



Symposium

Theoretical advances and empirical lessons
on emission trading schemes

排放交易机制理论前沿和实证经验

10-11 October, 2013

(Updated, 20130929)

Hosts:

Institute of Policy and Management, Chinese Academy of Sciences (IPM CAS)
Fraunhofer Institute for Systems and Innovation Research ISI

Chairs

Prof. Ying Fan (IPM CAS)
Dr. Wolfgang Eichhammer (Fraunhofer ISI)

Organizer

Center for Energy and Environmental Policy Research (CEEP), IPM CAS



Venue:

New building of IPM CAS
(No.15 ZhongGuanCun BeiYiTiao Alley, Haidian District, Beijing)

Background

In order to mitigate the trend of global climate change, mankind has to take measures to curb the emissions of greenhouse gases. The issue of carbon emissions, which is characterized by its externality, wouldn't be resolved in the absence of policy intervention. Carbon emission trading schemes (mechanism for emission permits trade of carbon) gives carbon emission permits properties of the common goods, hence, the emission permits can be traded on the market inter-enterprise, inter-government and inter-country based on the differences of their abatement costs.

A carbon emission trading system is different from traditional environmental pollutant transactions, and is an emerging instrument, which involves different aspects and has complex effects. There are some ETS markets worldwide such as EU ETS. However neither the EU ETS nor the U.S SO₂ trading system is perfect. The theoretical research and practical lessons learned from the carbon trading have been always ongoing.

As China is increasingly gaining experience with emission trading pilot schemes, it is important to look at experiences from those schemes and compare them with experiences made at international level. The Symposium would bring Chinese and international experts together and would focus both on practical insights as well as methodological issues linked to the design and the evaluation of such schemes.

During the Symposium, invited experts will debate on the theoretical advances and empirical lessons on emission trading schemes as a measure to curb the emissions of greenhouse gases. The aim is to communicate the latest theoretical results about carbon emission permit trading, to conclude the practical experience of EU ETS and the existing carbon emission trading systems, and analyze the interaction of carbon emission trading and low-carbon technology investment, and finally explore a well-adapted carbon emission trading system that suits the Chinese reality and the effects of emission trading on regional economy.

Meanwhile, the Symposium could create the conditions for further cooperation and exchange among scientists from various countries in the low-carbon economic field.

Agenda

Venue: New building of IPM CAS

Time: 10-11 Oct. 2013

	Time	Content	Place
(Oct. 9)	14:00- 18:00	Registration	Hotel
	18:30	Welcome dinner	TBD
Day1 (Oct. 10)	8:00-11:00	Registration	901
	8:30-08:50	Opening ceremony	901
	08:50-10:30	Session A	901
	10:30-10:50	Tea Break	--
	10:50-12:30	Session B	901
	12:30-13:30	Lunch	Dining Hall
	14:00-15:40	Session C	901
	15:40-16:00	Tea Break	--
	16:00-17:40	Session D	901
	18:30-20:30	Dinner	TBD
Day 2 (Oct. 11)	08:30-10:20	Session E1 Session E2	107/109
	10:20-10:40	Tea Break	--
	10:40-12:10	Session F1 Session F2	107/109
	12:20-13:20	Lunch	Dining Hall
	13:30-15:10	Session G	901
	15:10-15:30	Tea Break	--
	15:30-17:10	Session H	901
	17:10-17:30	Closing remarks	901
	18:00-20:30	Buffet	Hotel

Day 1		
08:30-08:50	Opening ceremony	Chair: Ying Fan
	Welcome Speech	<i>Rongping Mu</i>
	Introduction of the Symposium	<i>Wolfgang Eichhammer</i>
08:50-10:30	Session A The policy tool coping with climate change and the empirical experience from the present emission trading systems.	Chair: Ying Fan
	Chinese strategy and policy for coping with climate changes	<i>Jiankun He, Tsinghua Univ.</i>
	Design of carbon pricing for China: principles and lessons from international experience	<i>Frank Jotzo, ZEW and CCEP, ANU</i>
	Evaluation methods for the EU ETS	<i>Wolfgang Eichhammer, ISI</i>
10:30-10:50	Tea Break	
10:50-12:30	Session B Emission Trading Schemes in China	Chair: Joachim Schleich
	Crossing the River by Feeling the Stones: The Case of Carbon Trading in China	<i>Zhongxiang Zhang, Fudan Univ.</i>
	Overview of the design and implementation of California carbon cap-and-trade program and insights for China's pilots	<i>Bo Shen, LBNL</i>
	The institutional issues of Chinese carbon emission trading system	<i>Hongchun Zhou, DRC</i>
12:30-13:30	Lunch	
14:00-15:40	Session C Evaluation of Emission Trading Schemes	Chair: Wolfgang Eichhammer
	Interaction of Sectoral Targets and Emissions Trading Systems – Analyzing Competitiveness and Leakage with a global CGE Model	<i>Joachim Schleich, ISI</i>
	What sectors should be included in the ETS in the context of unified carbon market in China	<i>Ying Fan, IPM CAS</i>
	Transfers in Phase I of the EU Emissions Trading Schemes: A first reality check of transfer patterns	<i>Regina Betz, UNSW</i>
	Making emissions trading effective: lessons from New Zealand	<i>Suzi Kerr, Victoria Univ.</i>
15:40-16:00	Tea Break	
16:00-17:40	Session D Pilot schemes in China	Chair: Lixin Tian
	The design of carbon emission trading system (ETS) pilot of Beijing	<i>Xiliang Zhang, Tsinghua Univ.</i>
	The exploration and fundamental study of ETS pilot of Guangdong province	<i>Wenjun Wang, GIEC, CAS</i>

	Study on cap setting and allowance allocation: Experience from the Tianjin ETS	<i>Yue Tan David TANG, TCE</i>
	The Development and Challenges of Hubei province's ETS Pilot	<i>Shaozhou Qi, Wuhan Univ.</i>
Day 2		
08:30-10:20	Session E1 Ex-ante and ex-post evaluations of the ETS (Room 107)	Chair: Xiliang Zhang
	Upstream emissions trading and its role in a mix of policy instruments	<i>Vicki Duscha, ISI</i>
	Emission trading at provincial/industrial level in China: A performance assessment	<i>Peng Zhou, UAA</i>
	Emission transfer effect and its driving forces under China's carbon emission trading	<i>Libo Wu, Fudan Univ.</i>
	Allocation of emission allowance across key sectors in China's ETS: Insights from a partial equilibrium model	<i>Fei Teng, Tsinghua Univ.</i>
	The CO ₂ Emissions Reduction cost and Potential of Shandong Chlor-alkali Industry	<i>Changsheng Li, UQT</i>
08:30-10:20	Session E2 The role of costs (Room 109)	Chair: Frank Jotzo
	Assessing GHG mitigation potentials and costs in the ETS industry sector	<i>Tobias Fleiter, Fraunhofer ISI</i>
	Carbon pricing in the Chinese context: challenges for a cost-effective decarbonisation of the Chinese industrial sector	<i>Maarten Neelis, Ecofys</i>
	Dynamic optimal carbon tax under a Stackelberg game model	<i>Huibin Du, Tianjing Univ.</i>
	Simulating the Emission Trading in Iron and Steel Industry-A study based on multi-agent modeling	<i>Lei Zhu, IPM CAS</i>
	CO ₂ emissions reduction potential and cost consideration in China's cement industry	<i>Jinhua Xu, IPM CAS</i>
10:20-10:40	Tea Break	
10:40-12:10	Session F1 Empirical findings of ETS (Room 107)	Chair: Yue Tan David TANG
	Target interaction between ETS and Energy Efficiency targets	<i>Barbara Schlomann, ISI</i>
	Research on the decision of the stakeholder in carbon trading	<i>Dapeng Liang, HIT</i>
	The impacts of market based policies on energy and economic growth	<i>Lixin Tian, NNU</i>
	The empirical study on the influencing factors of CO ₂ price based on MSVAR	<i>Baochen Yang, Tianjing Univ.</i>
10:40-12:10	Session F2 Regulations on ETS (Room 109)	Chair: Bin Su
	How is regional equity considered in domestic carbon trading system	<i>Shenghua Cai, IPM CAS</i>

	Possibilities for international cooperation in different negotiation environments	<i>Jan Kersting, ISI</i>
	Allocation of Carbon Emission Permits and its Impacts on Regional Development in China— based on a Multi-regional Computable Equilibrium Model	<i>Yongna Yuan, UCAS</i>
	Policy design and market performance: what we can learn from emission trading programs	<i>Bing Zhang, Nanjing Univ.</i>
12:20-13:20	Lunch	
13:30-15:10	Session G Technological innovation and ETS	Chair: Regina Betz
	Carbon emission permit trading and low-carbon technology innovation	<i>Jiutian Zhang, MOST</i>
	GHG mitigation potentials and technological pathway for the key industries in China	<i>Zongguo Wen, Tsinghua Univ.</i>
	Training of GHG Accounting and Reporting for Enterprises in China	<i>Mingshan Su, NCSC</i>
	Emissions trading in the post-Kyoto period	<i>Hans-Joachim Ziesing, FFU</i>
15:10-15:30	Tea Break	
15:30-17:10	Session H Paths for the future development of ETS	Chair: Bo Shen
	Hedging to stabilize Carbon Markets	<i>Anne Schopp, DIW</i>
	Developing carbon trading in APEC countries	<i>Bin Su, ESI-NUS</i>
	Designing a National Emissions Trading Schemes for China by Applying Experience from the EU ETS	<i>Sebastian Voigt, ZEW</i>
	Emissions Trading in the Climate Policy Instrument Mix: Interaction with other policy instruments and implications for the optimality of climate efforts. Insights from the European research project CECILIA2050	<i>Benjamin Görlach, Ecologic Institute</i>
17:10-17:30	Closing remarks	Chair: Wolfgang Eichhammer

Participants

[1] Betz, Regina

Dr. Regina Betz is professor at the School of Management and Law at the Zurich University of Applied Sciences (ZHAW), and Joint Director (Economics) at the Centre for Energy and Environmental Markets (CEEM) at University of New South Wales (UNSW). She holds a PhD from the German University of Administrative Sciences Speyer. Regina has studied economics in Germany and the UK. In her PhD she analyzed the impact of different designs of carbon trading systems on transaction costs. Before she came to Australia in 2004 she was a Research Fellow at the Fraunhofer Institute (FhG ISI) in Germany. Today her research is mainly focusing on design of energy and environmental policy instruments applying experimental economics or empirical methods.

Representative papers:

- Betz Regina, Owen Tony. 2010. The Implications of Australia's Carbon Pollution Reduction Scheme for its National Electricity Market. *Energy Policy*, 38(9): 4966-4977.
- Betz R., T. Sanderson and T. Ancev. 2010. In or out: Efficient inclusion of installations in an Emissions Trading Scheme? *Journal of Regulatory Economics*, 37(2): 162-179.
- Jotzo F., R. Betz. 2009. Australia's emissions trading scheme: opportunities and obstacles for linking. *Climate Policy*, 9: 402-414.

[2] Cai, Shenghua

Dr. Cai Shenghua is an associate Prof. of the center for Energy & Environmental Policy Research (CEEP), Institute of Policy & Management (IPM), at Chinese Academy of Sciences (CAS) since March 2010. He focuses on studying energy economics and environmental policy, esp. mechanisms on mitigating climate change. As the principal investigator, he has been carrying out several national key projects on China's carbon emission trade system, including the design of optimal grandfathering schemes for emission allowances, initial allowance allocation and regional equity, inter-temporal distribution of GHG emission allowance and Borrowing & Banking mechanism design, and trigger price design etc.. Prof. Cai finished his PhD on Energy Economics at Kyoto University from 2003 to 2008.

Representative papers:

- Economic Development and Carbon Dioxide Emissions in China: Provincial Panel Data Analysis. *China Economic Review*. Vol. 23 Issue 2.
- Improvement Target of Energy Efficiency and Its Design. *Chinese Journal of Management Science*. Vol. 20 No.3 152-160.
- Robust Market Design for Power Industry Deregulation by Simulations. *Simulation Modeling Practice and Theory*. Vol. 18, 589-599.

[3] Du, Huibin

Huibin Du is an associate professor at College of Management and Economics in Tianjin University in P. R. China. She received a double bachelor degree both in engineering economics and English, and then a Ph. D in management science and engineering from Tianjin University. She was hosted as a visiting scholar by Frankfurt School of Finance & Management in Germany in 2009, and H. Milton Stewart School of Industrial and Systems Engineering in Georgia Institute of Technology in the U.S. in 2010, respectively. Now, she has also been engaged in

post-doctor research at Center for Energy Environmental Policy Research, Institute of Policy and Management of Chinese Academy of Sciences.

Dr. Du's research area is systems engineering and its application, and her research interests include mechanism design of carbon market, modeling and policy analysis on energy-environment-economy (3E) system, urban low-carbon transportation, and climate change, etc. She was responsible for and participated in more than 10 projects, which were supported by National Natural Science Foundation of China (NSFC), National Social Science Foundation of China, Minister of Personnel, Minister of Public Security, and Minister of Railways, etc. She has published more than 20 academic articles in Energy Policy, Energy Efficiency, Journal of Systems Engineering (in Chinese), and other academic journals.

Representative papers:

- Du H., Guo J., Mao G., Smith A., et al. CO₂ emissions embodied in China-US trade: Input-output analysis based on the energy/ dollar ratio. *Energy Policy*, 2011, 39: 5980-5987.
- Du H, Wei L, Brown M A, et al. A bibliometric analysis of recent energy efficiency literatures: an expanding and shifting focus. *Energy Efficiency*, 2013, 6(1): 177-190.
- Du H., Wang Y., Total-factor CO₂ emission performance and convergence hypothesis in China. *Journal of Systems Engineering*, 2013, 28(2): 256-264. (in Chinese)

[4] Duscha, Vicki

Dr. Vicki Duscha is a researcher in the Competence Center Energy Policy and Energy Markets (previously: Energy Policy and Energy Systems) at the Fraunhofer Institute for Systems and Innovation Research ISI. Her current research works include design, further development and evaluation of the EU emission trading schemes, alternative emission trading concepts, instruments to integrate non-Annex I countries in international emission abatement efforts, and design of international climate agreements post-2012. She studied mathematics and economics at the Technical University of Dortmund. From 2006 to 2007, she finished her diploma thesis at the Kiel Institute for the World Economy. Since January 2008 she has been a researcher in the Competence Center Energy Policy and Energy Markets (previously: Energy Policy and Energy Systems) at the Fraunhofer Institute for Systems and Innovation Research ISI. From 2008-2012 she was also an external doctoral candidate under the supervision of Professor Ehrhart at the Karlsruhe Institute of Technology (KIT) writing her thesis on "No-lose targets as an option to integrate non-Annex I countries in global emission reduction efforts – A game-theoretical analysis".

Representative papers:

- Duscha, V. and Schleich, J. 2013. Can no-lose targets contribute to a 2 °C target? *Climate Policy* 13 (3), 305–327.
- Peterson, E., Schleich, J. and Duscha, V. 2011. Environmental and economic effects of the Copenhagen pledges and more ambitious emission reduction targets. *Energy Policy*, 39: 3697-3708.
- Duscha, V., Graichen, J., Healy, S., Schleich, J. and Schumacher, K.. 2010. Post-2012 climate regime – How industrial and developing nations can help to reduce emissions – assessing emission trends, reduction potentials, incentive systems and negotiation options. *Climate Change* 02/2010. Umweltbundesamt, Dessau-Roßlau.

[5] Eichhammer, Wolfgang

Dr. Wolfgang Eichhammer is the Head of Competence Center Energy Policy and Energy Markets in the Fraunhofer Institute for Systems and Innovation Research ISI. He is a physicist with professional experience

gathered in various countries of the European Union and world-wide in designing and evaluating energy efficiency and renewables policies as well as climate policies. Dr. Wolfgang Eichhammer is the project coordinator of numerous national and international studies on modeling and simulating the impacts of climate protection measures, energy conservation and renewable energy policies, the technical coordinator of the EU IEE/ODYSSEE-MURE project on energy efficiency indicators and policies. the technical advisor to the EU-Commission on the implementation of EU Emission Trading (Benchmarking), the EU Effort Sharing Decision, the EU Directive on Energy Services as well as the follow-up Directive on Energy Efficiency, among others, and the advisor for various projects in these fields for international organizations such as the World Bank, the International Energy Agency, the UNIDO etc. He has rich international experience in Asian countries (Thailand, Malaysia, China, South Korea), Central and Eastern European countries (Serbia, Russia), North Africa (Morocco, Egypt, Tunisia, Algeria) and South/Central America (Mexico, Brazil, Chile). Since 1991, he was the research associate in the Competence Center Energy Policy and Energy Systems. From 2001 to 2011, he was the Deputy Head of this Competence Center, and since 2012, the Head of the Competence Center Energy Policy and Energy Markets.

Representative papers:

- Fleiter, Tobias; Worrell, Ernst; Eichhammer, Wolfgang. 2011. Barriers to Energy Efficiency in Industrial Bottom-up Energy Demand Models - A Review. *Renewable and Sustainable Energy Reviews*, 15(6): 3099-3111.
- Harmsen, Robert; Eichhammer, Wolfgang; Wesselink, Bart. 2011. Imbalance in Europe's Effort Sharing Decision: Scope for Strengthening Incentives for Energy Savings in the Non-ETS Sectors. *Energy Policy*, 39 (10): 6636-6649.
- Jardot, Daniela; Eichhammer, Wolfgang; Fleiter, Tobias. 2010. Effects of Economies of Scale and Experience on the Costs of Energy-Efficient Technologies - Case Study of Electric Motors in Germany. *Energy Efficiency*, 3(4): 331-346.

[6] Fan, Ying

Prof. Ying Fan got her Ph.D. degree in system engineering. She is currently a professor at the Institute of Policy and Management, CAS, and the director of Center for Energy and Environmental Policy Research. She visited Cornell University in the U.S. as a visiting scholar from 2004 to 2005. Her research and teaching fields include System engineering, Energy-Environment-Economy system modeling, energy finance, climate change, Energy and environmental policy. She has carried out over 50 research projects, published over 150 papers in peer reviewed journals such as *Energy Economics*, *Energy Policy*, *Energy*, *Applied Energy*, *Environmental Modelling and Software*, *Journal of Policy Modeling*, *Technical Forecasting and Social Change*, *Environmental Impact Assessment Review*, *Physica A*, *International Journal of Global Energy Issues* and *Computers and Industrial Engineering*. She has received important awards, such as research grant for distinguished young scientists sponsored by National Science Foundation of China (NSFC), CAS Hundred Talents Program sponsored by Chinese Academy of Sciences(CAS), Science and Technology AWARD of Beijing Municipality sponsored by the government of Beijing municipality in 2005 and 2002, Science AWARD of Hubei Municipality sponsored by the government of Hubei municipality in 2006, and Science and Technology Advancement AWARD of Qinghai Municipality sponsored by the government of Qinghai municipality. She is leading important projects such as: "Conditions, mechanism design and impact analysis for unified carbon market in China" and "Policy simulation platform for emissions trading schemes in China and development strategy study".

Representative papers:

- Ying Fan, Yan Xia. 2012. Exploring energy consumption and demand in China. *Energy*, 40(1):23-30.

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- Jian-Lei Mo, Lei Zhu, Ying Fan. 2012. The impact of the EU ETS on the corporate value of European electricity corporations.
 - Energy, 45(1):3-11
 - Ying Fan, Xiaobing Zhang, Lei Zhu. 2010. Estimating the Macroeconomic Costs of CO2 Emission Reduction in China Based on Multi-objective Programming. Advances in Climate Change Research (English edition), 1(1):27-33.

[7] Fleiter, Tobias

Dr. Tobias Fleiter is the coordinator of Business Unit Demand Analyses and Projections in Fraunhofer Institute for Systems and Innovation Research (Fraunhofer ISI). His current works focus on the modelling energy systems, rational energy use in industry, especially in motor systems, technological change and energy efficiency technologies and instruments of energy and environmental policy. He studied industrial engineering at the University of Flensburg, specializing in "Energy and Environmental Management". The main focus during his studies was on technical, economic and political questions concerning sustainable energy supply. Since August 2007 he has been a researcher in the Competence Center Energy Technology and Energy Systems (previously: Energy Policy and Energy Systems) at the Fraunhofer Institute for Systems and Innovation Research ISI. He finished his PhD at the University of Utrecht in September 2012 on "The adoption of energy-efficient technologies by firms". Since December 2012, he is the coordinator of the business unit Demand Analyses and Projections.

Representative papers:

- Xu, J.H.; Fleiter, T.; Eichhammer, W.; Fan, Y.. 2012. Energy consumption and CO2 emissions in China's cement industry: A perspective from LMDI decomposition analysis. Energy Policy, 50:821-832.
- Fleiter, T.; Gruber, E.; Eichhammer, W.; Worrell, E.. 2012. The German energy audit program for firms - a cost-effective way to improve energy efficiency? Energy Efficiency, 5 (4): 447-469.
- Fleiter, T.; Fehrenbach, D.; Worrell, E.; Eichhammer, W.. 2012. Energy efficiency in the German pulp and paper industry - A model-based assessment of saving potentials. In: Energy, 40 (1):84-99.

[8] Görlach, Benjamin

Benjamin Görlach is an environmental economist and Senior Fellow with Ecologic Institute. His main work areas are the evaluation of environmental policy instruments and assessment of their performance as well as the economic valuation of environmental goods and services. His other work includes the economics of adaptation to climate change. Benjamin Görlach was previously with the German Emissions Trading Authority (DEHSt) at the Federal Environment Agency (UBA) from 2007 until 2008. From October 2002 to July 2007, Benjamin Görlach worked as an environmental economist with Ecologic Institute. From 1997 to 2002, Benjamin Görlach studied economics in Freiburg (Germany), Maastricht (the Netherlands), and Dublin (Ireland). He holds a master's degree in international economic studies from the University of Maastricht.

Representative papers:

- Görlach, Benjamin et al., 2009: "Emissions Trading - Evaluation of the First Trading Period 2005 - 2007" . Berlin: Deutsche Emissionshandelsstelle im Umweltbundesamt.
- Görlach, Benjamin; Olaf Hölzer-Schopohl und Hauke Hermann, 2008: "The European Emissions Trading Scheme - Coming of Age?" . Carbon & Climate Law Review, Jg. 2, Nr. 1, 105-109
- Görlach, Benjamin, Nils Meyer-Ohlendorf und Michael Kohlhaas 2010: A sustainable response to the economic crisis. Analysis of potential contributions from an ecological tax reform. Study on behalf of the

German Sustainable Development Council (RNE) (in German). Berlin: Ecologic Institute.

[9] He, Jiankun

Professor Jiankun He is the professor of Management Science and Engineering at Tsinghua University, the the President of Low Carbon Economy, and the deputy-president of National Expert Committee on Climate Change. He is also the former Executive Vice President of the University and former Dean of the School of Economics and Management.

Professor He has been engaged in research on energy system analysis and modeling, counter global climate change strategy, resource management and sustainable development for many years. He has been a principal researcher of many national key science and technology projects and international collaborative research projects. He has been awarded the Second Class National Prize for Science and Technology progress, the Third Class National Prize for Science and Technology Progress, the First Class Prize for Science and Technology Progress of the Ministry of Education of China three times, and the Second Class Prize or the Third Class Prize for Science and Technology Progress at the provincial or ministry level five times.

Representative papers:

- He Jiankun, Yu Zhiwei, Zhang Da, 2012. China's strategy for energy development and climate change mitigation. *Energy Policy*, 51:7–13.
- Zhang Da, Zhang Xiliang, He Jiankun, Chai Qimin, 2011. Offshore wind energy development in China: Current status and future perspective. *Renewable and Sustainable Energy Reviews*, 15(9): 4673–4684.
- Chen Wenyong, Wu Zongxin, He Jiankun, Gao Pengfei, Xu Shaofeng, 2007. Carbon emission control strategies for China: A comparative study with partial and general equilibrium versions of the China MARKAL model. *Energy*, 32(1): 59–72.

[10] Jotzo, Frank

Dr Frank Jotzo is a visiting researcher at ZEW, Senior Lecturer at the Crawford School, Director of the Centre for Climate Economics & Policy, and Deputy Director of the ANU Climate Change Institute. He works on the economics and policy of climate change, as well as on broader issues of development and economic reform. He has research and published on these topics for over a decade, focusing on Australia and countries of the Asia-Pacific. Frank has advised governments and consulted for international organizations. He has been advisor to the Garnaut Climate Change Review, advisor to Indonesia's Ministry of Finance, consultant to the World Bank, and is a Lead Author of the Fifth Assessment Report by the Intergovernmental Panel on Climate Change. He is a frequent contributor to the public and policy debate in Australia and internationally.

Representative papers:

- Jotzo F. 2012, Australia's Carbon Price, *Nature Climate Change*, 2:2.
- Jotzo F, Tim J, Fabian N. 2012. Policy Uncertainty about Australia's Carbon Price: Expert Survey Results and Implications for Investment. *The Australian Economic Review*, 45(4):395-409.
- Pezzey, J, Jotzo, F. 2012. Tax-versus-trading and efficient revenue recycling as issues for greenhouse gas abatement. *Journal of Environmental Economics and Management*, 64:230-236.

[11] Kerr, Suzi

Suzi Kerr is currently a Senior Fellow at Motu and an Adjunct Professor at Victoria University. From 1998 to 2009

she was also Motu Director. She has a PhD in Economics from Harvard University. From 1995 through 1998, she was an Assistant Professor at the University of Maryland at College Park. Suzi was a Visiting Professor at Stanford University in 2009/10, and has been a Visiting Scholar at Resources for the Future (USA), Victoria University, and the Joint Center for the Science and Policy of Global Change at the Massachusetts Institute of Technology. Suzi's current research work focuses primarily on climate change policy. She studies domestic climate regulation, and particularly emissions trading, within New Zealand, Chile and Colombia and explores the design of international agreements with special emphasis on land use. She has also worked on water quality issues within New Zealand. Her work involves theoretical analysis, simulation modelling, econometric analysis and policy design. She has run three policy dialogue processes, one in the lead up to the establishment of New Zealand's emissions trading system, another completed on managing water quality in Lake Rotorua, and a recent process on agricultural greenhouse gas emissions.

Representative papers:

- Kerr, Suzi C. 2013. "The Economics of International Policy Agreements to Reduce Emissions from Deforestation and Degradation", *Review of Environmental Economics and Policy* 7:1, pp. 47–66.
- Kerr, Suzi, Simon Anastasiadis, Alex Olssen, William Power, Levente Tímár and Wei Zhang. 2012. "Spatial and Temporal Responses to an Emissions Trading System Covering Agriculture and Forestry: Simulation Results from New Zealand," *Forests* 3:4, pp. 1133–56.
- Kerr, Suzi, and Millard-Ball, Adam. 2012. "Cooperation to Reduce Developing Country Emissions", Motu Working Paper 12-03, Motu Economic and Public Policy Research, Wellington.

[12] Kersting, Jan

Jan Kersting is the researcher in Fraunhofer Institute for Systems and Innovation Research ISI. His current research work include the international cooperation and emission trading schemes. He Studied mathematics and economics at the Philipps-University Marburg (M.Sc. 2012) and the University of Wisconsin –Madison, USA. Master thesis on the topic of methods for the solution of the LASSO problem. Since June 2012, he has been a researcher in the Competence Center Energy Policy and Energy Markets at the Fraunhofer Institute for Systems and Innovation Research ISI.

[13] Li, Changsheng

Dr. Changsheng LI, Associate Professor in School of Science and Management, Qingdao University of Science and Technology. He got his Ph.D in Management Science and Engineering and graduated from the University of Science and Technology of China (USTC) under the dual culture mechanism in both IPMCAS and USTC. His research areas are: Energy and Environmental policies, Greenhouse Gas Emission Reduction Mechanism, Evaluation of Regional Energy-saving and Emission Reduction, Industrial Cost and Potential of Energy-saving and Emission reduction. He has been involved in several research projects related to energy, environment, and climate change and participated in writing four books.

Representative papers:

- LI Changsheng, FAN Ying, ZHU Lei. 2012. The Study of Carbon Dioxide Emission Intensity Abatement Mechanism of Iron and Steel Industry Based on Two-stage Game Model. *Chinese Journal of Management Science*, 20(2): 93-101.
- LI Changsheng, FAN Ying, ZHU Lei.2012. Emissions Tax and Its Revenue Refunding scheme Design with Exogenous Abatement Target. *Systems Engineering*, 30(9): 82-86.

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- LI Changsheng, FAN Ying, JI Qiang. 2010. China's energy demand forecasting based on cyclical theory in 2010. *Chinese Energy*, 2010, 32(4): 23-26.

[14] Liang, Dapeng

Prof. Dapeng Liang is the professor of technology and economy management, the Vice Dean and doctoral supervisor of School of Management, Harbin Institute of Technology since 2010. His main research interests are the waste gas emission control and the application of CCS technology. Selected Honors and Awards include Winner of the new century talents project, present by Ministry of Education of the People's republic of China, Longjiang Scholar, present by Heilongjiang province, Director of China Energy Society, Chinese Society of Optimization-Overall Planning and Economical Mathematics, Chinese Society of Technology Economics, Reviewer of Science of Total Environment, Environmental Science and Technology, Energy Policy, Journal of Management Science (in Chinese), and Evaluation expert of National Natural Science Foundation of China, Social Science Foundation of Ministry of Education of the People's republic of China, the Foundation of China Scholarship Council.

Representative papers:

- Liang Dapeng, Zhou Yan. Waste Gas Emission Control and Constraints of Energy and Economy in China, *Energy Policy*, 36(2008): 268~279.(SCI)
- (2)Dapeng Liang , Zhenzhong Ma , Liyun Qi. Service quality and customer switching behaviour in China's mobile phone service sector, *Journal of Business Research*, 66(8): 1161-1167.(SCI)
- (3)Liang Da-peng, Xu Chun-lin, Ma Dong-hai. The research on the model and stability of CCS based on the system dynamics, *Journal of Management Sciences in China*, 2012(07): 36-49.

[15] Neelis, Maarten

Maarten Neelis, Ph.D. (1977) is Managing Consultant of the Industrial Processes unit at Ecofys. His main expertise lies in the field of industrial energy efficiency monitoring, energy efficiency benchmarking, identification of energy saving potentials in the chemical and other industrial sectors, energy modelling, energy statistics and greenhouse emission inventories. He conducted several national and international research and consultancy projects related to these research fields. For the Dutch government, Maarten developed an industrial energy efficiency monitoring methodology. He coordinated an international project on non-energy use related CO₂ emissions and assisted Statistics Netherlands in a project to improve the energy statistics for the chemical industry. He is lead author of the 2006 IPCC Guidelines for national greenhouse gas emission inventories and published several papers in peer-reviewed scientific journals. In 2008, he finalised his Ph.D. thesis with the title "Monitoring Industrial Energy and Carbon flows". Recently he has been project leader of several projects for the European Commission outlining a methodology for the free allocation of emission allowances in the EU Emission Trading schemes (ETS) post 2012 based on benchmarking. Maarten was unit manager of the Industrial Processes unit for a couple of years. This unit is active in assignments related to the EU ETS implementation (carbon leakage and monitoring) as well as on industrial energy and carbon efficiency. In August 2013, Maarten will start as regional manager in Ecofys' Beijing office.

Representative papers:

- Maarten Neelis, Ernst Worrell, Nicolas Mueller, Tana Angelini, Clemens Cremer, Joachim Schleich, Wolfgang Eichhammer. 2009. Developing benchmarking criteria for CO₂ emissions. Ecofys Netherlands and The Fraunhofer Institute for Systems and Innovation research.

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- For European Commission: set-up of new methodology for determining carbon leakage.
 - For Asian Development Bank: Support project for the design of the Tianjin emission trading pilot.

[16] Qi, Shaozhou

Shaozhou Qi, was born in September 1965 in Baofeng County, Henan Province. Qi is a professor in economics. Director of Climate Change, Environment and Energy Study Centre, director of European Studies Center, executive director of World Economy Institute, Wuhan University. In 2001, Qi received the Ph.D. in Economics in Wuhan University. During 1999 to 2000, he studied in Université Paris-Est Marne-la-Vallée in France. During 2002 to 2003, he was a visiting research scholar in Georgia State University in the U.S.. In 2007, Qi was a senior visiting scholar in the University of Manchester, U.K.

Research Fields: Economics and policy of climate change; environment and energy economics.

Representative papers:

- The structure flaw and institution reform and its influence of EU ETS, Chinese Journal of European Studies, 2012(1).
- "Fundamental issues and solutions in the design of China's ETS pilots: Allowance allocation, price mechanism and state-owned key enterprises" , Population, resources and environment, 2013(2).
- Comparative Analysis of the Accounting Method of Provincial Carbon Emission During the Low Carbon Transition, Wuhan University Journal, 2013(1).

[17] Schleich, Joachim

Prof. Dr. Joachim Schleich is employed in the Competence Center Energy Policy and Energy Markets at Fraunhofer Institute for Systems and Innovation Research (Fraunhofer ISI), and he was the Leader of business unit Energy and Climate Policy until 2011. His works focus on the national and international environmental and energy policy. Since 2004, he is the Adjunct Professor at Virginia Tech, and since 2011 he is also the Professor of Energy Economics at Grenoble Ecole de Management, France. Now he is the member of editorial board of the journal "Energy Efficiency". Joachim Schleich Economics completed the programs at the Universities of Mannheim (Diploma) and at the University of Florida in Gainesville (Master), and got his PhD in Applied Economics from Virginia Polytechnic Institute and State University (Virginia Tech University) in Blacksburg.

Representative papers:

- Duscha, V. and Schleich, J. 2013. Can no-lose targets contribute to a 2 °C target? Climate Policy 13 (3), 305–327.
- Fleiter, T., Schleich, J. and Ravivanpong, P. 2012. Adoption of energy-efficiency measures in SMEs – An empirical analysis based on energy audit data from Germany. Energy Policy 51, 863-875.
- Peterson, E., Schleich, J. and Duscha, V. 2011. Environmental and economic effects of the Copenhagen pledges and more ambitious emission reduction targets. Energy Policy 39, 3697-3708.

[18] Schlomann, Barbara

Barbara Schlomann is the coordinator of Business Unit Energy and Climate Policy in Fraunhofer Institute for Systems and Innovation Research (Fraunhofer ISI). Her current research focus and publications are mainly in the area of national and international energy and climate policies and energy efficiency. She studied economics and energy economics at the universities of Freiburg i.Br. and Cologne. In 1987 she joined the Fraunhofer Institute for

Systems and Innovation Research (ISI) in Karlsruhe, Germany, where she works as a senior scientist and project manager. From 2008 to 2011, she was the head of business unit Energy Efficiency in the Competence Center Energy Policy and Energy Systems, and since 2012 the head of business unit Energy and Climate Policy in the Competence Center Energy Policy and Energy Markets . Since 2011, she is also a member in the Board of the European Council for an Energy Efficient Economy (ECEEE).

Representative papers:

- Diekmann, J., Eichhammer, W., Rieke, H., Schlomann, B., Ziesing, H.-J.. Energie-Effizienz-Indikatoren. Statistische Grundlagen, theoretische Fundierung und Orientierungsbasis für die politische Praxis. Heidelberg: Physica-Verl., 1999.
- Eichhammer, W., Mannbart, W., Schlomann, B.. Energy Efficiency in Germany 1999. Analysis based on the ODYSSEE Database from the SAVE Project "Cross Country Comparison on Energy Efficiency Indicators. Karlsruhe, 2000.
- Weinreich, S., Rennings, K., Schlomann, B.. External Costs of Road, Rail and Air Transport – a Bottom-Up Approach. ZEW Discussion Paper No. 98-06. Mannheim, 1998.

[19] Schopp, Anne

Anne Schopp works as research associate at the department of climate policy and is currently pursuing her doctorate from the DIW Graduate Center. Anne received a Master's in International Economics from the University of Tübingen with a focus on microeconomics and econometrics. In addition to her work experience in Germany with the Federal Environment Ministry and the German Development Bank, she has international work experience in the US and India.

Representative papers:

- Christian Hudson, Anne Schopp, Karsten Neuhoff. 2013. Financing of Energy Efficiency: Influences on European Public Banks' Actions and Ways Forward. A report from pilot study by DIW, Climate Policy Department in co-operation with IDDRI, EnergiaKlub and University of Vigo. Berlin
- Anne Schopp, Karsten Neuhof. 2013. The Role of Hedging in Carbon Markets. DIW Berlin Discussion Papers.
- Karsten Neuhoff, Anne Schopp. 2013. Europäischer Emissionshandel: durch Backloading Zeit für Strukturreform gewinnen. Wochenbericht des DIW Berlin (3-11).

[20] Su, Bin

Dr. Bin Su is currently a Research Fellow at the Energy Studies Institute, National University of Singapore. He received his Ph.D. degree in Industrial & Systems Engineering from National University of Singapore and M.Sc. degree in Probability Theory and Mathematical Statistics from the Academy of Mathematics and Systems Sciences at the Chinese Academy of Sciences. Dr. Su's main research interest is energy and environmental systems modeling and analysis, with particular emphasis on energy efficiency, embodied energy/emissions, carbon footprint, and carbon pricing. He is Associate Editor of Energy Economics.

Representative papers:

- Su, B., Ang, B.W., 2013. Input-output analysis of CO2 emissions embodied in trade: Competitive versus non-competitive imports. Energy Policy 56, 83-87.
- Su, B., Ang, B.W., Low, M., 2013. Input-output analysis of CO2 emissions embodied in trade and the driving forces: Processing and normal exports. Ecological Economics 88, 119-125.
- Su, B., Ang, B.W., 2012. Structural decomposition analysis applied to energy and emissions: Some

methodological developments. *Energy Economics* 34 (1), 177-188.

[21] Shen, Bo

Dr. Bo Shen is a Principal Scientific Engineering Associate in the China Group of Lawrence Berkeley National Laboratory. His current work at LBNL involves extensive collaboration with Chinese partners on improving China's energy use through the design of enabling policies, reduction of industrial energy intensity, and the implementation of demand-side management programs. Dr. Shen has over 18 years of experience working in the energy field. Prior to joining LBNL, Dr. Shen led the China Energy Efficiency and Demand-Side management Project at the Natural Resources Defense Council (NRDC) where he worked with partners in China in building capacity and providing policy support in facilitating greater energy efficiency improvement at the national level and designing and implementing DSM programs at the provincial level. From 1999-2007, Dr. Shen worked as a Senior Public Utilities Analyst for the State Government in Delaware on a broad range of regulatory issues including electricity restructuring, retail competition, wholesale power market development, integrated resource planning, energy efficiency, demand response, renewable energy, and distributed generation. Dr. Shen had also worked as a policy specialist primarily in the area of regional planning and energy management for 4 years at the Chinese Academy of Sciences before he moved to the U.S. to pursue his graduate study. Dr. Shen has a Ph.D. in energy and environmental policy, an MBA in finance, and a M.S. focusing on environmental policy, all from the U.S. and a B.A. in mechanical engineering from Peking University.

Representative papers:

- Shen Bo, Price Lynn, Lu Hongyou. 2012. Energy Audit Practices in China: National and Local Experiences and Issues. *Energy Policy*, 46:346–358.
- Shen Bo, Price Lynn, Wang Jian, Li Michelle, Zeng Lei. 2012. China's Approaches to Financing Sustainable Development: Policies, Practices, and Issues. Lawrence Berkeley National Laboratory. Berkeley, California, USA. Publication Number: LBNL-5579E.
- Shen Bo, Ni Chun Chun, Ghatikar Girish, Price Lynn. 2012. What China Can Learn from International Experiences in Developing a Demand Response Program. Conference Proceedings. Lawrence Berkeley National Laboratory. Berkeley, California, USA. Publication Number:LBNL-5578E.

[22] Su, Mingshan

Prof. Mingshan Su is the professor in National Center for Climate Change Strategy and International Cooperation (NCSC). He is currently the director of Statistics and Assessment Department in NCSC. Mr. Su has been working on climate change issues since 1992. He was the project leader of Industrial Process Greenhouse Gas Inventory in China second national communication on climate change, Beijing Greenhouse Gas Inventory, Beijing Enterprise Greenhouse Gas Accounting and Reporting, etc. He is a member of Beijing Expert Committee for Climate Change.

Representative papers:

- He Jiankun, Su Mingshan, 2011. Carbon Productivity Analysis to Address Global Climate Change, *Chinese Journal of Population, Resources and Environment*, Vol.9 No.1 March 2011.
- He Jiankun, Deng Jing, Su Mingshan, CO2 Emission from China Energy Sector and Its Control Strategy, *Energy*, 35(2010), 4494-4498.
- Su MS, Deng J, Zhao CR, 2008. Interactive of Renewable Energy Policy and CO2 Emission Control Policy-A Case Study. *Journal of Energy Engineering*. 134(2): 63-70.

[23] TANG Yue Tan David

TANG Yue Tan David, Board Secretary and Head of Beijing Office of the Tianjin Climate Exchange (TCX), a subsidiary of CNPC, is in charge of developing a regional Emissions Trading Schemes (ETS) in Tianjin. He has taken part in many government-sponsored consulting and research projects on China's carbon market. In 2009, he completed the first carbon-footprint-based carbon neutral trade in China. In 2010, he participated as a Chinese expert in the "Feasibility Study on SME Climate Innovation Finance Programme: Guarantee Facility" commissioned by KfW. Currently he major focus is on allowance allocation and registry development, as well as managing various national-level research projects sponsored by the Ministry of Finance CDM Fund, the Ministry of Science and Technology and the Asian Development Bank.

Mr. Tang holds a B.A., an M.A. (pure math) and an M.S. (financial engineering) from Columbia, a J.D. and a Ph.D. (econ) from Harvard. He is also a member of the New York Bar. He specializes in monetary theory, macroeconomics and international finance. In 2011, Mr. Tang joined the Changchun University of Technology School of Business Administration as an adjunct professor.

[24] Teng, Fei

Fei TENG received his bachelor degrees in Mechanical Engineering and Applied Mathematics from Tsinghua University in 1998, and its MSc and Ph.D in Management Science in School of Public Policy and Management at Tsinghua University in 2003. He finished his postdoc research in ENSIC/CNRS, Nancy in year 2004. He is now an associate professor in Institute of Energy, Environment and Economy in Tsinghua University. He is also a lead author of IPCC 5th assessment report in WG III. He is the lead author of China's National Assessment Report on Climate Change, member of drafting team for several key national documents, including National Plan on Climate Change and White Paper on Climate Change. He served as advisory experts for China's negotiation team under UNFCCC for many years. He is also member of BASIC expert group since 2011. He was the chief scientist of National Basic Research Program of China on Comparability and MRV in mitigation actions (2010CB955300). His research interest include: climate policy, international climate regime, consumer behavior in energy consumption and energy modeling.

Representative papers:

- Teng, Fei, and Daniel Tondeur. "Efficiency of Carbon Storage with Leakage: Physical and Economical Approaches." *Energy* 32 (April 2007): 540–548. doi:10.1016/j.energy.2006.07.027.
- Teng, Fei, and Xiliang Zhang. "Clean Development Mechanism Practice in China: Current Status and Possibilities for Future Regime." *Energy* 35 (November 2010): 4328–4335. doi:10.1016/j.energy.2009.04.033.
- Wei, T., S. Yang, J. C. Moore, P. Shi, X. Cui, Q. Duan, Fei. Teng, et al. "Developed and Developing World Responsibilities for Historical Climate Change and CO2 Mitigation." *Proceedings of the National Academy of Sciences* 109, no. 32 (July 23, 2012): 12911–12915. doi:10.1073/pnas.1203282109.

[25] Tian, Lixin

Lixin Tian is the professor and a Ph.D supervisor. he is the vice-president and member of the Standing Committee of the CPC Committee of Nanjing Normal University. He is concurrently the deputy general director of Jiangsu Industry and Applied Mathematics Association, the deputy general director of Jiangsu Society of System Sciences, the deputy general director of Chinese Council of International Society of Energy Economy. He is also the deputy editor of the journal of Inter.J.Nonli.Sci. His main inteters focus on the theoretical analysis and application

of nonlinear dispersive wave equations, the dynamic system modelling and its control, and the energy-economic system engineering, etc. He has implemented eight projects from the National Natural Science Foundation of China and six of them have been completed, three of which are major research projects of National Natural Science Foundation. Also, he has undertaken one project from National Social Sciences Fund and more than 30 provincial and ministerial projects. Dr. Tian has published three monographs and more than 150 papers in journals at home and abroad, more than 90 of which are indexed by SCI. He has won 2 Jiangsu provincial prizes for Science and Technology Advancement, including a first prize (in 2011) and a third prize (in 2009), 2 Shanghai municipal second prizes for Science and Technology Advancement (in 2001 and 2007), 2 second prizes by Mechanic Industry Association (in 2008 and 2011), and 1 second (in 20005) and 2 third (in 2001 and 2007) Philosophical and Social Sciences prizes of Jiangsu Province.

Representative papers:

- Tian Lixin, Chen Yuexia, Liu Yue, Gao Ying, 2011. Low-regularity solutions of the periodic general Degasperis–Procesi equation. *Nonlinear Analysis: Theory, Methods & Applications*, 74(8): 2802–2812.
- Sun Mei, Tian Lixin, Jia Qiang, 2009. Adaptive control and synchronization of a four-dimensional energy resources system with unknown parameters. *Chaos, Solitons & Fractals*, 39(4): 1943–1949.
- Chen Wenxia, Tian Lixin, Deng Xiaoyan, 2009. The global attractor and numerical simulation of a forced weakly damped MKdV equation. *Nonlinear Analysis: Real World Applications*. 10(3): 1822–1837.

[26] Voigt, Sebastian

Sebastian Voigt studied economics at the Humboldt University of Berlin. He focused on econometrics and operations research. Since June 2007, he has been working as a research fellow at the Centre for European Economic Research (ZEW) in Mannheim, Germany. He has been participating in several projects for the European Commission such as “Global Sectoral Approaches as Part of a Post 2012 Framework”, “Broadening the Scope of the Analysis of the Possible Risk of Carbon Leakage on Energy Intensive Industries”, “Sectoral Approaches to Fostering International Action on Climate Change” and “Assessment of the Impact of ETS Pilots in China”. His main research interests include the assessment of climate policies using quantitative economic models.

Representative papers:

- Victoria Alexeeva-Talebidi, Christoph Böhringer, Andreas Löschel, Sebastian Voigt. 2012. The value-added of sectoral disaggregation: Implications on competitive consequences of climate change policies. *Energy Economics*, 34(S2): S127–S142
- Peter Heindl, Sebastian Voigt. 2012. Supply and demand structure for international offset permits under the Copenhagen Pledges. *International Environmental Agreements: Politics, Law and Economics*, 12(4):343-360.
- Enrica De Cian, Michael Schymura, Elena Verdolini, Sebastian Voigt. 2013. Energy Intensity Developments in 40 Major Economies: Structural Change or Technology Improvement? FEEM Note di Lavoro.

[27] Wen, Zongguo

Dr. Wen Zongguo got his Ph.D. in Environmental Science and Engineering. He is currently an assessment expert of National Environmental Protection Model Cities, a panelist of National Health Cities and the executive director of China's Circular Economy Industry Research Center, Tsinghua University. His research fields include circular economy analysis, clean production technology assessment and urban environmental management. He has carried out over 5 international projects and 8 provincial or above projects, published 40 academic papers and written 5 books including “Eco-city Evaluation and Index System”.

Representative papers:

- Wen Zongguo, Li Ruijuan. Materials Metabolism Analysis of China's highway traffic system (HTS) for promoting circular economy. *Journal of Industrial Ecology*, 2010,14(4), 641-649.
- Wen Zongguo, Zhang Kunmin, Du Bin, Li Yadong, et al. Case study on the genuine progress indicator methodology to measure economic welfare in China. *Ecological Economics*, 2007, 63(2~3): 463-475.
- Wen Zongguo, Zhang Kunmin, Huang Liya, et al. Genuine saving rate: an integrated indicator to measure urban sustainable development towards ecocity. *International Journal of Sustainable Development and World Ecology*, 2005, 12(2): 184-196.

[28] Wu, Libo

Dr. Libo Wu is full professor in energy and environmental economics at Fudan University. She holds Ph.D. in environmental and natural resource economics (Hiroshima University, Japan) and master degree in environmental science (Fudan University, China). Prof. Wu is the executive director of Center for Energy Economics and Strategies Studies. Prof. WU has published more than 30 academic papers on the journals of *Energy Economics*, *Energy Policy*, *Journal of Policy Modeling*, *Journal of Asian Economic Study*, *Environmental Science & Technology*, *Journal of Atmospheric Science* and so on. Prof. Wu has been the principal of dozens of projects funded by the National Ministry of Science and Technology, National Development and Reform Commission, National Ministry of Education and so on. She is now in charge of sub-topic of National 12th Five-year Plan key Project "Key Technologies development and utilization for international climate negotiation and domestic emission reduction". Her paper was honored the second-class prize of "National excellent academic paper in social science and arts" by Ministry of Education in 2009, the third-class prize of "Shanghai excellent academic paper in social science and arts" by Shanghai government in 2008, the second-class prize of "Excellent achievement of Shanghai strategy and policy consulting studies" by Shanghai government in 2011 and second-class prize of "Excellent achievement of National Energy Strategic Studies" in 2012 by National Department of Energy.

Representative papers:

- Wu L.B, etc (2013). Inflationary effect of oil-price shocks in an imperfect market: A partial transmission input-output analysis. *Journal of Policy Modelling* 35, 354-369.
- Wu L.B, etc (2006). Dynamics of energy-related CO₂ emissions in China during 1980-2002: the relative importance of energy-supply side and demand-side effects, *Energy Policy* 34, 3549-3572.
- Tang W.Q, Wu L.B (2010). Oil Price Shocks and Their Short- and Long-Term Effects on the Chinese Economy, *Energy Economics*, S3-S14.

[29] Xu, Jinhua

Dr. Jinhua Xu is an assistant professor of Center for Energy and Environmental Policy Research, Institute of Policy and Management (IPM), Chinese Academy of Sciences (CAS). He holds a Ph.D. degree in Management Science and Engineering from the University of Science and Technology of China. His main research interest is industrial energy economics system and policy modeling for low-carbon economy, especially industrial energy efficiency and CO₂ mitigation policy modeling. He ever worked in Fraunhofer Institute for System and Innovation (ISI), Karlsruhe, Germany as a visiting scholar in 2010 for 13 months, and the main research content in ISI is industrial energy efficiency and CO₂ reduction potential. As main researcher, he ever attended many scientific projects from National Natural Science Foundation of China, National Science and Technology Support Program in "11th Five Plan" and Knowledge Innovation Project of Chinese Academy of Sciences.

Representative papers:

- Xu JH., Fan Y. 2013. Technology improvement potentials and CO₂ emission reduction path in China's cement industry up to 2030. *Advances in Climate Change Research*. Accepted, 2013.
- Xu JH., Eichhammer W., Fleiter T, Fan Y. 2012. China's energy consumption and CO₂ emissions in cement industry: A perspective from LMDI decomposition analysis. *Energy Policy*, 50:821–832.
- Fan Y, Xu JH. 2012. What has driven oil prices since 2000? A structural change perspective. *Energy Economics*, 33 (6): 1082-1094.

[30] Yang, Baochen

Dr. Baochen YANG is currently a professor of management and vice dean of College of Management and Economics of Tianjin University. He got his Ph.D degree in systems engineering from Tianjin University, and has pursued his postdoctoral study with Nanyang Technological University in Singapore and University of Konstanz in Germany from 1999 to 2002, respectively. He has been visiting University of Michigan as a Senior Fulbright Research Scholar from 2004 to 2005. His research fields include applied econometric modeling, financial econometrics, energy economics and finance. He has published more than 80 papers in peer reviewed journals, such as Journal of Management Science in China, Journal of Systems Engineering, Journal of Financial Research, Systems Engineering-Theory and practice, Chinese Journal of Management Science. He has completed more than 20 research projects which include Natural Science Foundation of China (NSFC), UNDP, Sino-Finnish cooperative program, Ministry of Science and Technology (MOST), and Ministry of Education (MOE) funded projects. In 2008, he received the Award for New Century Excellent Talents in University of MOE.

Representative papers:

- Regime Switching in Dynamics of Risk Premium: Evidence from SHIBOR. *Journal of Systems Engineering*, 2012,27(2):1-7. (with Yunpeng Su)
- Measurement Model and Empirical Study of China's Provincial Environmental Efficiency of Energy Utilization, *Systems Engineering*, 2011,29(1):8-15. (with Keliang Wang, Li Yang)
- China's Provincial Total-factor Energy Efficiency Considering Environmental Effects, *Journal of Management Science*, 2010,23(6):100-111. (with with Keliang Wang, Li Yang)

[31] Yuan Yongna

Yongna Yuan works at University of Chinese Academy of Science as an assistant professor and does research on low carbon economy, especially on how to mitigate carbon emission through market mechanism.

- Shi Minjun, Yuan Yongna, Zhou Shenglü, Li Na. Carbon tax, Cap-and-trade or Mixed policy: Which is better for Carbon Mitigation?--A simulation analysis by using China energy-environment-economic model based on a dynamic CGE model [J]. *Journal of Market Science*, 2013, Forthcoming.
- Yuan Yongna, Shi Minjun, Li Na. Analysis of Regional Assignment of Carbon Emission Permits and its Impacts on Regional Development in China: based on a Multi-regional Computable Equilibrium Model [J]. *Management Review*, 2013,25 (2): 43-50.
- Yuan Yongna, Shi Minjun, Li Na, Zhou Shenglü. Intensity Allocation Criteria of Carbon Emission Permits and China's Regional Development—Based on a 30-Province/Autonomous Region Computable General Equilibrium Model Analysis [J]. *Advances in Climate Change*, 2012, 3 (3): 154-162.

[32] Zhang, Bing

Bing Zhang is an associate professor of environmental planning and management at School of Environment and School of Government at Nanjing University. He holds a doctorate in Environmental Planning and Management from Nanjing University and Rutgers University. His research focuses on environmental governance and policy analysis. His recent work examines the social, political, and legal contexts shaping pollution control strategies at the local level and policy instruments for regulating carbon emission China.

Representative papers:

- Bing Zhang, Hui Zhang, Jun Bi, Policy Interactions and Underperforming Emission Trading Markets in China, *Environmental Science & Technology*, 2013, 47(13): 7077–7084.
- Bing ZHANG, Yongjing ZHANG, Beibei LIU. Regulatory uncertainty and corporate pollution control strategies: An empirical study of the “Pay for Permit” policy in the Tai Lake Basin, *Environment & Planning C: Government & Policy* (Accepted)
- Bing Zhang, Qinqin YU, Jun Bi*. Policy design and performance of emissions trading markets: an adaptive agent-based analysis, *Environmental Science & Technology*, 2010, 44, 5693–5699.

[33] Zhang, Xiliang

Professor Xiliang Zhang is the professor of Management Science and Engineering at Tsinghua University. He is currently the director of the Institute of Energy, Environment and Economy at Tsinghua University, the executive director of China Automotive Energy Research Center at Tsinghua University, the chief scientists of 973 project "Greenhouse Gas Control Target, the Pathway and the Supporting Systems until 2020".

Professor Zhang has been engaged in drafting *Circular Economy Law*, *National Program on Climate Change*, *Guidance of Low Carbon Development in China* and other laws and regulations. He is the main author of the chapter on Energy supply in *Assessment Report on Climate Change (IPCC) and National assessment report on Climate Change (China)*. He is also the deputy chief editor of *Energy-The International Journal and Energy for Sustainable Development* and editorial board of *Climate Policy*, *International Journal of Sustainable Engineering and Frontiers of Energy and Power Engineering in China*. Professor Zhang Xiliang has published over 70 academic papers in major international journals and 3 academic monographs.

Representative papers:

- Zhang X., Chang S., Eric M., 2012. Renewable energy in China: An integrated technology and policy perspective. *Energy Policy*, 51: 1-6.
- Zhang D., Zhang X., He J., 2011. Chai Q. Offshore wind energy development in China: Current status and future perspective. *Renewable and Sustainable Energy Reviews*, 15(9): 4673–4684.
- Zhang X., 1996. National seminar on integrated rural energy development planning. *Renewable and Sustainable Energy Reviews*, 3(3):6-7.

[34] Zhang, Jiutian

Dr. Jiutian Zhang got his Ph.D degree in Management Science and Engineering in University of Science and Technology of China. He is currently the associate professor and the deputy director of Global Environment Bureau, the Administrative Center for China's Agenda 21 of Ministry of Science and Technology of People's Republic of China. His research interests are the climate change technology, strategy and policy. He ever organized and participated in drafting and formulating many policy planning on climate change, such as "China's Scientific and Technological Action on Climate Change", "Special Planning for China's Scientific and Technological Action on

Climate Change in the ‘Twelfth Five-Year Plan’”, “Special Planning for Scientific and Technological Development in Carbon Capture and Sequestration” and so on. Dr. Zhang has published many monographs and papers in sustainable development, climate change, carbon capture and sequestration and carbon market.

Representative papers:

- Qinglin Wang, Jiutian Zhang. 2012. A Handbook of Climate Change Domain Ontology. Beijing: Beijing Institute of Technology Press. ISBN: 9787564065980.
- Xian Zhang, Jiutian Zhang, Ping Zhong, et al.. 2013. Expert Preference for Technology Combination Scenarios of CCS Full-chain Demonstration in China. *China Population Resources and Environment*, 23(4): 34-40.
- Sizhen Peng, Jiutian Zhang. 2012. Study on Key Macro-economic Factors and Indexes in Context of China's Goal of Carbon Intensity Reduction. *China Population Resources and Environment*, 22(5): 27-31.

[35] **Zhang, ZhongXiang**

ZhongXiang Zhang (张中祥) is a university distinguished professor and chairman at School of Economics, Fudan University, Shanghai, China. He also is an adjunct senior fellow at East-West Center, Honolulu; a distinguished professor at the Chinese Academy of Sciences, Beijing; an adjunct professor at the Chinese Academy of Social Sciences, Peking University and University of Hawaii at Manoa; an advisor to National Center for Resource Economics at Peking University; and a research associate at American University and Australian National University. He is co-editor of both *Environmental Economics and Policy Studies* and *International Journal of Ecological Economics & Statistics*, and is serving on the editorial boards of other ten international journals including *Climate Policy*, *Energy Policy*, *Environmental Science and Policy*, *International Environmental Agreements: Politics, Law and Economics*, *International Review of Environmental and Resource Economics*, and *Mitigation and Adaptation Strategies for Global Change*. Appointed by the Council of the European Association of Environmental and Resource Economists, he is serving as China Country Representative. He has authored about 200 journal articles, book chapters and other publications, and authored/edited 20 books and special issues of international journals (*Energy Economics*; *Energy Policy*; *International Economics and Economic Policy*; *International Environmental Agreements: Politics, Law and Economics*; *Journal of Policy Modeling*; and *Mineral Economics*). His papers at the web site of [Social Science Research Network](#) have been downloaded over 16,900 times, with their abstracts reviewed over 130,000 times. He is among the most cited authors by the *IPCC Climate Change 2001 and 2007*, and by *Trade and Climate Change: WTO-UNEP Report*. He is among IDEAS/RePEc list of both the leading energy economists and the leading environmental economists in the world. Based on the number of author-weighted journal pages, he is among [the Top 1000 Economists in the worldwide ranking](#). China's Ministry of Education funded research rated him among the top 20 authors from Chinese universities in all branches of social sciences based on the first-authored articles included in SSCI/A&HCI.

His professional services include joining colleagues from the “Circle of Climate Gurus” (current **Executive Secretary** of the United Nations Climate Change Secretariat) to assess the adequacy of the world's efforts on climate change; (at the request of the United Nations Conference on Trade and Development) co-authoring a first, comprehensive and authoritative document on international rules for greenhouse gas emissions trading (published by the United Nations in 1999); working with five “world's leading environmental economists” to improve the design of the EU emissions trading schemes; getting involved in a variety of activities with chief climate negotiators from a dozen key countries; serving as an expert to many national and international organizations (including UNCTAD, UNEP, UNDP, European Commission, North American Commission for Environmental Cooperation, ADB, OECD, IEA, the World Bank, and IPCC); frequently keynoting major international conferences in Asia, Europe and North America (including four-time plenary address at the International

Association for Energy Economics conferences); and organizing high-profile international conferences in Asia, Europe (including the conference at the European Commission) and the US. He is frequently interviewed with and cited by the major media. Appointed by Peking University President, he is with other six internationally renowned scholars conducting the first ever International Peer Review of PKU's academic, pedagogical, and developmental activities.

Representative papers:

- Zhang, Z.X. (forthcoming), Competitiveness and Leakage Concerns and Border Carbon Adjustments, *International Review of Environmental Economics and Policy*, (an invited state of the art paper).
- Zhang, Z.X. (forthcoming), An Analysis of China's Energy Demand and Supply Policy Framework, *Wiley Interdisciplinary Reviews: Energy and Environment*, (an invited state of the art paper).
- Zhang, Z.X. (forthcoming), Who Should Bear the Cost of China's Carbon Emissions Embodied in Goods for Exports?, *Mineral Economics*, Springer.

[36] Zhao, Daiqing

Professor Daiqing Zhao got her Ph.D degree in chemical engineering in Tohoku University. She is currently the director of Center for Energy Strategy Research, Guangzhou Institute of Energy Conversion, Chinese Academy of Sciences, the chief scientist and supervisor of Energy and Environmental Laboratory. Her research fields are the energy policy, programming and energy development strategy, evaluation of energy-economic and policy measures, comprehensive analysis and evaluation of sustainable energy technologies, improved LCA approach, indicators construction of sustainable energy system, diffusion and industrialization of the preferential energy technologies, countermeasures research to climate change and CDM capacity building. She has published over 30 papers in journals, 15 papers on international conference, 10 papers retrieved by SCI. She also has joined a cooperating translation on Japanese book "The Generation and Suppression Techniques of Combustion Products".

Representative papers:

- Wang X., Zeng X., Yang H., Zhao D.. 2012. General modeling and numerical simulation of the burning characteristics of porous chars. *Combustion and Flame*, 159(7):2457-2465.
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[37] Zhou, Hongchun

Hongchun Zhou is a professor and director of Research Department of Social Development of the Development Research Center (DRC) of the State Council and is granted a special allowance from the State Council. He received his BS degree from Geology Department of Nanjing University in 1982, his MS degree in hydrologic engineering from Academy of Geological Sciences in 1986, and his PH.D from China university of Geosciences in 1992. He has been long-term engaged in researches on resources, environment, industry and policies for sustainable development, etc. Dr. Zhou has undertaken many international cooperative projects, participated in studying and drawing up the laws and regulations of the State Council many times, published 8 monographs among which include the circular economy and more than 60 papers in journals at home and abroad, and he won many awards including specific prize and the first prize for development research in China, the second prize for Beijing development of science and technology. He has also undertaken consultation tasks of World Bank, UNDP (United

Nations Development Program), WWF (Worldwide Fund for Nature), etc.

Representative papers:

- Hongchun Zhou, Low carbon economics. Beijing: China machine press. 2012, 5.
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[38] Zhou, Peng

Peng Zhou (P. Zhou) is currently a professor and Assistant Dean of College of Economics and Management and Deputy Director of Research Centre for Soft Energy Science, Nanjing University of Aeronautics and Astronautics, China. He received his BSc in Computational Mathematics and MSc in Operations Research from Dalian University of Technology, China, respectively in 2000 and 2003. In 2008, he received his PhD in Industrial & Systems Engineering from the National University of Singapore. From Jan 2008 to Aug 2009, he was with Energy Sustainability Unit and Energy Studies Institute at National University of Singapore as a research fellow and fellow. Dr. Zhou's primary research area is energy economics and policy, with particular focuses on energy efficiency, carbon emissions and performance measurement. He has published more than forty articles in internationally referred journals. His research work has been continuously sponsored by the National Natural Science Foundation of China and several talent programs such as the Program for New Century Excellent Talents in University by Ministry of Education. In 2010, he received the ProSPER.Net-Scopus Young Researcher Award. He is an Associate Editor of *Energy Economics* and the Deputy Secretary-General of the Energy Economics and Management Sub-Society under the Chinese Society of Optimization, Overall Planning and Economical Mathematics.

Representative papers:

- Zhou, P., Zhang, L., Zhou, D.Q., Xia, W.J., 2013. Modeling economic performance of interprovincial CO₂ emission reduction quota trading in China. *Applied Energy*, <http://dx.doi.org/10.1016/j.apenergy.2013.04.013>
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[39] Zhu, Lei

Dr Lei Zhu is an Assistant Professor in Center for Energy and Environmental Policy Research (CEEP), Institute of Policy and Management, Chinese Academy of Sciences. His research areas are: Energy Investment Assessment, Impact Analysis of Climate change, Energy and Climate Technology Evaluation, Real Option Analysis, Game Theory, and Stochastic Programming. He received President Award of Chinese Academy of Sciences in 2010. In 2009, he went to Australia to attend 'IEA GHG International CCS Summer School', and in 2012, he went to Sweden to attend the course 'Environmental Policy Instruments' which hold by School of Business, Economics and Law, University of Gothenburg. Until now, he has published around 20 papers in peer reviewed journals, such as *Energy*, *Energy Economics*, *Computers and Industrial Engineering*.

Representative papers:

- Lei Zhu, Ying Fan. 2013. Modelling the Investment in Carbon Capture Retrofits of Pulverized Coal-Fired Plants. *Energy*. (SCI, in press)

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- Lei Zhu, Xiao-Bing Zhang and Ying Fan. 2012. A Non-Linear Model for Estimating the Cost of Achieving Emission Reduction Targets: the Case of the US, China and India. *Journal of System Science and System Engineering*, 21(3): 297-315. (SCI)
 - Lei Zhu, Ying Fan. 2011. A real options–based CCS investment evaluation model: Case study of China’s power generation sector. *Applied Energy* (SCI), 88(12): 4320–4333.

[40] Ziesing, Hans-Joachim

Dr. Hans-Joachim Ziesing is a Senior Research Associate with DIW econ and an internationally renowned expert on energy and climate change. He worked from 1969 to 2006 at the German Institute for Economic Research (DIW Berlin) and headed over many years the department "Energy, Transport, Environment". As of 2007 he works as an independent consultant and advises the German government and the governments of other countries in the field of climate policy. His main topics are energy-economic analysis, forecasts and scenarios, the economics of energy systems, especially renewable energy and combined heat and power systems, energy efficiency indicators, environmental impacts of energy policies, climate change policy, sustainable development and particularly the emissions trading (national allocation plan of Germany and development of emissions trading in the post-Kyoto period). He holds a Ph.D. from the TU Berlin on economic evaluation of renewable energy. Dr. Ziesing is member of the governmental energy expert commission to support the monitoring process "Energy of the Future".

Representative papers:

- Ziesing H.J. 2006. Trotz Klimaschutzabkommen: Weltweit steigende CO₂ –Emissionen. DIW Berlin, Nr. 35/2006.
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Center for Energy and Environmental Policy Research (CEEP)

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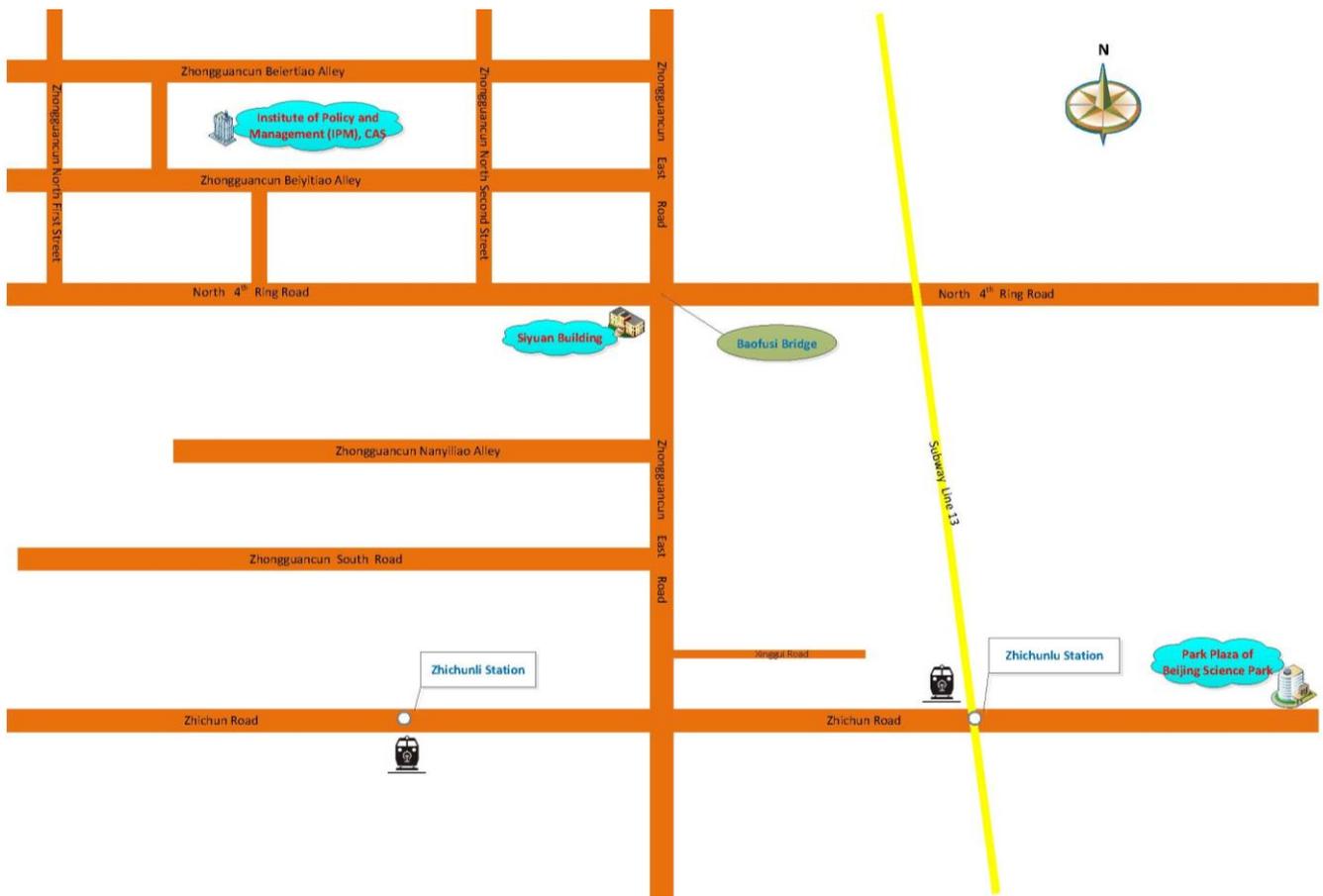
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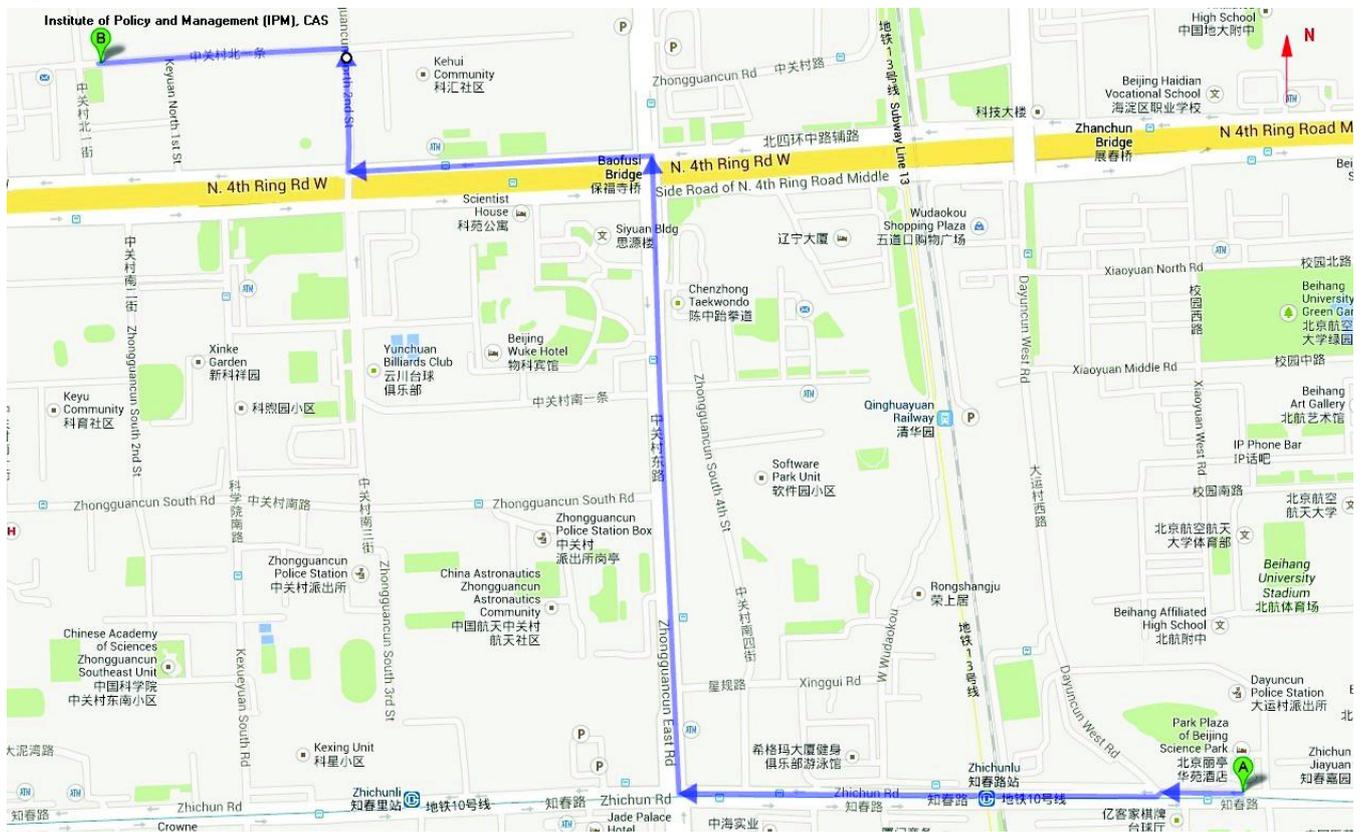
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Sketch of IPM CAS and Park Plaze Beijing Science Park Hotel:

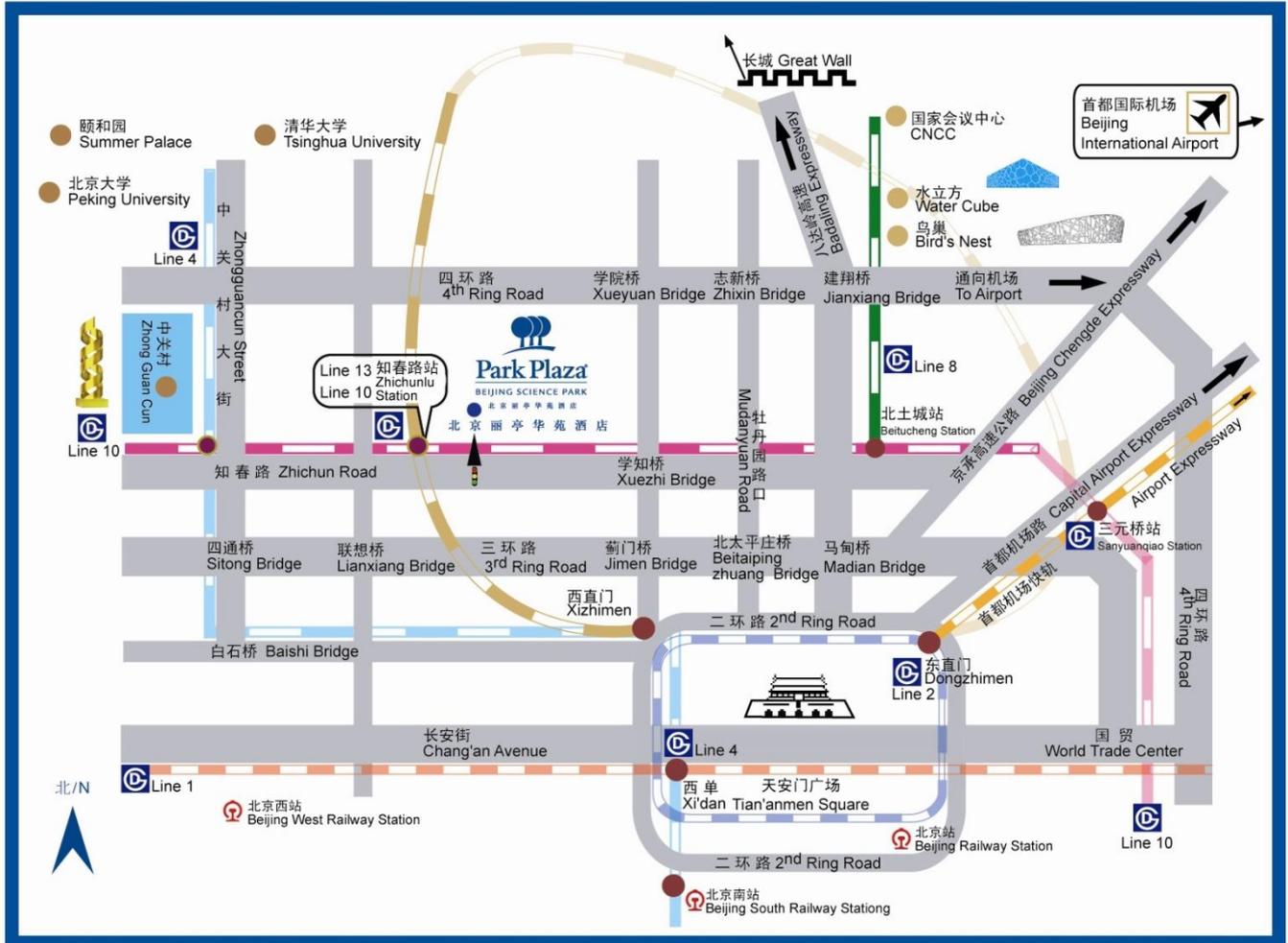


Google map of IPM CAS (B) and hotel (A):



Park Plaza Beijing Science Park Hotel Map

北京丽亭华苑酒店地理位置图



北京丽亭华苑酒店是由美国卡尔森酒店集团管理的涉外酒店。位于中关村科技园区心脏地带。紧邻清华大学、北京大学、北京航空航天大学等知名学府，周边遍布高档写字楼，距离鸟巢、水立方、国家会议中心不到10分钟车程，步行3分钟即可到达地铁10号、13号线，公共交通十分便利。每间客房均免费提供宽带上网服务，周围餐饮及娱乐设施齐全。

Park Plaza Beijing Science Park is managed by Carlson Hotels Worldwide - Asia Pacific. Hotel is located at the heart of Zhongguancun Science Park, close to the famous universities like Tsinghua University, Peking University and Beihang University; The "Bird Nest", "Water Cube" and CNCC(China National Convention Center) is within 10 minutes by drive; Walking distance to the subway line 10 and 13, the public traffic is very convenient. Hotel provides complimentary broadband access in every guest room, banks and local restaurants are surround the hotel.



陈冬 销售经理
 25 Zhi Chun Road, Haidian District, Beijing, China 100083
 中国北京海淀区知春路25号, 100083
 Telephone 电话 +86 -10 - 8235 6699分机442
 Facsimile 传真 +86-10 - 8235 6680
 Email 电子邮箱: arthurchen@parkplaza-bj.com
www.parkplaza.com/beijingcn_sciencepark

