



CHINA PROJECT NEWSLETTER

This summer was active and fruitful for the Harvard-China Project and its investigations of the “China 2030/2050” theme sponsored by the Harvard Global Institute (HGI). Summer provided time for intensive research progress in fields as diverse as haze pollution chemistry; grid integration of renewable power; household consumption, welfare and inequality; valuing environmental health risk over time; the impacts of interprovincial trade on air pollution; the carbon cycle in northern China; and the effects of changing land use and income on travel behavior in Chengdu.

On the educational front, we joined forces with Tsinghua University to

bring thirty Harvard undergraduate students to Beijing with students from China and around the world for a summer program to experience and learn about China’s environment. We also held two policy consultations with China’s top leaders on environment and climate, Minister XIE Zhenhua, special envoy on climate, and Minister LI Ganjie, the new minister of environment. In Beijing we participated in a panel discussion hosted by the HGI, and organized a spirited dinner event for China Project alumni.

In addition, we are pleased to announce that the Chinese version of our website is now live! Access it by visiting: www.cn.chinaproject.harvard.edu

INSIDE THIS ISSUE

Summer Undergraduate Program in Beijing	2
Harvard Global Institute Event in Beijing	2
Meetings with Chinese Ministers	3
Alumni Dinner	3
Research Updates	4
Chinese Website	4



China's Environmental Challenges: Summer Undergraduate Program in Beijing 2017

Funded by generous scholarships from the Harvard Global Institute, a diverse group of thirty Harvard College undergraduate students traveled to China in August 2017 on a trip organized by the Harvard-China Project, the Environmental Science and Public Policy concentration, and Tsinghua University to learn about and experience China's environmental challenges first-hand. While in China, the Harvard students participated in a two-week intensive summer program, joined by eighty students from China and other countries around the world.

As part of the summer program the students attended lectures delivered by Profs. Mike McELROY, Dale JORGENSEN, and Steve WOFSY of the China Project; faculty from Tsinghua University, Imperial College (U.K.), and other universities; and scientists and policy analysts from Chinese governmental and non-governmental organizations. The lectures surveyed a range of environmental topics specific to China, including air pollution and GHG measurement and control; carbon pricing; wastewater management; electricity interconnection

across Asia and the world; remediation of soil pollution; and urban sustainability. In addition, the students participated in field trips to the largest municipal wastewater treatment facility in Beijing, large-scale wind and solar farms outside the city, and China's National Climate Center, as well as cultural excursions to Qufu, Confucius' hometown in Shandong Province, and the Great Wall.

The students' experience included assignment into 12 multinational groups to develop projects proposing innovative solutions to diverse environmental issues in China. Topics included a multi-stage overhaul of China's vehicular policies, the adoption of a new technology to monitor wastewater quality in Beijing, and methods to optimize carbon emission trading in China, among others.

This summer program offered a unique and valuable opportunity for Harvard students to learn about environmental challenges as they are experienced and understood in China, and to reconcile their views with those of contemporaries from China, the rest of Asia, Africa, and Europe.

Quotes from Harvard Student Participants:

"This program gave me new insights into the state of environmental degradation in China and current Harvard efforts and technologies in place to mitigate it. Through the series of lectures of various topics I was able to learn new material (such as atmospheric chemistry) ... all while experiencing Chinese culture and making friends from around the world."

"... Being able to witness China's environmental challenges first-hand was certainly an invaluable experience. I firmly believe that the new perspective gained from traveling and immersing oneself in another culture can teach things that are impossible to learn in any other manner."

"The strengths of this program lie in connecting Harvard students among environmentally related fields ... The program also has a strong potential to allow Harvard students to form connections with top students in environmental fields at other universities, potentially paving the way to future collaboration."



Harvard Global Institute Event in Beijing

On August 3rd, the Harvard Global Institute (HGI) hosted a panel discussion on "Finding Solutions for China's Environmental Challenges: Climate Change, Air Quality, and Health" with three Harvard University faculty: Profs. Peter HUYBERS; Zhiming KUANG; and Michael McELROY, chair of the Harvard-China Project. Attended by a capacity audience at a hotel in Beijing's financial district, the event introduced alumni and friends of Harvard in China to the leading research on Chinese environmental challenges and solutions that Harvard faculty are currently conducting with the support of HGI. Leah ROSOVSKY, Vice President for Strategy and Programs, delivered welcoming remarks and moderated a vibrant exchange among audience members and the faculty participants on the nexus of climate change, extreme weather, energy, air pollution, food production, and health.



High-Level Meetings with Ministers XIE Zhenhua and LI Ganjie

On August 4, China's lead official on climate change, Minister XIE Zhenhua, hosted a research and policy consultation with Profs. Mike MCELROY, Steve WOFSEY, executive director Chris NIELSEN, and Project alumni Dr. ZHANG Hongjun (Holland & Knight, LLP) and Prof. LU Xi (Tsinghua University) at his offices in Beijing. Discussion topics included the state of U.S.-China engagement on climate and the growing role of subnational governments, disparate regional capacities for carbon control within China, the relative merits of carbon markets versus carbon taxes and prospects for a hybrid carbon-pricing policy, and the high risks of attempted geoengineering of the climate.

China's new Minister of Environment, LI Ganjie, met with the same China Project delegation, joined also by former China Project postdoc Dr. LIU Bingjiang, now director-general of the Department of Air Pollution Control at the Ministry of Environmental Protection. The focus of discussion was the persistent challenges of air pollution in China, the physical and chemical complexity of haze and its geographical heterogeneity, and the need for collaborative advances in the underlying science. Minister LI suggested a formal collaboration with the Harvard-China Project, to be developed in subsequent discussions between the Project and its alumni holding positions at the Ministry, soon to begin.

Photos (below, left to right): Professor Mike MCELROY shakes hands with Minister LI Ganjie; Profs. Steve WOFSEY, Mike MCELROY, Minister XIE Zhenhua, and Chris NIELSEN



Harvard-China Project Alumni Dinner

Since its inception in 1993, the Harvard-China Project has produced hundreds of alumni—from visiting professors and graduate students from China, to postdoctoral fellows and graduate students at Harvard, to undergraduate research assistants—and maintains active collaborative ties with a number of them. Most of our Chinese alumni have taken what they learned, as well as the relationships formed while with the Project, and returned to positions in China's universities, research institutions, government agencies, non-profit organizations, and private sector to contribute to the country's environmental development. To celebrate the Project's close-knit alumni community in China, the Project hosted a reception and dinner in Beijing in August. Nearly forty affiliates attended the lively event, catching up with each other and the Harvard principals, and meeting members from other cohorts. Given the success of the event, we plan to host similar gatherings periodically in the future.





CHINA PROJECT RESEARCH UPDATES

- Motivated by puzzling questions raised in the course of discussions with Nobel Prize winner Mario MOLINA during his February visit for a China Project public lecture, Prof. Mike McELROY and Project postdocs Drs. SONG Shaojie and GAO Meng have been intensively investigating the complex and poorly understood chemistry of severe winter haze episodes in northern China. Stay tuned for an upcoming publication.
- Doctoral researcher Archana DAYALU successfully defended her dissertation in the Department of Earth and Planetary Sciences. Advised by Prof. Steve WOFSY and Dr. Bill MUNGER, she modeled emissions and transport of CO₂ in China from 2005 to 2009, including fluxes from bottom-up CO₂ inventories (one of which was developed earlier by the China Project) and from crops and vegetation. She tested the data and model results against a unique set of continuous, hourly CO₂ observations taken over the five-year period at the Project's station north of Beijing, operated jointly with Tsinghua University.
- China Project economists including visiting fellow HU Wenhao, Dr. Mun HO, and Profs. CAO Jing and Dale JORGENSEN are studying consumption in China using data from urban and rural household surveys. One project is to establish consumption parameters such as income elasticities for use in a model to study the impacts of environmental policies,

such as carbon prices, on income and regional distribution and on regressivity. A second project measures the improvement in the standard of living and the rise in consumption inequality, in contrast to more common studies of income inequality.

- A collaboration led by Prof. WANG Haikun of Nanjing University, a research alumnus of the Project, with executive director Chris NIELSEN and chair Prof. Mike McELROY assesses the effects of interprovincial trade on air pollution and public health in China. The study, which is forthcoming in *Nature Communications*, quantifies the extent to which domestic trade leads to reduced environmental health damages in developed coastal provinces but increased ones in China's less-developed interior provinces.
- The first in a planned series of studies analyzing and comparing data from the China Project's 2016 and 2005 household surveys in Chengdu has been submitted to the Transportation Research Board. Drs. GUAN ChengHe (a joint postdoc of the China Project and Graduate School of Design) and Sumeeta SRINIVASAN (Tufts University and the China Project) assess differences in travel behavior and location characteristics, comparing changes over the 11-year period in vehicle ownership rates, travel mode choices, trip rates and purposes, and travel times and distances across high-, middle-, and low-income groups.

Chinese Website Launch Brings Environmental Research to Broader Audience

This fall, the China Project launched a Chinese version of our website, which now gives a broad, Chinese-speaking audience access to the research and activities of the Project on Chinese environmental issues. It also represents a significant milestone in our research communications efforts. Stay tuned for more, and visit our new Chinese website: www.cn.chinaproject.harvard.edu



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关于哈佛大学中国项目

哈佛大学中国能源经济环境项目成立于1993年，是一个跨学科综合研究项目，总部位于哈佛大学 John A. Paulson 工程与应用科学学院。该项目就中国的经济、能源、大气环境（包括空气污染和温室气体）以及环境健康展开高水平研究。相关研究成果发表于经过同行评审的权威学术期刊。项目在哈佛大学内外展开广泛合作，主要有两种形式：1) 在学校内部开展跨学科跨学院的科研交叉合作，2) 将根植于哈佛大学的科研力量同中国大学合作伙伴的研究成果进行整合。

自立项以来，哈佛大学中国项目已在多个学科领域建立了坚实的研究实力，包括：大气传输与大气化学建模；与清华大学在北京近郊联合运营大气监测站进行大气监测；自下而上的空气污染物和温室气体排放分析；可再生能源与低碳电力资源及其并网潜力的评估；中国经济与能源使用的一般均衡模型的建模与分析；空气污染对健康影响的建模与健康风险的评估；城市交通、土地使用以及环境的相关分析；对国家温室气体与空气污染物减排政策的经济与环境成本和效益的综合评估。