The 9th China-Japan Joint Workshop on
Sustainable Management of Cities and Regions under Disaster and Environmental Risks

October 14-18, 2017, China

Co-Chair:

Prof. WEI Yi-Ming

Prof. TATANO Hirokazu

Organized by:

Center for Energy and Environmental Policy Research, Beijing Institute of Technology

Disaster Prevention Research Institute, Kyoto University

School of Management and Economics, Beijing Institute of Technology

Beijing Key Laboratory of Energy Economics and Environmental Management

Sponsored by:

National Natural Science Foundation of China (NSFC)

Beijing Institute of Technology Beijing (BIT)

Organization Committee

Co-Chair

WEI Yi-Ming, Beijing Institue of Techonology, China

TATANO Hirokazu, Kyoto University, Japan

Secretary General

LIAO Hua, Beijing Institue of Techonology, China

Members

CRUZ Ana Maria, Kyoto University, Japan

FAN Jing-Li, China University of Mining and Technology, China

FANG Liping, Ryerson University, Canada

HATAYAMA Michinori, Kyoto University, Japan

HUANG Shifeng, China Institute of Water Resources and Hydropower Research, China

LIANG Qiao-Mei, Beijing Institue of Techonology, China

LIU Lancui, Beijing Normal University, China

LIU Wenling, Beijing Institue of Techonology, China

LV Xin, Beijing Institue of Techonology, China

SAMADDAR Subhajyoti, Kyoto University, Japan

TANG Bao-Jun, Beijing Institue of Techonology, China

TATANO Hirokazu, Kyoto University, Japan

WANG Zhaohua, Beijing Institue of Techonology, China

WEI Yi-Ming, Beijing Institue of Techonology, China

YANG Cunjian, Sichuan Normal University, China

YOKOMATSU Muneta, Kyoto University, Japan

YU Biying, Beijing Institue of Techonology, China

The 9th China-Japan Joint Workshop on Sustainable Management of Cities and Regions under Disaster and Environmental Risks

October 14-18, 2017, China
Center for Energy and Environmental Policy Research
Beijing Institute of Technology

Program Summary

October 14 (Saturday)	
Whole day	Arrival / Registration
October 15 (Sunday)	
08:30-08:45	Opening Remarks
08:45-09:00	Group Photo
09:00-10:30	Keynote Session 1
10:30-10:50	Coffee Break
10:50-12:20	Keynote Session 2
12:20-13:30	Lunch
13:30-15:15	Technical Session 1
15:15-15:35	Coffee Break
15:35-17:55	Technical Session 2
17:55-20:00	Welcome Banquet
October 16 (Monday)	
08:30-10:30	Technical Session 3
10:30-10:45	Coffee Break
10:45-12:05	Technical Session 4
12:05-13:30	Lunch
13:30-15:30	Technical Session 5
15:30-15:50	Coffee Break
15:50-17:50	Technical Session 6
17:50-18:20	Close Ceremony
18:20-20:00	Conference Dinner
October 17 (Tuesday)	
Whole day	Industrial Visit

The 9th China-Japan Joint Workshop on Sustainable Management of Cities and Regions under Disaster and Environmental Risks

Agenda

October 15 — *Function Room, Grand Building, Daoxianghu Hotel*

Breakfast (7:00-8:00)
Place: Daoxianghu Hotel

Opening Remarks (8:30-8:45)

Chairman: Prof. LIAO Hua (Beijing Institue of Techonology)

Speakers: Prof. WEI Yi-Ming (Beijing Institute of Technology)
Prof. TATANO Hirokazu (Kyoto University)

Group Photo (8:45-9:00)

Keynote Session 1 (9:00-10:30)

Chairman: Assoc. Prof. YU Biying (Beijing Institute of Technology)

09:00-09:45 **Applicability of a Spatial Computable General Equilibrium Model to Assess the Short-term Economic Impact of Natural Disasters**
Prof. TATANO Hirokazu (Kyoto University)

09:45-10:30 **Integrated Impact Assessment of Climate Change on Economic System**
Prof. WEI Yi-Ming (Beijing Institute of Technology)

Coffee Break (10:30-10:50)

Keynote Session 2 (10:50-12:20)

Chairman: Prof. TATANO Hirokazu (Kyoto University)

10:50-11:35 **Possibility to Apply Big Data Analysis for Disaster Response Activity**
Prof. HATAYAMA Michinori (Kyoto University)

11:35-12:20 **The carbon penalty of household defensive measures to avoid air pollution**
Prof. LIU Lancui (Beijing Normal University)

Lunch (12:20-13:30)

Technical Session 1 (13:30-15:15)

Chairman: Prof. HUANG Shifeng (China Institute of Water Resources and Hydropower Research)

13:30-14:05 **Risk Based Evacuation Planning for Natech Accidents**
Prof. CRUZ Ana Maria (Kyoto University)

14:05-14:40 **Monitoring and evaluating the vegetation restoration of earthquake-stricken area by using remote sensing**
Prof. Cunjian Yang (Sichuan Normal University)

14:40-15:15 **Day-Ahead Electricity Spike and Price Forecasting**
Prof. FANG Liping (Ryerson University)

Coffee Break (15:15-15:35)

Technical Session 2 (15:35-17:55)

Chairman: Prof. LIU Lancui (Beijing Normal University)

15:35-16:10 **Satellite Remote Sensing of Lake Area in Wuhan from 1973 to 2015**
Prof. HUANG Shifeng (China Institute of Water Resources and Hydropower Research)

16:10-16:45 **Dynamic Stochastic Macroeconomic Model of Disaster Risk and Mitigation Investment in Developing Countries**
Assoc. Prof. YOKOMATSU Muneta (Kyoto University)

16:45-17:20 **Optimization of China's coal exploitation plan under carbon emission constraint**
Assis. Prof. WANG Bing (China University of Mining and Technology)

17:20-17:55 **Pioneers of Disaster Preparedness: Their Characteristics and Roles**
Assoc. Prof. SAMADDAR Subhajyoti (Kyoto University)

Welcome Banquet (17:55-20:00)

October 16 — *Function Room, Grand Building, Daoxianghu Hotel*

Breakfast (7:00-8:00)
Place: Daoxianghu Hotel

Technical Session 3 (8:30-10:30)

Chairman: Prof. CRUZ Ana Maria (Kyoto University)

08:30-09:00 **Does state ownership always reduce investment efficiency? Evidence from China's energy enterprises**
Assoc. Prof. LV Xin (Beijing Institute of Technology)

09:00-09:30 **A Dynamic Active Energy Demand Management System for Evaluating the Effect of Policy Scheme on Household Energy Consumption Behavior**
Assoc. Prof. YU Biying (Beijing Institute of Technology)

09:30-10:00 **Understanding transition towards sustainable consumption: a conceptual framework and case studies in China**
Assoc. Prof. LIU Wenling (Beijing Institute of Technology)

10:00-10:30 **Energy-Water nexus embodied in supply chain of China from direct and indirect perspectives**
Assoc. Prof. FAN Jing-Li (China University of Mining and Technology)

Coffee Break (10:30-10:45)

Technical Session 4 (10:45-12:05)

Chairman: Prof. FANG Liping (Ryerson University)

10:45-11:15 **Climate change impacts on socioeconomic damages from weather-related events in China**
Assis. Prof. YUAN Xiao-Chen (University of Science & Technology Beijing)

11:15-11:45 **Comprehensive rating system for industrial area wide performance evaluation for extreme events: Natech-RateME**
SUAREZ PABA Maria Camila (Kyoto University)

11:45-12:05 **Socio-economic Impacts of Carbon Pricing in Beijing: Based on the Perspective of Social Accounting Matrix**
XUE Mei-Mei (Beijing Institute of Technology)

Lunch (12:05-13:30)

Technical Session 5 (13:30-15:30)

Chairman: Assoc. Prof. LIU Wenling (Beijing Institute of Technology)

13:30-13:50 **Analysis of Production Capacity Recovery of 2016 Kumamoto Earthquake**
ZHANG Yalin (Kyoto University)

13:50-14:10 **Abandonment Decision of Overseas Oil Project under Low Oil Price**
ZHOU Hui-Ling (Beijing Institute of Technology)

14:10-14:30	**A Reservoir Operation Rule Analysis with the Multi-Sector Multi-Region Open Economic Growth Model under Drought Stress: The Case of Pakistan** ZHANG Liuyi (Kyoto University)
14:30-14:50	**Technology Roadmap of Ethylene Industry in China** CHEN Jingming (Beijing Institute of Technology)
14:50-15:10	**A Stochastic Model of Warehouse Management after Disaster for Humanitarian Logistics** RYOSUKE Oba (Kyoto University)
15:10-15:30	**The Assessment of Paris Agreement and Kyoto Protocol: A Perspective from Benefit-Cost Analysis** YANG Pu (Beijing Institute of Technology)

Coffee Break (15:30-15:50)

Technical Session 6 (15:50-17:30)

Chairman: Assoc. Prof. SAMADDAR Subhajyoti (Kyoto University)

15:50-16:10	**Development paths of energy-saving and CO2 emission reduction technologies in China's iron and steel industry** AN Runying (Beijing Institute of Technology)
16:10-16:30	**Estimation of Elasticity of Substitution by Using Questionnaire Survey** FUJII Masahiro (Kyoto University)
16:30-16:50	**Impacts of Chinese provincial household income change on carbon dioxide emissions** ZHANG Junjie (Beijing Institute of Technology)
16:50-17:10	**An analysis of the regional economic effects of carbon tax in China: based on the production-based and consumption-based emissions** ZHANG Kun (Beijing Institute of Technology)
17:10-17:30	**Linkages between Power Generation from Renewable Resources and Electricity Imports of Morocco** AINOU Fatima Zahra (Beijing Institute of Technology)
17:30-17:50	**Women's vulnerability factors in disaster** HAMIDZADA Marina (Kyoto University)

Close Ceremony (17:50-18:20)

Chairman: Prof. TANG Bao-Jun (Beijing Institute of Technology)

Speakers: **Prof. TATANO Hirokazu** (Kyoto University)
Prof. WEI Yi-Ming (Beijing Institue of Techonology)

Conference Dinner (18:20-20:00)

Annex I SPEAKER ABSTRACTS & BIOGRAPHIES

TATANO Hirokazu
Professor, Disaster Prevention Research Institute, Kyoto University

Applicability of a Spatial Computable General Equilibrium Model to Assess the Short-term Economic Impact of Natural Disasters

Abstract: Computable general equilibrium (CGE) models have been widely used to assess the economic impact of natural disasters, but the models have not been fully validated by applying them to real disasters. This study focuses on validating a model for use in a short-run case in which the functional recovery of infrastructure and businesses occurred on a time scale of a few months. A special attempt is made to determine the parameter values of elasticity of substitutions, which play an important role in the effect on supply chains. In this study, a spatial CGE model, in which Japan is divided into nine regions, is constructed and applied to the case of the 2011 Great East Japan Earthquake and Tsunami. Through this application, the best estimates of the elasticity parameters generated relatively consistent estimates of production change compared with the observed change, both in severely affected regions and in other regions.

Biography: Dr. Hirokazu Tatano is a professor at Disaster Prevention Research Institute (DPRI), Kyoto University, Japan and serving as a head of Research Division of Integrated Management for Safe and Secure Society in DPRI. From September 2010, he is serving a role of Vise President of International Society of Integrated Disaster Risk Management (IDRiM Society). He is also currently served as a secretary general of the Global Alliance of Disaster Research Institutes, which established at the occasion of the second global summit of research institutes for disaster risk reduction, March 19-20th 2015. He received his M.Sc. and Ph.D. in civil engineering from Kyoto University. Much of Dr. Tatano's research is on the economics of natural hazards. He led the socio-economic assessment survey team of the Japan Society of Civil Engineering for the East Japan Earthquake. He also served as a leader of Disaster Risk Management Research Field, GCOE Program on Human Security Engineering for Asian Megacities and head of the Mumbai Base, which conducted a research program to implement community-led disaster risk reduction activities. He served as a PI on an MEXT grant-in-aid on disaster risk management strategy of global critical infrastructure. Dr. Tatano has done pioneering research on economic consequence analysis. Another major focus of his research has been on resilience to natural disasters at the levels of the individual business, market, and regional economy.

WEI Yi-Ming

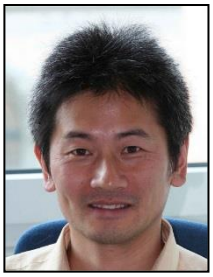
Professor, Center for Energy and Environmental Policy Research, Beijing Institute of Technology

Integrated Impact Assessment of Climate Change on Economic System

Abstract: CEEP-BIT leads a project titled "Integrated Impact Assessment of Climate Change on Economic System" under the Chinese National Key R&D Program. This project aims to (1) develop a China Climate Change integrated assessment model (C^3IAM) by incorporating China's specific situation; (2) assess impacts of climate change on global and China's socio-economic systems; and (3) propose optimal climate change mitigation and adaptation strategy. C^3IAM will couple the economic module (WP1: Development and improvement of economic models in IAM) and the earth system models (WP2: Earth system models used in IAM) within one framework, and meanwhile consider the trade-offs between different countries in the world. The framework and the core parts of this project will be introduced.

Biography: Dr. Yi-Ming Wei is a Distinguished Professor of Energy and Environmental Economics, Beijing Institute of Technology. He is the Dean of the School of Management and Economics, Beijing Institute of Technology (BIT), China. He is the Founding Director of the Center for Energy and Environmental Policy Research at BIT. He is also the Founding Director of Beijing Key Laboratory of Energy Economics and Environmental Management. Dr. Yi-Ming Wei has more than 25 years of experience in the energy industry, including academia, research, consulting. Previously, Dr. Yi-Ming Wei joined the Institute of Policy and Management, Chinese Academy of Sciences (CAS) from the State Key Laboratory of Resources and Environment Information System of China, he was appointed as the Deputy Director-General of the CAS institute of Policy and Management from October 2000 to November 2008. He was the founding director of IPM-CAS and RIET-CNPC Joint Center for Energy and Environmental Policy Research.

His recent research and teaching focus on Energy Policy and Energy Economics, CO_2 emission and Climate Policy, Energy and Climate Policy Modeling. He has performed over 40 research projects for various China governmental agencies including NDRC, MOST, NEA, NSFC, CNPC, SGCC and CAS, and such international organizations as the World Bank, EU-FP7. He published 20 books and over 300 papers in peer review Journals including Nature-Climate Change, Climatic Change, Energy Economics, Ecological Economics, Quantitative Finance, Energy Policy, Resource Policy, Applied Energy, Energy, Energy Conversion and Management, Renewable and Sustainable Energy Reviews, Mitigation and Adaptation Strategies for Global Change, Environmental Impact Assessment Review, Journal of Cleaner Production, Energy & Environment, Environmental Modelling and Software, Journal of Policy Modeling, Computers and Industrial Engineering, Omega.



HATAYAMA Michinori
Professor, Disaster Prevention Research Institute, Kyoto University

Possibility to Apply Big Data Analysis for Disaster Response Activity

Abstract: Big data analysis is one of key issues in information processing area, but there have been no effective applications for disaster response activities still now. In this presentation we tried to propose a method to identify refuge spots as soon as possible after the disaster using big data analysis. We had a case study in Kumamoto earthquake 2016 using a set of data of Moble Spatial Statistics (MSS) developed by NTT docomo. We estimate refuge spots by comparing the population of before and after the Kumamoto earthquake associated with the attribute of residents. We discuss the validity of the results compared with the actual data of refuge spots which local govenments used in real disaster response activities.

Biography: Michinori Hatayama works as a Professor in the Disaster Prevention Research Institute, Kyoto University. His research interests are in spatio-temporal database for advanced GIS and its application for disaster prevention, mitigation and response. Our research group have developed spatio-temporal database system called DiMSIS and disaster response support system, such as disaster debris management system in Great Hanshin Awaji Earthquake in 1995 and disaster certification publishing system in Great East Japan Earthquake in 2011, on it for local municipalities in affected areas. Now we have been developing an integrated Flood Risk Communication Support System (iFRiCSS) and an agent based simulation system for discussion of Tsunami Evacuation Plan in regional communities.

LIU Lancui
Professor, Beijing Normal University

The carbon penalty of household defensive measures to avoid air pollution

Abstract: Many families choose to use air purifiers to avoid costly air pollution exposure in cities. This paper provides new empirical evidence of direct carbon penalty that Chinese urban residents use air purifiers to protect against ambient air pollution. The analysis is conducted with detailed and comprehensive data available on city level. We find that electricity consumption and carbon emissions due to the use of air purifiers cannot be ignored. If the polluted days are not decreased obviously and primary schools, middle schools and high schools in 15 cities are equipped with air purifiers, the electricity consumption and related carbon emissions will be close to lighting power of 5 million population and 3-4 million urban residents' electricity use in 2014-2016 respectively. Urban low-carbon construction is the most important fields in low-carbon development, so how to balance low-carbon behaviors and air pollution protection behaviors is also important. Nevertheless, our estimates are likely only a small part of the carbon penalty because the indirect carbon emissions caused by the process of production, transportation etc. are not included.

Biography: Dr. Lan-Cui Liu now is in Business School in Beijing Normal University. She is interested in carbon emissions reduction Policies, environmental impact of consumption, co-benefit analysis of Greenhouse Gases and main Air Pollutions, and energy and Environmental Policies and Modeling. She has published more than 20 papers in widely peer review Journals such as Energy Policy, Ecological economics, Energy Economics, Environmental Impact Assessment Review.

CRUZ Ana Maria
Professor, Disaster Prevention Research Institute, Kyoto University

Risk Based Evacuation Planning for Natech Accidents

Abstract: Natural disasters can trigger technological accidents known as Natechs. The Great East Japan earthquake and tsunami of 11 March, 2011 serve as an example having caused various Natech accidents including fires, explosions and oil spills at oil refineries in Chiba and Sendai, among other events. The lessons from past Natech accidents call for the need to assess and manage Natech risks in order to understand the threat posed to nearby residents and prepare adequate emergency management plans. In this study we propose a Natech risk assessment methodology and apply it to an industrial park area in Kobe. We then propose a methodology for risk informed evacuation planning. The results showed high or low risk levels for residents evacuating or sheltering in place depending on the types of Natech scenarios that resulted. Given the high uncertainty regarding the type of accident scenarios, individual or household disaster preparedness for these types of events is crucial. Thus, we carried out a household survey to determine the level of Natech disaster preparedness of residents living near the industrial park in Kobe, Japan. The results of the survey showed high earthquake and tsunami preparedness, but low preparedness for chemical and Natech accidents. Little or no awareness of these kinds of hazards was reported, and only a few respondents said they knew about emergency response measures in the case of a Natech. Given that the area is at high risk from a large earthquake and tsunami, residents, industrial facility owners / operators, and government officials should make it a priority to assess Natech risks, and develop emergency management plans that specifically consider the cascading impacts such as earthquake and/ or tsunami triggered oil spills, floating oil fires, explosions and/ toxic clouds and their effect on emergency response actions.

Biography: Ana Maria Cruz is a Professor and Chair of the Disaster Risk Management Laboratory at the Center for Disaster Reduction Systems, Disaster Prevention Research Institute, Kyoto University. She received a Chemical Engineering degree in 1987, and worked in industry for over 10 yrs before pursuing graduate studies. She obtained a MSc. in Applied Development and a Ph.D. in Environmental Engineering from Tulane University in 2003. She has worked in the private and public sectors, in academia and with government at the local and international levels in four continents. Her research interests include area-wide Natech risk management, accident investigation, household hazard adjustment and risk perception as well as climate change impacts on the oil and gas industry. She has published over 40 peer reviewed journal articles and book chapters, and serves as an Editor for the Journal of the International Society for Integrated Disaster Risk Management.

YANG Cunjian
Professor, Sichuan Normal University

Monitoring and evaluating the vegetation restoration of earthquake-stricken area by using remote sensing

Abstract: In order to evaluate the vegetation damage by the earthquake in May 12, 2008 in Wenchuan, and the vegetation restoration after the earthquake, The Landsat Imageries acquired on September 18, 2007, July, 18, 2008, June.1, 2014 were used to discover the vegetation damage and restoration distribution characteristics. It includes several steps. Firstly, all imageries were matched together with the boundary of Wenchuan County. Secondly, NDVI for 2007, 2008 and 2014 (NDVI2007, NDVI2008, NDVI2014) were produced respectively from Landsat imageries. Thirdly, vegetation for 2007 was extracted from NDVI2007 by using threshold method and suitable threshold value. Fourthly, vegetation changes between 2007 and 2008, 2008 and 2014 were extracted by using the change detection method. Fifthly, the vegetation for 2008 and 2014 were respectively obtained based on the vegetation for 2007 and vegetation changes. Finally, the vegetation damage from the earthquake in May 12, 2008 in Wenchuan and the vegetation restoration after the earthquake were assessed. The area of vegetation restoration after vegetation damage is about 157736700 M2, which account for 3.86 % of the county total area. There is still 149513400 M2 vegetation damage without restoration, which account for 3.66 % of the county total area. There is also 13104900M2 vegetation damage between 2008 and 2014, which accounts for 0.32%.

Biography: Prof. Cun Jianyang, He got Ph.D in 1999 from Institute of Geography, Chinese academy of science. He finished post doctor research in 2001 in Institute of Remote Sensing Applications, Chinese academy of science. He was director of Research Center of RS and GIS, and Vice Director Key Lab of Land Resources Evaluation and Monitoring in Southwest, Ministry of Education, and Vice Director of the Faculty Geography Resources Science, Sichuan Normal University, Cheng Du, 610068, China. His research was focused on applying remote sensing and GIS to monitor and evaluate natural resource and environment.

FANG Liping
Professor, Department of Mechanical and Industrial Engineering, Ryerson University

Day-Ahead Electricity Spike and Price Forecasting

Abstract: A novel approach based on neural networks is developed to forecast day-ahead electricity spikes and prices. The method is composed of four steps. First, a neural network trained by data from similar price days is utilized to forecast day-ahead electricity prices. Second, a spike classifier is used to identify spike prices from the forecasted prices. Third, the identified spikes are re-forecasted by employing neural networks trained over historical spike hours. Finally, the comprehensive day-ahead electricity spike and price forecasting is obtained by a data re-constructor. Information from the wholesale electricity market in the province of Ontario, Canada, is used to conduct numerical experiments. The results indicate that significant improvements are achieved in terms of forecasting accuracy. The presentation is based on the joint work with Harmanjot Singh Sandhu and Ling Guan.

Biography: Dr. Liping Fang is Professor of Mechanical and Industrial Engineering at Ryerson University, Toronto, Canada; and a Visiting Professor with the Disaster Prevention Research Institute, Kyoto University, Japan. He severed as Chair of the Department of Mechanical and Industrial Engineering (2004 to 2012) and Associate Dean, Undergraduate Programs and Student Affairs, Faculty of Engineering and Architectural Science (2012-2017) at Ryerson. He is Fellow of the Canadian Academy of Engineering (FCAE), Engineering Institute of Canada (FEIC), and Canadian Society for Mechanical Engineering (FCSME) as well as a registered Professional Engineer in the province of Ontario, Canada. His research interests include industrial engineering, risk management, systems engineering, interactive decision making, and decision support systems. He has published widely. He is the recipient of the 2015 and 2012 Outstanding Contribution Awards from the IEEE Systems, Man, and Cybernetics (SMC) Society; 2015 Best Associate Editor Award from the IEEE SMC Society; 2014 Errol Aspevig Award for Outstanding Academic Leadership from Ryerson University; 2012 ENRE Best Publication Award in Environment and Sustainability from the Section on Energy, Natural Resources, and the Environment (ENRE), Institute for Operations Research and the Management Sciences; and 2008 Ryerson-Sarwan Sahota Distinguished Scholar Award from Ryerson University.

HUANG Shifeng
Professor, China Institute of Water Resources & Hydropower Research

Satellite Remote Sensing of Lake Area in Wuhan from 1973 to 2015

Abstract: In recent years, the Wuhan city has suffered flood disasters frequently, and the decrease of lake area is thought to be an important factor. Up to now, there is no consistent data of Wuhan lakes area. In order to analyze spatial and temporal variation of the Wuhan lakes in recent decades, this study used multi-source satellite data, to retrieve the lake images with a combined algorithm of normalized difference water index (NDWI) and object-oriented segmentation from 1973 to 2015. The influence factors of this change were also analyzed in combination with meteorological data and Wuhan Statistical Yearbooks. The results are as follows: (1) in 1973, the area of lakes in Wuhan was 1170.84 km^2, and was 856.27 km^2 in 2015. The decrease was 314.57 km^2 during the period, and the severe decrease period occurred in 1973-2005, after 2005, it basically stabilized. (2) In 1973, the area of lakes in central districts of Wuhan was 148.90 km^2, and the area was basically stable from 1973 to 1996. After 1996, the area of lakes in central districts of Wuhan began to decrease drastically, and tends to be stable after 2010. In 2015, the area of lakes in Wuhan central districts was 99.94 km^2, a decrease of 48.96 km^2 compared to 1973. (3) From 1973 to 2015, the annual precipitation in Wuhan showed a slight increase trend, while the average annual air temperature showed a significant increase trend. After 1990, the population growth, urban development and real estate development in Wuhan led to a large number of lakes were encroached. Climate change combined with human activities led to the changes of lake area in Wuhan, in which human activity may be the main factor.

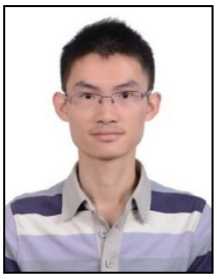
Biography: Prof. Huang Shifeng is professor of Remote Sensing Technique Application Center, China Institute of Water Resources & Hydropower Research. He specializes in application of remote sensing and has more than 20 years of experience in studying and graduate education in this field. His study interests include development of physics-based models and image processing software for the use of remote sensing data in solving problems in flood control and drought relief, water and soil conservation, and water resources management. He is a vice chairman of GIS application committee, geographic information system association, and Vice chairman of Digital Disaster Reduction Committee, Chinese National Committee of International Society for Digital Earth. He also is editorial board member of Journal of Remote Sensing and Journal of China Institute of Water Resources and Hydropower Research. He has published more than 50 papers and 6 books. He is the recipient of several Ministerial and Provincial S&T progress Awards.

YOKOMATSU Muneta
Associate Professor, Disaster Prevention Research Institute, Kyoto University

Dynamic Stochastic Macroeconomic Model of Disaster Risk and Mitigation Investment in Developing Countries

Abstract: This research formulates a dynamic stochastic macroeconomic model that includes an optimization problem for the formation of stock of human capital, production capital, and household assets, and quantitatively examines economic impacts of disaster on developing countries. We further investigate the optimal policy of development of disaster risk reduction (DRR) capital by considering costs of DRR investment, and show that the effect of DRR investment on economic growth is like a single-peaked curve with respect to the DRR investment rate, which implies that over-accumulation could decelerate economic growth. Moreover, this study emphasizes an effect that DRR capital increases the shadow values of other types of capital and assets by reducing risks of destruction. Importantly, this effect emerges even in cases of process, in which disaster does not actually occur for a long period. We decompose the effects of DRR investments into two parts: "ex-ante risk reduction effect (ARRE)" and "ex-post damage mitigation effect (PDME)." Furthermore, we develop a method of measuring ARRE and PDME by applying the results of Monte Carlo simulation, and show that the scale of ARRE is non-negligible using a case study of Pakistan. The results imply that types of models that cannot valuate ARRE underestimate the value of DRR investment.

Biography: Dr. Yokomatsu received his Bachelor, Masters, and Ph.D. degrees from Kyoto University, Japan, in 1997, 1999 and 2003 respectively. He started his career at Tottori University as a research associate in 2001. He moved to Disaster Prevention Research Institute, Kyoto University as an associate professor in 2005. He stayed in University of Minnesota, USA, in 2008 as visiting researcher. Moreover he once had adjunct researcher positions in University of Tokyo and, currently, in Waseda University. His research field is economic analysis of disaster risk management, where he has developed the methods of cost-benefit analysis of disaster prevention and infrastructure management. He is now intensively working on simulation models of macroeconomic dynamics under disaster risk and mitigation investment.



WANG Bing
Assistant Professor, China University of Mining and Technology

Optimization of China's coal exploitation plan under carbon emission constraint

Abstract: Carbon emission reduction is a huge task for China's coal industry. Targeting the viewpoint of coal mining, this research will firstly recognize the feasible pathways to achieve the low-carbon exploitation of coal and then discuss climate change mitigation strategy by applying a multi-objective programming model. The results show that five indicators are chosen for the carbon emission reduction of coal mining and coal mine methane is the most important index. China's coal exploitation plan has been optimized by the efficient utilization of coal mine methane and the lower energy consumption with the precondition of green coal resources estimation. Policy implications for future layout of coal mining are suggested.

Biography: Bing WANG earned his PhD from School of Management and Economics, Beijing Institute of Technology; visiting Scholar in University of Ottawa (Canada) sponsored by China Scholarship Council. He currently works in Faculty of Resource and Safety Engineering, China University of Mining and Technology, Beijing. Dr. Wang has 20+ peer-reviewed publications from the Journals such as Renewable and Sustainable Energy Reviews, Energy Economics, Energy Policy, International Journal of Hydrogen Energy etc. These papers include 11 papers cited in SCI/SSCI and two papers highlighted in ISI ESI (Essential Science Indicator) highly cited papers. His areas of research interest/expertise include Energy Transition strategy policy modeling, energy economic and climate change Impact assessment. He has host programs of the National Natural Science Foundation of China for young researcher, National Statistical Science Research Project.

SAMADDAR Subhajyoti
Associate Professor, Disaster Prevention Research Institute, Kyoto University

Pioneers of Disaster Preparedness: Their Characteristics and Roles

Abstract: In this study, we identified pioneer adopters and their roles in a rainwater harvesting technology dissemination process among communities exposed to drinking water risks due to water salinity and arsenic contamination in coastal Bangladesh. The dissemination of any such innovative technology or practice has long been advocated for to enhance communities' coping capacities, but how to disseminate these innovations has not been analyzed systematically, except in heuristic studies limited to analyzing the cognitive factors of preparedness of individuals. We argue that pioneers play a very critical role in technology dissemination because they adopt at a time when only limited information about the merits and demerits of the innovation is available, and, based on their firsthand experience and obtained knowledge, other members can make prudent adoption decisions. By using the social network threshold model, we show that, just as there are adopters at the macro or regional level, there are adopters at the micro or neighborhood level, and they play the most critical roles, as catalysts to disseminate innovation among the population. We also argue that cosmopolitaness and level of education characterize the pioneers better, rather than their income, risk perception, and other personal features. Some policy options related to the findings are also discussed.

Biography: Subhajyoti Samaddar is an Associate Professor in Disaster Prevention Research Institute (DPRI), Kyoto University, Japan. His research interests are household preparedness behavior, disaster risk communication, risk governance and implementation science. He has an interdisciplinary academic background including PhD in disaster management from Kyoto University, Japan and Master of Planning from School of Planning and Architecture (SPA), New Delhi and M.A. in Social Anthropology. He has been involved in different international research projects funded by JICA and JST on disaster risk management and climate change adaptation. Dr. Samaddar has the conducted in-depth field studies in different countries including India, Bangladesh, Japan and Ghana. He is the recipient of international award "Hazards 2000" in 2016 and "Young Scientist Award' by DPRI, Kyoto University in 2010. He has published widely in premier international journals on disaster risk studies.

LV Xin
Associate Professor, Center for Energy and Environmental Policy Research, Beijing Institute of Technology

Does state ownership always reduce investment efficiency? Evidence from China's energy enterprises

Abstract: Our research proves the nonlinear relationship between state ownership and investment efficiency of China's energy enterprises as captured by sensitivity of investment expenditure to investment opportunities. Traditional theory believes that state ownership always harms investment efficiency because of its week corporate governance and conflicting policy objectives. But this conclusion is drawn from the experience of developed countries and privatization economies, where the state ownership only takes a small share (often below 50%). Does it still hold when state ownership takes an overwhelming majority share of a sector? The energy sector, with the highest share of state ownership in China, provides us a good chance to examine the traditional theory. Using all sample data, we firstly find that state ownership weakens investment-Q sensitivity, thereby reduces investment efficiency. Secondly, we prove that the relation between state ownership and investment inefficiency is stronger in conventional energy enterprises (with relatively higher share of state ownership) than new energy firms. More importantly, we find evidence that state ownership may not affect or even increase investment efficiency when the share of state-owned holdings reached majority level, such as central enterprises and sectors strictly controlled by government (like electricity grid and nuclear power). Overall, our findings highlight the important role of the proportion of state ownership in determining firm's investment efficiency in transitional economy.

Biography: Lv Xin, born in October 1983, received Ph. D. in finance from Nagoya University, Japan. He works as an associate professor, master supervisor, School of management and economics, Beijing Institute of Technology. He also serves as the director of research and academic exchange management center. His main research areas include energy finance and asset pricing. Dr. Lv leads one Youth Project of National Natural Science Foundation of China, one Beijing Social Science Research Base Foundation Project, and participate in the National Science and Technology Major Project, the Innovative Research Groups of National Natural Science Foundation of China. In recent 5 years, he has published over 10 papers in the International Review of Economics and Finance, Emerging Market Finance and Trade, and other SCI, SSCI indexed academic journals. He concurrently serves as anonymous referees for Emerging Market Finance and Trade (SSCI), Applied Energy and some other academic journals. The course "financial economics" Dr. Lv offered has won the honor of Excellent Course.

YU Biying
Associate Professor, Center for Energy and Environmental Policy Research, Beijing Institute of Technology

A Dynamic Active Energy Demand Management System for Evaluating the Effect of Policy Scheme on Household Energy Consumption Behavior

Abstract: To reduce the continuously increasing energy consumption in the household sector, including residential and private transport sectors, it is important to design a proper policy scheme to regulate household energy demand. However, determining how to evaluate the collective effect of multiple countermeasures in one policy scheme on household energy related behavior is very challenging; furthermore, the potential interactions between policies due to the timing effect cannot be overlooked. Under these concerns, this study provides a quantitative methodology by developing a dynamic active energy demand management system (DAEDMS) that can evaluate the overall effects of urban planning, soft policies for improving household/individual awareness, technology-improvement/rebate policies, market end-use diffusion control, and social-interaction oriented policies. The timing effect is directly incorporated by allowing the free setting of the execution period for each policy. Building on this demand management system, the quantified policy schemes and the pathways that can reach the target of energy conservation become straightforward, providing helpful support for policy planning. Besides, the variant effectiveness of policy schemes due to different policy timings admonishes the policy makers to realize that the current fragmented regime of policy making between different departments is undesirable for capturing the genuine effect of all of the policies.

Biography: Biying Yu works as an Associate Professor in the Center for Energy & Environmental Policy Research, Beijing Institute of Technology. She got the JSPS postdoctoral fellowship hosted by Kyoto University in Japan. Her research fields mainly focus on the multi-disciplinary analysis across demographics, social behavior, technology improvement, economic growth, and energy and environmental system. She has published around 20 peer-reviewed papers in SCI/SSCI journal. She is the member of International Association for Travel Behavior Research, International Association for Time Use Research, and EASTS.

LIU Wenling
Associate Professor, Center for Energy and Environmental Policy Research, Beijing Institute of Technology

Understanding transition towards sustainable consumption: a conceptual framework and case studies in China

Abstract: Various theories and approaches have been introduced in the debate on how to address sustainable consumption. In this study, we first discuss different theoretical perspectives on sustainable consumption, particularly developed in the fields of economics, socio-psychology and environmental sociology. We argue that neither an 'individualist' nor a system- or structural perspective alone is sufficient for understanding and analysing the transition towards sustainable consumption. Therefore, we propose to apply the Social Practices Approach (SPA) that combines both human agency and social structures to understand sustainable consumption issues. Following the SPA framework, two case studies are conducted by examining household energy consumption and its potential for low carbon transition both in urban and rural China.

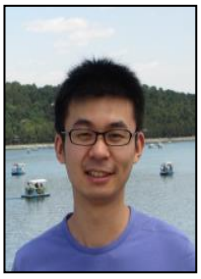
Biography: Wenling Liu is an associate professor at the Centre for Energy and Environmental Policy, School of Management and Economics, Beijing Institute of Technology. She got the doctoral degree of Environmental Economics and Policy from Wageningen University, the Netherlands. Her research focuses on household or individual behaviours in terms of energy consumption and adaptation to climate change, by majorly applying tools and methods of environmental sociology and behavioural research. She has published more than 20 articles on journals and books on topics such as sustainable consumption, household energy use behaviour and low carbon transition.

FAN Jingli
Associate Professor, China University of Mining and Technology

Energy-Water nexus embodied in supply chain of China from direct and indirect perspectives

Abstract: Energy and water underpin economic and social development. Energy and water are directly consumed by sectors, meanwhile they are both indirectly embodied in various products. This study aims to explore the linkage between energy and water from both direct and indirect perspectives. In details, from the production side, primary energy including oil, coal, natural gas, renewable electricity as well as water consumed by 34 sectors are calculated; from the consumption side, primary energy and water consumption by different final demands are accounted. Meanwhile we establish an energy-water nexus indicator to measure the nexus relationship between energy and water. Finally the pathway to realize synergism of energy saving and water saving are analyzed.

Biography: Dr. Jing-Li Fan is currently an associate professor from China University of Mining and Technology, Beijing. She got her Ph.D. degree from Center of Energy & Environmental Policy Research, Beijing Institute of Technology in 2014 and her research interest is energy economics, energy and environment modeling. She was also a visiting researcher in Kyoto University during 2011-2012.



YUAN Xiaochen
Assistant Professor, University of Science & Technology Beijing

Climate change impacts on socioeconomic damages from weather-related events in China

Abstract: China is vulnerable to climate change impacts, and this study investigates its potential socioeconomic damages from weather-related events under future climate conditions. A two-part model incorporating hierarchical Bayesian approach is employed to explore the effect of climate on human and economic damages. On the basis of the identified relationships, the changes in socioeconomic damages under RCPs are presented at the regional and national levels. It shows that China would have an increase in socioeconomic damages from rainfall-related events under RCP2.6 and RCP4.5, and the higher increments mainly appear in the central and southwestern areas. Future climate may dramatically raise national damages from drought events under RCP8.5. Those in some northern and southeastern provinces could double by 2081-2090. The national human damage from cold-related events is almost unchanged in most climate scenarios, but the downtrends are found for economic damage due to the extensive decrements across the country.

Biography: Dr. Xiao-Chen Yuan is an assistant professor from the University of Science & Technology Beijing (USTB). His research interests are related to climate change and energy policy, especially understanding the relationships between climate change and human society with natural and social sciences. He has published over 20 peer-reviewed articles in Climatic Change, Mitigation and Adaptation Strategies for Global Change, Water Resources Management, Natural Hazards, Journal of Cleaner Production, Applied Energy, et al.

SUAREZ PABA Maria Camila
Ph.D. Candidate, Kyoto University

Comprehensive rating system for industrial area wide performance evaluation for extreme events: Natech-RateME

Abstract: Natechs (Natural hazard triggered Technological accidents) are accidental events generated by the action of natural hazard loads on industrial facilities, which cause the subsequent release of hazardous materials, putting at risk the nearby population. Given the scale of these disasters, their consequences can affect large areas, causing damage to industrial parks, utilities and neighboring communities. In addition, Natech accidents can cause multiple and simultaneous accidents, which could affect the emergency response mechanisms. Although many efforts have focused on including natural hazard loads in the design and construction of industrial facilities with the aim of ensuring industrial safety, natural hazards are generally not part of the process risk assessment and management. Therefore, due to the severity of the consequences associated with the Natech scenarios, a framework is required to systematically evaluate the performance of industrial parks in risk management of extreme events. The Natech-RateME project proposes a complete Natech performance rating system to assess and manage risks, protect the population and ensure business continuity, leading to increased territorial resilience. The Framework is focused on four fundamental elements: Infrastructure, Organizational, Environment and Risk Governance and Risk Communication. Each of these elements evaluates the level of preparedness and performance of the industrial park for Natech scenarios. The evaluation is done using methodologies established for each element, under international standards and contemplating engineering tools that are adapted to the context of extreme scenarios. In this way, once the fulfillment of each of the requirements is assessed, the evaluation is completed and a performance index is assigned. Subsequently the result is delivered under three possible approaches: casualties, downtime and financial loss. These approaches translate the outcomes into possible levels of performance, using qualitative descriptors (e.g., 3 stars). The frame finally gives an award (i.e. Platinum, Gold, and Silver) to the industrial parks, for each of the four elements that compose it. This emblem gives the industrial park the distinction of having taken the required measures for the preparedness, mitigation and control of Natech scenarios, considering the high uncertainty associated to these scenarios. The Natech-RateME project is still under development and requires verification and validation of the proposed methodologies. Interviews and workshops with experts, government agencies and institutions, will be conducted as part of the future work in order to consider the views of the different parties involved in a possible Natech scenario.

Biography: Chemical Engineer from Universidad de America in Bogotá-Colombia. In 2012 she entered the MSc programme at Universidad de los Andes (Colombia), where she worked as a Teaching graduated assistant and developed a research regarding the study of right of way and far field scenarios, proposing a framework for the study of dispersion scenarios by accidental events in the transportation of hazardous materials. In 2014 she finished her studies and began working with the UNDP programme as a consultant and technical assistant of technological risk in a project that incorporated individual risk and land use planning to guarantee safety for the community. After the end of this project, she became a lecturer at Universidad de la Sabana (Colombia) in the chemical engineering department. In September 2016 she started her PhD studies at Kyoto University under the Human Security Engineering programme, Graduate School of Engineering.

XUE Mei-Mei
Ph.D. Candidate, Center for Energy and Environmental Policy Research, Beijing Institute of Technology

Socio-economic Impacts of Carbon Pricing in Beijing: Based on the Perspective of Social Accounting Matrix

Abstract: In order to clearly explore the socio-economic impacts of carbon pricing and effectively promote the implementation of carbon pricing mechanism, this study was conducted at the city level and took Beijing city as a case. We collected data to build a social accounting matrix of Beijing, and price multiplier model and average propagation length model were used in this study. It shows that, Electricity & Heating Sector, Transport Sector, Non-metallic Mineral Products Sector, Science & Technology Sector, and Gas & Water Sector are most affected because of the large carbon emissions of Electricity & Heating Sector, Transport Sector, and Other Services Sector. What's more, the average carbon cost propagation lengths from the service sectors, Electricity & Heating Sector and Gas & Water Sector to their intermediate demand sectors are quite long, thus the effect of the carbon cost transmission from theses sectors will last long. The low carbon of the service sectors can promote the development of a low-carbon society in the long run.

Biography: Mei-Mei Xue is a Ph.D. Candidate in Center for Energy & Environment Policy Research, Beijing Institute of Technology. Her research fields include Energy-Economic Complex System Modeling and Energy & Environmental Policy, CGE modeling, and Low-carbon Transportation.

ZHANG Yalin
Master Student, Disaster Prevention Research Institute, Kyoto University

Analysis of Production Capacity Recovery of 2016 Kumamoto Earthquake

Abstract: The 2016 Kumamoto earthquakes have generated great economic impacts on industrial sectors in Japan. Especially the production capacity of the companies in Kumamoto prefecture was seriously affected. Former researches mainly focused on analyzing production facilities to the recovery of production capacity. However, there are many factors that may affect the recovery of production capacity. Therefore, the purpose of this research is to investigate a comprehensive method for estimating the recovery of production capacity focusing on the 2016 Kumamoto earthquakes. To achieve the quantitative estimation of production capacity, "functional fragility curves" of production capacity against earthquake ground motion and "logistic model" are adopted taking account of actual recovery curves according to recovery time. Through the application of the method to the disaster, the initial operation capacity after the earthquake and recovery of production capacities in industrial sectors are estimated. The proposed estimation model may improve the precision and scale of recovery analysis of production capacity after disasters as well as contribute to policies to disaster prevention.

Biography: Yalin Zhang is a master student at Social Systems for Disaster Risk Governance Laboratory, Disaster Prevention Research Institute (DPRI), Kyoto University. She received her bachelor degree of engineering from Kyoto University. She joined Disaster Prevention Research Institute (DPRI) since April 2016. Her study focuses on developing methodologies to design and implement integrated disaster risk management and governance policies.

ZHOU Huiling
Ph.D. Candidate, Center for Energy and Environmental Policy Research,
Beijing Institute of Technology

Abandonment Decision of Overseas Oil Project under Low Oil Price

Abstract: Abandonment option of an operating oil project refers to the right to shut down or transfer the project. As a kind of American option, it can minimize the impact of bad operating conditions, thereby increasing the initial project value. Meanwhile, it maximizes the management flexibility in uncertain conditions, especially for the current low oil prices. The decisions are risk-neutral based and relatively objective for oil companies. In this article, the abandonment option considers the uncertainties of oil price, exchange rate, political environment and taxation. The case study indicates that the relative relationship between the abandonment option value and the project scrap value or selling price is the key to the decision-making. And the project is more likely to be sold at higher risk scenario. Moreover, export duty and mineral royalty have a greater impact on the abandonment timing than corporate income tax.

Biography: Hui-Ling Zhou was born in 1991, Zhengzhou, Henan Province. She obtained the Bachelor's degree of Economics in Beijing Forestry University and now is a Ph.D. candidate in CEEP-BIT. She has participated in several research projects focusing on overseas oilfield investment and import tax policy performance, and two relevant papers have been published on Energy Policy and Journal of Petroleum Science and Engineering. She is currently engaged in techno-economic assessment of CCS.

ZHANG Liuyi
Master Student, Disaster Prevention Research Institute, Kyoto University

A Reservoir Operation Rule Analysis with the Multi-Sector Multi-Region Open Economic Growth Model under Drought Stress: The Case of Pakistan

Abstract: Drought as a long-term hazard is difficult to predict. Therefore, improving the utility of water resources is important. A proposed solution to mitigate the impact of drought is an enhanced reservoir operation rule. The research is about combining two distinct models from economics and hydrology in order to evaluate the policy of reservoir operation under the concern of drought risk; respectively, the two models are the Multi-Sectors Multi-Region Open Economic Growth Model and the Coupled Land and Vegetation Data Assimilation System (CLVDAS). In regards to the Hydrologic model, five drought ranks are randomly allocated to a certain period for each of the three types of water resource (i.e. precipitation, canal irrigation and ground water). The main purpose of the proposed reservoir operation rule is to regulate the water outflow (available irrigation water), so that it remains as constant as possible for a long-term period. In more detail, if rank 1 or 2 are determined for a certain period, which translates to drought occurrence, then the reservoir should discharge 1/2 and 1/3 of its storage. Whereas, should a period be classified as a rank 3, 4 or 5, then the reservoir would retain water, until the outflow reaches its water control line or the reservoir becomes full. As far as the economic model is concerned, the reallocated water resource is examined as a primary resource for the agricultural sector. By comparing the economic situation beforehand and after the application of the reservoir operation rule, it is hypothesized that economic growth advances more steadily and rapidly.

Biography: Liuyi Zhang is a master student currently studying at the Disaster Risk Management Laboratory, Disaster Prevention Research Institute (DPRI), Kyoto University. She joined Disaster Risk Management Laboratory since April, 2016. Her study focuses on the evaluation of policy analysis with economic model with the concern of the risk of disaster.

CHEN Jingming
Ph.D. Student, Center for Energy and Environmental Policy Research, Beijing Institute of Technology

Technology Roadmap of Ethylene Industry in China

Abstract: Ethylene production increases rapidly in recent years in China, which promotes the growth of energy consumption and CO2 emission. Steam cracking, coal to olefins (CTO) and methanol to olefins(MTO) are three main ways to produce ethylene. In the view of technology selection and with a method of National Energy Technology model (NET), this study aims to find a suitable roadmap to achieve the targets with current policies for China's ethylene industry. With this roadmap, we find that the share of CTO&MTO would increase while steam cracking is still the main way to produce ethylene in future. Compared with 2015, the energy consumption and emission of producing one-ton ethylene could decrease effectively by 2030. Besides, this study also makes a discussion about how to achieve a more sustainable development for ethylene industry in China. It is proposed that environmental effect of CTO should be taken into consideration in its process of development. Steam cracking with ethane and MTO with imported methanol should be encouraged as they can reduce energy consumption and CO2 emission effectively.

Biography: Jingming Chen is a Ph.D. Candidate of Center for Energy and Environmental Policy Research, Beijing Institute of Technology (CEEP-BIT). He is currently making research on the energy and environmental performance of China's chemical industry, with a perspective of sustainability.

RYOSUKE Oba
Master Student, Kyoto University

A Stochastic Model of Warehouse Management after Disaster for Humanitarian Logistics

Abstract: Japan has been highly exposed to huge disasters like Hanshin-Awaji earthquake and the Great East Japan Earthquake and Tsunami. The Nankai Trough Earthquake (南海トラフ地震), which is estimated to be the most catastrophic disaster to happen, has an 80% probability of occurrence in 30 years. The disaster will affect a greater and wider area which increases the importance to improve the current post-disaster management. This research focuses on the relief goods issue. After the Chuetsu Earthquake 2008, many shelters were lacking relief goods while warehouses had surplus. The lessons learned from the earthquake had been studied by researchers and private companies. However, further studies need to be done because there are more issues which must be overcame. During the Kumamoto Earthquake, a large volume of relief goods was transported to the affected area. However, these goods were not well managed. A lot of goods were stored in warehouses and city office, but were not transported to the shelters. Disease problem arose in some shelters because the health goods were not available. This issue was caused by the lack of worker and information in the shelters. Many goods from government which were transported to Kumamoto could not reach the shelters on time. In addition, donated goods from other prefectures were not sorted, thus adding more difficulties to the distribution process. The absence of information regarding the truck arrival and shelters needs is making warehouse management more difficult. This issue had caused people to distrust office workers and adding the difficulty to the recovery. This research aims to apply a default model of financial engineering with a special focus on stochastic arrivals of relief goods and the mixed-goods problem. The Warehouse Management Model investigates how to allocate workers, categorize goods, and send goods to shelters in certain and efficient way. The model consists of 3 parts (supply, warehouse work, and evacuees in shelters) and 2 models (stochastic supply model and estimation evacuees model). Trucks arrival as well as the amount of goods it loads from outside to warehouse are random and stochastic. Due to this fact, a stochastic model was applied for the relief good supply. Evacuees were modeled using the method currently used by government for needs assessment. Warehouse workers were decided by estimation and supply. In conclusion, this research emphasizes the importance of information and estimation of shelter needs. For an effective warehouse management, types of goods which are necessary for each period needs to be decided. The result of this research will reduce the work time and worker number in the shelter and propose effective warehouse management method and data collection to develop supply and estimation model.

Biography: Mr. Oba received his Bachelor degrees from Nagoya Institute of Technology, Japan, in 2016. He studied Civil engineering and started Disaster Reduction research. His first research was to construct new disaster reduction plan for relief goods. Now he is Master course student in Kyoto University, research field is economic analysis of disaster risk management. He is now intensively working on stochastic simulation models of Warehouse Management for humanitarian logistics under disaster risk and mitigation investment.

YANG Pu
Master Student, Center for Energy and Environmental Policy Research,
Beijing Institute of Technology

The Assessment of Paris Agreement and Kyoto Protocol: A Perspective from Benefit-Cost Analysis

Abstract: Many research has shown a negative attitude towards the bottom-up Paris Agreement, and consider the Agreement as less binding compared with Kyoto Protocol. But none had made a quantitative analysis between the two. After the United States announced its withdrawal, many research focused on the benefit-cost perspective of the Climate problems, but most of them only provide a globally optimal solution. This paper provides an evaluation approach based on national benefit-cost optimal emission and compares the two climate treaties by their major participants. With more countries contribute their (Intended) Nationally Determined Contributions ((I)NDCs), the total amount of emission reduction by Paris Agreement is five times the amount of Kyoto Protocol. But to achieve the 2℃ target, the total emission of the ten major countries should cut in half. Also, we suggest Russia, South Africa and India have a more aggressive emission target in order to control their national climate damage lower than their emission revenue.

Biography: Pu Yang is now a second-year master student in Energy Economics and Climate Policy at Center for Energy & Environmental Policy Research. After graduating from Beijing University of Posts and Telecommunications (BUPT) and being awarded a bachelor's degree in information management and information systems, she is well armed with the ability of coding and enjoy using it to solve problems. She is now focusing on the benefit-cost perspective of climate change. As a beginner in the field, she is always thirsty to learn something new.

AN Runying

Ph.D. Student, Center for Energy and Environmental Policy Research, Beijing Institute of Technology

Development paths of energy-saving and CO2 emission reduction technologies in China's iron and steel industry

Abstract: China has made commitments to tackle climate change, which include the carbon intensity targets and energy structure adjustment. However, the country's carbon intensity targets have not been implemented in various industries. In order to achieve climate commitments and make decisions, it's necessary to analyze the sector's emission reduction potential. To evaluate the potential of CO2 emission reduction in China's iron and steel industry, CEEP independently developed the NET (National Energy Technology Model) model. In this paper, we use the sub-model of the NET model to consider three possible policy scenarios, and compared with the "4045" and "6065" targets of the iron and steel industry. According to the costs of technologies and unit emission reductions, the technical path of emission reduction is determined. The results show that the iron and steel industry cannot achieve the industry's 4045 goal in 2020, but it is likely to achieve the goal of reducing carbon emission intensity of 60% in 2030. Among the CO2 emission reduction measures in China's iron and steel industry, the development of low-carbon technologies play an important role in reducing emissions, and it is the best choice for economic benefits. The implementation of the current policy of eliminating backward production will also lead to a significant decline in carbon dioxide emissions. Higher emissions will result in a visible increase in costs. For specific energy-saving technologies, such as the applications of non-blast furnace iron making technology and ESP headless rolling technology, the government needs to develop fiscal and tax policies to promote development of these technologies.

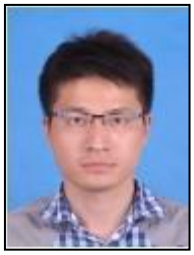
Biography: Runying An attended the University of Science & Technology Beijing from 2011 to 2015. She earned the bachelor of management in 2015. She has been working towards the Ph.D. degree in Management Science and Engineering at Center for Energy & Environmental Policy Research in Beijing Institute of Technology since 2016. Now, she is in the second year of Doctor. Her research interests concentrate on the energy system, environmental system modeling and energy-saving technologies in iron and steel industry.

FUJII Masahiro
Master Student, Disaster Prevention Research Institute, Kyoto University

Estimation of Elasticity of Substitution by Using Questionnaire Survey

Abstract: When disasters happen, they cause damage to remote areas through economic linkages. Companies producing parts, which are very important of the supply chain, were damaged by 3.11 earthquake. Influence by 3.11 earthquake spread not only in Japan but also all over the world. For example, amount of production of automobile industry before the earthquake decreased to 50~80% of that after the earthquake. By finding substitute vendors or increasing supply from another vendor, they can solve problems of supply chain disruptions. The purpose of this research is estimating elasticity of substitution before and after 3.11 earthquake and capturing flexibility of supply chain by industry. In the comparing elasticity of substitution in normal situation and that in the event of a disaster, we find elasticity of substitution in the event of a disaster is less than normal elasticity of substitution and lose flexibility of supply chain when disaster happens.

Biography: Mr. Masahiro Fujii is a master student at Disaster Prevention Research Institute (DPRI), Kyoto University, Japan. He graduate from the Univesity of Tokyo in 2016. He will graduate from Kyoto University in 2018.

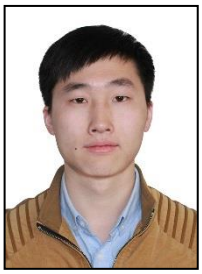


ZHANG Junjie
Ph.D. Candidate, Center for Energy and Environmental Policy Research,
Beijing Institute of Technology

Impacts of Chinese provincial household income change on carbon dioxide emissions

Abstract: Traditional method analyzing environmental problems mainly focus on a perspective of production, while it neglects an important aspect that household consumption is the basic driving factor of CO2 emissions of production sectors. This paper proposes a new perspective of consumption to analyze environmental problems. This paper estimates the impact of Chinese household consumption on carbon emissions across different income households for 2007 and 2012 via using 30 provincial input-output tables. We use a semi-closed input-output (IO) model to move different income household groups into the intermediate use matrix, then we use the hypothetical extraction method to estimate the impact of household consumption structure on total emissions and emissions of production sectors when one income group is extracted from the IO table. Finally, information gained from the methodology provides relevant additional insights for policy makers extending the picture gained from the traditional perspective of production.

Biography: Junjie Zhang is a Ph.D. candidate in Management Science and Engineering at Center for Energy & Environmental Policy Research in Beijing Institute of Technology. His research fields include Time-use activity and its environmental impact, Energy consumption and carbon emissions, Economic development and climate change.



ZHANG Kun

Ph.D. Student, Center for Energy and Environmental Policy Research, Beijing Institute of Technology

An analysis of the regional economic effects of carbon tax in China: based on the production-based and consumption-based emissions

Abstract: As one of the most cost-effective means of reducing emissions, carbon tax has long been supported by most economists and scholars. Based on the 2007 multi-regional input-output table, this paper discusses the impact of carbon tax on the China's eight regional economy and the short-term competitiveness of industrial sectors from the two accounting principles of production-based emissions and consumption-based emissions. Meanwhile, in order to maintain the principle of tax neutrality, carbon tax revenues are used to reduce the production tax and a lump-sum transfer to household, respectively. We found that, if the tax revenues are used to reduce the production tax, the economically developed regions such as Beijing-Tianjin, Eastern Coastal and the Southern Coastal are the net beneficiaries of the carbon tax policy, while the Central, Northwest and Southwest the more economically backward areas will need to bear the additional tax burden. However, if the tax revenues are used as a lump-sum transfer to household, this result is just the opposite. Moreover, under different emissions accounting principles, the impact of carbon tax on sectors competitiveness are quite different in various regions. Specifically, the potential effects of carbon tax on each sector in Beijing-Tianjin, Northern Coastal, Eastern Coastal and Southern Coastal are greater under the consumption-based principle than under the production-based principles. In contrast, the sectors in Northeast, Central, Northwest and Southwest are more influenced by carbon tax under the production-based emissions than under the consumption-based emissions. Therefore, in formulating the carbon tax policy, how to define the emission responsibilities of each region and how to use the tax revenues will have a great impact on the implementation effect of the policy. Moreover, policy-makers should also pay attention to the impact of carbon tax on the balanced development of regional economy while achieving carbon emission reduction.

Biography: Kun ZHANG is a PhD student of School of Management and Economics, Beijing Institute of Technology (BIT), and research conducted with the Center for Energy & Environmental Policy Research, BIT. He graduated from School of Mathematical Science of Huaqiao University in 2014 and got his Bachelor degree of Science. Furthermore, He received his Master degree in Energy Economics and Climate Change from BIT in 2017. This year, he had the chance for PhD for management and now is a PhD candidate with the help of prof. Yi-Ming Wei and prof. Qiao-Mei Liang. His main research interest is Energy Economic Complex System Modeling and Energy & Environmental Policy. He has published 2 papers in peer review Journals including Energy Policy and Renewable and Sustainable Energy Reviews.

AINOU Fatima Zahra
Ph.D. Student, Center for Energy and Environmental Policy Research,
Beijing Institute of Technology

Linkages between Power Generation from Renewable Resources and Electricity Imports of Morocco

Abstract: Kingdom of Morocco, being a net energy importer, depends on its electricity imports from abroad. Power generation from renewable resources, being an efficient, less costly (in the long run) and environment friendly substitute of carbon combustibles, is rapidly developing in the Morocco. This study uses Electricity Imports (EI) as dependent variable and Energy Consumption (ECO), Electricity from Renewable resources (ER), Electricity Capacity (ECA) and Distribution Losses (DL) as the explanatory variables. It uses time series data for the period extending from 1990 to 2013 and has applied OLS technique, ADF unit root test and Cointegration techniques for analyses. The results of cointegration pointed one cointegration vector which implies that all variables have long run relationship; it means that the variable, "electricity from renewable resources" has both long run and short run effects on electricity Imports in Morocco. The empirical findings of this research show that electricity from renewable resources has negative and significant effect on electricity imports and the model depicts one percent increase in Electricity from Renewable Resources decreases the electricity imports by 0.70 percent. Energy consumption also has significant, though, positive association with electricity imports and one percent increase in electricity consumption increases electricity imports by 4.35 percent. This study finds that renewable energy development has decreased Moroccan Electricity imports and has helped reduce its trade deficit. To summarize overall empirical findings, it shows negative relationship both in long run and short run, which means that Morocco can decrease its reliance on imported electricity if the renewable energy resources are properly used for electric power generation. This will not only improve country's electric supply but will also save precious financial foreign reserves and can provide Kingdom of Morocco opportunity to improve its trade in the sectors of its comparative advantages. Keeping in view: firstly, the liberalized energy policy of European Commission and their motives to feed their power grid requirements with off-border renewable energy projects in North African region, secondly, Kingdom of Morocco target of 40 % power to be set from renewable resources, this study suggests for china, being the world's largest hydroelectricity, wind and solar energy producer, to promote its renewable power generation equipment's trade with Morocco for win-win trade outputs.

Biography: Fatima Zahra Ainou, Female, Born in 1985, from Morocco, Meknes City. She graduated from School of Business Administration at Zhongnan University of Economics and Law (ZUEL) in 2013 with Bachelor degree of International Trade and Economics. In 2015, she completed her master degree in International Trade at University of Science and Technology Beijing (USTB), recently she is pursuing her PhD studies at Beijing Institute of Technology (BIT), and she is majored in Energy and Environmental Economics, under the supervision of Prof. Dr Yi-Ming WEI.

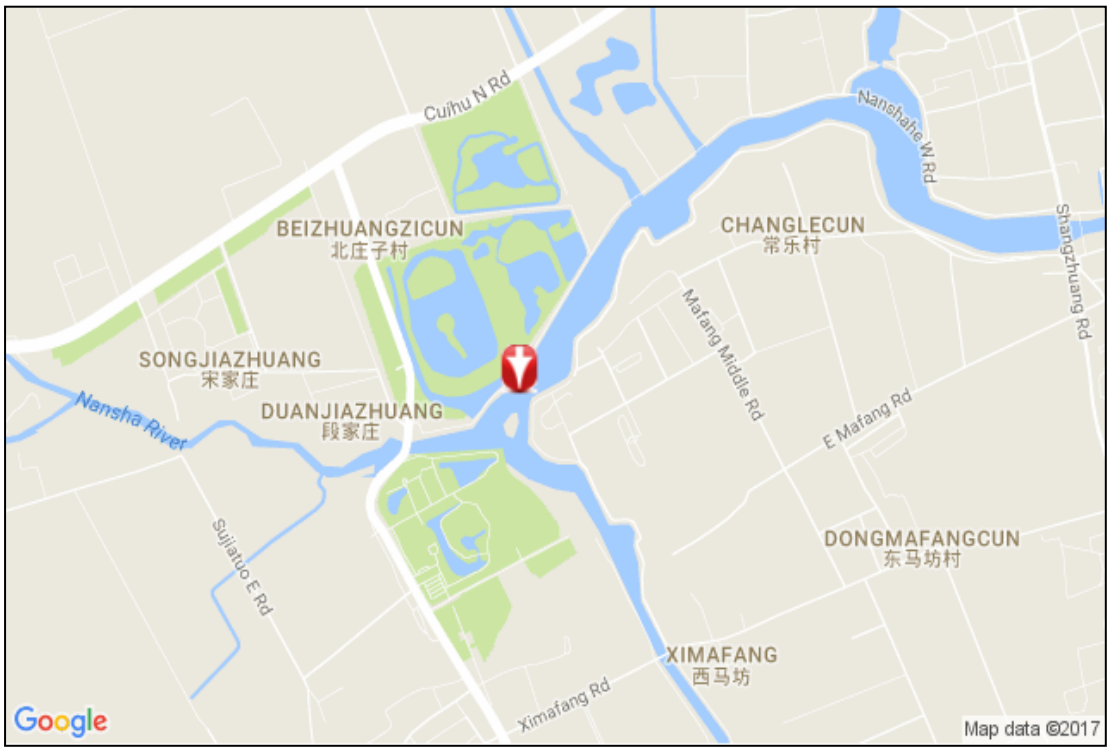
HAMIDZADA Marina
Ph.D. Student, Kyoto University

Women's vulnerability factors in disaster

Abstract: Recent studies shows that women are more vulnerable than men, especially at disaster time. According to several studies low education, lack of enough information and awareness on disasters, low economic situation and cultural issues are the main causes of vulnerability of women in disasters. Following the review of the available literature, analysis of disaster statistics from Afghan National Disaster Management Authority (ANDMA) and interview with government officials, we conducted FGDs in urban and rural areas of Afghanistan in January 2017. We conducted FGDS for women groups, men groups and DRR staff groups in rural and urban area. We use grounded theory method and Interpretive Structural Method to analysis our data. We found that education (including trainings, raising awareness sessions and information), cultural issues, health and protection are the main vulnerability factors of Afghan rural women in disasters. We found that lack of protection and lack of education are the main factors of vulnerability of women living in urban areas in Afghanistan. Our study showed that urban and rural communities' behavior and attitude toward natural hazards or disasters are different according to the structural vulnerability factors that exist in their communities. In rural areas, remoteness of the area, lack of water, and lack of evacuation centers resulted in increased exposure of women to disaster risks. Rural women have less access to education with more knowledge and information on disasters. However, rural women were found to be more independent and to be initiators. Rural women have traditional roles at home and working in the field to support their family economically. This was found to increase vulnerability. Women in rural areas do not have access to safe drinking water, health clinics, education, evacuation centers and transportation. In urban areas people area less aware about environmental issues and flood hazards. They are more dependent on disaster risk reduction agencies' help and have less coordination with them. We found that women in urban areas are generally excluded from disaster management training activities and decision making processes.

Biography: Marina was born on 1970 in Kabul, Afghanistan. She obtained her Master degree in Afghanistan. Her major is civil engineering of high ways and road construction. She worked several years for some governmental and non-governmental agencies inside Afghanistan. From 2002 to 2016 she worked for international agencies such UNHCR, UNWOMEN, and UNDP in Afghanistan. She started her PhD course in Disaster Risk Management laboratory, Urban Management department of graduate school of engineering in Kyoto University, Japan. She is researching on the inclusion of women in process of Disaster Risk Reduction and Disaster Risk Management.

Annex II HOTEL INFORMATION



Daoxianghu Hotel, Beijing (北京稻香湖景酒店)

Address: 28 Daoxianghu Road (Daoxianghu Lu), Sujiatuo, Haidian District, Xiang Mountain, Badachu Scenic Spot, Beijing, 100194, China (北京市海淀区苏家坨镇稻香湖路 28 号)

Tel:+86-10-58718888

Website: http://www.daoxianghu.com.cn

For more information

Please do not hesitate to contact us

Ms. WANG Qiong

wq@bit.edu.cn

+86-139-9482-7777

Ms. MA Ruyi

maruyi@bit.edu.cn

+86-188-1130-4236