. Accessed on 10 October 2015.

<http://ec.europa.eu/trade/creating-opportunities/bilateral-relations/countries/china/>

⁵¹⁰ Ibid.

of the EU countries can solve these issues alone.⁵¹¹ The two giants account for approximately one third of the world's energy use and their energy needs are expected to increase continuously to fuel their growing economies and populations. Gradually, energy have become more prominent in interactions between China and its EU counterparts. In face of climate change, the issues of high global energy consumption, volatility of international oil prices and environmental degradation have brought the two powers closer together.⁵¹²

In May 2012, China and the EU signed their energy “partnership” agreement, ensuring “open” access to each other's markets.⁵¹³ In addition to affirming the EU's agenda to develop beneficial energy partnerships with key third countries, the new agreement also set out China's new concept of energy security that called for “mutually beneficial cooperation, diversified forms of development and common energy security through coordination”.⁵¹⁴ Sino–EU energy cooperation was not limited to traditional security of resources and price, and extends to broader energy security issues, including energy governance, diversification of energy supplies, improvement of energy efficiency, and conservation and research innovations. Both sides understood the benefit of sustainable energy development, and this paved the path for clean energy cooperation between China and the EU. As a result, interactions between China and the EU in the realm of energy feature energy development in and technological transfer to China.

Table 5.1 Agreements and achievements related to clean energy reached in EU–China summits from 2001 to 2012

EU–China Summit	Achievement
The 3rd EU–China Summit	The two sides carried out extensive discussions on bilateral relations, the development of China and the EU and the regional and international issues of common concern and interest. The focus of the summit was China's entry into the WTO. In addition, the two sides exchanged views on cooperation in the sectors of science and technology, energy, information, education, etc.

⁵¹¹ Zhang, X. 2012. “中欧能源合作的未来——基于能源安全与气候变化的分析 [in English: Future of Sino-EU Cooperation: Analysis Base on Energy Security and Climate Change].” *International Economic Cooperation* 3: 11-16.

⁵¹² Ibid.

⁵¹³ European Union. 2012. EU-China Joint Declaration on Energy Security. Brussels. May 3.

⁵¹⁴ Ibid.

The 4th EU–China Summit⁵¹⁵	Leaders from both sides stressed the importance of dialogue in the trade sector and strengthening and expanding inter-departmental dialogues in the sectors of enterprise policies and regulations, information society, environment, energy, science and technology, satellite navigation, etc.
The 6th EU–China Summit⁵¹⁶	Leaders from both sides emphasized the significance of strengthening and expanding industry dialogues on a broad range of topics. The existing industry dialogues cover the important sectors of energy, environmental, regulatory and industry policy; social information; “digital Olympics” exchange; etc. This kind of cooperation is attracting widespread interest.
The 7th EU–China Summit⁵¹⁷	Leaders from the two sides both expressed satisfaction with the progress of cooperation in all the sectors. They also appreciated the new momentum of Energy Dialogues after the successful convening of the 5th EU–China Energy Conference. The Agreement on R&D Cooperation on the Peaceful Use of Nuclear Energy between the European Atomic Energy Community (Euratom) and the Government of the People’s Republic of China was signed.
The 8th EU–China Summit⁵¹⁸	The two sides signed the Memorandum of Understanding of Strategic Dialogue in the Energy and Transportation Sectors between China and the EU. During the summit, both sides released the EU–China Joint Statement on Climate Change, which established the partnership between China and Europe in relation to climate change. It would strengthen the cooperation

⁵¹⁵ PRC MFA. 2001. 第四次中欧领导人会晤联合新闻公报（全文）[in English: Fourth China-EU Summit Joint Press (full text)]. Accessed on 10 October 2015.

<http://wcm.fmprc.gov.cn/pub/chn/gxh/zlb/smagg/t365252.htm>

⁵¹⁶ PRC MFA. 2003. 第六次中欧领导人会晤联合新闻公报（全文）[in English: Sixth China-EU Summit Joint Press (full text)]. Accessed on 10 October 2015.

<http://wcm.fmprc.gov.cn/pub/chn/gxh/zlb/smagg/t365242.htm>

⁵¹⁷ PRC MFA. 2004. 第七次中欧领导人会晤联合新闻公报（全文）[in English: Seventh China-EU Summit Joint Press (full text)]. Accessed on 10 October 2015.

<http://wcm.fmprc.gov.cn/pub/chn/gxh/zlb/smagg/t365230.htm>

⁵¹⁸ PRC MFA. 2005. 第八次中欧领导人会晤联合新闻公报（全文）[in English: Eighth China-EU Summit Joint Press (full text)]. Accessed on 10 October 2015.

<http://wcm.fmprc.gov.cn/pub/chn/gxh/zlb/smagg/t365226.htm>

	and dialogue in relation to climate change, including clean energy, and would promote sustainable development. It would also promote cooperation in the development, application and transfer of low-carbon technologies, such as advanced coal technology through carbon capture and storage to achieve “zero emissions”. The two sides welcomed the signing of the Memorandum of Understanding as a start to China–EU strategic dialogue in the sectors of energy and transportation.
The 9th EU–China Summit ⁵¹⁹	Leaders from the two sides welcomed the progress made in solidifying the partnership between China and the EU in relation to climate change. Both leaders appreciated the closer cooperation in the clean development mechanism advocated in Kyoto Protocol. They both attached great importance to significantly reducing the costs of key technology and its transfer, application and promotion. Also, full coordination and cooperation in relation to promotion of energy security, sustainable energy supply, innovation and reduction of greenhouse gas emissions was emphasized. In addition, they also emphasized the strategic significance of the China–EU High-Level Energy Working Group and regular China–EU Energy Cooperation Conferences, the strengthening cooperation on the Clean Coal Action Plan and energy efficiency, and the renewable energy action plan within the cooperation framework. China and the EU had a common concern in the need to ensure a reliable, economical and sustainable energy supply. At the same time, both parties continued to emphasize cooperation in the sectors of energy and transportation.
The 10th EU–China Summit ⁵²⁰	Leaders from the two sides attached great importance to climate change issues and were willing to continue cooperation to jointly

⁵¹⁹ PRC MFA. 2006. 第九次中欧领导人会晤联合新闻公报（全文）[in English: Ninth China-EU Summit Joint Press (full text)]. Accessed on 10 October 2015.
http://www.gov.cn/gongbao/content/2006/content_431873.htm

⁵²⁰ PRC MFA. 2007. 第十次中欧领导人会晤联合新闻公报（全文）[in English: Tenth China-EU Summit Joint Press (full text)]. Accessed on 10 October 2015.
<http://wcm.fmprc.gov.cn/pub/chn/gxh/zlb/smagg/t386518.htm>

	cope with the severe challenges brought by climate change. It was agreed that China and the EU would shoulder the “common but differentiated responsibilities” ⁵²¹ , rely on their respective capabilities and jointly be committed to stabilizing the atmospheric concentrations of greenhouse gases, thereby preventing dangerous human interference with the climatic system. China and the EU agreed to take effective measures and advance mutually beneficial cooperation in the energy sector.
The 11th EU–China Summit ⁵²²	The two sides reached cooperative agreements, including the Joint Statement by the China–EU Clean Energy Centre (EC2), the China and EU Science and Technology Partnership Scheme and the China–EU Small and Medium-Sized Enterprises Cooperation Consensus. The leaders mainly discussed EU–China relations, the global economic and financial crisis, climate change and energy security, and exchanged views on issues of the Korean Peninsula and other regions. They stated their determination to strengthen cooperation and to undertake further work together to address the financial crisis, climate change and other global challenges, and that they were actively committed to promoting coordination and cooperation in international affairs.
The 12th EU–China Summit ⁵²³	The Chinese and EU leaders renewed the China and EU Science and Technology Cooperation Agreement, signed and started the Memorandum of Understanding of the Second Cooperation Phase of Near Zero Emissions of Carbon Project, signed the Memorandum of Cooperation Framework of Buildings’ Efficiency and Quality and the China–EU Finance Agreement of Environmental Governance Projects. The leaders agreed that the international community was facing severe

⁵²¹ Ibid.

⁵²² Xinhua News. 2014. “历次中国－欧盟领导人会晤 [in English: Previous China - EU summit].” *Xinhua News*, Aug 5. Accessed on 10 October 2015. http://news.xinhuanet.com/ziliao/2004-05/08/content_1457067.htm

⁵²³ Europa. 2009. Joint Statement of the 12th EU-China Summit Nanjing. Accessed on 10 October 2015. http://ec.europa.eu/clima/events/docs/0022/joint_statement_en.pdf

	challenges and needed a global response. Climate change, the financial crisis, energy and resources security, food security, the environment and public health security and other global issues were emerging, and terrorism and other non-traditional security threats had become global concerns. It was agreed that the need for close cooperation and coordination in the international community to cope with global challenges was becoming more and more urgent.
The 13th EU–China Summit⁵²⁴	The leaders all agreed that it was necessary to take appropriate climate change and energy policies to support the joint efforts in energy conservation, improve energy efficiency and promote the green low-carbon development efforts. They emphasized the further strengthening of China and EU partnership on climate change and the policy dialogue and pragmatic cooperation under the framework of Energy Dialogue. The focus of cooperation should include renewable energy, energy efficiency, smart grid and clean coal technology, including carbon capture and storage technology. Both sides agreed to encourage research units, especially small and medium-sized enterprises, to carry out energy cooperation in R&D to promote energy saving and emission reduction.
The 14th EU–China Summit⁵²⁵	As an initiative from the 14th Summit in 2012, the first China–EU High-Level Meeting on Energy (HLME) was held in May 2012, between NEA, EC DG ENER, energy ministers of the then 27 EU Member States and relevant ministers belonging to the NEC. NEA and EC DG ENER were in charge of the organization of the meeting, which was in a restricted and exclusive format. The China–EU Joint Declaration on Energy Security was signed in this meeting, and the China–EU strategic energy consumer partnership was announced.

⁵²⁴ Europa. 2010. 13th EU-China Summit Joint Press Communiqué. Accessed on 10 October 2015. http://ec.europa.eu/clima/events/docs/0021/joint_press_statement_en.pdf

⁵²⁵ EU. 2012. Joint Press Communiqué of the 14th EU-China Summit. Accessed on 10 October 2015. http://eeas.europa.eu/china/summit/summit_docs/120214_joint_statement_14th_eu_china_summit_en.pdf

The 15th EU–China Summit	⁵²⁶ The leaders redoubled their joint efforts to tackle global challenges, including sustainable development, environmental protection, climate change and energy security. They also agreed to further deepen dialogue and cooperation on promoting low-carbon development under the EU–China Partnership on Climate Change.
---------------------------------	--

5.3 Energy cooperation mechanism between China and the EU

As the energy initiative progressed with official promotion, China and the EU had preliminarily established a structured cooperation mechanism, involving joint energy projects between the two big powers via official channels and projects in both bilateral and multilateral approaches to facilitate China’s “going out and bringing in” strategy. As discussed in Section 5.1, energy cooperation between China and the EU focused on energy technology transfer particularly in renewable energy and energy efficiency to China. While the EU is leading in clean energy technology, China’s demand on these technologies is high. Trade on clean energy has been the most significant tie in China–EU energy relation. This section first discusses the official channels and then the projects in China–EU energy cooperation.

5.3.1 Official channels in China–EU clean energy cooperation

The China–EU Energy Conference, the China–Europe High-Level Energy Working Group, the China–Europe Energy Dialogue and the EU–China Summit are the main official channels facilitating China–Europe clean energy cooperation.

(1) China–EU Energy Conference

As mentioned in the prevision section, China and the EEC signed the Agreement on Trade and Economic Cooperation, the first official agreement between them regarding energy. Yet, energy was just one of many other policy fields in this new reference for the China–EU relationship. In 1994, energy was first treated as an individual agent in the China–EU Energy Conference, convened under the co-sponsorship of China’s Ministry of Science and Technology (formerly the State Science and Technology

⁵²⁶ EU. 2012. Joint Press Communiqué 15th EU-China Summit. Accessed on 10 October 2015. http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/132507.pdf

Commission) and the EC DG ENER.⁵²⁷ The conference is the largest scale and highest standard (ministerial level) energy event between China and EU, offering a platform for Chinese and European ministries, enterprises and experts to meet and exchange ideas.⁵²⁸ To date, eight conferences have been held as China and the EU rotate to host the conference biennially. Each and every conference can expect attendance of a significant number of high-level industrial and government representatives. Topics on energy challenges commonly faced by both sides of representatives are discussed at the conference, which is not only an official channel through which energy issues are communicated but also a regular platform for Chinese and European energy corporations.

(2) China–Europe High-Level Energy Working Group

The second China–EU Energy Conference in 1996 proposed the initiative of a bilateral energy working group.⁵²⁹ A year later, a China–EU high-level Energy Working Group was created to institutionalize China–EU energy cooperation and provide guidance and supervision with a top-down approach.⁵³⁰ Jointly convened by EC DG ENER and MOST, the first meeting was held the same year in Brussels and then once every two to three years. The Energy Working Group became a major form of communication and collaboration among government officials and experts from both sides..⁵³¹

(3) China–Europe Energy Dialogue

As China–EU energy cooperation gained momentum, with the objective to better coordinate each party's stance on energy issues and further cooperation, in 2005, China's NDRC and the EC DG Transport and Energy signed the Energy Dialogue Memorandum of Understanding. Pursued since 2005, the Energy Dialogue is a deputy-

⁵²⁷ CISTC. 2007. “中欧能源合作 [in English: China-Europe energy cooperation].” Accessed on 10 October 2015. <http://www.cistc.com/eu-china/pic.asp?column=549&id=68980>

⁵²⁸ PRC MOST. 2010. “第八次中欧能源合作大会在上海召开 [in English: The Eighth EU-China Energy Cooperation Conference Held in Shanghai].” July 12. Accessed July 15, 2015. http://www.most.gov.cn/kjbgz/201007/t20100711_78370.htm

⁵²⁹ CISTC. op. cit.

⁵³⁰ See EU. 2015. “European Commission Press Release Database.” Accessed on 10 October 2015. http://europa.eu/rapid/press-release_IP-96-1242_en.htm; Ministry of Foreign Affairs China. 2014. 中国同欧盟的关系 [in English: China-EU Relations] Accessed on 10 October 2015. http://www.fmprc.gov.cn/mfa_chn/gjhdq_603914/gj_603916/oz_606480/1206_607640/sbgx_607644/.

⁵³¹ CISTC. op. cit.

ministerial-level meeting covering six prioritized areas including renewable energy, energy efficiency, clean coal, nuclear energy, smart grid development and energy law.⁵³²

As of the end of 2013, a total of six Energy Dialogues⁵³³ had been held between China and the EU. The first and second ones were held in 2007 and 2008 respectively in the form of Strategic Dialogue on Energy and Transport Strategies, and the others were held in the form of EU–China Energy Dialogue. Both parties had been known to exchange views and had reached a consensus on multiple energy issues. New steps had been taken towards practical cooperation. For instance, in the fifth China–EU Energy Dialogue, NEA of China and the EC agreed to inaugurate a high-level energy conference held in Brussels, 2012, with the aim of setting out directions and key areas of future practical cooperation. In 2013, the sixth EU–China Energy Dialogue covered issues like energy strategy, energy market reform, low-carbon energy technologies, energy innovation regulation and the sustainable use of energy.⁵³⁴ More importantly, a number of joint energy cooperative initiatives like the Europe–China Clean Energy Centre (EC2) are created in the Energy Dialogue. These will be discussed in the next section.

(4) EU–China Summit

As mentioned in Section 5.1, China and the EU have held consultations on issues of common concerns like politics and economy through the EU–China Summit for over a decade. In these summits, Chinese and European leaders reach a relatively macro-level agreement on energy issues, especially on clean energy, and other energy cooperative mechanisms such as the China–EU Energy Conference, the China and EU Energy Dialogue and the China–EU High-Level Working Group. These summits also provide specialized platforms for both sides to further exchange information, coordinate specific clean energy policies and implement the consensus. Through the forms of leaders' Summit and Energy Dialogues, the two sides consult on issues including global warming, environmental problems and the future development of clean energy,

⁵³² Europa. 2014. "Energy From Abroad." Accessed on 10 October 2015.

http://ec.europa.eu/energy/international/bilateral_cooperation/china/china_en.htm

⁵³³ The first and second were held in 2007 and 2008 respectively in the form of Strategic Dialogue on Energy and Transport Strategies. The others are in the form of EU-China Energy Dialogues.

⁵³⁴ PRC NEA. 2013. "第六次中欧能源对话在京举行 [In English: The Sixth China-EU Energy Dialogue was held in Beijing]." Accessed on 10 October 2015. http://www.nea.gov.cn/2013-11/27/c_132923326.htm

and they develop necessary policy coordination and reach various agreements on mutually beneficial premises.

A number of cooperative agreements have been signed, for example, the Euratom–China Research and Development Agreement at the 7th Summit in 2004, the Memorandum of Understanding on China–EU Dialogue on Energy and Transport Strategies at the 8th Summit in 2005, the Joint Statement on Europe–China Clean Energy Centre (EC2) at the 11th Summit in May 2009 and the Memorandum of Understanding on Cooperation Framework on Energy Performance and Quality in the Construction Sector at the 12th Summit in November 2009.⁵³⁵ These efforts not only laid policy foundations for China–EU cooperation in the clean energy sector but also strongly promoted bilateral pragmatic cooperation in the sector – the specific cooperation agreements signed during the summits can best show this.

The above official channels promoted China-EU energy cooperation over the past two decades. While a wide range of topics is addressed, China and EU have located their common interest in the promotion of clean energy and energy efficiency, particularly technology transfer. The next section looks into energy projects established in the above areas.

5.3.2 Energy projects in China–EU clean energy cooperation

Since the 1980s, when China and the EU started energy cooperation, the two sides, through the abovementioned official Energy Dialogues, have achieved concrete cooperative action in clean energy, ranging from the large comprehensive cooperation projects of energy and environment with the investment of hundreds of millions, to the small pieces of solar equipment assisted by the EU. These can all be regarded as the results of China–EU clean energy cooperation.

(1) China–EU Energy Training Programme (from 1982 onwards)

China–EU Energy Training Programme established in 1982 is considered as the earliest concrete project in China-EU energy cooperation. This programme is organized every year to provide training courses for Chinese people. It symbolized the official

⁵³⁵ See Euratom-China Research and Development Agreement at the 7th Summit in 2004, the Memorandum of Understanding on China-EU Dialogue on Energy and Transport Strategies in 2005, the Joint Statement on Europe-China Clean Energy Center in 2009 and the Memorandum of Understanding on Cooperation Framework on Energy Performance and Quality in the Construction Sector in 2009.

start of the China–EU energy-management training project.⁵³⁶ Since then, China–EU energy training centres have been gradually set up by Zhejiang Energy Research Institute, Tianjin Energy-Saving Technology Centre, Shanghai Energy Research Institute and the Chongqing Energy-Saving Technology Service Centre.

From 1982 to now, every year, the five training centres have held one or two regular energy training classes, which are mainly taught by EU experts and professors, about EU energy management and energy-saving technology.⁵³⁷ In the beginning, European trainers were sent to China to conduct the training course. In return, since 1995, Chinese trainees have been sent to Europe for training. Over 5,000 Chinese energy personnel are trained in this program.⁵³⁸ By participating in the energy training class, Chinese energy management staff from energy companies, government departments and energy research institutions are expected to both grasp the latest developments of energy technology R&D in the EU and obtain a clearer and more rational understanding of energy conservation.

(2) Joint Energy and Environment Programme (from 2004 to the end of 2009)

In 2003, NDRC and the EC established the Joint Energy and Environment Programme (EEP) to push energy cooperation between the two sides. As a five year project, EEP had four components including energy policy development, energy efficiency, natural gas and renewable energy. Among them, cooperation in the clean energy sector plays an important role, and its objectives includes the utilization of renewable energies by developing biomass resources in rural areas, producing power for villages in Western China, and developing policies concerning the use of offshore wind energy.⁵³⁹ It had an investment of €42 million devoted to policy research, training program, personnel exchange and technology transfer.⁵⁴⁰

⁵³⁶ Jun, Y. & Dongfeng, Y. 2000. "Review of China-EU Energy Training Programme." *Energy Engineering* 4: 5; Mission of the People's Republic of China to the European Union. 2004. "China-EU Scientific and Technological Cooperation and Exchange." March 9. Accessed on 10 October 2015. <http://www.fmprc.gov.cn/ce/cebe/eng/kj/t72211.htm>.

⁵³⁷ Ibid.

⁵³⁸ Ibid.

⁵³⁹ Haugwitz, F. 2007. "EU-China Energy and Environment Program." Paper presented at the conference Wind Power Shanghai, Shanghai, China, Dec 19. http://www.frankhaugwitz.info/doks/aboutme/2007_11_02_EEP_RE_Shanghai_Wind_Power_Conference.pdf

⁵⁴⁰ Ibid.

The programme was implemented in two phases. The first phase consisted of ten large bidding projects, involving offshore wind energy, biomass and other sectors; the second stage provided the EU grants for feasibility studies and demonstration projects in certain key areas in China. In this phase, projects related to clean energy were sub-projects of energy policy, energy efficiency and renewable energy. At the end of 2009, the EEP was announced to cease with the basic completion of the projects in the two phases.⁵⁴¹ It achieved a large number of practical results, such as demonstrating the feasibilities of offshore wind power and energy saving in key energy-consuming industries; more importantly, the projects were a strong and effective demonstration and actively promoted China in improving energy policy, energy efficiency and the utilization of renewable resources.

(3) Europe–China Clean Energy Centre (EC2) (from 2010 to 2014)

In 2010, NEA, MOC and EC, with the support from Italian Ministry of Environment, Territory and Marine, launched the Europe–China Clean Energy Centre (EC2) in Tsinghua University to help the Chinese government to promote the use of clean energy in China and to create a more sustainable and efficient energy system.⁵⁴² Particularly, this five-year cooperation project focused on energy policies and technology transfer in the following five areas: clean coal (such as carbon capture and storage, improving the efficiency of power generation); sustainable biofuels, renewable energy and energy efficiency (buildings, industrial products and industrial manufacture); and a sustainable and efficient energy allocation system. Understand the supervision of NEA and MOFCOM, training courses, public lectures, conferences and workshops are organized to archive the above objectives. Its mandate expired in 2014.⁵⁴³

(4) Near Zero Emission Coal project (from 2006 onward)

In 2006, the Near Zero Emission Coal (NSEC) project was launched under the framework of EU and China Partnership on Climate Change develop carbon dioxide capture and storage (CCS) technology in China.⁵⁴⁴ The EU–China Partnership on Climate Change was designed to improve energy efficiency and achieve a low-carbon economy through cooperation on technologies. Both sides agreed to take concrete actions to develop, deploy and lower the cost of clean energy technologies. Through

⁵⁴¹ Ibid.

⁵⁴² EC2. 2014. “Know More About EC2.” Accessed on 10 October 2015. <http://www.ec2.org.cn/>

⁵⁴³ Ibid.

⁵⁴⁴ European Commission. 2014. “Climate Action.” Accessed on 10 October 2015. http://ec.europa.eu/clima/dossiers/nsec/index_en.htm

the NZEC project, China and the EU have attempted to develop advanced near-zero-emission coal technology which allows for the capture of CO₂ emissions from coal-fired power plants. Major participants are the EC, the UK and MOST. A total of three phases have been planned between 2006 and 2020.⁵⁴⁵

(5) China–EU Institute for Clean and Renewable Energy (from 2010 onward)

In 2010, China and EU co-funded the China–EU Institute for Clean and Renewable Energy (ICARE) located in Huazhong University of Science and Technology. It is composed of three components, including a master programme in renewable energy, a training center for energy professionals and a research support platform.⁵⁴⁶ The Chinese government funded contributes €5 millions for infrastructure to the institute and the EU contributes €13 millions. It is expected to provide a platform for international cooperation in energy research.⁵⁴⁷

(6) Other China–EU cooperation projects

There are numerous other ad hoc energy cooperation projects and a series of energy-related conferences, workshops and joint research projects between China and the EU. Under the EC–China Energy Dialogue, concrete cooperation projects⁵⁴⁸ have commenced in six priority energy fields: renewable energy, smart grids, energy efficiency in the building sector, clean coal, nuclear energy and energy law. Under the 2009–2013 Cooperation Framework on Energy Performance and Quality in the Construction Sector,⁵⁴⁹ a series of energy-related projects were organized, covering a wide range of topics: energy law, coal mine safety, environmental governance, ecological compensation, renewable energy and energy security. Apart from the

⁵⁴⁵ Ibid.

⁵⁴⁶ ICARE. 2013. “The ICARE Institute.” Accessed on 10 October 2015. <http://www.ce-icare.eu/en/article/26/26-en-the-icare-institute>; See also Delegation of the European Union to China. 2012. “Inauguration of China-EU Institute for Clean and Renewable Energy at Huazhong University of Science and Technology.” Accessed on 10 October 2015. http://eeas.europa.eu/delegations/china/press_corner/all_news/news/2012/20121030_en.htm

⁵⁴⁷ Ibid.

⁵⁴⁸ Europa. 2012. “Concrete Cooperation Projects Under the EC-China Energy Dialogue.” Accessed on 10 October 2015. http://ec.europa.eu/energy/international/bilateral_cooperation/china/doc/concrete_cooperation_projects_ec_china_energy_dialogue.pdf

⁵⁴⁹ Europa. 2009. “Cooperation Framework on Energy Performance and Quality in the Construction Sector.” Accessed on 10 October 2015. http://ec.europa.eu/energy/international/bilateral_cooperation/china/doc/building/2009_30_11_signed_mou.pdf

cooperation with the EU, China has also been cooperating with individual EU Member States on energy issues. For example, Germany is China's strategic partner in the development of electric automobiles, France has been China's long-term partner in nuclear energy and the UK is active in promoting CCS technology and offshore wind power in China. It is worth noting that some observers argue that such bilateral state-to-state cooperation is more tangible than that of China–EU.⁵⁵⁰

5.4 Analysis of the paradigm shift of China–EU energy cooperation

With increasing cooperation between China and the EU in the field of energy, several obvious features and obstacles appear. This section analyses these features in the framework of five levels of energy policy aspects against which change can be measured to answer the question of whether there is a policy paradigm shift from bilateral-based energy diplomacy to multilateral-based global energy governance in China's energy cooperation with the EU. It is notable that Chapter 3 marked the year of 2007 as the watershed in the development of Chinese energy security and policy. While the period before 2007 can be regarded as the policy paradigm of energy diplomacy relying on bilateralism, the period after can be viewed as the policy paradigm of global energy governance reliant on multilateralism.

5.4.1 Policy goal

Section 5.2 indicates that, in China's energy diplomacy policy paradigm, energy is understood as "a vital element of national interest in terms of economic power and military fuel", but in the paradigm of global energy governance, the context of energy in China–EU energy cooperation is extended because of the connection with the environmental element. It is notable that energy, particularly renewable energy, in China–EU energy cooperation is considered as a commodity, diminishing its geopolitical nature.⁵⁵¹ This is echoed in both the White Papers on China's energy policy in 2007 and 2012, which addressed environmental concern, climate change, market and low-carbon economy. Although there was not a profound change, EU–China's energy cooperation had witnessed an expansion of the concept of energy: that it was more than just fuel for the country and had become a commodity in the market with an environmental connection.

⁵⁵⁰ For example, Zhang, M. 2011. "中欧能源合作政策、机制与方式" [in English: Analysis of Policy and Mechanism of China-EU Energy Cooperation]." *全球科技经济瞭* [in English: *Global Technology Economy*] 26(3): 26.

⁵⁵¹ Interview with a senior researcher at CASS. Beijing. November 3 2015.

In the paradigm of energy diplomacy, the context of energy security includes traditional security thinking such as to control energy resources, obtain as many energy resources as possible, diversify resource suppliers and transportation routes, increase economic and military capability and secure the fuel for the national economic engine. In the paradigm of global energy governance, the idea of energy security in the context of China–EU energy cooperation is expanded with new contexts such as technology, environment protection, energy efficiency and international cooperation, as Section 5.2 indicates.

These new ideas are also embedded in the leaders’ meetings, initiatives and projects mentioned in Sections 5.3.1 and 5.3.2. For instance, the 2010 Joint Statement by MOST and the EC emphasizes energy research and innovation cooperation. Similarly, the Science and Technology Agreement, signed in 1998 and renewed in 2004, has a focus on innovation in renewable energy. The China–EU Partnership on Climate Change in 2005 included numerous cooperative initiatives on clean energy technology. Attention of projects like NZEC, EC2, ICARE is devoted to environmental protection and technology transfer with clean energy cooperation. EU–China’s energy cooperation has witnessed an expansion of the idea of energy security from the traditional security of acquiring a supply for national economic capability to the non-traditional security of environmental issues and technology. Most importantly, the idea behind these projects and initiatives means that both Chinese and European authorities are in principle open to multilateral forms of cooperation.

In the paradigm of energy diplomacy, the goal of policy is to secure a “reliable, diversified and cost-effective energy supply”. Because of geographical distance, there is almost no interdependency on energy resources like oil and gas between China and the EU. In contrast, in the paradigm of global governance, China–EU energy cooperation pays more attention to energy technology transfer. The goal behind cooperating with the EU, which can master advanced energy technology, is to improve energy efficiency as well as renewable energy development in China. By achieving this goal, a “reliable, diversified and cost-effective energy supply” can be secured as well, but it is more important that the idea of sustainable development is included in policy goals. However, it is notable that the share of renewable energy in China’s energy mix is so low that turning renewable energy as a reliable and cost-effective energy supply is a long-term goal and is only likely to be achieved decades from now.⁵⁵² In other words,

⁵⁵² Interview with a senior researcher at PRC NDRC Energy Research Institute. Beijing. June 15, 2014.

renewable energy has an important position in China's long-term energy plan, but it is not the only key resource in China's energy structure in the 2000s and mid-term policy goal. Moreover, since R&D requires years of energy investment, one of the goals of China–EU energy cooperation is to maintain China's capacity to develop renewable energy by learning from the EU's energy technology and experience.

EU–China's energy cooperation has witnessed a change of its policy goal from merely securing an energy supply to sustainable development energy technology transfer, although the ultimate objective of technology transfer points back to the original one – diversifying the energy supply with renewable energy.

5.4.2 Policy instrument

While Section 5.3.1 explains how China and the EU facilitates energy cooperation via a number of high-level meetings, actual operations are conducted via initiatives and projects as discussed in 5.3.2. Other than these instruments, energy cooperation between China and the EU, particularly in the field of clean energy, is mainly carried out in three categories: personnel exchange and training, technology transfer and joint R&D, and financial investment in the energy industry. From 1990 to 2010, China and EU had organized over 100 joint energy events and projects.⁵⁵³

(1) Personnel exchange and training

The exchange of personnel is one of the long-term cooperation forms in the sector of EU–China clean energy. In the clean energy sector, the personnel exchanges between the two sides can be roughly divided into high-level government exchanges, energy management personnel exchanges and technical personnel exchanges.⁵⁵⁴ Due to the advancement of the EU in energy management and energy saving, and environmental protection technology, for a long time, the European energy talent to China to provide training on the above aspects have always been the main form of personnel exchanges between China and Europe.⁵⁵⁵

As mentioned in Section 5.3, a typical project is the China–EU Energy Training Programme, which is the earliest and the longest exchange form in the energy sector.

⁵⁵³ China Awards for Science and Technology Office. 2004. “中欧科技合作纵述 [in English: A Review of China-EU Scientific and Technological Cooperation].” *中国科技奖励 [in English: China Technology Award]* 10: 92.

⁵⁵⁴ Interview with a senior officer of a joint center between EU and China. Beijing. August 22, 2013.

⁵⁵⁵ Ibid.

After development of nearly three decades, the training project has cultivated a large number of energy management personnel for China, which is understood to have helped improve energy efficiency, protect the environment and promote the sustainable development of the economy. In training Chinese energy management staff, the EU not only spreads its ideas, but more importantly it advocates clean technology and promotes technology export and income.⁵⁵⁶ In recent years, with the development of energy saving, environmental protection and clean technology and the growth of China's clean energy industry, there has been an increase in the exchange visits of clean energy technology and management personnel between China and the EU. In the visits, the two sides often carry out discussions and consultation on the common challenges and existing problems and also share successful experiences.⁵⁵⁷ In this sense, the equivalence properties of EU bilateral personnel exchanges have been improved. Personnel exchanges and training which deepen the understanding of the two sides are beneficial to popularize, utilize and marketize clean energy technologies.

(2) Technology transfer and joint R&D

In the early energy technology cooperation between China and the EU, only technology transfer played a major role. In terms of receiving EU technology, China mainly imported clean energy technology products from the EU. In addition, in order to enter the Chinese market, sometimes, the EU's energy enterprises transferred some of the technologies to Chinese enterprises when they were working together. Also, Section 5.3.2 indicates that, through assistance to China, such as building technology demonstration projects, the EU provided part of the non-core clean energy technology to China. In the early stage of China–EU cooperation, China was the receiver of clean energy technology because it was lagging behind in technology and there was a lack of funds.⁵⁵⁸

In recent years, China has become a world leader in the manufacture of clean energy technology, from wind turbines and solar cells to pulverized coal gasification and the car lithium battery.⁵⁵⁹ While China has leapt to the forefront in clean energy production,

⁵⁵⁶ Ibid.

⁵⁵⁷ Ibid.

⁵⁵⁸ Interview with a research director at Schlumberger. Beijing. June 18, 2013.

⁵⁵⁹ People Daily. 2008. "China Pioneers in Renewable Energy." *People Daily*, Sept. 9. Accessed on 10 October 2015. <http://english.people.com.cn/90001/90780/91344/6496247.html>

it is also increasing its investment in R&D of core clean energy technology.⁵⁶⁰ In order to improve its technological capabilities and financial strength, the cooperation mode between China and the EU in the technology sector has also changed. According to the Implementation Outline of International Science and Technology Cooperation released by the Ministry of Science and Technology in 2006, China claimed to treat the development of energy, water resources and environmental protection technology as the priority of international technology cooperation, strengthening its interaction with the EU in clean energy technology as well as international cooperation projects for clean development mechanisms.⁵⁶¹

Despite the substantial investment in clean energy, the Chinese clean energy industry was still in the early development stage. With poor fundamentals, the Chinese clean energy industry has to overcome many technical problems.⁵⁶² In the China–EU cooperation, the EU hopes that China can undertake part of the fund risk of R&D technology. At present, both sides have strengthened their information sharing and experience exchange of the latest developments in the clean energy technology sector and started to cooperate in the field of technical standards with the purpose of creating conditions for pragmatic cooperation, including joint R&D for China and EU enterprises. For example, the China and EU Clean Energy Centre (EC2), which started in April 2010 in Beijing, is a landmark project which shows that China and the EU have strengthened R&D cooperation.

(3) Financial investment in the energy industry

Foreign aid is of great importance in post-war international relations, especially in north–south relations. Post-war foreign aid given from developed countries and regions includes foreign development aid, emergency humanitarian aid, military aid and so on.⁵⁶³ In terms of the total amount, official development aid has comprised the greatest proportion of developed countries' foreign aid in the post-war era. The field of environment, climate and sustainable development is seen as important in

⁵⁶⁰ Forbes. 2012. "China Leads the World in Renewable Energy Investment." *Forbes*, July 27.

Accessed on 10 October 2015. <http://www.forbes.com/sites/jackperkowsky/2012/07/27/china-leads-the-world-in-renewable-energy-investment/>

⁵⁶¹ PRC MOST. 2006. *国际科技合作实施纲要* [in English: *Implementation Outline of International Science and Technology Cooperation*].

⁵⁶² Forbes. 2012. op. cit.

⁵⁶³ Interview with a senior officer of a joint center between EU and China. Beijing. August 22, 2013.

development aid.⁵⁶⁴ Due to the very importance of clean energy in solving the problem of environment and climate and in achieving sustainable development, the number of clean energy projects aided by developed countries in recent years has been climbing. As the world's largest developing country, China is an object of foreign aid that is certain to be targeted by the developed economies, the EU. In the field of clean energy, China lagged behind the EU in terms of the level of technology and industry development for a period of many years.⁵⁶⁵ Thus, collaborative projects of an aid-related nature are an important aspect of clean energy cooperation between China and the EU.

In 1984, the EU began to offer financial and technical aid to China and became one of the largest entities rendering it free aid. Before 1995, the EU's foreign aid to China was mainly in the field of agriculture, in which comprehensive poverty alleviation was a focus. After 1995, the EU expanded the types of its aid towards China, moving its focus away from poverty alleviation and development and concentrating on technical aid and intellectual transfer through the channel of relevant ministries' dialogue and cooperation on a higher level, as discussed in Section 5.3.1.⁵⁶⁶ There are two forms of aid provided by the EU to China in this field. One is giving training to Chinese energy company employees, as mentioned in the previous sections. The other is providing aid in the construction of clean energy projects, to which the EU offers technical or financial support. In recent years, important construction aid projects include China–EU EEP, China–EU Clean Development Mechanism Promoting Projects and China–EU Clean Energy Centre Project (EC2) in cooperation with China's NEA and the China-EU ICARE on higher education.

Up to now, the total amount of the EU's aid to China has amounted to more than €700 million and has covered the fields of agriculture, environment protection, energy and education. Among all the various types of aid, environmental resources and sustainable development are two of the most important. In 2001, the EU Committee passed a Country Strategy Paper, according to which the EU provided €250 million free aid to China during the five years of 2002–2006 and included “promote sustainable development and environment protection” as one of the three priorities of China–EU developmental cooperation. Currently, the Country Strategy Paper of China 2007–2013 was underperforming. This file was conducted through two stages. One was from 2007

⁵⁶⁴ Ibid.

⁵⁶⁵ Ibid.

⁵⁶⁶ Shambaugh, D., Sandschneider, E., & Hong, Z. 2008. “China-Europe Relations: Perceptions, Policies, and Prospects.” *Foreign Affairs* March/April.

to 2010 and the other was from 2011 to 2013.⁵⁶⁷ It emphasizes environment and clean energy as one of the major fields of mutual cooperation. Besides, the EU also offers other forms of aid to China, like the developmental mechanism of clean energy, through the United Nations Development Programme (UNDP), The World Bank (WB) and other international organizations and multilateral cooperative mechanisms.

In short, China-EU energy cooperation is mainly carried out using three instruments: 1) personnel exchange and training, 2) technology transfer and joint R&D and 3) financial investment in the energy industry. In clean energy cooperation, technology transfer and joint R&D are the main forms of the current cooperation between the two sides. From 1990 to 2010, China and EU had organized over 100 joint energy events and projects⁵⁶⁸ Both sides have, since then, established multiple functional and strategic mechanisms for long-term cooperation in terms of energy exchange. EU-China's energy policy dialogue and the institutionalization of the energy agency have been developed.⁵⁶⁹

These instruments allow China to cooperate with EU Member States via platforms and projects established under the EU. Policy instruments in EU-China's energy cooperation have in part experienced a shift from technical consultation, training and personnel exchange in the paradigm of energy diplomacy to technical collaboration and joint research in multilateral form in the paradigm of global governance energy.

5.4.3 The physical structure of energy policy

In China-EU energy cooperation, both sides launched a variety of initiatives discussed in Section 5.3.2, ranging from the large comprehensive cooperation projects of energy and environment to joint university educational programmes. Since the 1980s, China and the EU have been working on an energy training programme, and this project has passed through the paradigm of energy diplomacy. Yet it was not until the mid-2000s that both sides established bodies to facilitate multilateral cooperation through a number of joint research projects to facilitate technology transfer. For example, the Joint Energy and Environment Programme in 2004, the NZEC project in 2006, the Europe-China Clean Energy Centre (EC2) and China-EU ICARE in 2010 established a physical platform for China's governmental departments, companies and institutes to

⁵⁶⁷ Europa. "Country Strategy File of China 2007–2013." Accessed on 10 October 2015.

https://ec.europa.eu/europeaid/sites/devco/files/csp-china-2007-2013_en.pdf

⁵⁶⁸ China Awards for Science and Technology Office. *op. cit.*

⁵⁶⁹ Interview with a senior researcher of a joint center between EU and China. Beijing. August 22, 2013.

cooperate with the EU, as an integrated entity, or government of each Member State, or companies and academic institutes. States and both state-owned and private energy companies are not the only entities in the physical structure of energy policy. However, while the emergence of this new layer of multilateral platform hardly matches the watershed of 2007 discussed in Chapter 3, and there are three reasons why its function is limited.

(1) Lack of mutual trust in technology cooperation

Interviewees mentioned the misunderstandings and misperceptions between European and Chinese companies.⁵⁷⁰ These misunderstandings and misperceptions are generated because of a lack of trust between China and the EU reflected in technology transfer and business ideology. Since both sides established energy technology cooperation, technology transfer from the EU to China is greater than vice versa. Although China asserts that it understands the importance of R&D, both Chinese energy companies and governmental departments are reluctant to take action. Instead, what China is expecting is a “magic button”⁵⁷¹ that could solve the problem promptly. Moreover, Chinese companies⁵⁷² tend to have a poor attitude towards contracts and intellectual property rights (IPR) in general. Therefore, due to a lack of trust, Europeans were not always willing to transfer their high technology to China. The energy technology companies, especially small energy companies who rely on one or two unique technologies, feared the weak IPR regulation because disclosure of their intellectual property meant losing their trump card.

Interestingly, leading suppliers of technology such as Schlumberger do not express such fear, because of the big contrast between their innovative capability in R&D and the incapability of China to fully master a transferred technology.⁵⁷³ By the time the Chinese companies have mastered the previous generation of transferred technology, Schlumberger’s technology could have innovated to a newer generation already.⁵⁷⁴ Yet,

⁵⁷⁰ Interview with a senior officer of a joint center between EU and China. Beijing. August 22, 2013. Interview with a project coordinator at a Shanghai-based energy fund. Shanghai. March 20, 2013.

⁵⁷¹ Interview with Zha Daojiong. Beijing. August 20, 2015.

⁵⁷² Interview with a project coordinator at a Shanghai-based energy fund. Shanghai. March 20, 2013.

⁵⁷³ Interview with the research director at Schlumberger. Beijing. June 18, 2013.

⁵⁷⁴ The R&D of an original grid system could take decades; hence, China, with low research capability, needs to import technology to upgrade its system. Meanwhile, advanced technology providers tend to sell older technologies before selling the newer technologies, and

Chinese companies recognize the importance of advanced technology provided by foreign companies such as Schlumberger but refuse to over-rely on them.⁵⁷⁵ A researcher from State Grid Corporation of China holds similar views in that on one hand, China's low capability in R&D is an obstacle to duplicating the advanced technology of imported Japanese grid technology;⁵⁷⁶ on the other, it might be a national security concern to rely on Japanese technology in China's national electricity grid, a strategic sector.⁵⁷⁷

In the field of energy technology and management, China is perceived to have more to learn from the EU than vice versa but the Chinese partners had limited motivation in cooperation. Mistrust was an obvious factor here. In another interview, a director of a China–EU energy project revealed that some joint energy projects were agreed and carried out merely because the Chinese side wanted to receive considerable funding from the EU. Their intention had a weak linkage with the objectives of the joint projects, and hence the Chinese side contributed little to the cooperation.

(2) Trade friction becomes a hidden worry for EU–China clean energy cooperation

Trade friction existing in China and EU's clean energy cooperation was essentially due to the competitive interests of both sides, which not only concerned the conflict in economic interests but also contained a deeper meaning, namely the strategic conflict. The EU sides have tended to see Chinese enterprises as competitors. In recent years, China has sprung up as a new force in solar, wind energy and other clean energy sectors, and there has also been a rapid increase in the output of Chinese wind power equipment and photovoltaic products, which occupies an important position in the international market.⁵⁷⁸ This will undoubtedly pose a threat to the interests of EU enterprises which have a traditional advantage in the clean energy sector.

One example is the solar panel trade dispute.⁵⁷⁹ China's clean energy products squeezed the survival space of EU clean energy enterprises and reduced their profit

China's technology is always lagging behind given that they lack the determination to invest in their own R&D.

⁵⁷⁵ Interview with a senior researcher at a CNOOC. Beijing. June 15, 2013.

⁵⁷⁶ China's technologically backward power grid system needs help from Japanese technology for a systems upgrade.

⁵⁷⁷ Interview with a former researcher at a Chinese power company. Beijing. April 1, 2014.

⁵⁷⁸ Forbes. 2012. op. cit.

⁵⁷⁹ China is producing solar photovoltaic products en masse and at low prices. These products are being exported in large numbers every year. China's production of solar cells reached 8

margin.⁵⁸⁰ Chinese low-end and high-end products entering Europe could caused shaper competition between China and Europe.⁵⁸¹ As David Kerr argues, “EU enlargement expresses different aspirations... but in the economic sphere it clearly reveals a concern with the rising pressures of globalism, and perhaps especially those emanating from Asian industrialization... in both Europe and East Asia, a process of reducing competitive tensions intra-regionally may have the effect of increasing competitive pressures inter-regionally.”⁵⁸²

Another obstacle is the lack of openness of the China and EU energy markets to each other.⁵⁸³ While European companies find it difficult to enter the Chinese market, they will not easily transfer the core energy technology to Chinese companies due to IPR concern. Trade friction and market restrictions have hindered the flow of technology. Due to the export restrictions, China cannot import such technologies, therefore it fails to conduct joint R&D on those technologies which could not only cut the cost of solar power⁵⁸⁴ utilization but also expand application range. The joint R&D, however, is

gigawatts in 2010, accounting for 50% of the global production. With 400 megawatts applied domestically and 7,600 megawatts exported, the export proportion reached 95%. Europe accounted for 80% of China's export market. The aggravation of the European debt crisis led to a reduction in the global demand for photovoltaic products and overcapacity, which exposed the European photovoltaic industry to a severe situation. For example, major consumers of photovoltaic products, such as Germany, Italy, Czech Republic, and other EU Member States, began to cut their fiscal subsidies to photovoltaic power products. The export environment for China's photovoltaic industry deteriorated with the lagging global environment. In November 2011, the United States Department of Commerce declared an anti-dumping and anti-subsidy investigation into the solar cell panels imported from China. It was the first time that the United States had launched such an investigation into China's clean energy products. This action posed a severe challenge to China's photovoltaic industry.

⁵⁸⁰ Interview with the chairman of the board a green energy supplier in China. Beijing. September 24, 2014

⁵⁸¹ Barysch, K., Grant, C., & Leonard, M. 2005. “Embracing the Dragon: Can the EU and China be Friends?” *CESifo Forum* 6(3): 8-15.

⁵⁸² Kerr, D. 2007. “Between Regionalism and World Order: Five Structural Factors in China-Europe Relations to 2025.” In *The International Politics of EU-China Relations* edited by D. Kerr & F. Liu, 289-317, New York: Oxford University Press.

⁵⁸³ Müller, F., Piefer, M. N., & Knodt, M. (Eds). 2015. *Challenges of European External Energy Governance with Emerging Powers*. Ashgate Publishing, Ltd.

⁵⁸⁴ China is the largest producer of solar cells in the world. However, its scale of production is not accompanied by a leading position in technology. In the field of silicon-based thin-film solar cells, which is considered to be “the second generation of technology,” China is in an inferior position. The country imports most of the production equipment from other countries. Because

crucial to the investment- and technology-demanding clean energy industry. The EU's export restrictions on China has curbed the latter's demand, which has not only slowed down the development of China's clean energy but also hindered the deepening of their cooperation in technology.

(3) Insufficient cooperation between the public of Europe and China

Thanks to the facilitation of official mechanisms such as the China–EU Energy Dialogues and the China–EU Energy Cooperation Conferences, China and Europe have achieved a variety of agreements in clean energy cooperation. However, cooperation between the public and the business circles is less active, cooperation in clean energy being a vivid indicator. Firstly, in terms of joint R&D in the field of clean energy, universities, research institutes and other academic institutes of Europe and China remained at an early stage during Hu Jintao's era. Joint R&D is a key indicator of the progression of technology cooperation. Moreover, the wider the research range and the more in depth the content, the closer the cooperation. Judged by those criteria, the technology cooperation between China and Europe remains at a low level.⁵⁸⁵

Secondly, EU companies set a high price and impose restrictions on Chinese companies when transferring technology.⁵⁸⁶ Technology transfer, however, is a key element in international technology cooperation, and it has been mentioned in previous sections that the EU export restrictions of high-tech goods to China are hindering EU–China cooperation. Moreover, the number of Chinese companies investing in EU countries in the field of clean energy is currently small. For Europe, besides some government-led aid projects that inject capital into Chinese companies, European companies remain inactive in investment in China. Therefore, there is still considerable room for cooperation between the public of Europe and China. The clean energy

of EU regulations, China's ability to import the much needed technology from the EU is limited. Some advanced technologies in the field of solar power, such as the technology or new materials that can enormously improve the transfer efficiency of solar cells are widely used in aviation, satellites, and other fields concerned with military. Although these products or technologies are not applied to the battlefield, they are limited by export restrictions for being dual-use goods and technology. Such restrictions have undoubtedly exerted negative effects on the development of China's solar power industry.

⁵⁸⁵ Interview with the chairman of the board a green energy supplier in China. Beijing. September 24, 2014 Beijing. November 3, 2015. Interview with a senior officer of a joint center

between EU and China. Beijing. August 22, 2013. August 22, 2013. Interview with a project coordinator at a Shanghai-based energy fund. Shanghai. March 20, 2013.

⁵⁸⁶ Interview with the chairman of the board a green energy supplier in China. Beijing. September 24, 2014.

industry is at an early stage, and large investment is needed. Meanwhile, with a high cost of production and low profits, most companies cannot survive without fiscal subsidies.⁵⁸⁷ Currently, under the influence of the debt crisis, the EU is cutting fiscal subsidies to the clean energy industry. Chinese clean energy companies are facing problems as well. For example, some subsidy-taking companies have grown dependent on the government.⁵⁸⁸

In short, the establishment of the above platforms and projects for energy cooperation indicates a change in the physical structure of energy policy towards multilateralism in relations with the EU. China's cooperation with EU Member States via these channels established under the EU is classified as part of multilateralism.⁵⁸⁹ However, the above discussion reveals that the multilateral energy cooperation between China and the EU via the above platforms and projects has not been established effectively. In other words, the degree of appropriation and legitimacy of the idea of multilateralism via the above physical structure is low.

5.4.4 Conclusion: no profound change to multilateralism

This chapter explains how China understands energy and energy security in the context of China–EU energy cooperation. As discussed in Sections 5.1 and 5.2, while the Chinese understanding of energy has expanded to include elements like clean energy (e.g. from coal to clean coal), Chinese energy security refers not only to oil supply but also to energy efficiency. The idea of sustainable development is included in its policy goals. Section 5.3.2 indicates that a number of physical bodies have also been established to facilitate multilateral cooperation, which is an unusual practice for China. This section considers whether there was a profound change in China's energy policy towards the EU during Hu Jintao's era.

China's transformation into the world's biggest energy consumer and greenhouse gas emitter has boosted the market for clean energy technology transfer and negotiation addressing climate change. During the era of Hu Jintao, energy cooperation between China and EU grew in both scale and formality. The two sides demonstrated efforts to advance the mechanisms of promoting energy cooperation.⁵⁹⁰ However, China had limited cooperation with the EU through multilateral cooperation.

⁵⁸⁷ Ibid.

⁵⁸⁸ Ibid.

⁵⁸⁹ See footnote 1.

⁵⁹⁰ Interview with a senior researcher of a joint center between EU and China. Beijing. August 22, 2013. Interview with the chairman of the board a green energy supplier in China. Beijing.

Firstly, the effectiveness of the China–EU energy cooperative platform was limited. Most of the energy initiatives had a short mandate or limited funding, and there are no extension plans. According to interviewees, while certain types of collaboration, namely training, joint research, technology demonstration, and financial investment, were more warmly received by the Chinese side, sustainability was limited by the short cooperation mandate.⁵⁹¹ Moreover, clean energy is closely associated with environmental issues implying that the coordination and approval of China–EU clean energy initiatives involves different governmental departments. As a result, an administrative burden is created. As mentioned in Chapter 3, China has a fragmented energy governance structure with overlapping roles among different energy-related departments. Embedding energy with climate change and science tends to cause confusion in China's governmental management. Besides, technology transfer brings out a variety of frictions in China–EU energy trade, such as intellectual property rights, market competition and differences in business culture that hinder the operation of China–EU energy cooperative initiatives. As a result, most of the cooperative initiatives in China–EU energy cooperation come and go and are merely sustained by official meetings at different time intervals. Ineffective cooperative initiatives indicate a low degree of appropriation and legitimacy of idea that multilateralism is practised via the physical structure.

Secondly, the Chinese side prefers bilateral cooperation with EU Member States to multilateral cooperation with the EU as a whole. Chinese cooperation with multiple EU Member States via platforms established under the EU is classified as part of multilateralism. Yet, if China approaches an EU Member State outside these multilateral platforms, then it is considered to be a bilateral interaction. As reflected in the energy cooperation mechanism outlined in Sections 5.3.1 and 5.3.2, China's partner can be the EU as a whole, the central government or the local government of each member, or companies and academic institutes with headquarters situated in these Member States. Facing a group of diversified stakeholders allows China to have various options in choosing its cooperation target and to enjoy better leverage in negotiation. China can maximize its advantages by switching between multilateral China–EU cooperation and bilateral China–EU Member State cooperation.⁵⁹² Moreover, different EU Member States have their own specific strengths and business

September 24, 2014 Beijing. July 18, 2013. Interview with a project coordinator at a Shanghai-based energy fund. Shanghai. March 20, 2013.

⁵⁹¹ Ibid.

⁵⁹² Ibid.

interests in regard to renewable energy.⁵⁹³ Also, China has a clear view of the exact partners that are suitable for particular projects.⁵⁹⁴ Another reason that China prefers bilateral agreements with EU Member States is their flexibility and effectiveness. In state-to-state deals, China finds it easier to proceed with concrete actions.⁵⁹⁵ Such a pragmatic approach hinders the level of Chinese participation in multilateral channels.

Thirdly, the contemporary world is highly interdependent. China and the EU share common strategic interest in international cooperation responsive to their changing energy needs. However, Kerr and Yanzhuo point out that when confronted with a range of governance issues in either traditional or non-traditional security, in general, China and the EU have limited experience working together, as they hold different core assumptions.⁵⁹⁶ In China-EU energy cooperation, China prefers state-to-state bilateral cooperation to multilateral cooperation platform within EU.⁵⁹⁷ China is also reluctant to make use of the mechanisms and rules of the WTO to properly solve trade disputes with the EU in the clean energy sector. Although China has developed much in the way of bilateral relations, international cooperation and government policies to support and protect its FDI, China lacks confidence in the capability of international institutions to protect its national interests.⁵⁹⁸

In sum, information collected through interviews with Chinese officials and researchers reflect that, during Hu Jintao's era, there had not been much progress in EU–China energy cooperation, and most cooperation remained at the discussion level. Although it was a common goal to support China's sustainable development, there were different objectives and interests among EU Member States. There was no clear plan for EU–China sustainability collaboration, and the mandates of some joint energy projects lasted for a few years only. Moreover, some Chinese officials think that the EU unilaterally initiated the project on a voluntary basis and the Chinese merely agreed to

⁵⁹³ For example, France in nuclear electricity, Germany in photovoltaic power generation, Denmark in wind power, etc.

⁵⁹⁴ Müller, Piefer & Knodt, (Eds). op. cit.

⁵⁹⁵ Interview with a senior researcher of a joint center between EU and China. Beijing. August 22, 2013. Interview with the chairman of the board a green energy supplier in China. Beijing. September 24, 2014 Beijing. July 18, 2013. Interview with a project coordinator at a Shanghai-based energy fund. Shanghai. March 20, 2013.

⁵⁹⁶ Kerr, D. & Xu, Y. 2014. "Europe, China, and Security Governance: Is there Evidence of Normative Convergence?" *Asia Europe Journal* 12(1-2): 79-93.

⁵⁹⁷ Interview with a senior researcher at CASS. Beijing. November 3, 2015.

⁵⁹⁸ Ibid.

try, taking on no responsibility to maintain the cooperation. Most importantly, energy cooperation relied on energy companies, which were concerned with revenue first. Fierce competition in the clean energy market was an obstacle to China–EU energy cooperation.

This chapter shows that China's ideas of energy and energy security in its cooperation with the EU expanded to include ideas like environmental issues, sustainable development, technology transfer and clean energy. Yet, traditional concepts such as "energy as a fuel of the country's economy" and "securing a reliable energy supply" remained in China's blueprint; hence, the change in China's energy paradigm is considered to be an expansion instead of a profound change. China had adjusted its policy goal by adding technology transfer and energy efficiency, which could be seen in its energy cooperation with the EU. The change in the goal of policy is also considered to be an expansion instead of a profound change. There were clear changes in policy instruments and physical structures in different paradigms reflected by the establishment of a variety of clean energy cooperation initiatives and multilateral platforms after the mid-2000s, particularly 2007. While there were multilateral forms of cooperation and high-level exchanges between China and the EU, the bilateral diplomatic approach remained an important form of cooperation. China remained reluctant to pursue multilateralism in energy cooperation because of obstacles like lack of mutual trust, weak IPR, differences in business cultures and interests, high levels of competition in the clean energy market, trade friction and operational limitations of joint research projects. In terms of the physical structure of governance, the Chinese approach during Hu Jintao's era was far from global energy governance, mainly because the functions of the joint platforms were limited, as discussed above. The degree of appropriation and legitimacy of the idea of enhance multilateralism via joint platforms was low.

Although there were changes in the form of expansion, the degree of change was not high in China's understanding of energy security, policy goals, physical structures and policy instruments in China–Europe energy cooperation. In other words, first-order change and second-order change with respect to policy instruments and change in physical governance structure occurred in energy cooperation between China and the EU. A third-order change regarding ideas and policy goals towards global energy governance was not obvious. This section concludes that China's energy security strategy towards the EU during the era of Hu Jintao did not undergo a profound change from a paradigm of bilateral energy diplomacy to a paradigm of multilateral energy cooperation.

5.5 Summary

This chapter reviews the China–EU energy relationship and analyses whether China’s energy strategy was moving towards global energy governance. Two key elements in China–EU energy cooperation were top official exchange platforms and cooperation initiatives. China and the EU supported their energy cooperation bilaterally and multilaterally via platforms like the China–EU Energy Conference, the China–Europe High-Level Energy Working Group, the China–Europe Energy Dialogue and the EU–China Summit. On the other hand, to facilitate the plans agreed to in these meetings, China and the EU have preliminarily established a structured cooperation mechanism with official promotion, involving personnel exchange and training, technology transfer and joint R&D and financial investment in the energy industry in both bilateral and multilateral approaches. A number of joint initiatives have been launched in China, including the China–EU Energy Training Programme, the Joint Energy and Environment Programme, the Europe–China Clean Energy Centre (EC2), the Near Zero Emission Coal Project and the China-EU Institute for Clean and Renewable Energy. However, the function of the above mechanisms during Hu Jintao’s era was limited, and Chinese authorities preferred to conduct energy cooperation bilaterally. Key obstacles included the lack of mutual trust in technology cooperation, friction in clean energy trade and insufficient cooperation between the public of Europe and China. Therefore, this chapter concludes that energy cooperation between China and the EU during Hu Jintao’s era did not undergo a profound change from a paradigm of energy diplomacy to a paradigm of global energy governance.

Chapter 6 - China-African energy cooperation

This chapter discusses the development of and changes in energy cooperation between China and Africa in the 21st century. Energy cooperation plays an important role in China's relationship with Africa. Two key elements in their energy cooperation are Chinese energy investment in Africa and the Forum on China–Africa Cooperation. They do not merely indicate the development and changes in the energy cooperation mechanism between China and Africa, but also reveal the rationales underpinning Chinese energy security in the region. By studying the case of China–Africa energy cooperation, this chapter aims to answer the question of whether China's energy security has undergone a policy transition which has resulted in a paradigm shift away from the going-out energy diplomacy paradigm to the global energy governance paradigm during Hu Jintao's era.

Firstly, this chapter introduces the background to the Sino-African energy relationship and the foundation of their cooperation. It then provides a review of China's energy diplomacy towards Africa as well as the ideas and rationales behind it. This is followed by an overview of the mechanisms which underpin energy cooperation between China and Africa in terms of Chinese energy investment in the region and multilateral platforms, particularly the Forum on China–Africa Cooperation (FOCAC). The above sections lay the foundation for analysis of the paradigm shift in China's energy strategy, which is fully developed in the next section. This section includes a discussion of the impact of Chinese energy investment in Africa, China's aid to Africa and the role of FOCAC in China's energy security strategy in Africa. The last section of this chapter examines whether there has been a policy paradigm shift in China's energy cooperation with Africa by applying the framework of five levels of energy policy aspects against which change can be measured. The discussions in the last two sections are based on a systematic analysis of official documents and communications and original primary data collected from interviews with senior Chinese energy experts who are involved in or witnessed the Sino-African energy cooperation. The method employed to analyse Chinese energy security in this chapter is original and departs from existing methods.

6.1 The foundation of Sino-African energy cooperation

The African continent is one of the key energy players in the world, and its oil industry has developed rapidly since the 1990s. Traditional oil producers, such as Nigeria, Algeria, Angola and Libya, are increasing petroleum exploration, while other new

developers, such as Sudan, Chad and Equatorial Guinea, aim to increase their output. New emerging producers such as Kenya, Namibia and Madagascar are expected to be joining the traditional ones. Meanwhile, Chad, Sudan, Namibia, South Africa and Madagascar are gas producers, while Mozambique and Tanzania are potential gas producers.⁵⁹⁹ It is notable that African oil producers, except for Nigeria, Algeria and Libya, are not Organization of the Petroleum Exporting Countries (OPEC) member states,⁶⁰⁰ which means that there is great potential for development and exploration without the production restriction of cartels. African petroleum exploration has been accelerating, with a group of emerging oil producers spectacularly rising in prominence, which provides a broad space for China–Africa energy cooperation.

According to the BP Statistical Energy Survey 2012, at the end of 2011, Africa had proved oil reserves of approximately 132 billion barrels, equivalent to around 8% of the world's reserves, with an average production rate of approximately 8.8 million barrels of crude oil per day, equivalent to around 10.4% of what the world produces.⁶⁰¹ These figures reflect not only the abundance of African natural resources, but also their importance to the regional economy in Africa. Almost 30% of African GDP and over 70% of import–export revenue comes from natural-resource revenues.⁶⁰²

In recent years, African economic development has had a close relationship with its blooming regional resources economy. However, the expansion of multiple sectors other than agriculture and natural resources contributes to GDP growth. While most foreign capital is attracted by Africa's natural resources, it has also flowed into other sectors, such as construction, textiles, telecommunications and tourism. Since 2000, these sectors have generated around 70%⁶⁰³ of Africa's GDP. According to a report from the African Development Bank, African countries have GDP growth rates above the global average level. One-third of Africa's countries have GDP growth rates of more

⁵⁹⁹ BP. 2012. *BP Statistical Review of World Energy 2012*

⁶⁰⁰ OPEC. 2015. "Member Countries." Accessed 11 November 2015.
http://www.opec.org/opec_web/en/about_us/25.htm

⁶⁰¹ BP. 2012. *op. cit.*

⁶⁰² African Natural Resources Center. 2015. "Africa's Natural Resources Wealth: A Snap Shot." Accessed 11 November 2015. <http://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/african-natural-resources-center-anrc/>

⁶⁰³ McKinsey & Company. 2010. "What's driving Africa's growth?" Accessed 11 November 2015.
http://www.mckinsey.com/insights/economic_studies/whats_driving_africas_growth

than 6%.⁶⁰⁴ Out of the 20 countries with the fastest GDP growth rate in the world, 13 are African. Compared to 2011, inflation in African countries has also been slowing down.⁶⁰⁵ Africa has become the continent with the fastest GDP growth rate in the world.

While international oil firms have a long history of a dominant role in the African energy market, African energy producers are vigorously implementing the strategies of diversification of oil exploration.⁶⁰⁶ This offers a favourable environment for China's oil enterprises to enter the African market and enhance China–Africa energy cooperation. In Africa, China became a competitor of other Western countries who had arrived a few centuries earlier. The early cooperators faced many obstacles in the continent, and China took advantage to create room for cooperation with African countries.

Firstly, Chinese business models are more welcomed in Africa because China prioritises property over liberal concerns. Western companies are obligated to operate with high Western benchmarks relating to environmental damage, business transparency and human rights. In contrast, Chinese overseas investments always follow the mentality of non-interference in domestic affairs, and hence there are no political conditions in business contracts between China and Africa.⁶⁰⁷ Although Western involvement brings positive values, such as human rights protection and business transparency, the Chinese offer more flexibility in doing business.⁶⁰⁸

Secondly, China, as a new partner, gave Africa a more friendly impression in that it has no history of intervention in Africa.⁶⁰⁹ While China extracts resources from Africa, it also offers generous aid projects and development assistance. In addition to the notable

⁶⁰⁴ African Development Bank Group. 2013. "Annual Development Effectiveness Review 2013: Towards Sustainable Growth for Africa." Accessed 11 November 2015.

<http://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/ADER-%20Annual%20Development%20Effectiveness%20Review%202013.pdf>

⁶⁰⁵ IMF. 2012. "Regional Economic Outlook: Sub-Saharan Africa Maintaining Growth in an Uncertain World." Accessed [date?].

<http://www.imf.org/external/pubs/ft/reo/2012/afr/eng/sreo1012.pdf>

⁶⁰⁶ Zhang, C. 2008. "勘探开发非洲石油资源的机遇与挑战 [in English: Opportunities and Challenges to Explore African Oil]." *International Economic Cooperation* 3: 45-48.

⁶⁰⁷ Alessi, C. & Xu, B. 2015. "China in Africa." *Council on Foreign Affairs*, April 27. <http://www.cfr.org/china/china-africa/p9557>

⁶⁰⁸ Interview with an industrial economist at CASS. 2015. Beijing.

⁶⁰⁹ He, W. 1999. "面向 21 世纪的中非关系[in English: Sino-African Relations in the 21st Century]." *West Asia and Africa*. 1: 25-30.

Tanzam Railway project, Beijing delivers a number of grants, interest-free loans and concessional loans on a bilateral level. Although China prioritises resource-rich countries such as Angola, Nigeria, Sudan and Zambia, “China’s approach has been one of mutual respect, also awarding small African countries with relatively little economic and political significance, with aid and investment support.”⁶¹⁰

Thirdly, Chinese labour is more economically competitive than Western labour. Most importantly, Chinese labourers and equipment are much cheaper, charging unbeatable prices.⁶¹¹ China’s economic reform has created a frenzy of ambition among the Chinese to make a profit and send money home by working in Africa. Chinese labourers are very diligent, effective and disciplined, but ask for less, for example in connection with matters such as human rights protection, compared with Western labourers. They can tolerate living together in packed barracks and seldom complain.⁶¹² Senior staff from Chinese national oil companies in Africa also made the point that government and companies in Africa welcome the presence of the Chinese because of their low cost.⁶¹³ However, the perception of economically competitive Chinese labour is believed to be positive merely at company or government level, because a Chinese presence in Africa brings problems to the local communities as well.

6.2 China’s energy strategy in Africa

China started importing oil from Africa in 1992.⁶¹⁴ The China–Africa energy relationship can be viewed within the broader picture of the China–Africa relationship, which started as a strategic partnership. Before the 1990s, political diplomacy was the main focus of the relationship between China and Africa. With the changes in the domestic and

⁶¹⁰ Davies, M., Edinger, H., Tay, N. and Naidu, S. 2008. “How China Delivers Development Assistance to Africa.” Centre for Chinese Studies, University of Stellenbosch.

⁶¹¹ Friedman, E. 2009. “China-driven Development as China Pours Billions into Africa, Other Countries are Trying to Keep up.” *Beijing Review*, February 1. Accessed 11 November 2015. http://www.bjreview.com/world/txt/2009-02/01/content_176304.htm.

⁶¹² Interview with an industrial economist at CASS. 2013. Beijing. May 5; Interview with overseas staff of a CNOC. 2014. Beijing. Sept. 3.

⁶¹³ Ibid.

⁶¹⁴ Zha, D. 2006. “China’s Oil Interests in Africa: an International Political Issue.” *The Study of International Politics* 4.

international situations, multidirectional diplomacy was gradually instigated between China and Africa. China's oil imports have increased year by year, levelling external dependency since the beginning of the new century. The stability of overseas oil supply is of great significance to China's economic growth and social development. To maintain energy safety, diversification of overseas energy supply will be one of the important measures where energy-rich Africa could potentially fit in. To further develop the energy relations with Africa, China is committed to promoting bilateral and multilateral regional cooperation. In the bilateral cooperation, China attaches importance to developing economic, trade and security relations with the countries in Africa and enhancing their oil security interests. In addition, the multilateral cooperation is the seeking of regional economic and security integration in the framework of the FOCAC.

6.2.1 China's diplomatic principles towards Africa

Since the establishment of China in 1949, its core diplomatic principles towards Africa have been elucidated by the Chinese authorities.⁶¹⁵ Meanwhile, major meetings or summits between Chinese and African leaders are also key channels for setting the core diplomatic tone towards Africa. These channels have established direct exchange and communication at the highest official level since the 1960s. Mutual trust and respect are demonstrated between China and African countries.

In 1955, when China was establishing its relationship with African countries, it proposed the Five Principles of Peaceful Coexistence. Emphasising equality and mutual support, the Five Principles were well recognised by African countries.⁶¹⁶ In 1960, Chairman Mao Zedong met the leaders of 12 African countries and regions and said: "We are friends and we must all stand together on the same battlefield with the common opposition to imperialism and colonialism ... The anti-colonial struggle of African countries has a worldwide significance ... All our sympathy and support are with you. At the meantime, we think that your struggle gives support and help to us."⁶¹⁷

⁶¹⁵ Today China News. 2003. "The Sino-African Relations Comments of Chinese Leaders." *Today China*, November 14. Accessed 11 November 2015.
<http://www.china.com.cn/chinese/zhuanti/zf/442107.htm>

⁶¹⁶ PRC State Council. 2004. "Wen Jiabao's Speech at the 50th Anniversary Assembly of the Five Principles of Peaceful Coexistence." Presented at the 50th Anniversary Assembly of the Five Principles of Peaceful Coexistence, 28 June 2004.
http://www.gov.cn/gongbao/content/2004/content_62873.htm

⁶¹⁷ Mao Z.D. 1999. "Imperialism is not Terrifying." In *Mao Zedong Wenji, Volume 8*, 169. Beijing: People's Press.

Premier Zhou's visits to Africa in the early 1960s are regarded as the start of the Sino-African diplomatic relationship because he won the friendship of many African nations and expanded China's diplomatic reach.⁶¹⁸ He put forward the eight principles of foreign economic and technological assistance in early 1964.⁶¹⁹ When African leaders visited China in return in the same year, Chairman Mao declared them to be close friends again.⁶²⁰

In the 1980s, while China was expanding its economic partnership globally, its leaders visited Africa more frequently to reassure African leaders of the committed friendship between the two nations, as stated publicly: "We will not forget old friends when making new friends, or forget poor friends when making rich friends."⁶²¹ Meetings and summits have continued to be an important channel for applying China's diplomatic principles and maintaining confidence in the Sino-African relationship. In the 1990s, China's foreign ministers visited African nations as their first official stop abroad every year,⁶²² reflecting a symbolic respect for their African friends. In the 21st century, President Hu Jintao summed up the relationship between China and Africa as that of "good friends, good partners and good brothers"⁶²³. The FOCAC, a multilateral platform, has also been established to provide a mechanism for Chinese and African leaders to meet to promote Sino-African cooperation.

6.2.2 China's energy diplomacy towards Africa

Africa has been one of China's key targets in its energy diplomacy strategy. The Chinese government supports the investment of its Chinese national oil companies (CNOC) in Africa bilaterally and multilaterally. China's energy diplomacy towards Africa,

⁶¹⁸ Lu Ting'en. 2005. "The Example of Summit Diplomacy between China and African Premier Zhou Enlai's First Visit to Africa." In *China and Africa*, edited by Africa Research Center of Beijing University, 5. Beijing: Beijing University Press.

⁶¹⁹ PRC SCOI. 2011. "China's Foreign Aid." White Paper. Accessed 11 November 2015. http://www.scio.gov.cn/zxbd/tt/Document/1011345/1011345_1.htm

⁶²⁰ Li, Jiasong (ed.) 2001. In *Big Events in the History of Foreign Affairs of People's Republic of China*. Pp. 432–3, 438.

⁶²¹ Anonymous. 1986. *Yearbook of China's Foreign Economic Relations and Trade 1986*. Beijing: Outlook Press.

⁶²² Zhang, K. 2006. "Journals of the African Trip." *Observation and Reflection* 5.

⁶²³ People's Daily Online. 2006. "Good Friends, Good Partners and Good Brothers." *People's Daily Online*, June 22. Accessed 11 November 2015. http://en.people.cn/200606/22/eng20060622_276333.html

with oil as a focus, can be divided into three stages: 1950–1979, 1980–1999 and 2000 onwards.

This first stage, 1950–1979, was the foundation stage. It established diplomatic relations with African countries, such as Sudan, Nigeria, Libya, Egypt and other major oil-producing countries, which laid a political foundation for the future petroleum diplomacy. Between 1950 and 1979, the newly established China developed friendly relations with independent African countries, such as Libya, Egypt and Ethiopia. The close political cooperation with these countries was a prelude to Sino-African diplomatic relations.⁶²⁴ Before 1979, China had little investment in Africa, and the investment was limited to companies which were set up to implement specific projects, such as the China–Tanzania shipping joint venture. However, the political foundation was developed for future oil cooperation and exploration.⁶²⁵

In the 1980s, China and African countries moved beyond political diplomacy and began to embark on economic cooperation. At this stage, Chinese direct investment in Africa had only just begun. It had a political aim and was the main way to promote the export of engineering equipment, raw materials and other Chinese products to Africa.⁶²⁶ Insisting on the principles of equality and mutual benefit, economic benefits and mutual development, China and a few oil-producing countries in Africa, such as Angola and Sudan, began petroleum cooperation. At this stage, petroleum diplomacy between China and Africa demonstrated three characteristics: firstly, there were no mature regulations and standards; secondly, the form of cooperation was monotonous and was not abundant; and, thirdly, there were few countries in Africa that were engaged in petroleum diplomacy with China. Nevertheless, China accumulated practical experience of independent investment in energy programmes and increased its competitiveness in international petroleum.⁶²⁷ In general, before the 21st century, China's energy shortage problems were not so obvious, and its oil imports from Africa accounted for only 20% of its total oil imports. Therefore, both African energy and its policy were not attractive to China, and the China-Africa cooperation policies were not carefully drawn up and implemented.⁶²⁸

⁶²⁴ Yang, G. & He, W. P. 2005. *Annual Report on Development in the Middle East and Africa, No. 10 (2006–2007): The Relation of History and Reality Between China and Africa*. Beijing: Social Sciences Academic Press.

⁶²⁵ Ibid.

⁶²⁶ Ibid. p.71.

⁶²⁷ Ibid. p.71.

⁶²⁸ Ibid. p.71.

Entering the 21st century, the Chinese economy had developed rapidly and the demand for petroleum was increasing. In order to ensure Chinese petroleum safety and to promote the diversification of energy imports, China accelerated African oil and gas cooperation. With the political foundation created and experience accumulated over five decades, China's energy diplomacy towards Africa has become comparatively mature during this stage, reflected in three areas. First of all, according to Table 6.1, the amount of oil imported from Africa has been increasing, from 610,000 tons in 1992 to 16,160,000 tons in 2002, and then up to 64,700,000 tons in 2012. After 10 years' effort, China signed agreements on 27 large oil and gas programmes with 14 countries, including Sudan, Angola and Libya.⁶²⁹ Secondly, the oil cooperative field for China has become wider in the 21st century. China and African countries have started to move beyond oil trade and cooperate in other energy fields, such as oil exploration and development, extraction and transport.⁶³⁰ Thirdly, based on the Five Principles of Peaceful Coexistence proposed in 1955, China has further improved the principles underpinning its energy diplomacy towards Africa. On 12 January 2006, in order to maintain long-term supply, exploration and investment, China issued China's African Policy,⁶³¹ further addressing equality and mutual support.

Table 6.1: Imported Crude Oil from Africa to China (Years 1992–2012) (10,000 tons)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Algeria	/	/	1	13	/	/	/	/	/	/	/
Egypt	/	/	/	/	/	29	20	11	12	/	/
Angola	20	122	37	100	166	384	111	288	864	380	571
E. Guinea	/	/	/	/	/	20	24	81	92	215	178
Congo	/	/	/	/	/	98	38	38	145	64	105
Gabon	/	13	12	9	0	38	/	65	46	15	/
Cameroon	/	/	/	/	/	/	/	25	43	82	35
Libya	30	71	/	21	14	7	14	13	13	25	/
Nigeria	/	/	/	39	/	/	12	137	119	77	49

⁶²⁹ Liu, Y. 2006. "Who is in Charge of the Oil Production? [in Chinese]." In *China Comment Volume 12*

⁶³⁰ Chen, H. 2011. *Energy Strategy and Diplomacy in the World*. Beijing: Intellectual Property Publishing House.

⁶³¹ PRC State Council. 2006. "Government issues African Policy Paper." Accessed 11 November 2015. http://www.gov.cn/misc/2006-01/12/content_156509.htm

Sudan	/	/	/	/	/	0	/	27	331	497	643
Chad	/	/	/	/	/	/	/	/	/	/	/
Others	11	7	/	3	13	36	24	50	119	96	35
Total	61	213	50	185	193	612	243	735	1784	1451	1616
% of Yearly	4%	14%	4%	11%	9%	17%	8%	20%	24%	22%	23%
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	
Algeria	13	68	82	26	161	90	161	175	217	257	
Egypt	8	/	8	/	/	/	/	69	104	77	
Angola	1010	1621	1746	2345	2500	2989	3217	3938	3115	4016	
E. Guinea	146	348	384	527	328	271	222	82	176	200	
Congo	339	478	553	542	480	437	409	505	563	537	
Gabon	/	/	/	/	89	87	27	42	17	/	
Cameroon	/	/	/	/	/	47	58	36	47	58	
Libya	13	134	226	339	291	319	634	737	259	731	
Nigeria	12	149	131	45	90	35	139	129	107	94	
Sudan	626	577	662	485	1031	1050	1219	1260	1299	251	
Chad	/	83	55	55	/	/	14	96	32	/	
Others	52	73	/	215	334	71	42	16	79	249	
Total	2219	3531	3847	4579	5304	5396	6142	7085	6015	6470	
% of Yearly	24%	29%	30%	32%	33%	30%	30%	30%	24%	24%	

Source: *International Petroleum Economics* 1992 to 2013 published by CNPC Economics and Technology Research Institute

6.2.3 China's oil diplomacy towards Africa

In general, China's energy policy towards Africa aims to strengthen the oil cooperation with African countries and form closer ties, diversify energy supply sources to enhance energy security, reduce oil dependence on the Middle East region, help African countries to turn resource advantages into competitive advantages, and promote and realise the sustainable development of African countries and regions.⁶³²

Realistically speaking, one of the key objectives of China's oil diplomacy towards Africa is to strengthen the diversification of energy supply sources to enhance energy security

⁶³² Interview with an industrial economist at CASS. 2013. Beijing. May 5.

and reduce oil dependence on the Middle East.⁶³³ Meanwhile, close economic ties can be transformed into political mutual trust, which will deepen exchanges between China and Africa and build strong relationships. Establishing diplomatic ties is the first key step in this approach; therefore, Chinese leaders have attached great importance to Africa, especially in the past two decades. In order to encourage energy cooperation with the African oil-producing countries, Chinese leaders frequently visit Africa. In May 1996, former President Jiang Zemin visited Egypt, Kenya, Ethiopia, Mali, Namibia and Zimbabwe, achieving a series of energy cooperation results.⁶³⁴ Former Premier Wen Jiabao visited the oil producer Libya in 2003, and former President Hu Jintao visited Egypt, Gabon and Algeria in 2004.⁶³⁵ In 2006, leaders of 48 African countries gathered in the China–Africa Cooperation Forum in Beijing. They reached a consensus and made plans on energy cooperation.⁶³⁶ To further consolidate the partnership with African countries, former Chinese President Hu Jintao visited five African countries in 2009 and gave a speech entitled “Work Together to Write a New Chapter of China–Africa Friendship” to promote China’s energy diplomacy towards Africa.⁶³⁷

Since the establishment of China, Chinese and African leaders have visited each other frequently. From 2009 to 2012, over 20 Chinese top leaders visited African countries, and, in return, 32 heads of state, 17 vice presidents or deputy prime ministers and 10 representatives from African countries visited China for different events.⁶³⁸ China’s energy diplomacy has reached the major oil-producing countries in Africa. Whenever the Chinese leaders visited an African country, CNOCs, like CNPC, Sinopec and CNOOC, signed oil agreements with that country.⁶³⁹

⁶³³ Ibid.

⁶³⁴ Xinhua News. 2013. “Memorabilia of Chinese Presidents’ visits in Africa [in Chinese].” *Xinhua News*, 24 March. Accessed 11 November 2015. http://news.xinhuanet.com/world/2013-03/24/c_124496931.htm

⁶³⁵ PRC MFA. 2006. “China and African Countries Celebrate the 50th Anniversary of Diplomatic Relations.” Accessed 11 November 2015. <http://www.fmprc.gov.cn/ce/cebw/eng/xnyfgk/t257854.htm>

⁶³⁶ Ibid.

⁶³⁷ PRC MFA. 2009. “Hu Jintao’s Speech: Work Together to Write a New Chapter of China–Africa Friendship.” Accessed 11 November 2015. http://www.fmprc.gov.cn/mfa_eng/wjdt_665385/zyjh_665391/t538257.shtml

⁶³⁸ China Embassy. 2012. “Follow-up of the Fourth FOCAC Ministerial Meeting [in Chinese].” Accessed 11 November 2015. <http://rw.china-embassy.org/chn/rdzt/t952918.htm>

⁶³⁹ Zhang, G. 2008. “Competitive Trend Analysis of Foreign Oil Companies in Africa [in Chinese].” *International Petroleum Economics* 3.

Under the going-out strategy, China promoted various types of Chinese companies which had the reputation, strength and advantages to take part in the energy cooperation in Africa. In 2000, the Chinese government officially relaxed requirements for overseas investment in enterprises. It increased the proportion of assembly manufacturing and processing of components and equipment abroad, and also encouraged companies to build factories in Africa. Upon the request of the Chinese government, CNOC made a great effort to provide work opportunities and tax revenue for the local area, to pay attention to environmental protection and to actively participate in local public service during the process of investment and production in Africa.⁶⁴⁰ Up until the year in which China's African Policy was formed, China had signed a bilateral trade agreement with 41 African countries, a bilateral encouragement and investment security treaty with 28 African countries, and an agreement on avoidance of double taxation with eight African countries.⁶⁴¹

Attaching great importance to promoting the investment in Africa, the Chinese government has decided to support relevant Chinese banks in setting up the China and Africa Development Fund, with a total amount of 500 million US dollars to be released gradually.⁶⁴² Creating favourable trade and investment conditions, China also encourages and supports strong and reputable Chinese companies to invest in projects that are conducive to improving the technology level, increasing employment and promoting the sustainable development of local economies and societies in Africa.⁶⁴³ Pledging to further open the market to African countries, China will enhance the tax items of zero-tariff products exported from the least developed African countries that have diplomatic relations with China from 190 to over 440 and consult with relevant countries as soon as possible to sign agreements and put this into practice.⁶⁴⁴

On 12 October 2000, the FOCAC's Ministerial Conference 2000 was held in Beijing, and the Programme for China–Africa Cooperation in Economic and Social Development was signed in the closing ceremony. This multilateral platform further strengthened China's diplomatic ties and hence energy relationship with African

⁶⁴⁰ PRC MFA. 2006. "Vice Minister of Commerce Wei Jianguo: China-Africa Economic and Trade Cooperation with Impressive Results." Accessed 11 November 2015. http://www.gov.cn/zwhd/2006-01/13/content_157162.htm

⁶⁴¹ Ibid.

⁶⁴² PRC State Council. 2010. "China Trade Cooperation with Africa [in Chinese]." Accessed 11 November 2015. http://www.gov.cn/zwgk/2010-12/23/content_1771638.htm

⁶⁴³ Ibid.

⁶⁴⁴ Ibid.

countries. Under the commitment to social and economic cooperation, the programme pointed out that China and Africa realised the importance of natural resources and agreed to develop cooperation over their use. China agreed to invest in metallic resource exploration and use in Africa. The exploration and use of these resources was to be accelerated on the basis of equality and environmental protection.⁶⁴⁵ China and Africa were to establish a new type of strategic partnership in various fields, especially in the field of economic and social development, to revitalise, develop and expand cooperation in the 21st century. They also recognised the necessary efforts required to balance and expand trade and the need to help Africa improve its production capacity and realise export diversification, and they determined to cooperate and share experience to change Africa's dependence on exporting primary and single products and raw materials.⁶⁴⁶

6.3 The energy cooperation mechanism between China and Africa

As the energy initiative has progressed with official promotion, China and Africa have preliminarily established a structured cooperation mechanism. Such a mechanism involves joint energy projects between the two big powers in both bilateral and multilateral approaches. CNOC investment, aid and the FOCAC are the main national channels facilitating Sino-African energy cooperation.

6.3.1 The investment of CNOC in Africa

The Chinese government's reform of the management system of oil companies in the 1990s created an opportunity to engage in overseas business. China's national energy companies recognised that they must "change from using domestic resources to using both domestic and international resources and transform to adjust to the international operation of domestic and international markets"⁶⁴⁷. In early 1993, approved by the State Council, China United Oil Company was jointly founded by the Ministry of Economy and Trade, CNPC and China National Chemicals Import and Export Corporation, based on the principle of combining industry and trade. The purpose was

⁶⁴⁵ FOCAC Archives. 2009. "Programme for China-Africa Cooperation in Economic and Social Development." Accessed 11 November 2015.

<http://www.focac.org/eng/ltda/dyjbzjhy/DOC12009/t606797.htm>

⁶⁴⁶ Ibid.

⁶⁴⁷ Sheng, H. 1992. "Accelerate Reform to Achieve Six Changes." *People Daily*. Nov. 22.

to maximise the advantages of both sides; wholly manage and operate the exploration, development, production, sales, import and export of oil and natural gas in the world; and participate in international competition.⁶⁴⁸

In September 1995, CNPC signed contracts over six oil blocks with the Sudanese government and developed the oil industry in the region. The Sudan project is regarded as an important breakthrough for CNOCs' global investment.⁶⁴⁹ In November 1996, the Greater Nile Petroleum Operating Company was formed by CNPC and several other international oil corporations to develop oil resources in blocks 1, 2 and 4 in Sudan.⁶⁵⁰ In March 1997, CNPC signed an agreement with Sudan to jointly construct the Khartoum refinery. By the end of 2003, with a total investment of 2.7 billion dollars in Sudan, CNPC had constructed 1,506 kilometres of pipelines, a crude oil refinery with an annual output of 2.5 million tons and several gas stations, creating an entire oil industry system integrating exploration, production, refining, transportation and sales.⁶⁵¹ In the mid-2000s, the oil cooperation between China and Africa made great progress. Other notable achievements were the cooperation agreement on energy, mineral resources and infrastructure signed by China and Angola in February 2005; Sinopec's acquisition of Angola's exploration district in the same year; and CNOOC's purchase of 45% equity in Nigeria's No. 130 deep-sea block.⁶⁵²

Regarding recent direct investment, CNOOC has completed the purchase of 66.67% of the Ugandan licences of Tullow Oil plc for 2.9 billion dollars.⁶⁵³ The two parties have been working closely since March 2011, and based on their timetable, major production should commence in 2016. CNOOC has obtained 33.33% of the licence for Exploration Areas 1, 2 and 3A in the Lake Albert Basin and will share the operating responsibilities with other partners. In mid-2013, CNPC completed its purchase of a 28.57%⁶⁵⁴ stake in

⁶⁴⁸ Zha, D. 2006. op. cit.

⁶⁴⁹ Ibid.

⁶⁵⁰ Yang, L. 2003. "White Paper on China-Africa Economic and Trade Cooperation: The Next Five-Year Development Plan." White Paper, PRC Ministry of Commerce and CASS.

⁶⁵¹ China Petrochem. 2005. "Energy cooperation between China and Sudan." *China Petrochem*, 16.

⁶⁵² Kang, S. 2007. "China's Oil Security in the Turbulent Africa." *West Asia and Africa*, 2.

⁶⁵³ Tullow Oil PLC. 2012. "\$2.9bn Farm-down of Uganda Licences Completed." Accessed 11 November 2015. <http://www.tulloil.com/index.asp?pageid=137&newsid=737>

⁶⁵⁴ OGJ. 2013. "CNPC Completes Buy of Stake off Mozambique." *Oil & Gas Journal*, July 23. Accessed 11 November 2015. <http://www.ogj.com/articles/2013/07/cnpc-completes-buy-of-stake-off-mozambique.html>

Eni East Africa, which held a 70% interest in the Area 4 gas block in offshore Mozambique before the deal. CNPC secured its interest with 4.21 billion dollars to participate indirectly in the Mozambique Rovuma Basin, where Eni has discovered at least 75 Tcf of gas. There have since been further gas discoveries in the gas-rich Rovuma Basin in offshore Mozambique, so the East African country could be one of the world's largest LNG exporters in the future. CNPC's entrance into the Mozambique LNG sector is strategically significant for extending Sino-African energy cooperation to a new domain. Following the new discovery and production of oil and gas in Africa, China is expected to increase its investment in the continent.⁶⁵⁵

In the meantime, energy cooperation between China and Africa is not limited to gas and oil. Both sides have a long history of coal cooperation, and this partnership has become more mature and diversified in the 2000s. In the area of coal exploitation, China Africa Sunlight Energy Private Limited (CASECO) launched an integrated coal-mining and electricity-generation project in north-west Zimbabwe.⁶⁵⁶ According to the contract, CASECO will invest in the mining of coal, the extraction of coalbed methane and the construction of a 600-megawatt power station in Zimbabwe. In the area of coal investment, Haohua Energy International Hong Kong Resource Cooperation (HEI) reached a deal with Coal of Africa Limited (CoAL).⁶⁵⁷ In the deal, CoAL agreed to sell the company's shares to HEI. With the funds, CoAL can upgrade its processing plant and boost coal production for international and domestic markets. HEI will become the largest shareholder in the African coal industry.

Renewable energy is another highlight of Sino-African cooperation. Since 2012, African renewable energy has undergone rapid development due to governmental support. For example, South Africa has launched a solar water-heater project for 128,000 citizens, and plans to build a 5,000-megawatt power plant and to invest 90 billion dollars in

⁶⁵⁵ Ledesma, David. 2013. "East Africa Gas - Potential for Export" Oxford Institute for Energy Studies.

⁶⁵⁶ Xinhua News. 2012. "China and Zimbabwe Cooperate to Develop Coal Resources." *Xinhua News*, Dec 20. Accessed 11 November 2015. http://news.xinhuanet.com/world/2012-12/20/c_124123320.htm

⁶⁵⁷ Mining Weekly. 2013. "CoAL Shareholders Approve \$100m HEI Investment." *Mining Weekly*. Jan 25. Accessed 11 November 2015. <http://www.miningweekly.com/article/coal-shareholders-approve-100-million-investment-by-hei-2013-01-25>

renewable energy in the next 20 years.⁶⁵⁸ Although African renewable-energy development lacks experience, technological support and regional demand, there is still great market potential with considerable possible revenue. Therefore, transnational companies, including Chinese companies, have expressed interest in entering the African renewable-energy market. In 2012, they remained at a discussion level and attitudes were positive. Some interested Chinese renewable-energy companies, such as Trony Solar Holdings Co. Ltd, even set up offices in Africa in advance to facilitate business expansion to African countries like Ghana, Kenya, Nigeria and South Sudan. As China's close partners, African countries also welcome Chinese companies. In the China PV Summit 2012,⁶⁵⁹ 18 African delegates visited China to promote renewable-energy investment opportunities in their countries. In addition, the National Development and Reform Commission also encouraged Chinese solar companies to get on board and invest in Africa.

By observing the above cases, it can be seen that China's oil companies, in their overseas business, take the bilateral approach of national oil strategies, become involved in oil construction projects in oil export countries directly and obtain a certain share of the oil production of cooperation projects through production sharing, joint ventures, rent, services and in other ways. The share of oil gained can be either shipped back to China directly or resold on the international oil market. In addition, by mergers and acquisitions, China's oil companies also expand overseas business, while the mergers and acquisitions mainly focus on the upstream sectors of the oil and gas industry.

6.3.2 Official humanitarian aid

Africa is the poorest area in the world with the lowest economic development level, and 34 of the 50 least developed countries in the world are in Africa.⁶⁶⁰ Based on this situation, China has provided precious support and aid within its capabilities to African peoples since 1956. For the next 50 years, China's aid to Africa will be around 44.4

⁶⁵⁸ PRC MOC. 2012. "Enormous Potential in Africa's Solar and Other New Energy Markets." Accessed 11 November 2015.

<http://eg.mofcom.gov.cn/article/jmxw/201212/20121208490225.shtml>

⁶⁵⁹ China Power. 2012. "18 African Countries Visit China to Promote Solar Energy." Accessed 11 November 2015. <http://www.chinapower.com.cn/article/1219/art1219167.asp>

⁶⁶⁰ United Nations. 2005. *Human Development Report 2005*. New York.

billion yuan in total along with the implementation of about 900 infrastructure and social public welfare projects.⁶⁶¹

Chinese aid to Africa can be divided into two stages. The first stage was from 1949 to 1978, in which China established the policies and guidelines regarding aid to Africa. During this stage, China's policy towards Africa focused mainly on politics, fully supporting the independence movements in Africa, which went beyond mere moral support and extended to the provision of weapons and human assistance to cultivate military and political power for the movement.⁶⁶² In line with the Five Principles of Peaceful Coexistence⁶⁶³ and the Eight Principles for Foreign Economic and Technological Assistance,⁶⁶⁴ the purpose of foreign aid is equality and mutual benefit, respecting the sovereignty of the recipient, practically assisting countries' self-reliance and striving to benefit the recipient. Nowadays, both sets of principles still have guiding significance in aid to Africa. The second stage was from 1978 onwards. Slight changes were made to China's aid to Africa from an originally politically oriented policy to one which encouraged and supported the developing countries' economic development. Since neither China nor African countries are economically well developed, the growth of the national economy is a top priority for both of them.

In the first stage, from 1949 to 1978, project construction, which comprised material assistance as well as sending experts, was the main form of Chinese aid to Africa. After China's economic system reform, there has been a diversification in the type of aid, including donations, interest-free loans, discount loans, technical assistance, project construction, direct factory construction, expert guidance, labour services, personnel training, technical training, technical management guidance, preferential loans, investment and trade, construction, heavily indebted poor countries' debt relief, training for trade officials, natural disaster emergency aid, etc. The Chinese Ministry of Commerce stated that, up until 2012, China's total direct investment in Africa was more than 15 billion US dollars in over 50 countries. China has built more than 100 schools, 30 hospitals, 30 resistance centres and 20 centres of agricultural technology

⁶⁶¹ He, W. 2006. "Who are Triggered by the Development of Sino-African Relationship? [in Chinese]." *World Knowledge* 19.

⁶⁶² China trained and educated thousands military intellectuals in Africa between 1955 and 1977. See Jiang, G. 1997. *Historical Recording of Visiting Foreign Parties*. Beijing: World Affairs Press; Weinstein, W. & T.H. Henriksen, Eds. 1980. *Soviet and Chinese Aid to African Nations*. New York: Praeger Publishers.

⁶⁶³ PRC State Council. 2004. op. cit.

⁶⁶⁴ PRC SCOI. op. cit.

demonstration for African countries, and it plans to send more doctors to the continent. In addition, China is expected to increase financial support to African countries to 20 billion dollars, which is double that of 2012.⁶⁶⁵ China's aid does not only support African political independence and the economic development and social progress of countries; it also promotes the development of China–Africa economic and trade relations and bilateral relations, expanding the extent of China's diplomacy and international influence.

Chinese scholars argue that Chinese aid to African countries is not a “plundering oil” aid, as Western countries perceive. Rather, it is mutually beneficial for China to invest money and technology in helping African countries develop oil and construct public facilities, and for the recipient to sell oil to China through the international market.⁶⁶⁶ For example, in 2002, when Angola suffered severe economic development difficulties, China first offered a commercial loan of public services, which would be repaid with oil, and signed a framework agreement. This pattern promotes the economic development of the recipient countries and alleviates the present pressure of China's oil shortage.⁶⁶⁷ China's African policies made it clear that the Chinese government will, according to their own financial resources and economic development, continue to offer aid to African countries and gradually increase this with no conditions attached.⁶⁶⁸ Aid to Africa has played an important role in defending China's sovereignty and unity and supporting its economic development. More importantly, providing aid to Africa, directly or indirectly, not only promotes the economic development of African countries but can also keep China's oil supply stable.

As a developing country, China's economic aid to African countries is regarded as “South-South cooperation”. Other than general supplies and financial loans, China helps African countries to build roads, schools, hospitals and other infrastructure, and contributes to the provision of urban water supplies and social welfare projects.⁶⁶⁹ In this “South-South cooperation”, China provides development opportunities to African countries, and Africa does the same in return, becoming involved in economic cooperation projects. For example, China combined aid to Sudan with an oil

⁶⁶⁵ PRC MOC. 2012. “Congo Media Praised China for Economic Development in Africa and Injecting New Vitality.” Accessed [date].

<http://www.mofcom.gov.cn/article/i/jyj/k/201207/20120708247697.shtml>

⁶⁶⁶ Interview with an industrial economist at CASS. 2013. Beijing. May 5.

⁶⁶⁷ Ibid.

⁶⁶⁸ PRC State Council. 2006 op. cit.

⁶⁶⁹ Yang & Wang. op. cit.

development project. In 1995, Sudan signed an agreement with China to enjoy preferential government loans at a discounted rate.⁶⁷⁰ After that, the CNPC used the Chinese government's preferential loans to sign an agreement over oil production involving six blocks (Muglad), sharing with the Sudanese government and participating in oil cooperation over blocks 1, 2 and 4.

Some Chinese scholars believe that aid to Sudan, particularly that invested in its oil industry, is an important factor as to why the African oil producer became the source of Africa's largest oil exports to China.⁶⁷¹ By the end of 2006, 53 countries had accepted China's aid without political conditions. Due to China's aid and guidance, more than 800 projects have been set up and implemented in African countries. China provided concessional loans for 33 projects involving construction of infrastructure in 22 countries in Africa.⁶⁷² At the same time, CNPC cooperated with African producers of oil in offering to build infrastructure free of charge, for example providing assistance with the construction of local hospitals and roads to promote the economic development of the recipient countries and improve their living standards. According to the Institute of West Africa at CASS, in nearly a decade, CNPC invested 32.28 million dollars in total in Sudanese local infrastructure, not only solving employment problems for local residents, but also improving their living standards.⁶⁷³

6.3.3 China's energy cooperation via the FOCAC

Established in 2000, the FOCAC is a multilateral platform for exchange and cooperation between China and African countries that have formal diplomatic relationships with China, and covers various aspects of politics, economy, trade, society and culture.⁶⁷⁴ The FOCAC represents a new strategic partnership model between China and Africa in solving global issues, including those to do with energy. According to an official FOCAC document, the basis of the forum is "political equality

⁶⁷⁰ PRC MOC. 2006. "How to Apply for Government Subsidized Lending." Accessed 11

November 2015 <http://www.mofcom.gov.cn/aarticle/i/jyjl/k/200603/20060301679014.html>

⁶⁷¹ Tian, C. 2003. "Analysis on Import and Export of Chinese Petroleum in 2002." *International Petroleum Economics* 3.

⁶⁷² Chen, H. 2011. *Energy Strategy and Diplomacy in the World*. Beijing: Intellectual Property Publishing House.

⁶⁷³ Han, Y. 2008. "China-Africa Economic and Trade Cooperation: What Should be Concerned?" *World Knowledge* 18.

⁶⁷⁴ FOCAC Archives. 2012. "To Achieve Common Development and Prosperity Through Joint Efforts of China and Africa." Accessed 11 November 2015. <http://www.focac.org/eng/lttda/t967201.htm>

and mutual trust, economic win-win cooperation and two-way cultural exchanges, opening a new chapter in China–Africa relationship”⁶⁷⁵. There is a common perception that the Chinese government initiated the FOCAC,⁶⁷⁶ and some even argue that the forum is part of China’s grand strategy.⁶⁷⁷ However, Africa has also been heavily involved in promoting the establishment of the FOCAC. As discussed in previous sections, China’s foreign policy in Africa is important for its energy security, in that China’s investment in Africa is also determined by its growing need for energy resources.⁶⁷⁸ This section first discusses the progress of the FOCAC in energy cooperation.

6.3.3.1 The progress of the FOCAC regarding energy cooperation

There have been five FOCAC ministerial conferences to date, the third coinciding with the China–Africa Summit. FOCAC ministerial conferences are held every three years, and alternate between China and an African country. (See Table 6.2 for information and the key commitment of each conference.) After the first FOCAC, the Chinese government attached great importance to the follow-up work of the conference. In the same year, they established a follow-up action committee consisting of more than 20 ministries and commissions so as to guarantee the implementation of the commitment made at the forum. After the first conference, China agreed to promote investment in and exploration and beneficiation of metallurgical resources.⁶⁷⁹

The second conference in 2003 paid specific attention to the new measures that could be taken to deepen cooperation on human resource development, agriculture,

⁶⁷⁵ Ibid.

⁶⁷⁶ Alves, A.C. 2008. “Chinese Economic Diplomacy in Africa: The Lusophone Strategy” In *China Enters Africa: A Rising Power and a Content Embrace* edited by C. Alden, D. Large and R. Soares de Oliveira, London: Hurst; Mwesiga, B. 2008. “The Three Faces of the Dragon: Tanzania-China Relations in Historical Perspective” In *Crouching Tiger, Hidden Dragon? Africa and China* edited by K. Ampiah and Sanusha Naidu, Scottsville: University of KwaZulu-Natal Press.

⁶⁷⁷ Helmut, A. 2007. “China’s Engagement in Africa: A Survey.” Paper presented at the international conference “China in Africa: Who Benefits? Interdisciplinary Perspectives on China’s Involvement in Africa”, Johann Wolfgang Goethe University, Frankfurt, Germany, December 14-15.

⁶⁷⁸ Taylor, A. 2006. “Unpacking China’s Resource Diplomacy in Africa.” Center on China’s Transnational Relations. Working Paper No. 19.

⁶⁷⁹ FOCAC Archive. 2000. “Programme for China-Africa Cooperation in Economic and Social Development.” Accessed 11 November 2015.
<http://www.focac.org/eng/ltada/dyjbzjhy/DOC12009/t606797.htm>

infrastructure, investment and trade. The conference passed the FOCAC Addis Ababa Action Plan (2004–2006), which mapped out a three-year programme for China–Africa cooperation in political, economic, trade and social development as well as other areas. The Chinese government made commitments to open up the market and grant tariff-free market access to some commodities from the least developed countries in Africa.⁶⁸⁰ Both sides agreed to strengthen their consultations on cooperation in natural resources exploration, particularly energy development, and work out modalities to promote the objectives.⁶⁸¹

The conference was the first ministerial conference ever held in Africa, which is of great significance in China–Africa relations. The conference highlighted the cooperation between Chinese and African companies. The first China–Africa Business Conference was held in parallel with the Second Ministerial Conference. Over 500 Chinese and African entrepreneurs attended the conference. There were more than 600 talks. Seventeen Chinese companies signed cooperation agreements with those companies from Africa, covering 20 projects with a total value of 700 million US dollars.⁶⁸²

The Third Ministerial Conference was held in 2006, which was the 50th year since China had started diplomatic relations with African countries. Forty-eight African countries, as well as 24 representatives from international and regional organisations, attended the opening ceremony.⁶⁸³ The conference passed the Declaration of the Beijing Summit of the Forum on China–Africa Cooperation and the FOCAC Beijing Action Plan (2007–2009). These documents aimed to develop a new type of strategic partnership between China and Africa, characterised by the development of political equality and mutual trust, win–win cooperation and cultural exchanges, and, more importantly, with more focus on energy cooperation.

Both sides also agreed to “promote joint exploration and rational exploitation of energy and other resources through diversified forms of cooperation”, let China “help African countries turn their advantages in energy and resources into development strengths”, and “step up scientific and technological cooperation in areas of common interest

⁶⁸⁰ FOCAC Archive. 2004. “Forum on China-Africa Cooperation: Addis Ababa Action Plan.” Accessed 11 November 2015. <http://www.focac.org/eng/ltida/dejbzjhy/DOC22009/>

⁶⁸¹ Ibid.

⁶⁸² Guo, M. & Zhou, S. 2003. “China Africa Business Conference Concluded.” *RENMINRIBAO*, 17.

⁶⁸³ World Affairs Press. 2010. *World Affairs Almanac 2009/2010, 3rd Edition*. World Affairs Press.

including solar energy and mining”.⁶⁸⁴ Five key decisions influencing energy trade that were made by China during the conference were to double its 2006 assistance to Africa by 2009; to provide 3 billion US dollars of preferential loans and 2 billion US dollars of preferential buyer’s credits to Africa in the following three years; to set up a China–Africa development fund which would reach 5 billion US dollars to encourage Chinese companies to invest in Africa and provide support to them; and to cancel debt in the form of all the interest-free government loans that matured at the end of 2005 owed by the heavily indebted poor countries (HIPC)s and the least developed countries (LDCs) in Africa that had diplomatic relations with China.⁶⁸⁵

The second China–Africa Business Conference was held in parallel with the Third Ministerial Conference. Premier Wen Jiabao put forward five suggestions on strengthening China–Africa cooperation, which were to expand the size of China–Africa trade, to increase cooperation in investment, to upgrade assistance to Africa, to promote cooperation between the business communities and to increase assistance to Africa in human resources development. Chinese and African representatives from business communities had dialogue on economic and trade cooperation. The Beijing Summit not only marked the maturity of China–Africa relations, but was also a milestone in China–Africa friendship. Together with the China African Policy proposed in the same year, the above-mentioned steps fully demonstrated the Chinese government’s devotion to developing its new type of strategic partnership with Africa actively and pragmatically.

The Fourth Ministerial Conference of the FOCAC was held in Sharm el-Sheikh and passed the Declaration of Sharm el-Sheikh of the FOCAC and the FOCAC Sharm el-Sheikh Action Plan (2010–2012). The documents proposed eight new measures to strengthen China–Africa cooperation, and at least four of them were related to energy. The first of these four was the establishment of a China–Africa partnership in addressing climate change, to hold senior officials’ consultations with African countries from time to time and enhance cooperation on satellite weather monitoring, development and utilisation of new energy sources, prevention and control of desertification, and urban environmental protection. China decided to build 100 clean-

⁶⁸⁴ FOCAC Archives. 2006. “Forum on China-Africa Cooperation Beijing Action Plan (2007–2009).” Accessed 11 November 2015.

<http://www.focac.org/eng/ltida/dscbjhy/DOC32009/t280369.htm>

⁶⁸⁵ Ibid.

energy projects for Africa covering solar power, bio-gas and small hydropower.⁶⁸⁶ The second of these measures was to enhance cooperation with Africa in science and technology. China proposed to launch a China–Africa science and technology partnership including those in the energy field. China would carry out 100 joint demonstration projects on scientific and technological research, receive 100 African postdoctoral fellows to conduct scientific research in China, and assist these fellows in going back and serving their home countries.⁶⁸⁷ The other two measures were to help Africa build up financing capacity, including in the area of energy, and to open up China’s market to African products.⁶⁸⁸

The Fifth Ministerial Conference of the FOCAC was held in 2012, again in Beijing, and passed the Beijing Declaration of the Fifth Ministerial Conference of the Forum on China–Africa Cooperation and the Beijing Action Plan (2013–2015). The document included more proposals on energy cooperation, including prioritising infrastructure in China–Africa cooperation in energy, supporting joint development and proper use of their energy and resources through enterprises, helping African countries translate their energy and resources strength into development strength, and advancing cooperation in clean energy and renewable resources projects in keeping with the principles of mutual benefit and sustainable development.⁶⁸⁹

All previous FOCAC ministerial conferences and their follow-up actions have had a great impact and deepened bilateral cooperation between China and Africa. The FOCAC functions as a mechanism to promote diplomatic, trade, security and investment relations between China and African countries, institutionalising support for Chinese oil companies that have become the new economic vanguard of China’s diplomatic thrust into the continent. Through the FOCAC process, China has cancelled Africa’s debt, facilitated expanded market access, provided a wide range of new opportunities for positive engagement and expanded their energy cooperation. Based on the data in Table 6.1, following the establishment of the FOCAC in 2000, oil export from Africa to China soared from 17,840,000 tons to approximately 45,790,000 tons in

⁶⁸⁶ FOCAC Archive. 2009. Forum on China-Africa Cooperation Sharm El Sheikh Action Plan (2010–2012).” Accessed 11 November 2015.

<http://www.focac.org/eng/ltada/dsjbjzhj/hywj/t626387.htm>

⁶⁸⁷ Ibid.

⁶⁸⁸ Ibid.

⁶⁸⁹ FOCAC Archive. 2012. “The Fifth Ministerial Conference of the Forum on China-Africa Cooperation Beijing Action Plan (2013-2015).” Accessed 11 November 2015.

<http://www.focac.org/eng/ltada/dwjbzjhys/hywj/t954620.htm>

2005, which is a twofold increase in five years. The top 11 African countries exporting oil to China were Algeria, Egypt, Angola, Equatorial Guinea, Congo, Gabon, Cameroon, Libya, Nigeria, Sudan and Chad.

Table 6.2: The History of FOCAC Conferences

Conference	Year	Paper Issued	Commitments
First Ministerial Conference	2000	Beijing Declaration of the FOCAC; Guideline of China–Africa Cooperation in Economic and Social Development	• Promote political cooperation, create a favourable environment for China–Africa business affiliation and trade; • Provide assistance to African countries; • Give preference to importing African products; • Establish China–Africa Joint Business Council and China– Africa Products Exhibition Centre to promote bilateral trade and to facilitate access for African products to the Chinese market; • Provide special funds to support well-established Chinese enterprises to invest in African countries; • Cancel RMB10 billion in HIPC and LDC debts; and • Send extra medical teams to African countries.
Second Ministerial Conference	2003	FOCAC – Addis Ababa Action Plan (2004–06)	• Enhance cooperation in the development of human resources, train 10,000 African personnel; • Open up market and grant free tariff access for some commodities from the LDCs in Africa; • Strengthen their consultations on cooperation of natural resources exploration, particularly energy development, and work out modalities to promote the objectives; • Sponsor the “Meeting in Beijing”; and • Increase people-to-people exchanges with Africa and hold a China–Africa Youth Festival.
Beijing Summit and Third Ministerial Conference	2006	Declaration of the Beijing Summit of the FOCAC; FOCAC – Beijing Action Plan (2007–09)	• Double the 2006 assistance to Africa by 2009; • Provide US\$3 billion of preferential loans and \$2 billion of preferential buyer's credits; • Set up CADF, the funding to reach \$5 billion to encourage Chinese companies to invest in African countries and support them; • Build an AU conference centre; • Cancel debts owed by HIPCs that matured at the end of 2005; • Increase the number of export items from 190 to over 440, offer zero-tariff treatment to the 30 African LDCs; • Establish three to five trade and economic

			cooperation zones; • Promote joint exploration and rational exploitation of energy and other resources through diversified forms of cooperation; • Help African countries turn their advantages in energy and resources into development strengths; • Step up scientific and technological cooperation in areas of common interest, including agricultural bio-technology, solar energy utilisation, geological survey, mining and development of new medicine; • Train 15,000 African professionals and send 100 senior agricultural experts to Africa. Set up 10 special agricultural centres; • Build 30 hospitals, provide artemisinin (anti-malaria drug) to the value of RMB300 million and build 30 malaria prevention and treatment centres in Africa; • Dispatch youth volunteers to Africa; and • Build 100 rural schools in Africa and increase Chinese scholarships for African students from 2,000 per year to 4,000 per year by 2009.
Fourth Ministerial Conference	2009	Declaration of Sharm el-Sheikh of the FOCAC; FOCAC – Sharm el-Sheikh Action Plan (2010–12)	• Establish a China–Africa partnership to respond to climate change and build 100 clean-energy projects for Africa; • Enhance cooperation with Africa in science and technology: launch a China–Africa science and technology partnership, carry out 100 joint scientific and technological research demonstration projects and accept 100 African postdoctoral fellows to conduct scientific research in China; • Provide \$10 billion concessional loans to African countries and set up a \$1 billion special loan for small and medium African businesses; • Cancel debts associated with interest-free government loans due to mature by the end of 2009; • Give zero-tariff treatment to 95% of products from African LDCs; • Increase Chinese-built agricultural technology demonstration centres in Africa to 20 and send 50 agricultural technology teams to Africa to train 2,000 African agricultural technicians; • Provide medical equipment and anti-malaria equipment worth RMB500 million to hospitals and

			malaria prevention and treatment centres, and train 3,000 doctors and nurses for Africa; • Build 50 China–Africa friendship schools, train 1,500 school principals and teachers, and increase Chinese scholarships to Africa to 5,500 by 2012; and • Launch a China–Africa joint research and exchange programme.
Fifth Ministerial Conference	2012	The Beijing Declaration of the Fifth Ministerial Conference of the FOCAC and the Beijing Action Plan (2013–2015)	• Tap its advantages in railway technology to support Africa's efforts in developing and modernising its railway networks; • Make active use of grants, interest-free loans and concessional loans to help the development of African countries; • Train 30,000 African professionals in various sectors, offer 18,000 government scholarships and take measures to improve the content and quality of the training programmes; • Launch the “science and technology for a better life” campaign in Africa and implement the joint research and technology demonstration projects; • Prioritise infrastructure in China–Africa cooperation and strengthen cooperation in transport, telecommunications, radio and television, water conservancy, electricity, energy and other areas of infrastructure development; • Support joint development and proper use of Africa's energy and resources by enterprises; • Help African countries translate their energy and resources strength into development strength; • Advance cooperation in clean energy and renewable resources projects in keeping with the principles of mutual benefit and sustainable development; • Offer US\$20 billion of credit to African countries; and • Launch cooperation projects in science and technology, as well as information and communication technology, which will further help strengthen Africa's industrialisation processes.

Source:

FOCAC Archive (2000) Programme for China–Africa Cooperation in Economic and Social Development

FOCAC Archive (2004) Forum on China–Africa Cooperation – Addis Ababa Action Plan

FOCAC Archive (2006) Forum on China–Africa Cooperation – Beijing Action Plan (2007–2009)

FOCAC Archive (2009) Forum on China–Africa Cooperation – Sharm el-Sheikh Action Plan (2010–2012)

FOCAC Archive (2012) The Fifth Ministerial Conference of the Forum on China–Africa Cooperation Beijing Action Plan (2013–2015).

6.4 Analysis of paradigm shift of China–Africa energy cooperation

With increasing cooperation between China and Africa in the field of energy, several obvious features and obstacles have appeared. This section analyses these features in relation to the framework of five aspects of energy policy against which change can be measured to answer the question of whether there is a policy paradigm shift from bilateral-based energy diplomacy to multilateral-based global energy governance in China's energy cooperation with Africa. It is notable that Chapter 3 marked 2007 as the watershed year in the development of Chinese energy security and policy. While the period before 2007 can be regarded as the policy paradigm of energy diplomacy relying on bilateralism, the period after can be viewed as the policy paradigm of global energy governance relying on multilateralism.

6.4.1 Policy goal

It is not surprising that in such a broad economic context, Africa has turned into a major energy supplier for China. Of particular interest to the West is China's growing expansion into Africa's energy markets, particularly oil. Nevertheless, with China's rapidly expanding activities in Africa, international concerns over Chinese behaviour are deepening, and calls for Beijing to be a more responsible world power are increasing. Much has been debated about China's growing influence in Africa and around the world. China's rapidly developing ties to Africa are a result of the following combined factors.

As discussed in Section 6.2, China's interests within its relations with Africa regarding resources intimately combine its energy demands and diplomacy towards the continent. In summary, there is one short-term goal and one long-term goal behind Chinese oil diplomacy in Africa. In the short term, China has to secure oil supplies to feed its growing domestic economy, and in the long term, China is aiming to grow as a global player in the international oil market. The need to secure natural resources is the

driving component behind China's foreign policy towards Africa.⁶⁹⁰ China's manufacturing sector has created an enormous demand for aluminium, copper, nickel, iron ore and oil. The dramatic energy investments discussed in Section 6.3.1 are the clearest sign that Africa figures prominently in China's overall energy strategy. David Zweig pointed out that China has linked its foreign policy to its domestic development initiatives via the going-out strategy to an unprecedented level by encouraging state-controlled companies to seek out exploration and supply contracts with commodity-producing countries.⁶⁹¹ An interviewee argues that maximisation of profit is the ultimate purpose of CNOCs' investment in Africa⁶⁹². However, a number of interviewees pointed out that the Sino-African energy relationship is increasingly defined by a combination of economic and political considerations, which can be seen through CNOCs' major investments in acquiring African oil and gas.⁶⁹³

As discussed in previous chapters, China is one of the key global economic players, with a high economic growth rate. Any slowdown or collapse of such a growth regime will have an impact on its domestic political stability. China's economic reform in the 1980s and entry into the WTO in 2002 further opened the door for trade, making Chinese investment abroad easier. Africa, with huge resource potential, has become a major destination for Chinese overseas expansion. Section 1 also points out two factors: that while African developing countries have hopes that their experience with China will be more positive than their past experiences with Western powers, the decreasing influence of Western power in Africa provides room for China to make inroads into the continent. In considering the aforementioned factors, it is important to avoid drawing overly simplistic conclusions regarding China's policies in Africa. While China's going-out strategy is driven primarily by the energy demand that is needed for its own economic development, it does not have a well-planned agenda for taking over the resources in the continent. The fragmented governance of China's energy sector, discussed in Chapter 3, results in the lack of a single and linear Chinese policy for all the African countries. It is also difficult for Chinese energy authorities to control the outcome of its engagement with a rapidly expanding network of African state and private actors who have entered the energy markets.⁶⁹⁴ Some interviewees claim that

⁶⁹⁰ Interview with D. Zweig. 2013. Hong Kong. May 1.

⁶⁹¹ Ibid.

⁶⁹² Interview with an energy division director of CASS. 2013. Beijing. May 5.

⁶⁹³ Interview with senior staff of CICC. 2014. Beijing. Sept. 18; Interview with senior analyst of a CNOC. 2014. Beijing. Oct. 8; Interview with a former manager of a CNOC. 2013. Beijing. March 28. Interview with D. Zweig. 2013. Hong Kong. May 1.

⁶⁹⁴ Interview with D. Zweig. 2013. Hong Kong. May 1.

both the Chinese government and CNOC are still in the learning stage of the going-out strategy and are learning from bad experiences, such as investment in Sudan.⁶⁹⁵

Although the leadership of CNOC has a close connection with the Chinese government, some analysts and US policymakers caution against conflating China's foreign policy goals with the actions of its energy firms. James Swan, the Deputy Assistant Secretary of State for African Affairs, noted in a June 2008 Congressional testimony: "There are often exaggerated charges that Chinese firms' activities or investment decisions are coordinated by the Chinese government as some sort of strategic gambit in the high-stakes game of global energy security. In reality, Chinese firms compete for profitable projects not only with more technologically and politically savvy international firms, but also with each other."⁶⁹⁶ It is reasonable that the Beijing authority may have an overall strategic concept about its role in Africa, but China is not a monolithic polity. CNOCs are, in some cases, politically stronger than the government departments responsible for regulating them, given that China's overseeing agencies, such as the Ministry of Foreign Affairs and the Ministry of Commerce, do not always have authority over Chinese corporations overseas.⁶⁹⁷ In some cases, for example China's pipeline construction in Sudan, the leadership of CNOCs even criticised officers from the Ministry of Foreign Affairs for not offering swift diplomatic assistance in the region. Meanwhile, CNOCs are often criticised for unfair labour practices, human rights problems and poor management in their energy business in Africa, and these difficult situations reflect that in the energy sector, the Beijing authority lacks the capability to control these powerful companies so that they remain aligned with the official strategy in Africa of a win-win situation.

The discussion in Section 6.2.2 highlights that China's energy diplomacy towards Africa is an evolving strategy. Moreover, due to the lack of a linear African policy, a pan-African approach was not possible for China until 2006, when the Chinese government issued the China African Policy. The document claims that "China is ready to enhance consultation and coordination with Africa within multilateral trade systems and financial institutions" and "will hold regular/irregular consular consultations with African countries ... in bilateral or multilateral consular relations in order to improve

⁶⁹⁵ Interview with a former manager of a CNOC. 2013. Beijing. March 28; May 27; Interview with an industrial economist at CASS. 2013. Beijing. May 5.

⁶⁹⁶ Swan, J. 2008. "Congressional Testimony: China in Africa: Implications for U.S. Policy. Accessed 11 November 2015.

<http://www.foreign.senate.gov/imo/media/doc/ChristensenTestimony080604a.pdf>

⁶⁹⁷ Interview with an industrial economist at CASS. 2013. Beijing. May 5.

understanding and expand cooperation”.⁶⁹⁸ Since energy resources are regarded as a key component in Sino-African trade, the above claims laid down the multilateral foundation for both sides to “encourage and support competent Chinese enterprises to cooperate with African nations in various ways on the basis of the principle of mutual benefit and common development, to develop and exploit rationally their resources”⁶⁹⁹. This also echoes the analysis in Chapter 3 that 2007 was the watershed for China’s energy strategy in shifting from a bilateral to a multilateral approach.

6.4.2 Policy instruments

In order to achieve its policy goal on energy security regarding Africa, China has adopted a series of instruments, including a variety of joint projects and energy diplomacy on both bilateral and multilateral levels. These instruments are complementary to each other and reveal the change in Chinese policy instruments in Africa. Based on the existing energy cooperation between China and African countries listed in Section 6.3.1 and counter-examination with former overseas staffs from CNOC,⁷⁰⁰ the major cooperation mechanisms of the two sides are resource-backed development loans, special trade and economic cooperation zones, and aids based on non-interference policy.

Resource-backed development loans

Resource-backed development loans offered by China to African countries are an initiative to exchange energy resources for loans. In the late 1970s, China leveraged its natural resources, including oil and coal, to attract loans from Japan, together with technology and infrastructure for railway, port and hydropower projects, and power grids. It did not qualify as official foreign aid but did help development. China applied the same model in its energy cooperation with African countries and concluded similar deals in which China offered loans or infrastructure construction services in exchange for natural resources.⁷⁰¹ For example, under this initiative, Chinese companies have built roads, railways, hospitals and schools for Angola; offered financial support for electricity projects in Nigeria; and built one hydropower project for Congo. Most of these loans are issued by the Export-Import Bank of China, a Chinese export credit agency. Poor but resource-rich countries often fall under the “energy curse”, but

⁶⁹⁸ PRC State Council. 2006. “China’s African Policy.” Accessed 11 November 2015.

http://www.gov.cn/misc/2006-01/12/content_156509.htm

⁶⁹⁹ Ibid.

⁷⁰⁰ Interview with overseas staff of a CNOC. 2014. Beijing. Sept. 3.

⁷⁰¹ Ibid.

resource-backed development loans can function as an “agency of restraint” to make sure the wealth from natural resources is spent on the development of the country.⁷⁰²

Special trade and economic cooperation zones

China has built seven special trade and economic cooperation zones in African countries, including Nigeria, Egypt, Ethiopia, Mauritius, Zambia and Algeria.⁷⁰³ Building special trade and economic cooperation zones is an initiative which can promote industrialisation and employment in Africa’s least developed countries.⁷⁰⁴ Special economic zones were an important feature of China’s early development and are designed to be sustainable in the long term. Chinese companies have been setting up businesses or factories in Africa, but a project-based approach is not sustainable for development because the Chinese company might leave if the benefits decline or the host governments lose interest.⁷⁰⁵ In contrast, in a special trade and economic cooperation zone, Chinese companies have to take responsibility for both designing the zone and managing it as their own business.⁷⁰⁶ A Chinese-initiated special trade and economic zone indicates a long-term local presence as strategic positioning for the future.

Aid based on non-interference policy

China is willing to get into “troubled zones” not only with bold investment, but also with aid packages in exchange for energy. Aid from China can be attractive for developing countries because China attaches no conditions, in contrast with aid from Western countries or institutions like the World Bank, which is often tied up with economic or political penalties as well as promotion of democracy or human rights concerns.⁷⁰⁷ Chinese loan policies also tend to be less transparent, and hence recipients may have more flexibility in using such loans. As an African newspaper put it: “Chinese aid is as likely to subsidize profligate and/or dictatorial governments as it is to advance the welfare of ordinary Africans.”⁷⁰⁸ The contradiction was well illustrated in 2006 when

⁷⁰² Ibid.

⁷⁰³ Brautigam, D. & Xiaoyang, T. 2011. “China’s Investment in Special Economic Zones in Africa.” *Special Economic Zones* 69.

⁷⁰⁴ Interview with former Counselor of a Chinese embassy to an African country. 2015. Beijing. May 20.

⁷⁰⁵ Ibid.

⁷⁰⁶ Tang, X. 2010. “A Brief Analysis of China’s Economic and Trade Cooperation Zones in Africa.” *West Asia and Africa* 11: 17-22.

⁷⁰⁷ Interview with I. Taylor. 2012. London. Jan 18.

⁷⁰⁸ Laurence, P. 2006. “Chinese Aid Comes at a Price.” *The Star Newspaper*, June 4, p.8.

China attempted to secure an important oil exploration agreement, and, on the same day, the Dutch government suspended almost 150 million US dollars of aid to Kenya because of concerns over corruption.⁷⁰⁹ Moreover, linked with aid, China can promote economic projects or infrastructure projects in areas of Africa which other governments perceive to be risky or unfeasible.

The above three initiatives are crucial to China–Africa cooperation, as they intensify it and result in a structural leap, if not transformation, in how China approaches Africa regarding energy issues. As discussed in Section 6.2, for over half a century, China and African countries have had close political and economic ties, with frequent leadership-level exchanges, a massive amount of investment and intensifying cooperation. The bilateral trade and economic cooperation between China and Africa has grown rapidly, and cooperation has expanded in a variety of fields relevant to policy, economy, science, education, culture, public health, social affairs, and peace and security.⁷¹⁰ Therefore, both parties have attempted to look for “redoubled cooperation” to deal with international or regional affairs, having adopted a policy document aimed at strengthening their ties.⁷¹¹ Therefore, China issued the China African Policy in 2006, which put Sino-African cooperation forward in a multilateral way. The above initiative has laid down a solid foundation which has transformed the policy instrument from bilateral to multilateral.

6.4.3 Physical structure of the energy policy

The FOCAC is the lynchpin of Sino-African relations. Driven by a joint ministerial conference held every three years since 2000, the FOCAC emphasises the planned cultivation of a long-term relationship based on solidarity and cooperation. This platform has strengthened Sino-African cooperation in all spheres. Through the FOCAC, China has facilitated and expanded market access, promoted a variety of engagement and cancelled Africa’s debt, providing a wide range of new opportunities for positive engagement. The FOCAC has provided China with a platform to strengthen its economic interests as well as offering humanitarian aid in Africa. As discussed in Section 3.3, although China is well aware that Africa is rich with resources, the main driver of the FOCAC is not linked to energy. Instead, the key initiative of the FOCAC is

⁷⁰⁹ BBC News. 2006. “China’s Hu Boosts Kenyan Business.” *BBC News Online*, 28 Apr.

Accessed 11 November 2015. <http://news.bbc.co.uk/2/hi/africa/4953588.stm>

⁷¹⁰ FOCAC Archives. 2006. “China Looking for Redoubled Cooperation with Africa.” Accessed 11 November 2015. <http://www.focac.org/eng/zt/zgdfzzcwj/t231169.htm>
<http://www.focac.org/eng/zt/zgdfzzcwj/t231169.htm>

⁷¹¹ Ibid.

to do with the overall development of the developing world, the tie between developing countries and the promotion of a just and equitable new international order. It functions as a regular platform for meetings and exchange between leaders from China and Africa.

The engagement of the FOCAC is multifaceted, encapsulating mainly trade and related economic ties. Therefore, although the original initiative of FOCAC was not about energy, it is closely related to energy because China has increasing energy trade and investment in Africa. China will promote effective measures to facilitate market access and duty-free treatment of commodities, expanding and balancing bilateral trade and optimising trade structure. It also intends to settle trade disputes via bilateral and multilateral means in the FOCAC. Another key theme in the FOCAC conference concerns the multilateral consultation and coordination mechanism with which China and Africa can deal with practical situations. As commodities traded between China and African countries, oil, gas and other minerals are also promoted via the FOCAC.

China's overseas investment in Africa has been protected by bilateral agreements, but when trade between the two increased tremendously within a short period, China realised that the bilateral approach was not sufficient or effective enough to protect its investment. Moreover, in order to expand its cooperation with Africa, China needed a broader platform. Together with the fact that China's energy investment in Africa was increasing tremendously in the 2000s, China proposed in both its China African Policy and in the FOCAC conference to manage energy issues and initiate energy projects in a multilateral way. As well as establishing a multilateral trade system and dispute settlement which includes oil investment, China also extended its energy cooperation to clean-energy cooperation. As listed in Section 6.3.3.1, China has decided to be involved in joint clean-energy projects and research covering solar power, bio-gas and small hydropower⁷¹² with African countries. Meanwhile, under the framework of the FOCAC, China has steadily been offering aid to Africa which has also been linked to new energy. In the joint clean-energy projects, China cooperates with 11 African countries on new energy programmes to help them deal with the multiple effects of climate change. As a developing region, Africa needs funding as well as technology. China's aid in new energy functions as a package covering technology, funding, management, knowledge, etc.

⁷¹² FOCAC Archive. 2009. op. cit.

It is notable that since China lacks confidence in the capacity of international institutions led by the West to protect its national interests, it is very cautious about joining major international energy frameworks. Such conservative behaviour reflects its scepticism towards international systems and insistence on state sovereignty.⁷¹³ In this sense, the FOCAC can be more attractive for China, as it is an international platform designed and led by developing countries. Hosting the FOCAC in Beijing every six years is also very important for the cautious Chinese authorities. Without the ideological belonging to and physical controlling of the entity, China will not see any advantage in participating in an international organisation.⁷¹⁴ In short, including energy cooperation in the framework of the FOCAC indicates an expansion in the physical structure of China's energy policy towards multilateralism in Africa.

6.4.4 Conclusion: No profound change towards multilateralism

The previous sections in this chapter explained the energy cooperation mechanism between China and Africa. This final section explores whether there was a profound change in China's energy strategy towards Africa from bilateral to multilateral during the era of Hu Jintao. Section 6.2 and Section 6.4.1 have explained the Chinese understanding of energy security and the rationale of its oil diplomacy towards Africa. Section 6.3 and Section 6.4.2 have also illustrated the bilateral channel of Sino-African energy cooperation, particularly in the oil and gas sectors. The expansion of this cooperation laid down the important foundation for multilateral cooperation. Moreover, Section 6.3.3 and Section 6.4.3 have explained that both sides have made use of a physical body, the FOCAC, to facilitate multilateral trade activities that push Sino-African energy cooperation forward.

However, when multilateral cooperation like the FOCAC has been implemented, it has not always been effective. There are three elements which are important in understanding China's attitude towards multilateral cooperation with Africa. First, while the China African Policy issued by China in 2006 is the most complete and systematic outline of China's policy towards Africa, the FOCAC Action Plans list follow-up plans to facilitate cooperation between China and Africa. These documents, particularly the ones issued in and after 2006, introduce the objectives and measures to be taken under the policy and address multilateral cooperation between China and Africa covering various fields. However, the documents do not elaborate on the methods or

⁷¹³ Schill, S.W. 2007. "Tearing Down the Great Wall: the New Generation Investment Treaties of the People's Republic of China." *Journal of International and Comparative Law* 73: 82.

⁷¹⁴ Interview with Paik Keun-wook. 2014. London. July 29.

scale of the cooperation, and the duration of the cooperation is not set, nor is the department in charge introduced. Moreover, the FOCAC lacks a well-organised structure, and its legitimate status and influence are limited. In addition, the policies originating from the forum often have difficulty in being implemented. In other words, although there is new physical governance established for multilateral cooperation, the degree of appropriation and legitimacy of new ideas regarding multilateralism is low.

Second, as discussed in previous sections, China has established trade relations with over 50 countries and regions in Africa and has signed bilateral trade agreements with over 40 countries. Since 2005, China has granted tariff-free treatment to the 29 least developed African countries on 190 types of commodity. These mutually beneficial agreements and policies have undoubtedly contributed to China–Africa trade relations. In the meantime, an increasing number of energy projects have been included in the mechanism of the FOCAC. However, these agreements and proposals were signed under the guidance of governments rather than under a legal framework between the governments. China has not yet introduced legal regulations concerning China–Africa economic and trade relations. Therefore, FOCAC lacks the legal basis to ensure China’s energy investment and energy security in Africa.

Third, member states’ perception of the FOCAC is complicated, and China’s ultimate goal in the FOCAC has strong bilateral characteristics. The background of the China–Africa relationship provides a unique opportunity for China. The influence of Western countries in Africa has been weakening, and China is in a better ideological position given its rich experience in “South-South cooperation” with Africa. With its present rising international status, China is in a favourable position to put forward energy investment, set policy agendas and formulate new system rules, by promoting multilateral cooperation with African countries. However, since China and African countries proposed multilateral cooperation in 2006, they have had many ideas about what methods and practices to employ in such cooperation. While some advocate keeping the country-to-country bilateral model, others support multilateral cooperation. The former have little interest in international multilateral projects.⁷¹⁵ As discussed, China considers bilateral cooperation arrangement to be the most effective mechanism. As a result, although the multilateral diplomacy carried out through the FOCAC provides China with an additional promising channel through which to develop its oil diplomacy, China tends to utilise the FOCAC as a platform to strengthen the

⁷¹⁵ Interview with an industrial economist at CASS. 2013. Beijing. May 5.

bilateral relations between China and African countries rather than to shift its focus to multilateral cooperation.

Although there were expanding cooperation projects and physical platforms in multilateral forms in the structure of the FOCAC, particularly after 2006, the extent of change was limited. The bilateral approach remained the key form of cooperation, so the Chinese approach was far from one of global governance. As a number of Chinese experts have pointed out, the multilateral mechanism in the FOCAC was ineffective, and China lacked the willingness to make a change, using the platform to strengthen existing bilateral ties.

First order change and second order change in policy instruments and physical governance structure did occur in energy cooperation between China and Africa, but third order change in ideas and policy goals was not obvious. Therefore, the degree of change in China–Africa energy cooperation during the period of President Hu Jintao was not great enough to be claimed as a profound break from the past. Looking at the long-term prospects for economic globalisation and regional integration trends, multilateral energy cooperation between countries has become increasingly frequent, but progress will take decades, and is likely to be an extension of the bilateral mechanism instead of a profound change. This chapter concludes that China's energy security strategy in Africa during the era of Hu Jintao did not undergo a profound change from a paradigm of bilateral energy diplomacy to a paradigm of multilateral energy cooperation.

6.5 Summary

This chapter reviews the China–Africa energy relationship and analyses whether China's energy strategy towards the region is moving towards global energy governance. Key mechanisms in China–Africa energy cooperation include the investment of CNOC in Africa, official humanitarian aid and FOCAC. In terms of instruments, resource-backed development loans, special trade and economic cooperation zones, and a non-interference aid policy facilitate China–Africa energy cooperation. China and African countries also support their energy cooperation bilaterally and multilaterally via platforms like FOCAC. While China–Africa energy cooperation is strongly characterised by oil diplomacy, including energy cooperation in the framework of the FOCAC, there are strong indicators of an expansion of the physical structure of China–Africa energy cooperation towards multilateralism. Such an expansion echoes both the pan-Africa strategy in the 2006 China–Africa Policy and the

2007 watershed of China's energy strategy moving from bilateral to multilateral. However, multilateral cooperation via FOCAC was not always effective. Instead, China's ultimate goal in the FOCAC had strong bilateral characteristics. Although multilateralism appeared in new policy instruments and goals, it was not a key element in the new physical governance structure and ideas of China's top leaders. Therefore, this chapter concludes that energy cooperation between China and Africa during Hu Jintao's era did not undergo a profound change from the paradigm of energy diplomacy to the paradigm of global energy governance.

Chapter 7 – Conclusion

7.1 Introduction

This thesis has verified the following hypothesis: *Despite calls by Chinese authorities for good global energy governance, China's energy security during Hu Jintao's era did not undergo a paradigm shift away from the policy paradigm of energy diplomacy to a policy paradigm of global energy governance.* To a large extent, this is due to a lack of change in ideas regarding mechanisms of energy cooperation. China relies on bilateral cooperation plus multilateral hedging in achieving its goal(s) in energy security. This thesis has answered the three questions identified in the first chapter:

1. What are the rationales underpinning the two policy paradigms of China's energy security – the policy paradigm of energy diplomacy and the policy paradigm of global energy governance – during Hu Jintao's era?
2. Is there a profound change in China's energy security? Can the degree of change in energy policy represent a break from the past?
3. What are the reasons and causes of the policy transition, or lack thereof, in China's energy security?

Although energy is one of the key issues in academia, Chapter 2 pointed out that limited attention has been paid to energy policy transition. Applying a revised version of Hall's theory of paradigm shift, this thesis has studied energy policy transition in a systematic way, providing a more dynamic account of how energy security is constructed and how energy policy is transformed over time. Chapters 2 and 3 argued that although a large body of research has paid attention to how well China's overseas energy investment could fit in the liberal system, less empirical research has been conducted to examine the rationale for and mechanisms of China's energy security. An examination of possible transitions of the current Chinese energy policy could enrich the literature on international energy systems, and hence this issue needs to be addressed seriously. The original data about China's energy security collected in this thesis offers an observation of the Chinese mindset from a Chinese perspective, which is crucial to understanding China's international behaviour. The findings in this thesis are understood to have filled the above gaps.

Furthermore, this thesis has conducted three cases studies to examine China's international energy cooperation with Central Asia, the EU and Africa. By studying

these cases alongside the energy policymaking of China, this thesis improves our understanding of the rationale for and mechanisms of China's international energy cooperation and why there is no paradigm shift away from the "going out" energy diplomacy paradigm to the global energy governance paradigm, in spite of calls for global energy governance among Chinese authorities.

7.2 Five levels of policy paradigm analysis

This thesis has applied the idea-goal-instrument-physical structure framework, based on Hall's concept of policy paradigm shift, to analyse whether there was any change of ideas regarding Chinese energy security. In this framework, ideas of political elites, rationale for policy goals, mechanisms of policy instruments and physical structure of energy governance are studied to analyse change.

As discussed in Chapter 2, a "policy paradigm shift" is considered to be a change in the ideas and standards associated with policy, resulting in "a dramatic departure in policy goals, based on a new theoretical and ideological framework"⁷¹⁶. There are three kinds of change, namely 'first order', 'second order' and 'third order' change⁷¹⁷. First order change refers to changes in the basic instruments of policy. Second order change refers to changes in the basic techniques in policy goals. Third order change refers to changes in the ideas and goals informing policy; its legitimacy and appropriateness can be reflected in related physical governance structures. First- and second order change are considered as mere "process(es) that adjust policy without challenging the overall terms of a given policy paradigm"⁷¹⁸. In contrast, third order change is the key to policy paradigm shifts, as it is a change in the ideas and rationales behind the policy, with adjustment in policy goals and techniques in response to new perspectives and past experiences.

Chapter 2 points out that a policy paradigm shift could occur when there is a crisis representing shock or insecurity and to which the authorities decisively intervene. The understanding of crisis in this thesis refers not only to an abrupt change in external circumstance, new evidence in science or innovation of knowledge, but a moment that

⁷¹⁶ Coleman, W., Skogstad, G. and Atkinson, M. 1997. "Paradigm Shifts and Policy Networks: Cumulative Change in Agriculture", *Journal of Public Policy*, 16(3): 273-301.

⁷¹⁷ Hall, Peter. 1993. "Policy Paradigms, Social Learning, and the State: The Case of Economic Policymaking in Britain", *Comparative Politics*, 25(3): 278-279.

⁷¹⁸ Ibid.

could lead to “decisive intervention”⁷¹⁹. Triggered by crisis, a policy paradigm shift occurs when “the historical context changes to a sufficient degree making it increasingly hard to reconcile the existing mindset of policy-makers with the evidence leading eventually to new objectives and new policy instruments”⁷²⁰. In the context of energy, the Fukushima incident and the abrupt cut of the Russian gas supply to Europe are considered “crises” that resulted in policy paradigm shifts. It is notable that the processes of change are not necessarily linear or clean cut, but could be messy and contingent. The change in a policy paradigm shift could be revolutionary or evolutionary depending on the continuity, pace and degree of change. The shift could take place over a period of time, and an evolutionary change could lead to a revolutionary change.

Taking the case of Central Asia as an example, this thesis has compared two policy paradigms of China’s energy security approach towards Central Asia. More explicitly, this thesis has studied the ideas, policy goals, policy instruments and physical governance structures in China’s energy security in Central Asia in two different paradigms and measured change against these five levels of variables. Policy instruments of China’s energy security in Central Asia have been studied to see if there has been first and second order change. Ideas of Chinese authorities on energy security in Central Asia have been interpreted to test if there has been a third order change. Changes in physical governance structure have also been observed to examine the legitimacy and appropriateness of the ideas. In order to claim a paradigm shift, profound changes from previous policy paradigms are expected to be seen at each level, especially the level of ideas, because a third order change is crucial. In other words, if changes are found in policy instruments and physical energy governance, but not in ideas, then a paradigm shift cannot be claimed.

It is notable that the existence of a particular bilateral approach in the global energy governance paradigm is normal practice and hence the presence of bilateral behaviour does not represent sufficient evidence that there has not been a paradigm change. The ideas of Chinese authorities on global energy governance and multilateral energy cooperation are more important in the analysis of policy paradigm shifts. Therefore, if evidence of a multilateral approach is obvious in the policy paradigm of global energy

⁷¹⁹ Hay, Colin. 2001. “The ‘Crisis’ of Keynesianism and the Rise of Neoliberalism in Britain: an Ideational Institutional Approach” in *The Rise of Neoliberalism and Institutional Analysis* edited by John L. Campbell and Ove K. Pedersen eds. Princeton: Princeton University Press.

⁷²⁰ Helm, D. 2007 “The New Energy Paradigm”, in *The New Energy Paradigm* edited by D. Helm. Oxford: Oxford University Press, pp. 9–35. p. 9

governance, the existence of a bilateral approach does not negate the possibility that there has been a profound change in policy unless it remains a key approach.

7.3 Chinese energy security and energy policy paradigms

This thesis has offered a comprehensive study of Chinese energy security to improve our understanding of its historical background, governing structure, key actors and strategy. We can also better understand the energy policymaking process and rationale of Chinese authorities. The thesis emphasised the role of ideas and non-material interests in shaping Chinese energy security in the international system and, more importantly, in influencing changes in Chinese international energy behaviour. Before looking into China's energy security, this thesis also discussed the concept of energy security.

Scholars discuss energy security – including geopolitics, economy and science – in different dimensions and interdisciplinarily. In this thesis, energy security refers to “the availability of energy at all times in various forms, in sufficient quantities, and at affordable prices”⁷²¹. The IEA points out that there are five “basic strategies” for enhancing energy security: “developing domestic resources to the maximum possible, creating strategic reserves, seeking foreign technology and investment, establishing reliable and secure oil trading channels, and making strategic investments in upstream production facilities abroad”⁷²². The actual practice of the above strategies inevitably relies on international cooperation, which could be in the form of energy diplomacy (a bilateral approach) or global energy governance (a multilateral approach).

There has been a long debate over whether China's international energy behaviour would move from bilateralism to multilateralism. This distinction is not only about the number of actors involved, but also about the institutions and principles in policy coordination. Such discussion also underpins the theme of this thesis. In order to answer this question, this thesis has enriched the existing literature of Chinese energy

⁷²¹ UNDP. 2000. “World Energy Assessment: Energy and the Challenge of Sustainability”: Page 113. See also, Bielecki, J. 2002. “Energy security: is the wolf at the door?” *The Quarterly Review of Economics and Finance*, 42(2); Yergin, D. 1988. “Energy security in the 1990s.” *Foreign Affairs*, 67(1):110-132; IEA. 2007. *World Energy Outlook 2007: China and India insights*. OECD/IEA, Paris; Robert, K. 1975. *The United States and International Oil*, New York: Praeger Publisher.

⁷²² IEA. 2005. *China's Worldwide Quest for Energy Security*. p.74

security with a comprehensive study of its historical background, governance structure, key actors and strategy.

This thesis has pointed out that China's energy governance has a fragmented structure because of constant changes, overlapping duties, decentralisation and bureaucratic ineffectiveness. Chinese authorities have been trying to establish a suitable and effective governance structure. However, repeated structural reformations have had little effect. Instead, constant change has resulted in instability and inconsistency in governance. China's energy administration system is facing serious problems of overlapping duties, decentralisation and bureaucratic ineffectiveness, because more than 20 ministries, government agencies and national oil companies are involved in the governance of the sector. Policy planning, decision-making, instruction delivery and operations in the Chinese energy sector are processed ineffectively.

As discussed in Chapter 3, Chinese energy security has been traditionally associated with strategic and geopolitical considerations, with oil security as an important component, because of China's increasing reliance on "foreign oil" and desire for self-sufficiency throughout its history. Since 1949, three concepts have dominated the rationales of Chinese energy security in different periods: the mentality of self-reliance (1949 to 1992), the energy supply-oriented concept (1993 to 2002) and the concept of source opening up and flow regulating concept (2002 to present).

In the 1950s and 1960s, China relied heavily on imported oil. Chinese authorities were anxious about supply interruptions, such as oil trade embargoes or sudden supply cuts; hence, they developed a self-sufficiency-oriented energy security strategy. In the next few decades, supply security, particularly against political interruption by hostile powers, remained the core concern in China's energy security.

When China became a net oil importer in 1993, Chinese authorities put forward a goal to "ensure a stable long-term oil supply"⁷²³. Since increasing domestic production failed to stop the growing dependence on foreign oil, China continued to import oil. In alignment with China's going-out strategy, Chinese energy companies made huge investments overseas.

In the 2000s, Chinese energy security was facing the fierce energy competition among major countries, the Chinese-energy-threat discourse in the Western world and the

⁷²³ Chang, Felix K. 2001. "Chinese Energy and Asian Security," *Orbis*, 145(2). p.233

strategic constraints to Chinese overseas energy investment. Limits on the energy supply were caused by instability in energy supply regions in China. What concerned Chinese authorities were not just geopolitical factors, but also the means by which China could be integrated into the global energy cooperation system. Chinese energy policy was expanded to include elements such as supply diversification, strategic oil reserves, energy efficiency, environmentally friendly considerations and international cooperation in energy policy planning, indicating that the Chinese authorities were adopting a more comprehensive understanding of energy security. From 2003, source opening up and flow regulating became the core concept in energy security. These concepts laid out the ideological foundation of energy security during the Hu Jintao era.

According to Chapter 3, a common characteristic throughout the above periods is that international energy cooperation was adopted as a key mechanism to enhance energy security. Since the late 1990s, China's overseas energy approach has been dominated by the going-out strategy. China's international interactions with both developing and developed countries in accessing energy resources include strengthening cooperation with countries that produce, transport and consume oil.

In the analysis of the international approaches of Chinese energy security during the Hu Jintao era, this thesis has considered two policy paradigms based on different rationales, namely the paradigm of energy diplomacy and the paradigm of global energy governance. The policy paradigm of energy diplomacy is underpinned by the strategy of "going out and bringing in" via bilateral energy cooperation. In contrast, the policy paradigm of global energy governance is underpinned by the Chinese emphasis on multilateral energy cooperation that leads to global energy governance.

2007 has been identified as the turning point between these two paradigms. While the period 2003 to 2006 involved the policy paradigm of energy diplomacy, 2007 to early 2013 saw a shift to the policy paradigm of global energy governance. Discussion of multilateral energy cooperation as a means to enhance energy security first appeared in official policy documents in the White Paper on China's Diplomacy 2007 and in China's Energy Policy (2007) White Paper. It was addressed again in the White Paper on China's Diplomacy 2008, and the concept of global energy governance was emphasised in China's Energy Policy (2012) White Paper. Chinese top leaders called for global energy governance publicly in 2011 and 2012. China has also modified its policy instrument from a traditional bilateral approach to a multilateral one. These acts reflect how Chinese authorities have changed their understanding of energy and energy security towards multilateral energy cooperation and global energy governance.

Chinese authorities have a complicated attitude towards multilateral energy cooperation and global energy governance, although they call for its adoption. As analysis in this thesis has shown, Chinese authorities have a strong preference for a bilateral approach in international energy cooperation. 53 interviewees agreed that, if conditions allow, in general, China prefers a bilateral approach to a multilateral one in energy cooperation. Another common viewpoint shared in Chinese academia and among the political elite is that China should follow its own way instead of the Western one in how it participates in the international community. Since the current institutions in global energy governance are considered by Chinese authorities to be led by the West, China appears hesitant in joining them. Moreover, Chinese authorities consider that it would be fine for China not to join international energy organisations such as the IEA, as there is no urgent need.

Chinese authorities consider China to be accountable for its contributions to global energy governance. A few interviewees emphasised the importance of China's participation in global energy governance and the need to learn to play the game of multilateralism. Instead of joining an existing international institution, Chinese authorities are keener to establish their own international or regional energy institution in which China could set its own rules. The findings in this thesis also indicate that there is a lack of common consensus on global energy governance among Chinese academia and energy elites because of limited knowledge; global energy governance is a relatively new idea in the country.

There is a gap in knowledge between how Western academia and Chinese energy elites understand multilateral cooperation. Almost 17 out of the 53 interviewees from China's government, energy industry and think tanks misunderstood multilateralism, presuming that participation in more than one international bilateral cooperation agreement was equivalent to multilateral cooperation. This misperception among Chinese energy elites is considered to be an important finding that could help explain China's unfamiliarity with global energy governance, its ineffective multilateral approach and the different expectations held by China and the West.

Chinese authorities' complicated attitudes towards global energy governance raise the question of whether ideological change has occurred in China's energy policy in different paradigms. This thesis continued the discussion with three empirical case studies on China's energy security in Central Asia, the EU and Africa.

7.4 Case studies of China's international energy cooperation

7.4.1 1 Case study 1: China–Central Asia energy cooperation

The first case study analysed in this thesis, Chinese energy security towards Central Asia, confirms the hypothesis already outlined. China–Central Asia energy cooperation started in the early 1990s. China has a strong interest in energy cooperation with Central Asia mainly because of the rich oil and gas resources in the region and the need to diversify its energy supply. There is a solid foundation for a China–Central Asia energy relationship that can be viewed through the broader lens of the China–Central Asia strategic relationship.

The policy goal of China's energy security in Central Asia during Hu Jintao's era was multileveled, and both policy paradigms shared the same goal. Economically, Central Asia is one of China's key economic cooperation partners, and oil and gas business could play an important role in this. Politically, China is concerned with regional security issues such as terrorism, separatism and extremism. In general, China's foreign policy in Central Asia aims to create an "amicable, secure and prosperous neighbourhood"⁷²⁴ and develop friendly bilateral relations with the Central Asian countries. Energy security has become a key goal in China's relations with Central Asia, with an emphasis on the establishment of political, economic and infrastructure links with the Central Asian countries. More importantly, Chinese authorities consider Central Asian oil and gas to be helpful for China in facing its energy security challenges. China needs Central Asian oil and gas to maintain the sustainable development of the economy and to diversify its supply sources.

Key instruments of the above policy goals during Hu Jintao's era included energy diplomacy joint energy projects and SCO, and there were obvious changes from bilateral to multilateral mechanisms in the instruments. China's top leaders attempted to promote China–Central Asia energy cooperation via diplomatic means, such as strengthening relations with Central Asian countries and supporting the activities of CNOCs in Central Asia. Chinese diplomatic support was carried out in at least four ways, including visits by top leaders, strong bilateral economic and trade ties, intergovernmental agreements with a legal basis, and multilateral platforms. The first three ways are mainly bilateral and appear in both policy paradigms. In contrast, the fourth refers to SCO and appears mainly in the policy paradigm of global energy

⁷²⁴ LI, Zhaoxing. 2005. "Peace, Development and Cooperation - Banner for China's Diplomacy in the New Era", *Chinese Journal of International Law* 4(2): 677–683

governance. Such differences indicate that, in the second policy paradigm, China modified its policy instrument by handling China–Central Asia energy cooperation via SCO, a multilateral platform, instead of relying only on bilateralism.

Chinese energy diplomacy is believed to have renewed the momentum of energy cooperation with Central Asia, particularly through another policy instrument: joint energy projects. Similar to the broader China–Central Asia cooperation, energy cooperation between the two sides is hindered by the lack of adequate infrastructure and by trade barriers. Yet, under the support of both governments, China’s energy cooperation with Central Asia proceeded with a series of projects including equity mergers and acquisitions, oil and gas pipeline networks, and clean-energy investment. Major cooperation mechanisms in these projects include the production sharing model, the joint management model and the technology service model. These three cooperation models are crucial in tackling obstacles in China–Central Asia cooperation. They reduce trade barriers regarding taxes, provide technological development for the infrastructure linking the two sides, such as transportation pipelines, and facilitate cooperation between both parties in joint energy management in the region.

Among these projects, the Central Asia–China transnational pipeline, announced in 2007, is considered to be one of the greatest achievements in China–Central Asia energy cooperation. This transnational gas pipeline is China’s first and largest cross-border gas pipeline. The initial plan was a gas pipeline between China and Kazakhstan, but the involvement of Turkmenistan and Uzbekistan in 2007 expanded the pipeline project from a bilateral to a multilateral arrangement.

By exporting gas from Turkmenistan to China, the pipeline physically connects four countries: Turkmenistan, Uzbekistan, Kazakhstan and China. This transnational gas pipeline project set the foundation for a multilateral instrument between China and the Central Asian countries, because the need for transnational transit management encouraged China to look into better energy governance from a multilateral approach. The possibility of working multilaterally is further reflected by the attention paid by Chinese authorities to the potential for a multilateral regulatory platform like ECT in protecting CNOCs’ interests in the region. However, the materialisation of such an agenda was believed to be beyond Hu Jintao’s reach, limiting the multilateral impact of the transnational pipeline, which ended in early 2013.

Physical governance structure change is observed in how China enhances China–Central Asia energy cooperation via SCO in both policy paradigms. The findings in this

thesis indicate that although there was a new physical governance structure in China–Central Asia energy cooperation during Hu Jintao’s era, the degree of appropriation and legitimacy of the idea of multilateralism was low.

SCO was established by China, Russia and Central Asian countries in 2001 to tackle security issues including terrorism, separatism and extremism in Central Asia. In the mid-2000s, SCO started to pay more attention to economic cooperation, including the energy business, and drew the attention of Chinese energy authorities. Eventually, SCO was developed as a multilateral energy platform to facilitate energy cooperation in the region. Since 2003, over 100 energy projects have been placed under the multilateral framework of SCO, with a series of agreements regarding multilateral energy cooperation being signed. It appeared that SCO offered an ideal multilateral platform for China to enhance China–Central Asia energy cooperation.

Yet it is notable that China had limited involvement in those projects. More importantly, although those projects were placed under SCO, they were conducted bilaterally. In other words, they did not really belong to SCO’s multilateral framework. In the policy paradigm of global energy governance, the construction of a Central Asia–China pipeline plus Russia’s proposal of establishing an “Energy Club” in 2006 reignited Chinese interest in using SCO as a multilateral platform to promote energy cooperation. However, the implementation of energy cooperation via SCO during the Hu Jintao era was ineffective. Key multilateral projects like the transnational oil and gas pipelines were not coordinated under SCO. In practice, China–Central Asia energy cooperation relied on bilateral approaches during Hu Jintao’s era.

In sum, although multilateral elements appeared in all policy goals, policy instruments and the physical structure of China–Central Asia energy cooperation, they were not solid enough to lead to profound change within Hu Jintao’s era. More importantly, changes in ideas regarding multilateralism were very limited, and hence a third-order change did not occur. Therefore, this case study indicated that energy cooperation between China and Central Asian countries during Hu Jintao’s era did not undergo a profound change from a paradigm of energy diplomacy to a paradigm of global energy governance.

Table 7.1: Summary of China–Central Asia energy cooperation

Levels in paradigm	Policy paradigm of energy diplomacy	Policy paradigm of global energy governance	Appearance of multilateralism	Profound change
Idea about energy	A vital element for sustainable economy, political stability and military fuel	A vital element for sustainable economy, political stability and military fuel	No	No
Idea about energy security	National interest, including supply diversification, strategic oil reserves, energy efficiency, environmental issues, international cooperation, etc. * International cooperation relies on bilateral approaches	National interest, including supply diversification, strategic oil reserves, energy efficiency, environmental issues, international cooperation, etc. * International cooperation relies on bilateral approaches	No	No
Policy goal	Enhance energy security Diversify energy supply sources Promote economic cooperation (oil and gas business) Maintain regional security Establish infrastructure links	Enhance energy security Diversify energy supply sources Promote economic cooperation (oil and gas business) Maintain regional security Establish transnational infrastructure links	Yes	No
Policy instrument	Energy diplomacy (bilateral) Top-leader visits Bilateral economic and trade ties, intergovernmental legal agreements Joint energy projects (bilateral) Oil and gas projects	Energy diplomacy (bilateral) Top-leader visits Bilateral economic and trade ties, intergovernmental legal agreements Joint energy projects (bilateral + multilateral) Oil and gas projects Transnational gas pipeline SCO (multilateral coordination)	Yes	Yes
Physical governance structure	Relies on bilateral mechanism	Includes energy projects and coordination in SCO	Yes	No

7.4.2 Case study 2: China–EU energy cooperation

The second case study analysed in this thesis, Chinese energy security towards the EU, confirms the hypothesis already outlined. China–EU energy cooperation has a strong focus on clean energy. In the Hu Jintao era, China attempted to increase the use of renewable energy in its energy mix and improve its energy efficiency. Advanced energy technologies are crucial for such an ambition. China needs a partner with advanced energy technologies due to its lack of advanced technology in green energy and energy efficiency. Therefore, although China and the EU do not have a direct supply-and-demand relationship for oil and gas, there is still a solid foundation for a China–EU energy relationship in clean energy. Note that in the term “China–EU energy cooperation” in this thesis, “EU” refers to a group of diversified stakeholders including the EU as a whole, the central government or local governments of each Member State, or companies and academic institutes whose headquarters are situated in Member States. This thesis has focused in particular on how China engages with the EU and its Member States via platforms set up under the EU.

The policy goal of China’s energy cooperation with the EU during Hu Jintao’s era was multileveled, and both policy paradigms shared the same goal. In general, China enjoys abundant renewable energy resources, which provide for China’s clean energy industry development, particularly in the fields of wind power, solar power generation and bio-liquid fuel. However, the share of renewable energy in China’s total energy mix remains low. Energy cooperation with the EU, particularly in the form of technology transfer, could help China develop its renewable energy industry. In the long term, the promotion of renewable energy is more about maintaining the capability of the renewable energy sector for future energy security. On the policy level, China had published a series of supporting policies to promote the development of clean energy in order to tackle issues like climate change and sustainable development. The Chinese government also played a key role in leading its clean-energy market and promoting industrialisation. International energy cooperation was a way for China to break the development bottleneck in technology to achieve this long-term goal. Economically, the EU is one of China’s key partners, and the energy business could play an important role in this. While the EU is leading in clean-energy experience and technology, from which China can learn, China offers a huge market through which European companies can expand their businesses. China was also promoting investment in the renewable energy industry and the transmission of energy infrastructure through a variety of financial and economic incentives, representing a giant market for China’s clean energy, which could attract European investment.

Key policy instruments of the above policy goals include official energy channels and joint project initiatives. The findings in this thesis indicate that there were no obvious changes from bilateralism to multilateralism in the instruments between the two paradigms. Official channels include platforms like the China–EU Energy Conference, the China–Europe High-Level Energy Working Group, the China–Europe Energy Dialogue and the EU-China Summit. Over the past two decades, official energy dialogues between China and the EU covered a wide range of energy issues, particularly sustainable development. They also increased in terms of government level, number of actors and variety of issues involved. Among them, the annual China–EU Energy Dialogue is the only ongoing process. Although most of these communication platforms are organised on an ad hoc basis, China and the EU have promoted their energy cooperation by signing cooperation agreements on renewable energy and energy efficiency.

Energy cooperation between China and the EU, agreed in the above official energy channels, activated another policy instrument during Hu Jintao's era: joint project initiatives. Over 100 events and projects were jointly carried out under the framework of the EU by China and EU Member States from 1990 to 2010. A number of joint initiatives have been launched, including the China–EU Energy Training Programme, the Joint Energy and Environment Programme, the Europe–China Clean Energy Centre EC2, the Near Zero Emission Coal project, and the China–EU Institute for Clean and Renewable Energy. These cooperative projects have concentrated on areas related to clean energy, energy efficiency and sustainable energy development and are mainly carried out in three categories: personnel exchange and training, technology transfer and joint R&D, and financial investment in the energy industry. Such evolution and expansion in cooperation mechanisms indicate that, in the second policy paradigm, China modified its policy instruments by creating more multilateral platforms for energy cooperation instead of relying on previous bilateral methods.

Physical governance structure change is observed in how China enhanced China–EU energy cooperation via physical institutes under the framework of the EU in both policy paradigms. The findings in this thesis indicate that although there was a new physical governance structure in China–EU energy cooperation during Hu Jintao's era, the degree of appropriation and legitimacy of the ideas regarding multilateralism was low. While there were energy programmes and exchanges between China and the EU from the 1980s onwards, physical institutes, such as the Joint Energy and Environment Programme in 2004, the NZEC project in 2006, the Europe–China Clean Energy Centre EC2, and the China–EU ICARE in 2010, were established to facilitate

technology transfer and clean-energy development in the mid-2000s. These projects established a physical platform for China's governmental departments, companies and institutes to cooperate with the EU.

However, the effectiveness of these initiatives was limited for three reasons. First, there were misunderstandings and misperceptions generated in China–EU energy cooperation because of a lack of trust between China and the EU, as reflected in technology transfer and business ideology. Chinese authorities expect a 'magic button' to solve the energy problem promptly; they pay less attention to R&D. Moreover, Chinese companies were criticised for having a weak mentality regarding contracts and intellectual property rights (IPR) in general. Therefore, due to a lack of trust, the Europeans were not always willing to transfer their advanced technology to China. Second, trade friction exists in China–EU energy cooperation because of interest competition at both economic and strategic levels. The solar panel trade dispute is an example of these competing interests. The lack of openness in the energy market and technology export restrictions has hindered China–EU energy cooperation in technology transfer. Third, energy cooperation between the public and business circles is limited. Joint research and development in the field of clean energy between China and the EU remains at an early stage. Energy cooperation relies on energy companies that are concerned with revenue first. Without government subsidies, European companies remain inactive in project investment in China.

More importantly, there is no clear long-term plan for the above China–EU energy initiatives. Some joint energy projects have short mandates without renewals. Some Chinese officers involved with these projects consider the initiatives to be voluntary proposals of the EU, and therefore believe the Chinese side has no responsibility to maintain them. This reflects that Chinese authorities have limited willingness to work with EU Member States via the multilateral platforms set up under the EU. Instead, in cooperation with the EU, China is more accustomed to a bilateral cooperation method and appears cautious about the multilateral cooperation method. China finds a bilateral approach with EU Member States to be more flexible and efficient, and would even allow China to enjoy greater leverage in negotiation.

In sum, although multilateral elements appeared in all policy goals, policy instruments and the physical structures in China–EU energy cooperation, they were not solid enough to lead to profound change within the Hu Jintao era. More importantly, change in ideas regarding multilateralism was very limited, and hence a third order change did not occur. Therefore, this case study concluded that energy cooperation between

China and the EU during Hu Jintao's era did not undergo a profound change from the paradigm of energy diplomacy to the paradigm of global energy governance.

Table 7.2: Summary of China–EU energy cooperation

Levels in paradigm	Policy paradigm of energy diplomacy	Policy paradigm of global energy governance	Appearance of multilateralism	Profound change
Idea about energy	A vital element for sustainable economy, political stability and military fuel	A vital element for sustainable economy, political stability and military fuel	No	No
Idea about energy security	National interest, including supply diversification, energy efficiency, environmental issues, international cooperation, etc. International cooperation relies on bilateral approaches	National interest, including supply diversification, energy efficiency, environmental issues, international cooperation, etc. International cooperation relies on bilateral approaches	No	No
Policy goal	Develop renewable energy industry Increase the capability of the renewable energy sector for future energy security Break the development bottleneck in technology Tackle issues like climate change and sustainable development	Develop renewable energy industry Increase the capability of the renewable energy sector for future energy security Break the development bottleneck in technology Tackle issues like climate change and sustainable development	No	No
Policy instrument	Official energy channels Top-leader meetings, dialogues, workshops, conferences Bilateral economic and trade ties Joint cooperation initiatives Joint projects and centers under the framework of the EU	Official energy channels Top-leader meetings, dialogues, workshops, conferences Bilateral economic and trade ties Establish more multilateral platforms and joint cooperation initiatives Joint projects and centres under the framework of the EU	Yes	Yes
Physical governance structure	Relies on bilateral mechanism	More joint physical initiatives created under the framework of the EU	Yes	No

7.4.3 Case study 3: China–Africa energy cooperation

The third case study analysed in this thesis, Chinese energy security towards Africa, confirms the hypothesis already outlined. China–Africa energy cooperation started in the early 1990s. China has a strong interest in energy cooperation with Africa mainly because of rich oil and gas resources in the region and the need to diversify its energy supply. There is a solid foundation for a China–Africa energy relationship that can be viewed through the broader picture of the China–Africa strategic relationship.

The policy goal of China’s energy security in Africa during Hu Jintao’s era was multileveled, and both policy paradigms shared the same goal. There was one short-term goal and one long-term goal for Chinese energy cooperation with Africa, intimately combining its energy demands and diplomacy for the continent. In the short term, China aimed to strengthen the diversification of energy supply sources and reduce oil dependence on the Middle East in order to enhance its energy security. In the long term, close economic ties could promote trust between China and Africa. China was aiming to grow as a global player in the international oil market. Chinese energy investment in Africa is also considered part of China’s going-out strategy, which linked the country’s foreign policy with its domestic development. CNOCs were encouraged to invest in the energy sector in Africa. While Africa, with huge resource potential, became a major destination for Chinese overseas expansion, energy resources, particularly oil, were regarded as a key component of Sino-African trade. In 2006, a pan-African approach was proposed in the China African Policy, which aimed to “encourage and support competent Chinese enterprises to cooperate with African nations in various ways on the basis of the principle of mutual benefit and common development, to develop and exploit rationally their resources”⁷²⁵. Energy cooperation is considered to be a key means to further enhance the China–Africa relationship multilaterally. This echoes the analysis in chapter 3 that 2007 was the turning point for China’s energy strategy in moving from a bilateral to a multilateral approach.

Key policy instruments of the above policy goals included energy diplomacy, joint energy projects and FOCAC, and there were obvious changes from bilateral to multilateral mechanisms in the instruments, shifting from a policy paradigm of energy diplomacy to a policy paradigm of global energy governance. Africa is one of China’s key targets in its overall energy diplomacy strategy. The Chinese government supports the investment of its CNOCs in Africa bilaterally and multilaterally. Whenever top

⁷²⁵ PRC State Council. 2006. “China’s African Policy.” Accessed 11 November 2015.
http://www.gov.cn/misc/2006-01/12/content_156509.htm

Chinese leaders have visited an African country, CNOCs have signed oil agreements with that country. Since 2000, the Chinese government has also created favourable trading conditions and lowered the requirements for CNOCs to invest overseas. Until the year in which China issued its African Policy, China had signed bilateral trade agreements with 41 African countries and investment security treaties with 28 African countries. Other than bilateral means, energy cooperation is also carried out via multilateral platforms like FOCAC by not only further strengthening China's diplomatic ties with African countries, but also addressing the importance of natural resources and agreements to develop cooperation over their use.

Chinese energy diplomacy is believed to have activated the momentum of energy cooperation with Africa through another policy instrument: joint energy projects. Most of the energy projects between China and Africa were carried out in bilateral form. CNOCs had been involved in oil construction projects in oil export countries directly, and obtained a certain share of the oil production of cooperation projects through production sharing, joint ventures, rent, services, and in other ways. While China's oil companies could expand overseas business by upstream mergers and acquisitions, the share of oil gained could be shipped back to China directly or resold on the international oil market. These energy cooperation initiatives were mainly facilitated by three mechanisms: resource-backed development loans, special trade and economic cooperation zones, and a non-interference policy regarding aid. China–Africa cooperation was intensified via the above three mechanisms. They became a solid foundation when China attempted to push forward its energy cooperation instruments via the multilateral platform of FOCAC.

Physical governance structure change can be observed in how China enhanced China–Africa energy cooperation via FOCAC in both policy paradigms. The findings in this thesis indicate that although there was a new physical governance structure in China–Africa energy cooperation during Hu Jintao's era, the degree of appropriation and legitimacy of the idea of multilateralism was low. FOCAC, which was established in 2000, is a joint ministerial conference held every three years to cultivate a long-term China–Africa relationship with solidarity and cooperation. It is a regular platform for meetings between top Chinese and African leaders. This platform has strengthened Sino-African cooperation in all spheres, mainly trade and related economic ties. Although energy cooperation was not the initial objective of FOCAC, it has gradually become a key focus, because China has increasing energy trade and investment initiatives in Africa.

China's overseas investment in Africa had been relying on bilateral agreements, and China realised that these agreements were insufficient in protecting its investment when trade between the two increased tremendously within a short period. China needed a broader platform to expand its cooperation with Africa. China proposed in both its China African Policy in 2006 and in the FOCAC conference to carry out energy cooperation via a multilateral platform. Through FOCAC, China attempts to facilitate market access, promote duty-free treatment of commodities, optimise trade structures, offer aid and settle trade disputes. FOCAC also provides the multilateral consultation and coordination mechanisms with which China and Africa can handle practical situations. Commodities traded between China and African countries, such as oil, gas and other minerals, are also promoted via the FOCAC. More importantly, FOCAC is established and led by developing countries, and is hosted in Beijing every six years, giving China more ideological influence and physical control of the process. It appears that FOCAC offers an ideal multilateral platform for China to enhance China–Africa energy cooperation.

Yet, when it comes to implementation, FOCAC is not always effective. First, although FOCAC Action Plans issued in and after 2006 listed follow-up plans to facilitate multilateral cooperation between China and Africa, the documents do not elaborate on the details, such as methods, scale, responsible department and duration of cooperation. FOCAC lacks a well-organised structure and its legitimate status and influence are limited. In addition, policies originating from the forum often have difficulty in being implemented. Second, FOCAC lacks the legal basis to ensure China's energy investment in Africa. Although there are more and more energy projects included in the mechanism of the FOCAC, the agreements were signed under the guidance of governments rather than within the legal framework of FOCAC. China still relies on bilateral trade agreements signed with over 40 African countries to protect its investments in Africa. Third, Chinese authorities consider bilateral cooperation to be the most effective mechanism in China–Africa energy cooperation and tend to rely on it. Meanwhile, although FOCAC could be a channel for oil diplomacy, FOCAC is understood by Chinese authorities to be a multilateral platform to strengthen bilateral relations between China and African countries instead of enabling it to shift its focus to multilateral cooperation.

In sum, although multilateral elements appeared in all policy goals, policy instruments and the physical structures in China–Africa energy cooperation, they were not solid enough to lead to profound change within the Hu Jintao era. More importantly, changes in ideas regarding multilateralism were very limited, and hence a third-order change did

not occur. Therefore, this case study concludes that energy cooperation between China and African countries during Hu Jintao's era did not undergo a profound change from a paradigm of energy diplomacy to a paradigm of global energy governance.

Table 7.3: Summary of China–Africa energy cooperation

Levels in paradigm	Policy paradigm of energy diplomacy	Policy paradigm of global energy governance	Appearance of multilateralism	Profound change
Idea about energy	A vital element for sustainable economy, political stability and military fuel	A vital element for sustainable economy, political stability and military fuel	No	No
Idea about energy security	National interest, including supply diversification, strategic oil reserves, energy efficiency, international cooperation, etc. International cooperation relies on bilateral approaches	National interest, including supply diversification, strategic oil reserves, energy efficiency, international cooperation, etc. International cooperation relies on bilateral approaches	No	No
Policy goal	Enhance energy security Diversification of supply Reduce oil dependence on the Middle East Promote trust	Enhance energy security Diversification of supply Reduce oil dependence on the Middle East Promote trust Achieve a pan-African approach	Yes	Yes
Policy instrument	Energy diplomacy (bilateral) Top-leader visits Bilateral economic ties, and legal agreements, Joint energy projects (bilateral) Energy projects supported by development loans, special trade and economic zones, and aid	Energy diplomacy (bilateral) Top-leader visits Bilateral economic ties, and legal legal agreements, Joint energy projects (bilateral + multilateral) Energy projects supported by development loans, special trade and economic zones, and aid via the FOCAC FOCAC	Yes	Yes
Physical governance structure	Relies on bilateral mechanism	Includes energy projects in FOCAC	Yes	No

7.5 Analysis: No policy paradigm shift

Based on the findings of the above three case studies, this thesis concludes that China's energy security did not undergo a policy transition that resulted in a shift away from the policy paradigm of energy diplomacy to a policy paradigm of global energy governance.

Ideas about Energy

The findings in Section 3.2 and the three case studies indicate that in both policy paradigms during Hu Jintao's era, Chinese authorities considered energy to be a vital element for a sustainable economy, political stability and military fuel. China needs a stable and sufficient energy supply to support its rapid economic growth, socio-political stability and sovereignty.⁷²⁶ Therefore, there was no change in how energy is understood across the policy paradigms.

Ideas about Energy Security

In both policy paradigms during Hu Jintao's era, Chinese authorities considered energy security to be a top national interest. Traditionally, Chinese energy security has essentially been equated to oil security because of China's increasing reliance on "foreign oil" and desire for self-sufficiency. It is indicated in Section 3.2 and echoed in the three case studies that, in Hu Jintao's era, although oil supply security remained important, the concept of Chinese energy security expanded to other energy issues like international pricing mechanisms, sustainable environment, solutions for energy-related pollution and low-carbon economies. Although international energy cooperation was emphasised in Chinese energy security, it relied on a bilateral approach and multilateralism was limited. Therefore, there was no change in the understanding of energy security across the two policy paradigms.

Policy Goal

In both policy paradigms and across the cases examined during Hu Jintao's era, the policy goals of Chinese international energy cooperation varied but were ultimately similar. Common policy goals included enhancing energy security by diversifying energy supply sources and reducing oil dependence, as discussed in Section 3.2.

⁷²⁶ In order to maintain its authority, the CPC needs to meet people's economic and nationalistic expectations. As Breslin argues, "it is an unwritten social contract between the party and the people whereby the people do not compete with the party for political power as long as the party looks after their economic fortunes." See Breslin, S. 2005. "Power and production: rethinking China's global economic role", *Review of International Studies*. 31 (04), 735.

There were also goals that depended on circumstances, such as regional security and infrastructure construction in China–Central Asia energy cooperation, clean-energy development and technological bottleneck breakthrough in China–EU energy cooperation, and trust promotion and a pan-Africa strategy in China–Africa energy cooperation. Other than the case of China–Africa energy cooperation, which points to a pan-Africa strategy, there was no clear appearance of multilateralism in the policy goals. In short, there was no change in the policy goals of international energy cooperation across the two policy paradigms.

Policy Instrument

A change in policy instrument can be observed across the two policy paradigms during Hu Jintao's era. In the policy paradigm of energy diplomacy, key policy instruments included energy diplomacy (bilateral) and joint energy projects. All three case studies indicate that policy instruments based on a multilateral approach are adopted in the policy paradigm of global energy governance. In China–Central Asia energy cooperation, while joint energy projects were expanded, such as transnational pipelines including multilateral parties, SCO was introduced as a multilateral platform to coordinate energy cooperation. In China–EU energy cooperation, more energy initiatives, including joint projects and joint centres, were established under the EU framework. In China–Africa energy cooperation, FOCAC was introduced as a multilateral platform to coordinate energy cooperation. Therefore, in the policy paradigm of global energy governance, there were new policy instruments in China's international energy cooperation.⁷²⁷

Physical governance structure

A new physical governance structure can be observed across the two policy paradigms during Hu Jintao's era. However, it is not considered to be a change, because the degree of appropriation and legitimacy of the understanding of multilateralism in the physical multilateral platform was low. SCO, new China–EU joint centres and FOCAC were established to facilitate China's energy cooperation with Central Asia, the EU and Africa respectively. However, the findings in Sections 4.5, 5.5 and 6.5 indicate that although there were new cooperation projects and/or physical platforms in multilateral form, particularly since 2006, the extent of the change was limited. On the one hand,

⁷²⁷ One notable point is that although there are multilateral approaches introduced, bilateral approaches like energy diplomacy and joint projects still existed in the policy paradigm of global energy governance. As discussed in Section 2.4.4, such finding is not strong enough to disclaim a change in policy instrument because if evidence of multilateral approach is obvious in the paradigm of global energy governance.

the effectiveness of the multilateral mechanisms was low. On the other hand, China either lacked the willingness to make a change or merely utilised the multilateral platform to strengthen its existing bilateral ties. The bilateral approach remained the key form of cooperation, and a profound change in terms of physical governance structure towards multilateralism could not be claimed.

Policy paradigm shift

The above analysis indicates that obvious change from bilateralism to multilateralism only occurred in policy instruments. Ideas about energy and energy security and policy goals remained the same. There was no obvious change in physical governance structure that reflected the legitimacy and appropriateness of a new idea.

Table 7.4: Summary of changes from bilateralism to multilateralism between policy paradigms in each case study

Change in	China's energy cooperation with Central Asia	China's energy cooperation with the EU	China's energy cooperation with Africa
Idea about energy	No	No	No
Idea about energy security	No International cooperation relies on bilateralism	No International cooperation relies on bilateralism	No International cooperation relies on bilateralism
Policy goal	No	No	Yes
Policy instrument	Yes	Yes, but not obvious	Yes
Physical governance structure	No, although new structure (SCO) appears	No, although new structure (China-EU joint project initiatives) appears	No, although new structure (FOCAC) appears
Policy paradigm shift	NO	NO	NO

In other words, first order change and second order change in regard to policy instruments was obvious. A new physical governance structure appeared, but the degree of appropriation and legitimacy of the idea of multilateralism in the physical multilateral platform was low. Yet a third order change regarding ideas was missing. Therefore, the degree of change in China's international energy cooperation during the

period of President Hu Jintao was not high enough to be claimed as a profound break from the past.

The above conclusion is not in alignment with the aims asserted in Chinese official energy documents and the messages delivered by top authorities, as discussed in Section 3.3.2. The White Paper on China's Diplomacy 2007, China's Energy Policy (2007) White Paper, White Paper on China's Diplomacy 2008, and China's Energy Policy (2012) White Paper address the importance of and China's effort in multilateral approaches to international energy cooperation. China's Energy Policy (2012) White Paper further asserted China's contribution to global energy governance, which has also been addressed by the former Deputy Premier of the State Council, Zeng Peiyan, and former Premier, Wen Jiabao, publicly. Despite a call for a multilateral approach from Chinese authorities, the findings in this thesis indicate that there has been a change in policy instruments, but not in ideas regarding multilateralism. These findings reflect that there was an inconsistency between policy planning and implementation in China's energy security during Hu Jintao's era. This thesis points out at least four reasons why a policy paradigm shift from bilateralism to multilateralism did not occur, despite calls by Chinese authorities for good global energy governance.

Reason 1: Fragmented Chinese energy governance

As discussed in Section 3.1.3, China has a fragmented energy governance structure, with constant changes, decentralisation and bureaucratic ineffectiveness. Table 3.5 shows that there are over 20 agencies and institutions with overlapping functions and responsibility in China's energy governance structure. The authority over China's energy sector is decentralised to different actors, and the disintegration of policymaking is unavoidable. A policy could be made by several government sectors and carried out by different actors. The formulation and implementation of energy policy has become a process in which different parties struggle for or even corrupt their own interests. Moreover, in China's energy governance structure, central authorities are not always influential enough to control and manage the whole energy industry; therefore, local production relies on local government. The same logic applies to central authorities' influence on CNOCs that go abroad. Ineffectiveness in energy governance hinders the implementation of energy policy.

According to the White Paper on China's Diplomacy and China's Energy Policy, NDRC, NEA and MFA are the key institutes in planning Chinese strategy regarding international energy cooperation. However, instead of these central authorities, CNOCs are the key actors carrying out the strategy. In such a fragmented governance structure,

CNOCs could alter the policy guidelines from the central authorities if they have other considerations in actual operation. As discussed in the case studies presented in Sections 4.5, 5.5 and 6.5, in general, actors on the frontline prefer bilateral approaches over multilateral approaches in energy cooperation, because a bilateral approach is relatively flexible and straightforward. Therefore, although central authorities like MFA, NDRC and NEA have published white papers encouraging multilateral forms of energy cooperation, in actual operation energy projects are still carried out via bilateralism. Similarly, multilateral platforms such as SCO have been set up to facilitate energy cooperation; but key energy projects, such as transnational pipelines, are not negotiated within the multilateral platform.

Reason 2: Misperceptions of multilateralism

As discussed in Section 3.3.3, there is a “gap of knowledge” between how Chinese authorities and Western academia understand multilateral cooperation and multilateral institutions. 17 out of the 53 interviewees from government, the energy industry and think tanks in China misunderstood multilateral cooperation as participation in more than one international bilateral partnership, which means multiple bilateral partnerships. A common consensus is lacking among Chinese academia and energy elites, hindering proper discussion. The case of personnel exchange with ECT discussed in Section 3.3.3 reflects that while Chinese officers are sent abroad to learn from the experience of multilateral cooperation, they are too junior in China’s energy governance structure. Senior officers are often reluctant to depart from the tradition of the bilateral approach. Although the interviewees did not reject the definition of multilateralism used in this thesis once it had been properly explained to them, their loose understanding of the concept helps explain China’s ineffective multilateral approach and the different expectations between China and the West.

Multilateralism or global energy governance includes the establishment of an institution. A loose understanding of the concept means that Chinese authorities might lack recognition of the legal functions of such an institution. This lack of understanding is reflected in how Chinese authorities hesitate to join international energy organisations such as the IEA or the ECT to avoid being legally bound. Due to the loose understanding of multilateralism, multilateral platforms are not well established. In the two cases of China’s energy cooperation with Central Asia and Africa, the SCO and FOCAC are criticised for lacking mature legal frameworks to coordinate energy investment. In the case of China–EU energy cooperation, the EU is concerned with the weak Chinese mentality towards contracts in joint initiatives. As a result, the effectiveness of multilateral platforms established in China’s international energy

cooperation is reduced, and any changes towards multilateralism remain at the policy instrument level.

Reason 3: Lack of an urgent need for multilateralism

Chapter 2 pointed out that a policy paradigm shift is triggered by crisis, referring to a moment when “the historical context changes to a sufficient degree making it increasingly hard to reconcile the existing mindset of policy-makers with the evidence leading eventually to new objectives and new policy instruments”⁷²⁸ and “decisive intervention”.⁷²⁹ In mid-2000, Chinese authorities were concerned about China’s sharp increase in energy demand and oil dependency. China’s “going out” energy investment and entry into the WTO meant that China began to deal with regional and global oil markets. A bilateral investment treaty (BIT) is understood to be insufficient in protecting China’s overseas energy investments, particularly in terms of national treatment standards and arbitration mechanisms. High oil prices in the mid-2000s further triggered China’s concerns about its international strategy with respect to energy security.

In other words, other than geopolitics, the Chinese authorities recognise the importance of integration into the global energy cooperation system and comprehensive measures to ensure energy security. China opted for a multilateral approach when it realised that bilateral approaches were insufficient to coordinate international energy issues. In the White Paper on China’s Diplomacy 2007, multilateral cooperation is discussed in a special case explicitly addressing high oil prices. Similarly, due to the impact of the global financial crisis on global energy markets in the late 2000s, China realised the importance of a stable market and further called for global energy governance.

Yet whether the crisis is of sufficient severity to make a change depends on the perceptions of Chinese authorities. The 53 interviewees shared the view that, if conditions allow, Chinese authorities prefer a bilateral approach to a multilateral one in energy cooperation. An official from NEA, who was responsible for the coordination work with international energy cooperation and international energy organisations over the past two decades, explicitly claimed that China is feeling very comfortable about its

⁷²⁸ Helm, D. 2007. “The New Energy Paradigm”, in *The New Energy Paradigm* edited by D. Helm. Oxford: Oxford University Press, pp. 9–35. p. 9

⁷²⁹ Hay, Colin. 2001. ‘The ‘Crisis’ of Keynesianism and the Rise of Neoliberalism in Britain: an Ideational Institutional Approach’ in *The Rise of Neoliberalism and Institutional Analysis* edited by John L. Campbell and Ove K. Pedersen eds. Princeton: Princeton University Press.

decision to decline membership in international energy organisations. He thinks there is no urgent need to join the international energy organisations. Such a claim, which is not unique among Chinese authorities, reflects that there has not been a crisis of sufficient severity to trigger a change in the mindsets of policymakers.

Reason 4: Paradigm shift as an evolutionary process that requires time

Chapter 2 pointed out that processes of change are not necessarily revolutionary but could be evolutionary. Change is not always linear or clean cut, but can be messy and contingent. Therefore, processes of change from bilateralism to multilateralism take time.

The findings in this thesis indicate that Chinese authorities consider bilateral strategies to be efficient and flexible. With fewer parties involved, coordination costs are lower and clarity of interest is easier to attain. Moreover, there are different histories, cultures, domestic politics and economic development levels in different regions, which a bilateral approach could address more directly.⁷³⁰ Since processes of change from bilateralism to multilateralism are not necessarily linear and clean cut, a bilateral approach is expected to remain a part of China's international energy cooperation, even if multilateral approaches are introduced. In the short to mid term, it is believed that China will continue to balance both approaches to maximise opportunities, because "national interests seem to explain much of China's devotion to multilateralism or, where relevant, the lack thereof"⁷³¹. As a hedge, China uses a multilateral approach as a cover for its bilateral energy diplomacy where possible, and vice versa. In other words, China's international energy strategy uses multilateral approaches designed to benefit from the current liberal system.

Section 3.3.3 pointed out that China has not closed its doors to multilateralism, as reflected in China's interest in the multilateral legal framework, like ECT and the growing importance of transnational infrastructure like the Central Asia–China gas pipeline. Over the long term, these multilateral elements in China's energy security will link China more closely to the international energy system. However, the time required for such a process is so long that it could not be accomplished within the period of Hu

⁷³⁰ Heppell, J. M. 1997. Confidence-Building Measures: Bilateral versus Multilateral Approaches. In Y. W. Kihl, & P. Hayes, *Peace and Security in Northeast Asia - The Nuclear Issue and the Korean Peninsula* (p. 270). Armonk, New York: M E Sharpe.

⁷³¹ Blanchard, Jean-Marc F. 2008. "Harmonious World and China's Foreign Economic Policy: Features, Implications, and Challenges." *Journal of Chinese Political Science*. 13(2): 165-192. P.174

Jintao. First and second order changes regarding policy instruments are considered to be easier than a third order change regarding the idea and the policy goal. Therefore, while a change in policy instruments in the case studies can be observed to be in alignment with the official Chinese statements about multilateral energy cooperation, there was not enough time during Hu Jintao's era for a change in ideas towards multilateralism to occur.

7.6 Future research to stem from this thesis

This thesis has given answers to three issues related to energy security strategy during Hu Jintao's era. Firstly, the thesis has explained the rationales underpinning the two policy paradigms of China's energy security – the policy paradigm of energy diplomacy and the policy paradigm of global energy governance. Secondly, this thesis has answered the question of whether the degree of change in the case studies of China's energy cooperation in different regions represents a profound change in China's energy security. Thirdly, this thesis has explained the decisions made by Chinese authorities regarding policy transitions in China's energy security.

The idea-goal-instrument-physical structure framework, based on Hall's concept of policy paradigm shift, was used to analyse if there was any change of ideas regarding Chinese energy security. In the three case studies, the ideas of political elites, rationale for policy goals, mechanisms of policy instruments and physical structure of energy governance were studied to analyse change.

From this research, two projects in the discipline of international relations can be developed. The idea-goal-instrument-physical structure framework could be applied in other time periods and regions to demonstrate its general applicability. More specifically, the model could be applied to study the change in energy security during Xi Jinping's era. The approach would be the same as used in this thesis. If the call for global energy governance by the end of Hu Jintao's era is seen as progress towards multilateralism, energy cooperation in Xi Jinping's grand strategy, the "One Belt One Road" initiative, is considered to be more ambitious in multilateral cooperation. Although the official announcement of the "One Belt One Road" initiative was made in March 2015, Xi Jinping proposed the concept in 2013. The origin of this initiative can be traced back to the early 2000s. There is sufficient data to test the model. Secondly, the model can be applied to different regions in which energy policy paradigm shifts will necessarily differ. For example, Japanese energy security before and after the Fukushima incident, Russian energy security before and after the Ukraine crisis, and

American energy security before and after the shale gas revolution will obviously show different results in policy paradigm shift.

The use of the idea-goal-instrument-physical structure framework to study change in energy policy assists us in addressing several issues. Among them, one stands out. This approach can help redress the isolated focus of energy security on a single aspect, such as geopolitics, market or science. The slippery and changing definition of energy security implies a continuous change in the focus of energy security from one perspective to another over time. Other than transiting among traditional perspectives, lists of additional dimensions, aspects and elements, ranging from environmental issues to efficiency, have been included in energy security in recent years. An isolated study from a single discipline is insufficient for energy policy advice, and the idea-goal-instrument-physical structure framework allows different aspects of energy to intermingle within the same system. This approach is not unique in analysis change, but it offers a more sophisticated account of policy change that takes ideas of policymakers as a central element. The idea-goal-instrument-physical structure framework can explain how an energy policy paradigm changes and the reasons for and causes of this transition mechanism.

Bibliography

- African Development Bank Group. 2013. "Annual Development Effectiveness Review 2013: Towards Sustainable Growth for Africa." Accessed 11 November 2015. <http://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/ADER-%20Annual%20Development%20Effectiveness%20Review%202013.pdf>
- African Natural Resources Center. 2015. "Africa's Natural Resources Wealth: A Snap Shot." Accessed 11 November 2015. <http://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/african-natural-resources-center-anrc/>
- Agnes, M. E. (ed.) 2004. *Webster's New World College Dictionary, fourth edition*. Cleveland, OH: Wiley-Blackwell.
- Aleklett, K., Höök, M., Jakobsson, K., Lardelli, M., Snowden, S., Söderbergh, B. 2009. "The Peak of the Oil Age: Analyzing the World Oil Production Reference Scenario in World Energy Outlook 2008." *Energy Policy* 38(3): 1398–1414.
- Alessi, C. & Xu, B. 2015. "China in Africa." *Council on Foreign Affairs*, April 27. <http://www.cfr.org/china/china-africa/p9557>.
- Alhajji, A.F. 2006. "The Meaning of Energy Security." USAEE Blog. Last modified August 22. <http://blog.usaee.org/?q=node/8#topS>.
- Alhajji, A.F. 2007 "What is Energy Security?" *Middle East Economic Survey* L(45).
- Alves, A.C. 2008. "Chinese Economic Diplomacy in Africa: The Lusophone Strategy" In *China Enters Africa: A Rising Power and a Content Embrace* edited by C. Alden, D. Large and R. Soares de Oliveira, London: Hurst.
- Anaf, S., Sheppard, L., & Drummond, C. 2007. "Combining Case Study Research and Systems Theory as a Heuristic Model." *Qualitative Health Research* 17(10): 1309-1315.
- Andrews-Speed, P. 2012. *The Governance of Energy in China Transition to a low-carbon economy*. New York: Palgrave Macmillan.
- Andrews-Speed, P., Dow, S., and Gao, Z. 1998. *A provisional evaluation of the 1998 reforms to China's government and state sector: the case of the energy industry*. Draft version. Centre for Energy, Petroleum and Mineral Law and Policy, University of Dundee.
- Anonym. 1986. *Yearbook of China's Foreign Economic Relations and Trade 1986*. Beijing: Outlook Press.
- B. Naughton. 2008. "SASAC and rising corporate power in China." *China Leadership Monitor* 24: 1–9.
- Baghat, G. 2006. "Europe's Energy Security: Challenges and Opportunities." *International Affairs* 82 (5): 961-975.

- Bailes, A.J.K., P. Dunay, P. Guang, and M. Troitskiy. 2007. "The Shanghai Cooperation Organization, SIPRI Policy Paper 17".
- Bajoria, Jayshree . 2009. China's Role in the World. Council on Foreign Relations. Council of Foreign Relations. Accessed on 15 October 2013.
<http://www.cfr.org/china/chinas-role-world/p19545>
- Bajpae, C. 2005. "China Fuels Energy Cold War." *Asia Times*, 2 Mar. Accessed on 13 September 2013. <http://www.atimes.com/atimes/China/GC02Ad07.html>.
- Barry Buzan, Ole Waever, & Jaap de Wilde, 1998. *Security: A New Framework for Analysis*, Boulder: Lynne Rienner Publishers.
- Barton, B. 2004. *Energy Security: Managing Risk in a Dynamic and Regulatory Environment*. Oxford: Oxford University Press.
- Barysch, K., Grant, C., & Leonard, M. 2005. "Embracing the Dragon: Can the EU and China be Friends?" *CESifo Forum* 6(3): 8-15.
- BBC News. 2006. "China's Hu Boosts Kenyan Business." *BBC News Online*, 28 Apr. Accessed 11 November 2015. <http://news.bbc.co.uk/2/hi/africa/4953588.stm>
- Behr, T. & Jokeia, J. 2011. "Regionalism & Global Governance: The Emerging Agenda." *Study & Research* 85.
- Bielecki, J. 2002. "Energy Security: Is the Wolf at the Door?" *The Quarterly Review of Economics and Finance* 42(2),
- Biolsi, Robert. 1995. "Spot, Options, and Futures Oil Markets." In *The New Global Oil Market: Understanding Energy Issues in the World Economy* edited by S. Shojai. Westport, Conn.: Praeger.
- Blanchard, Jean-Marc F. 2008. "Harmonious World and China's Foreign Economic Policy: Features, Implications, and Challenges." *Journal of Chinese Political Science* 13(2):165–192.
- Blank, S. 2002. "China's Defeats in Central Asia." *Central Asia-Caucasus Analyst*, 14 Aug;
- Blank, Stephen J., 2005. "China, Kazakh Energy and Russia: An Unlikely Ménage à Trois." *China and Eurasia Forum Quarterly* 3(3):99-109. p.103.
- Blyth, Mark. 2002. *Great Transformations: Economic Ideas and Institutional Change in the Twentieth Century*. New York: Cambridge University Press
- Bohi, D. R. and Toman, M.A. 1996. *The Economics of Energy Security*. Massachusetts: Kluwer Academic Publishers
- Boisard, M.A., & Chossudovsky, E. 1997. *Multilateral Diplomacy: United Nations System at Geneva - A Working Guide*. Brill.
- BP. 2002. *Statistical Review of World Energy 2001*;
- BP. 2012. *Statistical Review of World Energy 2012*.
- BP. 2013. *Statistical Review of World Energy 2013*.

- Brautigam, D. & Xiaoyang, T. 2011. "China's Investment in Special Economic Zones in Africa." *Special Economic Zones* 69.
- Breslin, S. 2005. "Power and production: rethinking China's global economic role." *Review of International Studies* 31 (04), 735.
- Brummer, M. 2007. "The Shanghai Cooperation Organization and Iran: A Power-Full Union." *Journal of International Affairs* 60(2), 185–198, p. 185.
- Buijs, B. 2012. "China and the Future of New Energy Technologies: Trends in Global Competition and Innovation." Clingendael International Energy Programme, Netherlands Institute of International Relations.
- Calame, P. & Marin, G. 2005. "Main Points for the Discussion with the United Nations Secretariat." In *Reforming the U.N. and Redefining Global Governance (Report of the meeting on the reform of the U.N. with the U.N. Secretariat on March 3)*
- Calder, K. 2006. *Pacific Defense: Arms, Energy, and America's Future in Asia*. New York: William Morrow & Co..
- Campbell, J.L. 1998. "Institutional Analysis and the Role of Ideas in Political Economy." *Theory and Society* 27(3): 377-409; Schmidt, V. A. 2006. *Democracy in Europe: The EU and National Politics*. Oxford: Oxford University Press.
- Campbell, John L. 2004, *Institutional Change and Globalization*. Princeton and Oxford: Princeton University Press. p. 33-35,
- Carson, M., Burns, T., & Calvo, D. 2011. *Paradigms in Public Policy: Theory and Practice of Paradigm Shifts in the EU*.
- CGNPC. 2009. "中广核集团积极开发利用海外铀资源取得重要进展 [In English: CGNPC overseas uranium resources exploitation overseas achieves important progress]" Accessed on 13 October 2013.
<http://www.cgnpc.com.cn/n1302/n1306/n1358/n1360/n1362/c81077/content.html>.
- Chang, Felix K. 2001. "Chinese Energy and Asian Security." *Orbis* 145, no. 2. 233.
- Chen, C. 2002. "A Review of China's 'Global Governance Research.'" *Practice* 11.
- Chen, H. 2011. *Energy Strategy and Diplomacy in the World*. Beijing: Intellectual Property Publishing House.
- Chen, J. 2004. "The Five-Circle Energy Diplomacy of China." *21st Century Business Herald*. 18 Mar. Accessed on 14 December 2014.
<http://www.21cbh.com/HTML/2004-3-18/14529.html>.
- Chen, Liuqing. 2013. "能源安全是最重要的战略目标" [in English: Energy security is the most important strategic target], *China Energy Journal*, 28 January, 2013.
- Chen, M. & Jaffe, A. M. 2007. "Energy Security: Meeting the Growing Challenge of National Oil Companies." *The Whitehead Journal of Diplomacy and International Relations* 9–21.

- Chen, S. 2008. "Motivations Behind China's Foreign Oil Quest: A Perspective from the Chinese Government and the Oil Companies." *Journal of Chinese Political Science* 13(1).
- Chen, Shaofeng. 2008. "Motivations behind China's Foreign Oil Quest: A Perspective from the Chinese Government and the Oil Companies." *Journal of Chinese Political Science* 13(1).
- Cherp, A. and Jewell, J. 2011. "The Three Perspectives on Energy Security: Intellectual History, Disciplinary Roots and the Potential for Integration." *Current Opinion in Environmental Sustainability* 3(4): 202-212.
- Cherp, A., Jewell, J., & Goldthau, A. 2011. "Governing Global Energy: Systems, Transitions, Complexity." *Global Policy* 2(1): 75-88.
- Chester, L. 2010. "Conceptualising Energy Security and Making Explicit its Polysemic Nature." *Energy Policy* 38(2): 887-895.
- China Awards for Science and Technology Office. 2004. "中欧科技合作纵述 [in English: A Review of China-EU Scientific and Technological Cooperation]." *中国科技奖励 [in English: China Technology Award]* 10: 92.
- China Daily. 2004. "China, Kazakhstan Discuss Cross-border Gas Pipeline". *China Daily*. 25 Aug.
- China Embassy. 2012. "Follow-up of the Fourth FOCAC Ministerial Meeting [in Chinese]." Accessed 11 November 2015. <http://rw.china-embassy.org/chn/rdzt/t952918.htm>
- China Petrochem. 2005. "Energy cooperation between China and Sudan." *China Petrochem*, 16.
- China Power. 2012. "18 African Countries Visit China to Promote Solar Energy." Accessed 11 November 2015. <http://www.chinapower.com.cn/article/1219/art1219167.asp>
- Chinese Embassy to Kazakhstan. 2010. "哈萨克完成出口中国铀粉末芯块的认证 [In English: Kazakh uranium to complete the export certification Chinese powder slug]" Accessed on 13 October 2013. <http://kz.mofcom.gov.cn/article/zxhz/zhxm/201012/20101207327050.shtml>.
- Chinese Embassy to Kazakhstan. 2011. "纳扎尔巴耶夫总统访华期间中哈签署系列经贸协议 [In English: President of Kazakhstan Nursultan Nazarbayev signed a series of economic and trade agreements during his visit to China]." Accessed on 13 October 2013. <http://kz.mofcom.gov.cn/article/zxhz/zhxm/201102/20110207417305.shtml>.
- Chinese Embassy to Uzbekistan. 2011. 外国在乌兹别克斯坦开发铀资源新动向 [In English: News trend of foreign development of uranium resources in Uzbekistan].

- Chwieroth, Jeffrey M. 2010. "How do Crises Lead to Change? Liberalizing Capital Controls in the Early Years of New Order Indonesia." *World Politics* 62(3): 496-527.
- CISTC. 2007. "中欧能源合作 [in English: China-Europe energy cooperation]." Accessed on 10 October 2015. <http://www.cistc.com/eu-china/pic.asp?column=549&id=68980>
- Clarke, Duncan 2007. *Empires of Oil: Corporate Oil in Barbarian Worlds*. London: Profile Books Ltd.
- CNPC. "Central Asia-China Gas Pipeline." Accessed on 8 October 2013. http://www.cnpc.com.cn/en/CentralAsia/CentralAsia_index.shtml.
- CNPC. "Flow of natural gas from Central Asia." Accessed on 8 October 2013. <http://www.cnpc.com.cn/en/FlowofnaturalgasfromCentralAsia/FlowofnaturalgasfromCentralAsia2.shtml>.
- CNPC. "CNPC in Kazakhstan." Accessed on 3 March 2012. <http://classic.cnpc.com.cn/en/cnpcworldwide/kazakhstan>.
- CNPC. 2009. "CNPC announces Kenkiyak–Kumkol section of Kazakhstan–China Oil Pipeline becomes operational" (Press release).
- Coleman, W., Skogstad, G. & Atkinson, M. 1997. "Paradigm Shifts and Policy Networks: Cumulative Change in Agriculture." *Journal of Public Policy* 16(3): 273-301.
- Constantin, Christian. "China's Conception of Energy Security: Sources and International Impacts." *Working Paper*, no. 43, March 2005.
- Cornell, Svante E. 2004. "The United States and Central Asia: In the Steppes to Stay?" *Cambridge Review of International Affairs*, 17(2): 239-254.
- CPCIF. 2011. *China Petroleum and Chemical Industry Federation Annual Report 2010*.
- Crane, K. 2009. *Imported Oil and US National Security*. Washington: RAND Corporation.
- Daniel Kimmage. 2006. "Central Asia: Turkmenistan–China Pipeline Project Has Far-Reaching Implications." *Radio Free Europe/Radio Liberty*, 10 Apr. Accessed on 8 October 2013. <http://www.rferl.org/content/article/1067535.html>
- Davies, M., Edinger, H., Tay, N. and Naidu, S. 2008. "How China Delivers Development Assistance to Africa." Centre for Chinese Studies, University of Stellenbosch.
- Davis, Jonathan. 2007. "Turkmen break ground on China pipe", *Upstream Online*, 30 Aug. Accessed on 8 October 2013. <http://www.upstreamonline.com/live/article1145401.ece>
- De Matteis, P. 2010. "EU-China Cooperation in the Field of Energy, Environment

- and Climate Change.” *Journal of Contemporary European Research* 6(4): 449-477.
- DECC. 2009. *The Low Carbon Transition Plan: National strategy for climate and energy*. London: TSO; DECC. 2009b. *The UK Renewable Energy Strategy*. London: HMSO; DECC. 2011. *Planning our electric future: a White Paper for secure, affordable and low-carbon electricity*. London: HMSO.
 - Decker, D. K. and Michel-Kerjan, E. O. 2007. “A New Energy Paradigm: Ensuring Nuclear Fuel Supply and Nonproliferation through International Collaboration with Insurance and Financial Markets”. Discussion Paper. Belfer: Center for Science and International Affairs.
 - Deng, Y., Morck, R. , Wu, J. and Yeung, B.. 2011. “Monetary and fiscal stimuli, ownership structure, and China’s housing market.” *NBER Working Paper No. 16871*, Cambridge, MA: National Bureau of Economic Research, March.
 - Devezas, T., LePoire, D. Matias, J. C. O. and Silva, A. M. P. 2008. ‘Energy Scenarios: Toward a New Energy Paradigm’, *Futures* 40.
 - Diesendorf, M. 2007. *Greenhouse Solutions with Sustainable Energy*. UNSW Press.
 - Dittrick, P. 2010. “Chinese Oil Companies Invest Heavily Abroad.” *Oil & Gas Journal* 108(5).
 - Downs. E. 2006. *China’s Energy Security Series*. The Brookings Foreign Policy Studies.
 - Downs. E. 2008. “China’s new energy administration.” *China Business Review*, November–December.
 - DTI. 2003. *Energy White Paper: Our Energy Future – Creating a Low Carbon Economy*. London: HMSO.
 - Dubash, N. K. & Florini, A. 2011. “Mapping Global Energy Governance.” *Global Policy*. 2(2):6–18.
 - Dubash, N. K., & Florini, A. 2011. “Mapping Global Energy Governance.” *Global Policy* 2: 6-18.
 - Dwivedi, Ramakant. “China's Central Asia Policy in Recent Times.” *China and Eurasia Forum Quarterly* 4, no. 4 (2006), 145-157.
 - EC2. 2014. “Know More About EC2.” Accessed on 10 October 2015. <http://www.ec2.org.cn/>.
 - EIA. 2014. “China.” Accessed 10 October 2015. <http://www.eia.gov/countries/cab.cfm?fips=ch>
 - EID. 2004. “Chinese Oil Firms ‘Go out’ to Resolve the Oil Predicament.” *Economic Information Daily*. 21 Sep. Accessed on 14 December 2014. <http://finance.sina.com.cn/g/20040921/08431037218.shtml>.
 - Erixon, F. 2009. “Europe’s Energy Dependency on Russia’s Commercial

- Assertiveness.” Brussels: European Centre for International Political Economy.
<http://www.ecipe.org/publications/ecipe-policy-briefs/europe2019s-energy-dependency-andrussia2019s-commercial-assertiveness-what-should-the-eu-do/PDF>.
- Ethier, E. 1998. “The International Commercial System.” *Essays in International Finance* 210.
 - EU. 2012. *Joint Press Communiqué 15th EU-China Summit*. Accessed on 10 October 2015.
http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/132507.pdf
 - EU. 2012. *Joint Press Communiqué of the 14th EU-China Summit*. Accessed on 10 October 2015.
http://eeas.europa.eu/china/summit/summit_docs/120214_joint_statement_14th_eu_china_summit_en.pdf
 - EU. 2015. “European Commission Press Release Database.” Accessed on 10 October 2015. http://europa.eu/rapid/press-release_IP-96-1242_en.htm Ministry of Foreign Affairs China
 - Eurasianet. 2009. “Kazakhstan: Workers Complete Section of Turkmenistan–China Pipeline.”, *Eurasianet*, 10 Jul. Accessed on 8 October 2013.
<http://www.eurasianet.org/departments/news/articles/eav071009a.shtml>
 - Europa. 1996. *Communication from the Commission - Energy for the Future: Renewable Sources of Energy - Green Paper for a Community Strategy*.
 - Europa. 1997. *Communication from the Commission - Energy for the future: Renewable sources of energy - White Paper for a Community Strategy and Action Plan*.
 - Europa. 2001. *Renewable Energy: The Promotion of Electricity from Renewable Energy Sources*. Accessed Accessed 10 October 2015.
http://europa.eu/legislation_summaries/energy/renewable_energy/l27035_en.htm.
 - Europa. 2005. *Green Paper on Energy Efficiency or Doing More With Less*.
 - Europa. 2006. *A European Strategy for Sustainable, Competitive and Secure Energy*.
 - Europa. 2009. “Cooperation Framework on Energy Performance and Quality in the Construction Sector.” Accessed on 10 October 2015.
http://ec.europa.eu/energy/international/bilateral_cooperation/china/doc/building/2009_30_11_signed_mou.pdf
 - Europa. 2009. *Joint Statement of the 12th EU-China Summit Nanjing*. Accessed on 10 October 2015.
http://ec.europa.eu/clima/events/docs/0022/joint_statement_en.pdf

- Europa. 2010. *13th EU-China Summit Joint Press Communiqué*. Accessed on 10 October 2015.
http://ec.europa.eu/clima/events/docs/0021/joint_press_statement_en.pdf
- Europa. 2011. "Roadmap 2050." Accessed 10 October 2015.
http://ec.europa.eu/energy/energy2020/roadmap/index_en.htm.
- Europa. 2012. "Concrete Cooperation Projects Under the EC-China Energy Dialogue." Accessed on 10 October 2015.
http://ec.europa.eu/energy/international/bilateral_cooperation/china/doc/concrete_cooperation_projects_ec_china_energy_dialogue.pdf
- Europa. 2013. *A 2030 Framework for Climate and Energy Policies*.
- Europa. 2014. "Energy From Abroad." Accessed on 10 October 2015.
http://ec.europa.eu/energy/international/bilateral_cooperation/china/china_en.htm
>
- Europa. 2014. "Renewable energy statistics." Accessed 10 October 2015.
http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Renewable_energy_statistic.
- Europa. 2015. *Countries and regions China*. Accessed on 10 October 2015.
<http://ec.europa.eu/trade/creating-opportunities/bilateral-relations/countries/china/>
- Europa. "*Country Strategy File of China 2007–2013*." Accessed on 10 October 2015. https://ec.europa.eu/europeaid/sites/devco/files/csp-china-2007-2013_en.pdf
- European Commission. 1978. *The Agreement between the People's Republic of China and the European Community*. Accessed on 10 October 2015.
http://aei.pitt.edu/8243/1/31735055282234_1.pdf
- European Commission. 1995. *A Long Term Policy for China-Europe Relations*.
- European Commission. 1998. *Building a Comprehensive Partnership with China*.
- European Commission. 2014. "Climate Action." Accessed on 10 October 2015.
http://ec.europa.eu/clima/dossiers/nzec/index_en.htm.
- European Union to China. 2012. "Inauguration of China-EU Institute for Clean and Renewable Energy at Huazhong University of Science and Technology." Accessed on 10 October 2015.
http://eeas.europa.eu/delegations/china/press_corner/all_news/news/2012/20121030_en.html
- European Union. 2012. *EU-China Joint Declaration on Energy Security*. Brussels. May 3.
- Fan, Bi. 2014. *世界能源新格局--美国"能源独立"的冲击及中国应对* [in English: *The new world energy order –The impact of US "energy independence" and China's response*]. China Economy Publisher.

- Farrell, A., Zerriffi, H., & Dowlatabadi, H. 2004. "Energy Infrastructure and Security." *Annual Review Environment Resource* 29: 421–469.
- Florini A., Sovacool, B.K. 2011. "Bridging the Gaps in Global Energy Governance." *Global Governance* 17: 57-74.
- Florini, A. 2011. "The International Energy Agency in Global Energy Governance." *Global Policy* 2: 40-50.
- Florini, A. 2011. "The International Energy Agency in Global Energy Governance." *Global Policy* 2: 40-50.
- FOCAC Archive. 2000. "Programme for China-Africa Cooperation in Economic and Social Development." Accessed 11 November 2015.
<http://www.focac.org/eng/ltda/dyjbzjhy/DOC12009/t606797.htm>
- FOCAC Archive. 2004. "Forum on China-Africa Cooperation: Addis Ababa Action Plan." Accessed 11 November 2015.
<http://www.focac.org/eng/ltda/dejbzjhy/DOC22009/>
- FOCAC Archive. 2006. "China Looking for Redoubled Cooperation with Africa." Accessed 11 November 2015. <http://www.focac.org/eng/zt/zgdfzzcwj/t231169.htm>
<http://www.focac.org/eng/zt/zgdfzzcwj/t231169.htm>
- FOCAC Archive. 2006. "Forum on China-Africa Cooperation Beijing Action Plan (2007–2009)." Accessed 11 November 2015.
<http://www.focac.org/eng/ltda/dscbjhy/DOC32009/t280369.htm>
- FOCAC Archive. 2009. "Programme for China-Africa Cooperation in Economic and Social Development." Accessed 11 November 2015.
<http://www.focac.org/eng/ltda/dyjbzjhy/DOC12009/t606797.htm>
- FOCAC Archive. 2009. Forum on China-Africa Cooperation Sharm El Sheikh Action Plan (2010–2012)." Accessed 11 November 2015.
<http://www.focac.org/eng/ltda/dsjbzjhy/hywj/t626387.htm>
- FOCAC Archive. 2012. "The Fifth Ministerial Conference of the Forum on China-Africa Cooperation Beijing Action Plan (2013-2015)." Accessed 11 November 2015. <http://www.focac.org/eng/ltda/dwjbzjjhys/hywj/t954620.htm>
- FOCAC Archive. 2012. "To Achieve Common Development and Prosperity Through Joint Efforts of China and Africa." Accessed 11 November 2015.
<http://www.focac.org/eng/ltda/t967201.htm>
- Forbes AFX News. 2007. "Turkmenistan to join China, Kazakhstan pipeline project – KazMunaiGas EP CEO." *Forbes, AFX News*, 4 Jul.
- Forbes. 2012. "China Leads the World in Renewable Energy Investment." *Forbes*, July 27. Accessed on 10 October 2015.
<http://www.forbes.com/sites/jackperkowsky/2012/07/27/china-leads-the-world-in-renewable-energy-investment/>

- Frei, C. 2007. "Blueprint for a Global Energy Authority." *Europe's World*.
- Friedman, E. 2009. "China-driven Development as China Pours Billions into Africa, Other Countries are Trying to Keep up." *Beijing Review*, February 1. Accessed on 11 November 2015. http://www.bjreview.com/world/txt/2009-02/01/content_176304.htm.
- FT. 2007. "中國與哈薩克斯坦達成核能合作協議 [In English: China and Kazakhstan reach nuclear capability collaboration agreement]". *Financial Times*. 19 Nov. Accessed on 13 October 2013. <http://big5.ftchinese.com/story/001015591?full=y>
- Fudge, S. et al. 2011. "Paradigms, Policy and Governance: The Politics of Energy Regulation in the UK Post-2000." *Environmental Policy and Governance*. 21(4): 291–302.
- Fudge, S., Peters, M., Mulugetta, Y., & Jackson, T. 2011. "Paradigms, Policy and Governance: The Politics of Energy Regulation in the UK Post-2000." *Environmental Policy and Governance* 21(4): 291–302.
- Gabriela, S.M. & Zirra, D. 2013. "Regionalism Versus multilateralism: Important Pieces in Reforming the Global Economic Governance." In *Advances in Fiscal, Political and Law Science* edited by Vladimir Marascu-Klein.
- Gallagher, B. 2011. "Peak Oil Analyzed with a Logistic Function and Idealized Hubbert Curve." *Energy Policy* 39:790-802.
- Garnett, Sherman W. 2000. *Rapprochement or Rivalry? Russia–China Relations in a Changing Asia*, Washington D. C., Carnegie Endowment for International Peace, 392–393.
- Garrison, J. 2009. *China and the Energy Equation in Asia: The Determinants of Policy Choice*. First Forum Press; Langenkamp, D. 2010. "Our Friend, The Dragon." Accessed on 29 January 2013. <http://207.41.118.84/articles.cfm?aid=3758>.
- Gaye, Christoffersen. 2005. "The Dilemmas of China's Energy Governance: Recentralization and Regional Cooperation." *The China and Eurasia Forum Quarterly* 13(3) p.64.
- Gerring, J. 2009. "Case Selection for Case-Study Analysis: Qualitative and Quantitative Techniques." In *The Oxford Handbook of Political Methodology* edited by J.M. Box-Steffensmeier, H.E. Brady, and D. Collier. Oxford University Press.
- Ghosh, A. 2011. "Seeking Coherence in Complexity? The Governance of Energy by Trade and Investment Institutions." *Global Policy* 2: 106-119.
- Goldstein, L. 2005. "China and Central Asia." *Fletcher Forum of World Affairs* 29(1), 13–34.
- Goldthau A., Witte, J.M. 2010. "Back to the Future or forward to the Past? Strengthening Markets and Rules for Effective Global Energy Governance."

International Affairs 85:373-390.

- Goldthau A., Witte. J.M. 2010. *Global Energy Governance: The New Rules of the Game*. Washington, DC: Brookings Press.
- Goldthau, A. 2011. "Governing Global Energy: Existing Approaches and Discourses." *Current Opinion in Environmental Sustainability* 3(4): 213-217.
- Goldthau, A. 2011. "The Public Policy Dimension of Energy Security." In *The Routledge Handbook of Energy Security* edited by B.K. Sovacool, Routledge.
- Goldthau, A. 2012. "From the State to the Market and Back: Policy Implications of Changing Energy Paradigms." *Global Policy* 3(2): 198–210.
- Golovnina, Maria. 2007. "Kazakhstan, China agree to press ahead with pipeline." *Reuters*. 8 Nov. Accessed on 13 October 2013.
<http://uk.reuters.com/article/2007/11/08/kazakhstan-china-pipeline-idUKL0888292120071108>
- Gonzalez, Pablo Rafael 2006. *Running Out: How Global Shortages Change the Economic Paradigm*. New York: Agora Publishing.
- Greenaway, John. 1998. "Policy Learning and the Drink Question in Britain 1850-1950." *Political Studies*, XLVI: 903-18.
- Greener, Ian. 2001. "Social Learning and Macroeconomic Policy in Britain" *Journal of Public Policy* 21(2): 133-152.
- Grevi, G.D. & Alvaro, V. 2008. "Partnerships for Effective Multilateralism: EU Relations with Brazil, China, India and Russia." Chaillot Paper - No109. Accessed 10 October 2015. <http://www.iss.europa.eu/publications/detail/article/partnerships-for-effective-multilateralism-eu-relations-with-brazil-china-india-and-russia/>
- Guerrero, J. et al. 2010. "Distributed Generation: Toward a New Energy Paradigm." *Industrial Electronics Magazine* 4 (1): 52– 64.
- Guo, M. & Zhou, S. 2003. "China Africa Business Conference Concluded." *RENMINRIBAO*, 17.
- Guo, S. 2007. "The business development of China's national oil companies: the government to business relationship in China." The James A. Baker III Institute for Public Policy, Rice University.
- Gurt, Marat. 2008. "Russian company wins Turkmen China pipeline tender." *Reuters*, 19 February. Accessed on 8 October 2013.
<http://uk.reuters.com/article/2008/02/19/turkmenistan-china-idUKL194546920080219>
- Hall, Peter. 1986. *Governing the Economy: The Politics of State Intervention in Britain and France*. Cambridge: Polity Press.
- Hall, Peter. 1993. "Policy Paradigms, Social Learning, and the State: The Case of Economic Policymaking in Britain." *Comparative Politics* 25(3).

- Han, Y. 2008. "China-Africa Economic and Trade Cooperation: What Should be Concerned?" *World Knowledge* 18.
- Handke, Susann. 2006. "Securing and Fuelling China's Ascent to Power – The Geopolitics of the Chinese–Kazakh Oil Pipeline." *Clingendael Institute of International Relations, Energy Programme*, pp. 43-44.
- Haugwitz, F. 2007. "EU-China Energy and Environment Program." Paper presented at the conference Wind Power Shanghai, Shanghai, China, Dec 19.
http://www.frankhaugwitz.info/doks/aboutme/2007_11_02_EEP_RE_Shanghai_Wind_Power_Conference.pdf
- Hay, Colin & Wincott, Daniel. 1998. "Structure, Agency and Historical Institutionalism." *Political Studies* XLVI: 951-957.
- Hay, Colin. 1996. "Narrating Crisis: The Discursive Construction of the Winter of Discontent." *Sociology* 30(2): 253-277.
- Hay, Colin. 1999. "Continuity and Discontinuity in British Political Development", in *Postwar British Politics in Perspective*, edited by David Marsh et al., Cambridge: Policy Press.
- Hay, Colin. 2001. "The 'Crisis' of Keynesianism and the Rise of Neoliberalism in Britain: an Ideational Institutional Approach" in *The Rise of Neoliberalism and Institutional Analysis*, edited by John L. Campbell and Ove K. Pedersen, Princeton: Princeton University Press.
- Hay, Colin. 2011. "Pathology Without Crisis? The Strange Demise of the Anglo-Liberal Growth Model." *Government and Opposition* 46(1): 1-31.
- He, W. 1999. "面向21世纪的中非关系[in English: Sino-African Relations in the 21st Century]." *West Asia and Africa*. 1: 25-30.
- He, W. 2006. "Who are Triggered by the Development of Sino-African Relationship? [in Chinese]." *World Knowledge* 19.
- Helm, D. 2005. 'The Assessment: The New Energy Paradigm', *Oxford Review of Economic Policy*. 21 (1), 1–18.
- Helm, D. 2007. 'The New Energy Paradigm.' In *The New Energy Paradigm* edited by D. Helm, 9-35. Oxford: Oxford University Press.
- Helmut, A. 2007. "China's Engagement in Africa: A Survey." Paper presented at the international conference "China in Africa: Who Benefits? Interdisciplinary Perspectives on China's Involvement in Africa", Johann Wolfgang Goethe University, Frankfurt, Germany, December 14-15.
- Heppell, J. M. 1997. "Confidence-Building Measures: Bilateral versus Multilateral Approaches." In *Peace and Security in Northeast Asia - The Nuclear Issue and the Korean Peninsula* edited by Y.W. Kihl and P. Hayes, 270, Armonk, New York: M E Sharpe.

- Higgott, R. 2004. "Multilateralism and the Limits of Global Governance." CSGR Working Paper No. 134/04
- Hippel, von, D., Suzuki, T., Williams, J. H., Savage, T., & Hayes, P. 2011. "Energy Security and Sustainability in Northeast Asia." *Energy Policy* 39(11): 6719–6730.
- Hook, Leslie. 2011. "Kazakhstan embraces Chinese investment" Financial Times. 22 Feb. Accessed on 8 October 2014. <http://www.ft.com/cms/s/0/8c25e008-3e5e-11e0-9e8f-00144feabdc0.html#axzz3rjEj5jc6>.
- <https://www.iea.org/media/workshops/2012/energyefficiencyfinance/1aBirol.pdf>
- Hu Jintao. 2008. Press Statements following Russian-Chinese Talks, Dmitry Medvedev's Official Visit to China, Beijing, 23 May. Accessed on 13 October 2013. http://archive.kremlin.ru/eng/speeches/2008/05/23/2105_type82914type82915_201246.shtml.
- Hubbert, M.K. 1949. "Energy from Fossil Fuels," *Science*. 109: 103–109.
- Hydrocarbons Technology. 2013. "Central Asia–China Gas Pipeline, Turkmenistan to China." *Hydrocarbons Technology*, 25 Sep. Accessed on 8 October 2013. <http://www.rferl.org/content/article/1067535.html>
- IAEA. 1992. "IAEA Report INSAG-7 Chernobyl Accident: Updating of INSAG-1 Safety Series, No.75-INSAG-7". Vienna: International Atomic Energy Agency. Accessed February 28, 2015. http://www-pub.iaea.org/MTCD/publications/PDF/Pub913e_web.pdf.
- ICARE. 2013. "The ICARE Institute." Accessed on 10 October 2015. <http://www.ce-icare.eu/en/article/26/26-en-the-icare-institute>
- IEA. 2005. *China's Worldwide Quest for Energy Security*. Paris.
- IEA. 2007. *World Energy Outlook 2007: China and India Insights*. OECD/IEA, Paris. http://www.worldenergyoutlook.org/media/weowebiste/2008-1994/weo_2007.pdf.
- IEA. 2010. *World Energy Outlook 2010*. Paris. <http://www.worldenergyoutlook.org/media/weo2010.pdf>
- IEA. 2012. *World Energy Outlook 2012: In-depth Study on Energy-efficiency*.
- IEA. 2013. *World Energy Outlook 2013*.
- IEEE. 2011. "Spectrum, Explainer: What Went Wrong in Japan's Nuclear Reactors". IEEE Spectrum. Accessed February 28, 2015. <http://spectrum.ieee.org/tech-talk/energy/nuclear/explainer-what-went-wrong-in-japans-nuclear-reactors>.
- Ikenberry, G. J. 2003. "Is American Multilateralism in Decline?" *Perspectives on Politics* 1:533-550.
- IMF. 2012. "Regional Economic Outlook: Sub-Saharan Africa Maintaining Growth in an Uncertain World." Accessed [date?].

<http://www.imf.org/external/pubs/ft/reo/2012/afr/eng/sreo1012.pdf>.

- Isbell, P. 2007. "Security of Supply." *Oxford Economic Forum*, 71: 3–6.
- Ito, T. & Krueger, A. 1997. "Regionalism Versus Multilateral Trade Arrangements." *NBER-EASE* 6.
- Jaffe, Amy Myers, and Lewis, Steven W. 2002. "Beijing's Oil Diplomacy." *Survival* 44(1): 115–134.
- Jakobson L., and Knox D. 2010. "New foreign policy actors in China." *SIPRI Policy Paper No. 26*, September.
- Jegen, M. 2009 "Framing Energy Security: The Case of the European Union." Paper presented at the ISA Convention, New York.
- Jenny, F. 2007. "Energy Security: A Market Oriented Approach." Paper presented at the OECD Forum on Innovation, Growth, and Equity, Paris, May 14–15.
- Jiang, G. 1997. *Historical Recording of Visiting Foreign Parties*. Beijing: World Affairs Press; Weinstein, W. & T.H. Henriksen, Eds. 1980. *Soviet and Chinese Aid to African Nations*. New York: Praeger Publishers.
- Jiang, Wenran. (2006) "China makes great leaps outward in regional diplomacy." *International Journal*. 61(2): 329-340. p.338.
- Johnson, D. 2005. "EU–Russian Energy Links: A Marriage of Convenience?" *Government and Opposition* 40(2): 256–277.
- Jokela, J. & Behr, T. 2011. "Regionalism & Global Governance: The Emerging Agenda." Working Paper, Notre Europe. Accessed February 28, 2015.
<http://www.eng.notre-europe.eu/011-2751-Regionalism-Global-Governance-The-Emerging-Agenda.html>
- Jokela, Juha and Behr, Timo. 2011. *Regionalism & Global Governance: The Emerging Agenda, Working Paper*, Notre Europe.
- Jun, Y. & Dongfeng, Y. 2000. "Review of China-EU Energy Training Programme." *Energy Engineering* 4: 5; Mission of the People's Republic of China to the European Union. 2004. "China-EU Scientific and Technological Cooperation and Exchange." March 9. Accessed on 10 October 2015.
<http://www.fmprc.gov.cn/ce/cebe/eng/kj/t72211.htm>.
- Kahler, M. 1992. "Multilateralism with Small and Large Numbers." *International Organization* 46 (3): 681.
- Kang, S. 2007. "China's Oil Security in the Turbulent Africa." *West Asia and Africa*, 2.
- Karl, T. 2005. "Understanding the Resource Curse." In *Covering Oil: A Reporter's Guide to Energy and Development*, 21-27. New York: Open Society Institute.
- Karon, T. 2006. "Iran Diplomacy: Why Russia and China Won't Play Ball." *Time*, 22 Mar. Accessed on 29 January 2013.

<http://www.time.com/time/world/article/0,8599,1175573,00.html>

- Keohane, Robert O. 1990. "Multilateralism: An Agenda for Research." *International Journal* XLV.
- Kerr, D. & Xu, Y. 2014. "Europe, China, and Security Governance: Is there Evidence of Normative Convergence?" *Asia Europe Journal* 12(1-2): 79-93.
- Kerr, D. 2007. "Between Regionalism and World Order: Five Structural Factors in China-Europe Relations to 2025." In *The International Politics of EU-China Relations* edited by D. Kerr & F. Liu, 289-317, New York: Oxford University Press.
- Kerr, D. and Swinton, Laura C. 2008. "China, Xinjiang and the transnational security of Central Asia." *Critical Asian Studies* 40(1): 89–112.
- Khan, H. 2008. "China's Energy Drive and Diplomacy." *International Review* 91–108.
- Klein, N. 2008. *The Shock Doctrine: The Rise of Disaster Capitalism*. London: Penguin Group.
- Kong, B. 2005. "An anatomy of China's energy insecurity and its strategies." *Pacific Northwest Laboratory for the United States Department of Energy*.
- Kong, B. 2006. "Institutional insecurity." *China Security*, Summer: 65–88.
- Kong, B. 2009. "China's Energy Decision-Making: Becoming more like the United States?" *Journal of Contemporary China* 18(62): 789-812.
- Kong, B. 2011. "Governing China's Energy in the Context of Global Governance." *Global Policy*. 2:51–65.
- Kooiman, J. 2003. *Governing as Governance*. London: Sage.
- Kovačovská, L. 2007. "European Union's Energy (In)security: Dependence on Russia." *Defence and Strategy* 2: 1–17.
- Kruyt, B., van Vuuren, D. P., de Vries, H. J. M. & Groenenberg, H. 2009. "Indicators for energy security." *Energy Policy* 37(6): 2166–2181.
- Kuhn, T. 1962. *The Structure of Scientific Revolutions* Chicago. University Of Chicago Press.
- Kuzemko, C. 2011. "UK Energy Governance in the Twenty-first Century: Unravelling the Ties that Bind." Warwick University.
- Kuzemko, C. 2011. *UK Energy Governance in the Twenty-first Century: Unravelling the Ties that Bind*, Warwick University; Flavin, C. & Dunn, S. 1999. "A New Energy Paradigm for the 21st Century." *Journal of International Affairs* 53(1): 167–190.
- Landman, T. 2000. *Issues and Methods in Comparative Politics: An Introduction*. Routledge.
- Lang, K., Lang, P., Bauer, C., Duranton, C., Wieder, T., Huber, S. & Lang, F. 2005. "Mechanisms of Suicidal Erythrocyte Death." *Cellular Physiology and Biochemistry*

15(5): 195-202.

- Lang, P. et al. 2011. "Paradigms, Policy and Governance: The Politics of Energy Regulation in the UK Post-2000." *Environmental Policy and Governance*. 21(4): 291–302.
- Lanteigne, M. 2005. *China and International Institutions: Alternate Paths to Global Power*. London: Routledge.
- Lanteigne, Marc. 2008. "China's Maritime Security and the 'Malacca Dilemma'." *Asian Security*, 4:2, 143–161.
- Larsen, Christian & Andersen, Jorgen. 2009. "How New Economic Ideas Changed the Danish Welfare State: The Case of Neoliberal Ideas and Highly Organized Social Democratic Interests.", *Governance: An International Journal of Policy, Administration and Institutions* 22(2): 239-261.
- Laurence, P. 2006. "Chinese Aid Comes at a Price." *The Star Newspaper*, June 4, p.8.
- Lawrence, R.Z. 1996. *Regionalism, Multilateralism, and Deeper Integration*. Washington, DC: The Brookings Institution.
- Lawson, N. 1989. *Energy Policy: The Text of a Speech Given in 1982*. Oxford: Clarendon Press.
- Ledesma, David. 2013. "East Africa Gas - Potential for Export" Oxford Institute for Energy Studies.
- Lee, S. 2010. "China's Energy Security: The Grand 'Hedging' Strategy. School of Advanced Military Studies United States Army Command and General Staff College Fort Leavenworth, Kansas.
- Leggett, J. 2005. *Half Gone: Oil, Gas, Hot Air and the Global Energy Crisis*. Portobello Books.
- Lesage, D., Van de Graaf, T., Westphal, K. 2010. *Global Energy Governance in a Multipolar World*. Surrey.
- Leung, G., Li R. and Walls, WD. 2012. "Transitions in the Chinese market for refined petroleum products." *OPEC Energy Review* 2012.
- Leung, Guy. 2011. "China's energy security: perception and reality." *Energy Policy*.
- Leung, Guy. 2014. "Securitization of energy supply chains in China." *Applied Energy*.
- Li, Jiasong (ed.) 2001. In *Big Events in the History of Foreign Affairs of People's Republic of China*. Pp. 432–3, 438.
- Li, Yazhou. 2007. "The Grand National Strategy." *Chinese Law and Government* 40(2), 13–36.
- Li, Zhaoxing, 2005, "Peace, Development and Cooperation – Banner for China's Diplomacy in the New Era", *Chinese Journal of International Law*, 4(2): 677–683.

- Liberthal, K. and Oksenberg, M. 1988. *Policy making in China: leaders, structures and process*. New Jersey: Princeton University Press.
- Lieberthal, K. and Herberg, M. 2006. "China's Search for Energy Security: Implications for U.S. Policy." *NBR Analysis* 17(1).
- Lijphart, A. 1971. "Comparative Politics and Comparative Method." *American Political Science Review* 65: 682-93.
- Lim, R. 2005. *Geopolitics of East Asia: The Search for Equilibrium*. New York: Routledge.
- Lin, K.C. 2006. "Disembedding socialist firms as a statist project: restructuring the Chinese oil industry, 1997–2002." *Enterprise & Society* 7(1): 59–97.
- Liou, C. 2009. "Bureaucratic politics and overseas investment by Chinese state-owned oil companies: illusory champions." *Asian Survey* 49(4): 670–90.
- Littlechild, S. C.; Vaidya K. G. 1982. *Energy Strategies for the UK*. London: George, Allen and Unwin
- Liu, X. 2006. "China's Energy Security and its Grand Strategy." The Stanley Foundation Policy Analysis Briefs, 1–16.
- Liu, Y. 2006. "Who is in Charge of the Oil Production? [in Chinese]." In *China Comment Volume 12*.
- Lo'schel, A., Moslener, U., Ru'belke, D.T.G. 2009. "Indicators of Energy Security in Industrialised Countries." *Energy Policy* in press.
- Loder, A. 2013. China to surpass U.S. as world's top crude importer, OPEC says. *Bloomberg*, 2 April. Accessed on 13 December 2014.
<http://www.bloomberg.com/news/2013-04-02/china-tosurpass-u-s-as-world-s-top-crude-importer-opec-says.html>.
- Lovins A.B., Lovins L.H. 1982. *Brittle Power*. Andover, MA: Brick House Publishing Company.
- Lu Ting'en. 2005. "The Example of Summit Diplomacy between China and African Premier Zhou Enlai's First Visit to Africa." In *China and Africa*, edited by Africa Research Center of Beijing University, 5. Beijing: Beijing University Press.
- Lukszo, Z., Deconinck, G., & Weijnen, M. 2010. *Securing Electricity Supply in the Cyber Age: Exploring the Risks of Information and Communication Technology in Tomorrow's Electricity Infrastructure*. New York: Springer.
- Mahoney, James. 2000. "Path Dependence in Historical Sociology." *Theory and Society* 29: 507-548,
- Mahoney, James & Thelen, Kathleen. 2010. *Explaining Institutional Change: Ambiguity, Agency, and Power*. Cambridge: Cambridge University Press. 23-31.
- Mansfield, E. & Reinhardt, E. 2003. "Multilateral Determinants of Regionalism: The Effects of GATT/WTO on the Formation of Preferential Trading Arrangements."

International Organization 57(4):829-862.

- Mao Z.D. 1999. "Imperialism is not Terrifying." In *Mao Zedong Wenji, Volume 8*, 169. Beijing: People's Press.
- Mariani, Bernardo. 2013. *China's role and interests in Central Asia*. Saferworld, London. 8–12.
- Marsh, David. 1999. "Introduction: Explaining Change in the Postwar Period" In *Postwar British Politics in Perspective*, edited by David Marsh. Cambridge: Policy Press.
- Martin, L. 2004. "Multilateral Organisations after the US-Iraq War of 2003," Harvard University, Weatherhead Centre for International Affairs.
- Martin, L. 1993. "The Rational State Choice of Multilateralism." In *Multilateralism Matters: The Theory and Praxis of an Institutional Form*, 93, edited by J.G. Ruggie, New York: Columbia University Press
- McKinsey & Company. 2010. "What's driving Africa's growth?" Accessed 11 November 2015.
http://www.mckinsey.com/insights/economic_studies/whats_driving_africas_growth
- Meadows, D.H., Meadows, D.L., Randers, J., Behrens, W.W. 1972. *The Limits to Growth*. New York: Universe Books.
- Mearsheimer, J. 2006. "China's Unpeaceful Rise." *Current History* 105(690): 160–162.
- Mearsheimer, J. 2010. "Australians Should Fear the Rise of China." *The Spectator*.
- Medvedev Dmitry. 2008. "Interview for Chinese Media: Xinhua news agency, People's Daily newspaper, and China Central Television." Accessed on 13 October 2013.
http://archive.kremlin.ru/eng/speeches/2008/05/22/0718_type82916_201206.shtml.
- Meidan M., Andrews-Speed P., and Xin M. 2009. "Shaping China's energy policy: actors and processes." *Journal of Contemporary China* 18(61): 591–616.
- Michael, Arndt. 2013. *India's Foreign Policy and Regional Multilateralism*. Palgrave Macmillan, 12–16.
- Mining Weekly. 2013. "CoAL Shareholders Approve \$100m HEI Investment." *Mining Weekly*. Jan 25. Accessed 11 November 2015.
<http://www.miningweekly.com/article/coal-shareholders-approve-100-million-investment-by-hei-2013-01-25>
- Mitchell, Catherine. 2008. *The Political Economy of Sustainable Energy*. Basingstoke and New York: Palgrave Macmillan.
- Mitchell, J., Morita N., Selley, N. and Stern, J. 2001. *The New Economy of Oil: Impacts on Business, Geopolitics and Society*. London: Royal Institute for

International Affairs.

- Mitchell, J., Morita N., Selley, N. and Stern, J. 2001. *The New Economy of Oil: Impacts on Business, Geopolitics and Society* London: Royal Institute for International Affairs.
- Mufson, S. 2006. "As China, U.S. Vie for More Oil, Diplomatic Friction May Follow." *Washington Post*, April 15. Accessed on 13 September 2013.
http://www.washingtonpost.com/wp-dyn/content/article/2006/04/14/AR2006041401682_2.html.
- Mukhamedov, R. 2004. Uyghurs in Kyrgyzstan under Careful Government Supervision, *Central Asia-Caucasus Analyst*, 28 January.
- Müller, F., Piefer, M. N., & Knodt, M. (Eds). 2015. *Challenges of European External Energy Governance with Emerging Powers*. Ashgate Publishing, Ltd.
- Munro, Ross H. 2006. "China's relations with its neighbours." *International Journal*.
- Mwesiga, B. 2008. "The Three Faces of the Dragon: Tanzania-China Relations in Historical Perspective" In *Crouching Tiger, Hidden Dragon? Africa and China* edited by K. Ampiah and Sanusha Naidu, Scottsville: University of KwaZulu-Natal Press.
- Nakagawa, J. 2012. *Multilateralism and Regionalism in Global Economic Governance: Trade, Investment and Finance*. Routledge.
- National Research Council. 2010. *Advancing the Science of Climate Change*. Washington, D.C.: The National Academies Press.
- Nurshayeva, Raushan; Zhumatov, Shamil. 2009. "China's Hu boosts energy ties with Central Asia." *Reuters*. 12 Dec. Accessed on 13 October 2013.
<http://www.reuters.com/article/2009/12/12/china-kazakhstan-idUSGEE5BB01D20091212>
- Nuttall, W. and Manz, D. 2008. "A New Energy Security Paradigm for the Twenty-First Century", *Technological Forecasting and Social Change*, 75 (8): 1247–1259.
- Nye, J. 1968. *International Regionalism*. Boston: Little Brown and Company
- O'brien, R. 2000. *Contesting Global Governance: Multilateral Economic Institutions and Global Social Movements (Vol. 71)*. Cambridge University Press.
- OGJ. 2006. "Russian-Chinese competition may marginalize US, European influence." *Oil and Gas Journal*. Accessed on 13 March 2013.
<http://www.ogj.com/articles/print/volume-104/issue-10/exploration-development/central-asia-oil-and-gas-2-russian-chinese-competition-may-marginalize-us-european-influence.html>.
- OGJ. 2013. "CNPC Completes Buy of Stake off Mozambique." *Oil & Gas Journal*, July 23. Accessed 11 November 2015. <http://www.ogj.com/articles/2013/07/cnpc->

completes-buy-of-stake-off-mozambique.html

- OPEC. 2015. "Member Countries." Accessed 11 November 2015.
http://www.opec.org/opec_web/en/about_us/25.htm.
- Paik, Keun-Wook; Valerie Marcel; Glada Lahn; John V. Mitchell, and Erkin Adylov. 2007. "Trends in Asian National Oil Company Investments Abroad: An update." *Royal Institute of International Affairs*, Chatham House, Working Background Paper, March 2007. p. 6 at
http://www.chathamhouse.org.uk/files/6427_r0307anoc.pdf.
- Paik, Keun-Wook. 2012. Sino-Russian oil and gas cooperation : the reality and implications. Oxford University Press.
- Pang, Zhongying. 2006. 中国在国际体系中的地位与作用 [in English: China' s role in the international system]. *Contemporary International Relations*, 4, pp.17-22.
- Pang, Zhongying. 2012. "Peaceful Development and Energy Diplomacy." *Outlook Weekly*, 95.
- Paramonov, Vladimir. 2005. "China and Central Asia: Present and Future of Economic Relations." Conflict Studies Research Centre, *Central Asian Series*. p.3–7.
- Paust, J., Blaustein, A. 1974. "Arab Oil Weapon: A Threat to International Peace." *American Journal of International Law* 68:410.
- Pennington, J. 2012. "How Peaceful is China's Rise? The Use of Soft and HardPower in China's Energy Security Strategy in Central Asia." *POLIS Journal* 6: 1-55.
- People's Daily. 2008. "China Pioneers in Renewable Energy." *People Daily*, Sept. 9. Accessed on 10 October 2015.
<http://english.people.com.cn/90001/90780/91344/6496247.html>
- People's Daily Online. 2006. "Good Friends, Good Partners and Good Brothers." *People's Daily Online*, June 22. Accessed 11 November 2015.
http://en.people.cn/200606/22/eng20060622_276333.html
- People's Daily. 2000. "中、塔、俄、哈、吉五国《杜尚别声明》 [In English: Tajikistan, Russia, Kazakhstan, and Kyrgyz signed the Dushanbe Declaration]." *People's Daily*, 5 July 2000. Accessed on 13 October 2015.
<http://www.people.com.cn/GB/channel1/10/20000705/131545.html>.
- People's Daily. 2006. "Kazakhstan–China oil pipeline to open in May." *People's Daily Online*, 27 Feb.
- Percival, B. 2008. "The Risk of Energy Securitization on the Eurasian Continent." Clingendael International Energy Programme.
http://www.clingendaelenergy.com/inc/upload/files/The_risk_of_energy_securitization_Eurasia.pdf

- Peyrouse, Sébastien, "China's recent advances in Central Asia." *CACI Analyst*. Accessed 12 November 2008. www.cacianalyst.org/?q=node/5001;
- Peyrouse, Sébastien. 2007. "Economic Aspects of the Chinese–Central Asia Rapprochement." Central Asia–Caucasus Institute & Silk Road Studies Program – A Joint Transatlantic Research and Policy Center.
- Li, Cunhui. 2010. 中哈原油管道合作双赢开辟能源通道 [In English: Win-Win Situation in Sino-Kazakhstan oil pipeline open energy corridor] *China Petroleum Daily*. 17 Dec.
- Pham, J. Peter. 2006. "Beijing's Great Game: Understanding Chinese Strategy in Central Eurasia." *American Foreign Policy Interests*. 28:54-67.
- Plater-Zyberk, Henry. 2007. "Who's Afraid of the SCO?" Conflict Studies Research Centre, *Central Asian Series*. p. 4.
- Pop, I.I. 2010. "China's energy strategy in Central Asia: interactions with Russia, India and Japan." *UNISCI Discussion Papers* 24: 197–220.
- Popper, K. R. 1934. *Logik der Forschung*. Wien: Julius Springer Verlag.
- PRC CPC. 2007. "為奪取全面建設小康社會新勝利而奮鬥" Accessed on 13 December 2014. <http://cpc.people.com.cn/BIG5/64162/134580/141428/index.html>.
- PRC CPC. 2005. 中共中央关于制定“十一五”规划的建议 [CPC Central Committee on the development of the "Eleventh Five-Year Plan"] <http://cpc.people.com.cn/GB/64162/64168/64569/65414/4429220.html>.
- PRC MFA. 2001. 第四次中欧领导人会晤联合新闻公报（全文） [in English: Fourth China-EU Summit Joint Press (full text)]. Accessed on 10 October 2015. <http://wcm.fmprc.gov.cn/pub/chn/gxh/zlb/smegg/t365252.htm>
- PRC MFA. 2003. 第六次中欧领导人会晤联合新闻公报（全文） [in English: Sixth China-EU Summit Joint Press (full text)]. Accessed on 10 October 2015. <http://wcm.fmprc.gov.cn/pub/chn/gxh/zlb/smegg/t365242.htm>
- PRC MFA. 2004. 第七次中欧领导人会晤联合新闻公报（全文） [in English: Seventh China-EU Summit Joint Press (full text)]. Accessed on 10 October 2015. <http://wcm.fmprc.gov.cn/pub/chn/gxh/zlb/smegg/t365230.htm>
- PRC MFA. 2005. 第八次中欧领导人会晤联合新闻公报（全文） [in English: Eighth China-EU Summit Joint Press (full text)]. Accessed on 10 October 2015. <http://wcm.fmprc.gov.cn/pub/chn/gxh/zlb/smegg/t365226.htm>
- PRC MFA. 2006. "China and African Countries Celebrate the 50th Anniversary of Diplomatic Relations." Accessed 11 November 2015. <http://www.fmprc.gov.cn/ce/cebw/eng/xnyfgk/t257854.htm>
- PRC MFA. 2006. "Vice Minister of Commerce Wei Jianguo: China-Africa

- Economic and Trade Cooperation with Impressive Results.” Accessed 11 November 2015. http://www.gov.cn/zwhd/2006-01/13/content_157162.htm
- PRC MFA. 2006. 第九次中欧领导人会晤联合新闻公报（全文）[in English: Ninth China-EU Summit Joint Press (full text)]. Accessed on 10 October 2015. http://www.gov.cn/gongbao/content/2006/content_431873.htm
 - PRC MFA. 2007. “Joint Communiqué of Meeting of Council of Heads of SCO Members.” Accessed on 13 October 2013. http://www.fmprc.gov.cn/mfa_eng/wjdt_665385/2649_665393/t355665.shtml.
 - PRC MFA. 2007. Bilateral relationship between China and Turkmenistan. Accessed on 8 October 2012. <http://www.mfa.gov.cn/chn/wjb/zzjg/dozys/gjlb/1781/default.htm>.
 - PRC MFA. 2007. 中国外交(2007) [in English: White Paper on China’s Diplomacy 2007].
 - PRC MFA. 2007. 第十次中欧领导人会晤联合新闻公报（全文）[in English: Tenth China-EU Summit Joint Press (full text)]. Accessed on 10 October 2015. <http://wcm.fmprc.gov.cn/pub/chn/gxh/zlb/smgg/t386518.htm>
 - PRC MFA. 2008. 中国外交(2008) [in English: White Paper on China’s Diplomacy 2008].
 - PRC MFA. 2009. “Hu Jintao’s Speech: Work Together to Write a New Chapter of China-Africa Friendship.” Accessed 11 November 2015. http://www.fmprc.gov.cn/mfa_eng/wjdt_665385/zyjh_665391/t538257.shtml
 - PRC MFA. 2013. “上海合作组织成员国总理会议 [In English: Shanghai Cooperation Organization (SCO) meeting]” http://www.fmprc.gov.cn/mfa_chn/wjb_602314/zzjg_602420/dozys_602828/dqzzoy_602832/shhz_602834_1/gk_602836.
 - PRC MFA. 2014. 中国同欧盟的关系 [in English: China-EU Relations] Accessed on 10 October 2015. http://www.fmprc.gov.cn/mfa_chn/gjhq_603914/gj_603916/oz_606480/1206_607640/sbgx_607644/.
 - PRC MLR. 2010. “The main functions.” Accessed on 21 August 2013. http://www.mlr.gov.cn/bbgk/zyzn/201009/t20100908_762243.htm.
 - PRC MOC. 2006. “How to Apply for Government Subsidized Lending.” Accessed 11 November 2015 <http://www.mofcom.gov.cn/aarticle/i/jyjl/k/200603/20060301679014.html>
 - PRC MOC. 2011. “中国天辰工程公司中标哈萨克电站改造项目 [In English: China Tianchen Engineering Company won the bid Kazakh power plant renovation project]” Accessed on 13 October 2013.

- <http://www.mofcom.gov.cn/aarticle/i/jyj/m/201103/20110307454157.html>.
- PRC MOC. 2012. "Congo Media Praised China for Economic Development in Africa and Injecting New Vitality." Accessed [date].
<http://www.mofcom.gov.cn/article/i/jyj/k/201207/20120708247697.shtml>
 - PRC MOC. 2012. "Enormous Potential in Africa's Solar and Other New Energy Markets." Accessed 11 November 2015.
<http://eg.mofcom.gov.cn/article/jmxw/201212/20121208490225.shtml>
 - PRC MOC. 2013. Beijing. Jul 18.
 - PRC MOST. 2006. *国际科技合作实施纲要 [in English: Implementation Outline of International Science and Technology Cooperation]*.
 - PRC MOST. 2010. "第八次中欧能源合作大会在上海召开 [in English: The Eighth EU-China Energy Cooperation Conference Held in Shanghai]." July 12. Accessed July 15, 2015. http://www.most.gov.cn/kjbgz/201007/t20100711_78370.htm
 - PRC MOST. 2010. *China's Clean Energy in Progress*.
 - PRC NBS. 2013. *China Energy Statistical Yearbook 2013*, China Statistics Press.
 - PRC NDRC. 2007. "能源发展“十一五”规划 [in English: Energy development "Eleventh Five-Year" Plan]." Accessed on 13 December 2014.
<http://www.ccchina.gov.cn/WebSite/CCChina/UpFile/File186.pdf>.
 - PRC NDRC. 2007. *China's Energy Policy (2007) White Paper*.
 - PRC NDRC. 2008. National Energy Administration (NEA) Accessed on 19 December 2014. http://en.ndrc.gov.cn/mfod/200812/t20081218_252224.html.
 - PRC NDRC. 2012. *China's Energy Policy (2012) White Paper*.
 - PRC NEA. 2010. *2009年能源经济形势及2010年展望 [in English: 2009 Energy Economic Situation and Prospects 2010]*.
 - PRC NEA. 2012. *中国可再生能源“十二五”规划概览 [In English: An Overview of China Renewable Energy Twelfth Five Year Plan]*.
 - PRC NEA. 2013. "第六次中欧能源对话在京举行 [In English: The Sixth China-EU Energy Dialogue was held in Beijing]." Accessed on 10 October 2015.
http://www.nea.gov.cn/2013-11/27/c_132923326.htm.
 - PRC NEA. 2013. *China Energy Statistical Yearbook 2013*.
 - PRC NPC. 2005. *Renewable Energy Law of the People's Republic of China*.
 - PRC NPC. 2007. *Law of the People's Republic of China on Energy Conservation*.
 - PRC SASAC. 2011. 中化集团与哈萨克磷公司签署战略合作框架协议 [In English: Sinochem signed framework agreement with KPC]. Accessed on 8 October 2014.
<http://www.sasac.gov.cn/n86114/n326638/c958714/content.html>.
 - PRC SCIO. 2011. "China's Foreign Aid." White Paper. Accessed 11 November 2015. http://www.scio.gov.cn/zxbd/tt/Document/1011345/1011345_1.htm

- PRC SETC. 2000. *中国工业五十年: 1949-1999 [in English: Fifty years of China's Industry]*. China Economy Publishing.
- PRC State Council. 2001. "China's 11th Five Year Plan". Accessed 23 December 2012. <http://politics.people.com.cn/GB/1026/4208451.html>.
- PRC State Council. 2003. *China's National Energy Strategy and Policy*, Development Center, State Council, Beijing.
- PRC State Council. 2004. "Wen Jiabao's Speech at the 50th Anniversary Assembly of the Five Principles of Peaceful Coexistence." Presented at the 50th Anniversary Assembly of the Five Principles of Peaceful Coexistence, 28 June 2004 http://www.gov.cn/gongbao/content/2004/content_62873.htm
- PRC State Council. 2006. "China's African Policy." Accessed 11 November 2015. http://www.gov.cn/misc/2006-01/12/content_156509.htm
- PRC State Council. 2006. "Government issues African Policy Paper." Accessed 11 November 2015. http://www.gov.cn/misc/2006-01/12/content_156509.htm
- PRC State Council. 2006. "中华人民共和国国民经济和社会发展第十一个五年规划纲要 [People's Republic of China national economic and social development in the Tenth Five-Year Plan]." Accessed on 13 December 2014. http://www.gov.cn/ztl/2006-03/16/content_228841.htm.
- PRC State Council. 2007. *中国的能源状况与政策 [in English: White Paper on China's energy situation and policy]*.
- PRC State Council. 2010. "China Trade Cooperation with Africa [in Chinese]." Accessed 11 November 2015. http://www.gov.cn/zwgk/2010-12/23/content_1771638.htm
- PRC State Council. 2010. "Notification of the State Council on the establishment of the National Energy Commission." Accessed on 13 August 2013. http://www.gov.cn/zwgk/2010-01/27/content_1520724.htm.
- Prindle, B., Eldridge, M., Eckhardt, M., and Frederick, A. 2007. *The Twin Pillars of Sustainable Energy: Synergies between Energy Efficiency and Renewable Energy Technology and Policy*, ACEEE Report E074. Washington, DC: American Council for Energy Efficiency.
- Putin, Vladimir. 2006. "Speech at the Shanghai Cooperation Organisation Council of Heads of State." 15 June. Accessed on 13 October 2013. http://archive.kremlin.ru/eng/speeches/2006/06/15/0748_type82914_107181.shtml.
- Qiu, Lin. 2010. "日本为能源向中亚示好 [In English: Japan approach Central Asia for energy]", *中亚信息* 8: 33–34
- Rapley, C., de Cendra de Larragán, J., McDowall, W. & Ekins, P. 2012. "Stemming the Flow: A New Direction for Climate Change Governance." Paper

presented at Planet Under Pressure 2012, London.

- Reddy, A. K. N. & D'Sa, A. 1995. "Enron and Other Similar Deals vs New Energy Paradigm." *Economic and Political Weekly*, 30 (24): 1441–1448.
- Rehn, Cecilia. 2012. "Kazakhstan–China oil pipeline could start operating at its full capacity by 2014". *Energy Global*. Nov 9. Accessed on 13 March 2013.
http://www.energyglobal.com/pipelines/business-news/09112012/Kazakhstan_to_China_oil_pipeline_could_start_operating_at_its_full_capacity_by_2014/
- Ren, L. 2014. "Global Multilateral Governance: Achieve Effectiveness and Openness." (in Chinese) *International Relations Survey* 5.
- Reuters. 2005. "CNOOC, CNPC and KazMunayGas to team up in Caspian sea exploration" *Reuters*, 8 Sep.
- Ristuccia, C.A. 1997. "1935 Sanctions Against Italy: Would Coal and Crude Oil Have Made a Difference." Oxford Economic and Social History Working Papers.
- Roantree, Anne Marie. 2008. "CNPC, Uzbekistan tie up to develop Mingbulak oilfield." *Reuters*. 20 Oct. Accessed on 13 March 2013.
<http://www.reuters.com/article/2008/10/20/cnpc-uzbekistan-idUSPEK30407220081020#PYvrPJeGSUgImJgx.97>.
- Robert, D., Hershey, Jr. 1981. "How the Oil Glut is Changing Business." *New York Times*, 21 Jun. <http://www.nytimes.com/1981/06/21/business/how-the-oil-glut-is-changing-business.html>
- Robert, K. 1975. *The United States and International Oil*. New York: Praeger Publisher.
- Rogovin, M. 1980. "Three Mile Island: A report to the Commissioners and to the Public, Volume I.: Nuclear Regulatory Commission, Special Inquiry Group. Accessed February 28, 2015. <http://www.threemileisland.org/downloads/354.pdf>.
- Ruggie, J.G. 1993. "Multilateralism: The Anatomy of an Institution." In *Multilateralism Matters: The Theory and Praxis of an Institutional Form*, 11, edited by J.G. Ruggie, New York: Columbia University Press
- Ruland, J. 2011. "Southeast Asian Regionalism and Global Governance: 'Multilateral Utility' or 'Hedging Utility.'", *Contemporary Southeast Asia: A Journal of International and Strategic Affairs* 33.
- Schill, S.W. 2007. "Tearing Down the Great Wall: the New Generation Investment Treaties of the People's Republic of China." *Journal of International and Comparative Law* 73: 82.
- Schmidt, V. A. 2006. *Democracy in Europe: The EU and National Politics*. Oxford: Oxford University Press.
- Schmidt, V.A. and Radaelli, C. M. 2004. "Policy Change and Discourse in Europe:

- Conceptual and Methodological Issues.” *West European Politics* 27(2): 183-210.
- SCO. 2001. “Shanghai Convention on Combating Terrorism, Separatism and Extremism.” Accessed on 8 October 2014.
<http://www.sectsco.org/EN123/show.asp?id=68>.
 - SCO. 2006. “Declaration on Establishment of SCO.” Accessed on 8 October 2015.
http://english.scosummit2006.org/en_bjzl/2006-04/20/content_85.htm.
 - SCO. 2008. “Chronicle of main events at SCO in 2008.” Accessed on 13 October 2013. www.sectsco.org/EN123/show.asp?id=66.
 - Seaman, John. 2010. *Energy Security, Transnational Pipelines and China’s Role in Asia*. Paris: Institut Français des Relations Internationales.
 - Shambaugh, D., Sandschneider, E., & Hong, Z. 2008. “China-Europe Relations: Perceptions, Policies, and Prospects.” *Foreign Affairs* March/April.
 - Sheng, H. 1992. “Accelerate Reform to Achieve Six Changes.” *People Daily*. Nov. 22.
 - Shi, Dan. 2000. “我国能源政策回顾与未来的政策” [“China’s energy policy and future policy review”], *经济研究参考* [Economic Research Reference], 20:20–27.
 - Simmons, M. 2005. *Twilight in the Desert: The Coming Saudi Oil Shock and the World Economy*. John Wiley.
 - Singh, Swaran. 2010. “China’s Quest for Multilateralism: Perspectives from India.” *Social and Behavioral Science*, 2(5): 720–729.
 - Smyth, R., Qingguo, Z. and Wenguo, H. 2001. “Restructuring China’s petrochemical enterprises: a case study of the Fushun Petrochemical Company.” *Post-Communist Economies* 13(2): 243–61.
 - Snyder, F. G. 2009. *The European Union and China, 1949-2008: Basic Documents and Commentary*. Hart Publishing.
 - Sovacool, B. K. 2011. “Evaluating Energy Security in the Asia Pacific: Towards a More Comprehensive Approach. *Energy Policy* 39(11): 7472–7479.
 - Spanjer, A. 2007. “Russian Gas Price Reform and the EU–Russia Gas Relationship: Incentives, Consequences and European Security of Supply.” *Energy Policy* 35(5): 2889–2898.
 - Stake, R.E. 2000. “Case Studies.” In *Handbook of qualitative research* edited by N.K. Denzin & Y. S. Lincoln. 435-454. Thousand Oaks, CA: Sage.
 - Stanislaw, J. 2004. “Energy Competition or Co-operation: Shifting the Paradigm”, *Economic Perspectives* 9(2): 17-20.
 - PRC State Council. 2011. “An Overview of ‘Going out’ Strategy.” Accessed on 13 September 2013. <http://qwgzyj.gqb.gov.cn/yjyt/159/1743.shtml>.
 - *Steel Guru*. 2009. Construction cost of Kazakhstan to China gas pipeline increases.” *Steel Guru*, 13 Jul.

- Sukhanov, Alexander. 2005. "Caspian oil exports heading east." *Asian Times*. Accessed 15 March 2008.
- Swan, J. 2008. "Congressional Testimony: China in Africa: Implications for U.S. Policy. Accessed 11 November 2015.
<http://www.foreign.senate.gov/imo/media/doc/ChristensenTestimony080604a.pdf>
- Swanstrom, N. 2005. "China and Central Asia: A New Great Game or Traditional Vassal Relations?" *Journal of Contemporary China* 14(45), 569–584.
- Szadziwski, Henryk. 2009. "How the West was Won: China's Expansion into Central Asia." *Caucasian Review of International Affairs* 3(2): 210-218.
- Tang, X. 2010. "A Brief Analysis of China's Economic and Trade Cooperation Zones in Africa." *West Asia and Africa* 11: 17-22.
- Taylor, A. 2006. "Unpacking China's Resource Diplomacy in Africa." Center on China's Transnational Relations. Working Paper No. 19.
- Taylor, Ian. 2006. "China's Oil Diplomacy in Africa," *International Affairs* 82(5): 937–959.
- Teunissen, J.J. 1998. *Regional Integration and Multilateral Cooperation in the Global Economy*. City: FONDAD,
- The American Presidency Project. 1980. "Jimmy Carter." Last modified 23 January. <http://www.presidency.ucsb.edu/ws/index.php?pid=33079>.
- The Commission on Global Governance. 1995. *Our Global Neighbourhood*. Oxford: Oxford University Press.
- The White House. 2006. "The National Strategy."
- Tian, C. 2003. "Analysis on Import and Export of Chinese Petroleum in 2002." *International Petroleum Economics* 3.
- Tian, C. 2011. "China's 2010 Oil Imports and Exports." *International Petroleum Economics* March: 20.
- Tisdall, S. 2006. "Irresistible Rise of the Dictators' Club." *The Guardian*, 6 Jun.
- Tobin, Damian. 2008 "From Maoist Self-Reliance to International Oil Consumer: A Resource-Based Appraisal of the Challenges Facing China's Petrochemical Sector." *Journal of Chinese Economic & Business Studies* 6 (4). pp. 363–383
- Today China News. 2003. "The Sino-African Relations Comments of Chinese Leaders." *Today China*, November 14. Accessed 11 November 2015.
<http://www.china.com.cn/chinese/zhuanti/zf/442107.htm>
- Tønnesson, Stein and Åshild Kolås. 2006. *Energy Security in Asia: China, India, Oil and Peace*. International Peace Research Institute 31–32.
- Tsang, S. & Kolk, A. 2011. "The Evolution of Chinese Policies and Governance Structures on Environment, Energy, and Climate." *Environmental Policy and Governance* 20(3): 180-196.

- Tullow Oil PLC. 2012. "\$2.9bn Farm-down of Uganda Licences Completed." Accessed 11 November 2015.
<http://www.tullowoil.com/index.asp?pageid=137&newsid=737>
- U.S. Congress House. 2007. "Energy as a Weapon: Implications for U.S. policy." Washington.
- U.S. DOE. 2006. "Energy Policy Act of 2005 Section 1837: National Security Review of International Energy Requirements."
- Umarov, Adiljan and Dmitriy Pashkun. 2006. "Tensions in Sino–Central Asian Relations and their Implications for Regional Security." Conflict Studies Research Centre, *Central Asian Series*.
- UNCTAD. 2012. "Country-specific Lists of Bilateral Investment Treaties." Accessed on 14 Decembet 2014.
<http://unctad.org/en/Pages/DIAE/International%20Investment%20Agreements%20%28IIA%29/Country-specific-Lists-of-BITs.aspx>.
- UNDP. 2000. "World Energy Assessment: Energy and the Challenge of Sustainability."
<http://www.undp.org/content/dam/aplaws/publication/en/publications/environment-energy/www-ee-library/sustainable-energy/world-energy-assessment-energy-and-the-challenge-of-sustainability/World%20Energy%20Assessment-2000.pdf>.
- UNFCCC. 2010. *United Nations Framework Convention on Climate Change*.
- UNFCCC. 2011. *Kyoto Protocol*
- United Nations. 2005. *Human Development Report 2005*. New York.
- UPI. 2012. "China Urges Global Energy Cooperation." *United Press International*. 16 Jan. Accessed on 13 September 2013.
http://www.upi.com/Business_News/Energy-Resources/2012/01/16/China-urges-global-energy-cooperation/UPI-77361326740422.
- Upstream Online. 2008. "Kazakhstan gets cracking on China pipe", *Upstream Online* 9 Jul. Accessed on 8 October 2013.
<http://www.upstreamonline.com/live/article1159922.ece>
- Upstream Online. 2008. "Beijing digs in with Kazakh pipes", *Upstream Online*, 9 Apr.
- US DOS. 2012. "Energy Diplomacy in the 21st Century." Accessed on 6 September 2015. <http://www.state.gov/r/pa/pl/2012/200637.htm>.
- van der Hoeven, M. 2012. "IEA Vision on International Energy Governance." *Energy Strategy Reviews* 1(2): 73-75.
- Vivoda, V. 2010. "Evaluating Energy Security in the Asia-Pacific Region: A Novel Methodological Approach." *Energy Policy* 38(9), 5258–5263.
- Vogler, J. 2000. *The Global Commons: Environmental and Technological*

Governance. Chichester: John Wiley & Sons.

- Wæver, Ole. 1995. "Securitization and Desecuritization." in *On Security*, edited by Ronnie D. Lipschutz, New York: Columbia University Press.
- Walt, S. 2011. "Sino-American Rivalry: A Chinese View." Accessed on December 23, 2012.
http://walt.foreignpolicy.com/posts/2011/11/21/sino_american_rivalry_a_chinese_view.
- Wan Zhihong. 2010. "China, Kazakhstan sign new gas pipeline deal." *China Daily*. Retrieved 20 June 2010.
- Wan, Duoyun, Zhang, Xiuying. 2011. *中国油气资源国际合作*[In English: *Chinese international oil and gas cooperation*], CASS Publishing.
- Weaver. 2004. "Can Energy Markets Be Trusted? The Effect of the Rise and Fall of Enron on Energy Markets." *Houston Bus Tax Law Journal* 4
- Weiss, T. and Thakur, R. 2006. *The UN and Global Governance: An Idea and its Prospects*. Indiana University Press.
- Weiss, T. G., & Wilkinson, R. 2014. "Rethinking Global Governance? Complexity, Authority, Power, Change." *International Studies Quarterly* 58(1): 207-215.
- Weitz, R. 2006. "Shanghai Summit Fails to Yield NATO-style Defence Agreement." *Jane's Intelligence Review* 18(8):42, p. 42.
- Widmaier, Wesley, Blyth, Mark & Seabrooke, Leonard. 2007. "Exogenous Shocks or Endogenous Constructions? The Meanings of Wars and Crises." *International Studies Quarterly* 51, pp. 747-759.
- Winters, A. 1999. "Regionalism Versus Multilateralism", Policy Research Working Papers, World Bank.
- Wong, Jacqueline. 2011. "KazMunaiGas in deal to tap Urikhtau gas field". *Reuters*. 23 Feb. Accessed on 8 October 2014.
<http://uk.reuters.com/article/2011/02/23/china-kazakhstan-gas-idUKTOE71M04Z20110223>.
- Wong, S. et al. 2008. "Mining for China's Outbound Direct Investment." *China Law & Practice*. 37-40.
- World Affairs Press. 2010. *World Affairs Almanac 2009/2010, 3rd Edition*. World Affairs Press.
- World Energy Assessment. 2001. *Renewable energy technologies*.
- CIA. 2005. "World Factbook." Accessed on 3 May 2012.
<http://www.cia.gov/cia/publications/factbook/index/html>.
- Wright, P. 2005. "Liberalisation and the security of gas supplies in the UK." *Energy Policy* 33 (17): 2272-2290.
- Wu, Xuxin. 2006. 經濟全球化下中亞石油國際合作和中國石油國際合作之比較 [In

English: Comparison between Sino-Central Asian oil cooperation with China's international oil cooperation under the globalized economy]. *Journal of Shengli Oilfield Party School* 19 (1).

- Xing, Guangcheng. 2009. *上海合作组织发展报告2009 [In English: Shanghai Cooperation Organization Development Report 2009]*. CASS Publishing.
<http://euroasia.cass.cn/news/60976.htm>.
- Xinhua News. 2004. “国务院常务会议原则通过《能源中长期发展规划纲要》 [“Energy and long-term Development Plan” approved in State Council executive meeting].” *Xinhua News*, 1 July. Accessed on 13 December 2014.
http://news.xinhuanet.com/zhengfu/2004-07/01/content_1559228.htm.
- Xinhua News. 2004. “胡锦涛在乌演讲:睦邻安邻富邻建言與中亞關係” [In English: Hu Jintao's Speech in Uzbekistan: Good neighbour and Sino-Central Asian relationship]. *Xinhua News*. 16 Jun. Accessed on 8 October 2014.
<http://news.sina.com.cn/c/2004-06-16/19592825117s.shtml>.
- Xinhua News. 2004. 中亞關係四項基本政策和六點主張 [In English: Four basic policy and six claims in Sino-Central Asian relations]. *Xinhua News*. Accessed on 16 June 2014. http://news.xinhuanet.com/ziliao/2003-02/19/content_735901.htm.
- Xinhua News. 2006. Kazakhstan-China oil pipeline opens to operation, 12 July, *Xinhua News*. Accessed on 13 March 2013.
http://news3.xinhuanet.com/english/2006-07/12/content_4819484.htm.
- Xinhua News. 2009. “China Adopts Amendment to Renewable Energy Law.” *Xinhua News*, Dec. 26. Accessed 10 October 2015.
http://www.china.org.cn/environment/2009-12/26/content_19136273.htm
- Xinhua News. 2012. “China and Zimbabwe Cooperate to Develop Coal Resources.” *Xinhua News*, Dec 20. Accessed 11 November 2015.
http://news.xinhuanet.com/world/2012-12/20/c_124123320.htm
- Xinhua News. 2013. “Memorabilia of Chinese Presidents' visits in Africa [in Chinese].” *Xinhua News*, 24 March. Accessed 11 November 2015.
http://news.xinhuanet.com/world/2013-03/24/c_124496931.htm
- Xinhua News. 2014. “历次中国—欧盟领导人会晤 [in English: Previous China - EU summit].” *Xinhua News*, Aug 5. Accessed on 10 October 2015.
http://news.xinhuanet.com/ziliao/2004-05/08/content_1457067.htm
- Xu, Q. 2007. “China's Energy Diplomacy and its Implications for Global Energy Security.” FES Briefing Paper. Accessed on 13 September 2013.
<http://library.fes.de/pdf-files/iez/global/04763.pdf>.
- Xu, X. 2007. “Chinese NOCs' Overseas Strategies: Background, Comparison and Remarks,” Paper presented at the James A. Baker III Institute for Public Policy

conference on The Changing Role of National Oil Companies (NOCs) in International Energy Markets, Houston, Tx, March 2007.

http://www.rice.edu/energy/publications/docs/NOCs/Papers/ChineseNOCs_Xu.pdf

- Yang, G. & He, W. P. 2005. *Annual Report on Development in the Middle East and Africa, No. 10 (2006–2007): The Relation of History and Reality Between China and Africa*. Beijing: Social Sciences Academic Press.
- Yang, G. & Wang, J. 2006. *Middle East and Africa Development Report No. 9 (2005–2006): The Influence of Economic Globalization in the Middle East and Africa*. Beijing: Beijing Social Sciences Academic Press.
- Yang, L. 2003. "White Paper on China-Africa Economic and Trade Cooperation: The Next Five-Year Development Plan." White Paper, PRC MOFCOM and CASS.
- Yee, A. S. 1996. "The Causal Effects of Ideas on Policy." *International Organisation* 50(1).
- Yergin, D. 1988. "Energy security in the 1990s." *Foreign Affairs* 67(1): 110-132.
- Yergin, D. 1991. *The Prize: The Epic Quest for Oil, Money, and Power*. New York: Simon & Schuster.
- Yergin, D. 2006 "Ensuring Energy Security." *Foreign Affairs* 85 (2): 69–82.
- Chen, M. & Jaffe, A. M. 2007. "Energy Security: Meeting the Growing Challenge of National Oil Companies." *The Whitehead Journal of Diplomacy and International Relations* 9–21.
- Youngs, R. 2009. *Energy Security: Europe's New Foreign Policy Challenge*. Abingdon and New York: Routledge.
- Zeng Peiyan. 2012. Speech at BOAO Forum for Asia, Beijing, 26–27 November 2012.
- Zha, Daojiong and H., Weixing. 2007. "Promoting Energy Partnership in Beijing and Washington." *Washington Quarterly* 30(4): 105–115.
- Zha, Daojiong. 2005. 中国石油安全的国际政治经济学分析 [Analysis of the international political economy of China's oil security], 当代世界出版社.
- Zha, Daojiong. 2006. "China's energy security: domestic and international issues." *Survival: Global Politics and Strategy* 48(1): 179–90.
- Zha, Daojiong. 2006. "China's Oil Interests in Africa: an International Political Issue." *The Study of International Politics* 4.
- Zhang, C. 2008. "勘探开发非洲石油资源的机遇与挑战 [in English: Opportunities and Challenges to Explore African Oil]." *International Economic Cooperation* 3: 45-48.
- Zhang, G. 2008. "Competitive Trend Analysis of Foreign Oil Companies in Africa [in Chinese]." *International Petroleum Economics* 3.
- Zhang, Guobao. 2011. Speech in The Observer Forum 2010, Beijing, 1 January

2011.

- Zhang, J. 2004. *Catch-up and competitiveness in China: the case of large firms in the oil industry*. London, New York: Routledge Curzon
- Zhang, K. 2006. "Journals of the African Trip." *Observation and Reflection* 5.
- Zhang, M. 2011. "中欧能源合作政策、机制与方式" [in English: Analysis of Policy and Mechanism of China-EU Energy Cooperation]. *全球科技经济瞭* [in English: *Global Technology Economy*] 26(3): 26.
- Zhang, X. 2012. "中欧能源合作的未来——基于能源安全与气候变化的分析 [in English: Future of Sino-EU Cooperation: Analysis Base on Energy Security and Climate Change]." *International Economic Cooperation* 3: 11-16.
- Zhao, C. 2008. "中欧关系的现状及其发展趋势 [in English: Sino-EU Relations and its Future]." *新视野* [in English: *New Horizons*] 2: 94-96.
- Zheng, Y. 2010. *China and International Relations: The Chinese View and the Contribution of Wang Gungwu*. Routledge.
- Zhou, Fangyin. 2012. 中国崛起, 东亚格局变迁与东亚秩序的发展方向 [in English: China's rise, the change of East Asia pattern, and the future]. *Contemporary Asia-Pacific Studies*, 5.
- Zhu, F. 2005. "A High Price to Pay: China's Resource Diplomacy Requires Wisdom." *New Finance*. 18 May. Accessed on 13 September 2013. <http://media.163.com/05/0518/10/1K1FC60A00141A16.html>.
- Zhu, P.P.L. 2014. "Conquest, Contest, and Consent: Evolution of Global Governance." *NUCB Journal of Economics and Information Science* 59(1): 179-196.
- Ziegler, Charles E. 2008. "Competing for Markets and Influence: Asian National Oil Companies in Eurasia." *Asian Perspective* 32(1): 129-163. p.146.
- Zoellick, R.B. 2005. "Wither China: From Membership to Responsibility?" Remarks presented at the National Committee on U.S.-China Relations, New York, NY, September 21.
- Zweig, D. & Herberg, M.E. 2010. "China's Energy Rise, the US, and the New Geopolitics of Energy." *Pacific Council on International Policy* 1-90.
- Zweig, D. & Jianbai, B. 2005. "China's Global Hunt for Energy." *Foreign Affairs* 84:25-38
- Zweig, D. 2009. "A New 'Trading State' meets the Developing World." *Center on China's Transnational Relations* 31: 1-26.
- Zweig, D., & Jianbai, B. 2005. "China's Global Hunt for Energy." *Foreign Affairs* 84: 25-38.

List of Interviewees

- Anonymous, Chinese senior energy officer responsible for international energy cooperation
- Anonymous, Chinese senior energy officer of a renewable energy division
- Anonymous, Regional Coordinator at Energy Charter
- Anonymous, Former Counselor in Chinese Embassy in Central Asian countries.
- Anonymous, Division Director at National Energy Administration of China
- Anonymous, Former Counselor in Chinese embassies in Central Asian countries and Russia.
- Anonymous, Former Counselor of a Chinese embassy to an African country.
- Anonymous, Former manager of a CNOC
- Anonymous, Former researcher at a Chinese power company
- Anonymous, Industrial economist at Chinese Academy of Social Science.
- Anonymous, Senior officer at China International Capital Corporation Limited.
- Anonymous, Officer at Division of Oversea Resources Development of National Energy Administration of China.
- Anonymous, Overseas researcher of a CNOC.
- Anonymous, Project coordinator at a Shanghai-based Energy Fund.
- Anonymous, Research director at Schlumberger.
- Anonymous, Researcher at Energy Research Institute of National Development and Reform Commission of China.
- Anonymous, Researcher at Ministry of Commerce of China.
- Anonymous, Researcher of a CNOC
- Anonymous, Senior officer at a CNOC
- Anonymous, Senior officer at a joint center between EU and China
- Anonymous, Senior officer of IEA.
- Anonymous, Senior research at a joint center between EU and China
- Anonymous, Senior researcher at a CNOC
- Anonymous, Senior researcher at Chinese Academy of Social Science.
- Anonymous, Senior researcher at Energy Research Institute of National Development and Reform Commission of China.
- Anonymous, Chairman of the board of a green energy supplier in China.
- Anonymous, Vice-division head of National Energy Administration
- Chen, Weidong, Chief analyst of CNOOC
- Chen, Xavier, Chairman of Energy Committee at European Chamber of

Commerce, President of Beijing Energy Club, Energy Business Council member of International Energy Agency.

- Guo, Chaoxian, Deputy Director of Baotao National Rare Earth Hi-Tech Industrial Development Zone
- Huang, Kevin, Analyst at International Department of Shanghai Construction Group
- Li, Dongyin, Researcher of Global Governance Research Group, Chinese Academy of Social Science.
- Liu, Ying, Division Director at Chongyang Institute for Financial Studies at Renmin University
- Ni, Xiangdong, Director at Sinopec Zhenhai Refinery
- Paik, Keun-wook, Senior research fellow at Chatham House and Oxford Institute of Energy Studies
- Philip Andrews-Speed, Principal Fellow at the Energy Studies Institute of the National University of Singapore and Associate Fellow at Energy, Environment and Development Programme of Chatham House
- Rusnák, Urban, Secretary General at Energy Charter
- Su, Hao, Professor at the Department of Diplomacy of China Foreign Affairs University
- Taylor, Ian, Professor in International Relations and African Political Economy at St Andrews
- Tu, Jianjun, Director of China Office at International Energy Agency
- Wang Haiyun, Director of the Energy Diplomacy Research Center of the China Foundation for International Studies, Major Major General of China
- Wu, Daihui, Fellow, Institute of Eurasian Society Development, Development Research Center of the State Council
- Xia, Yishan, Former senior diplomat of Eurasian and energy issues at the Ministry of Foreign Affairs of China
- Xu, Xiaojie, Chair Fellow of World Energy Research Project of the Chinese Academy of Social Sciences.
- Xue, Li, Director of Department of International Strategy at Chinese Academy of Social Science.
- Yang, Huai, Research Fellow at China Energy Fund Committee
- Ye, Yu, Researcher at Shanghai Institute of International Studies
- Yu, Hongyuan, Director of the Department of International Organizations and Laws at the Shanghai Institute for International Studies.
- Zha, Daojiong, Professor of International Political Economy at Peking University
- Zhang, Bin, Researcher at China Institute of International Studies.

- Zhang, Meng, former Secretary of China energy policy and strategy” roundtable series, and former Director of China Business Network energy division.
- Zhang, Wenmu, Strategic specialist at Beijing University of Aeronautics and Astronautics
- Zhao, Hongtu, Deputy Director of Institute for World Economic Studies at China Institute of Contemporary International Relations
- Zweig, David, Director of Center on China's Transnational Relations at Hong Kong University of Science and Technology