ADB ASIAN DEVELOPMENT BANK

Regional: Promoting Carbon Capture and Storage in the People's Republic of China and Indonesia

Project Name	Promoting Carbon Capture and Storage in the People's Republic of China and Indonesia
Project Number	48282-001
Country	Regional
Project Status	Active
Project Type / Modality of Assistance	Technical Assistance
Source of Funding / Amount	**TA 8714-REG: Promoting Carbon Capture and Storage in the People's Republic of China and Indonesia** Carbon Capture and Storage Fund under the Clean Energy Financing Partnership Facility — US$ 1.80 million **TA 8714-REG: Promoting Carbon Capture and Storage in the People's Republic of China and Indonesia (Supplementary)** Carbon Capture and Storage Fund under the Clean Energy Financing Partnership Facility — US$ 1.50 million
Strategic Agendas	Environmentally sustainable growth Inclusive economic growth Regional integration
Drivers of Change	Governance and capacity development Knowledge solutions Partnerships Private sector development
Sector / Subsector	**Energy** - Energy sector development and institutional reform
Gender Equity and Mainstreaming	No gender elements
Description	The Country Partnership Strategy 2009-2013 of PRC underscores the need to resolve climate change issues and explore opportunities for clean development mechanisms. The Country Partnership Strategy 2012-2014 of INO explicitly outlines that ADB support to the country will include ongoing dialogue and policy advocacy with the government to promote the scale-up of carbon capture and storage. PRC is the largest emitter of CO2 in the world, and INO is the 15th largest The impact of the TA will be reduced CO2 intensity and increased deployment of CCS technology in PRC and INO. The outcome of the TA will be a well-established institutional capacity for CCS research and capacity development in areas of technology innovation, policy development and formulation and financial mechanisms. The TA will have four components. It will (i) conduct research on CCS technology development and deployment with partners; (ii) promote knowledge sharing through conferences, workshops, dialogues, study visits, fellowships, and other forms of regional cooperation; (iii) strengthen collaborative partnerships with centers in and outside the region; (iv) foster leadership in capacity development, including government policy and regulatory system establishment for CCS.

Project Rationale and Linkage to Country/Regional Strategy	The IEA Carbon Capture and Storage (CCS) Roadmap highlighted the significant role that CCS will need to play in achieving an atmospheric CO2 concentration stabilization of 450ppm by 2050. In the scenario it is based on, CCS will provide approximately 14% of the total CO2 emissions reductions out to 2050. Achieving this contribution of emissions reductions will require an ambitious CCS growth-path, with 100 projects needed globally by 2020 and over 3,000 by 2050. In both 2020 and 2050 major developing countries, including the People's Republic of China (PRC) and Indonesia (INO), will need to contribute to carbon capture and storage (CCS) deployment. PRC's continuing economic growth is projected to drive surging energy consumption for the next several decades. With 70% of PRC's primary energy coming from coal, and the expectation that this reliance on coal will persist for decades to come, PRC will likely continue as one of the world's largest GHG emitters for some time. Coal reserves in PRC are vast and account for over 5,500 billion tons, with proven reserves of 189 billion tons that can supply its projected requirements for over 70 years. Therefore, wide deployment of CCS in PRC over the long term will be necessary to significantly reduce national emissions. Indonesia has a heavily fossil-fuels based economy, consuming coal, oil and gas produced domestically plus imported petroleum. As the world's largest coal exporter and a substantial LNG exporter, and confronted by increasing CO2 emissions from growing domestic consumption of its indigenous coal and fossil fuels, Indonesia has significant requirements for the deployment of large scale low carbon technology in the long term. Moreover, the Government of Indonesia has been increasingly vocal about climate change and its impacts on the developing world. The government has pledged to achieve a non-binding commitment to reduce country emissions by 26% in 2020, and has stated that this target would increase to 41% if international financing was to become available. While CCS-related activities have been going on in PRC and more recently in Indonesia, much still has to be done to speed up the process of moving large-scale CCS from R&D to commercial stage. There are a range of activities underway in both countries, but mostly these are uncoordinated and fragmented in approach; in the main, initiatives have been focused on specific projects or technologies, rather than on a broader strategic view of best technologies, national CCS planning requirements, enabling regulatory and policy environments, environmental and social impacts, and financial mechanisms. Moreover there remains no single source of comprehensive data and information on CCS activities in PRC or INO. To address this information need and create a stronger strategic architecture for future CCS initiatives, ADB proposes to establish a CCS research program under this R-RDTA that will be administered by two research centers in PRC and one in INO, together forming a new CCS Center for the two countries. With support from the ADB, the CCS Center and its partners will conduct research to develop CCS technologies in the region and organize activities to develop the capacity to enable widespread deployment of CCS in both countries and the region within next decade. Program activities will benefit from strategic direction provided by ADB (through its Energy Community of Practice) and the Clean Energy Financing Partnership Facility. The research scope is to examine issues involved with integration of CCS into the power and industry sectors of both countries, and will be comprehensive, covering key dimensions, economic, policy and technology, aiming to build the level of consensus on the role of CCS as a promising option for addressing greenhouse gas issues from increasing use of fossil fuels. This program will also enable the center to join forces with partner institutes and centers in the region and to facilitate the creation and functioning of an international network of CCS researchers that will update technology and policy development status. This joint effort will build on the earlier part-time research work by ADB and knowledge partner organizations. One such organization is the UK Carbon Capture and Storage Research Centre at the University of Edinburgh of United Kingdom, which is already active in pursuing partnerships for CCS development in PRC and is involved in design of a demonstration project near Guangzhou (the China Resources Haifeng Power Plant). The program will form an important part of the knowledge platform that ADB is building with the PRC.
Impact	Reduced CO2 intensity and increased deployment of carbon capture and storage technology in the People's Republic of China and Indonesia

Project Outcome

Description of Outcome	Well-established institutional capacity for CCS research and capacity development in areas of technology innovation, policy development and formulation, and financial mechanisms.
Progress Toward Outcome	
Implementation Progress	
Description of Project Outputs	1. Improved R&D activity on CCS in PRC and INO, with three CCS Centers of Excellence established. 2. Increased knowledge sharing through conferences, workshops, dialogues, study visits and other forms of regional cooperation; 3. New collaborative partnerships built with centers in and outside the region 4. Foster leadership in capacity development, including government policy and regulatory system establishment for CCS.

Status of Implementation Progress (Outputs, Activities, and Issues)	The TA is aimed at creating a stronger strategic architecture for accelerating and scaling up CCS development and deployment in both the PRC and Indonesia by addressing a series of issues associated with the wide range of CCS-related activities currently underway in both countries. These include inter alia a broader strategic view of advanced technologies, national CCS planning requirements, enabling regulatory and policy environments, innovative and robust financial mechanisms, and compilation of comprehensive and reliable database on CCS activities. Specifically, the captioned TA proposes to establish a regional CCS research program to be administered by two research centers in the PRC and one research center in Indonesia, collectively forming a new region-wide CCS knowledge hub and community of practice. The activities of these Centers of Excellence (COEs) will help the host countries in adopting CCS technology, create necessary regulations and obtain financial access for developing CCS projects. The COEs are also expected to foster regional cooperation on these aspects and build capacity in the PRC and Indonesia. Two institutes in the PRC and two institutes in Indonesia have been engaged by ADB to respectively set up the two CCS centers in the PRC and one CCS center in Indonesia, and collectively undertake specific tasks for delivering the envisaged outputs of the TA. All activities will be carried out with strategic direction, oversight and support from and through its Energy Sector Group and the CCSF donors including the Global Carbon Capture and Storage Institute (Australia) and the Department of Business, Energy and Industrial Strategy of Government of United Kingdom. The first CCS COE in the PRC is the Energy Research Institute (ERI) of Shanghai Jiao Tong University, contracted in November 2015. The ERI of Shanghai Jiao Tong University is an integrated research organization engaging in research activities on comprehensive development and utilization management of new energy. ERI's main research specializations include inter alia clean and efficient utilization of fossil energy, renewable energy development and utilization, reduction of carbon dioxide emission and resource utilization, and energy strategy and policy. The second CCS Center is the Guangdong Electric Power Design Institute (GEDI), China Energy Engineering Group, contracted in August 2016. GEDI is a subsidiary under China Energy Engineering Group, an ultra large energy engineering group. With over 50 years of experience, GEDI has developed strong expertise covering electric power system planning, fossil fuel power plant, nuclear power plant, new energy, environmental project, EHV and UHV transmission geotechnical investigation, designing, engineering, consulting, supervision, EPC contracting and project management. The third COE was established in Indonesia as knowledge partnership with the Institute of Technology Bandung and LEMIGAS in December 2016. Both ITB and LEMIGAS have undertaken initiatives that contribute to ADB's strategic agenda of environmentally sustainable growth. They have supported Indonesia's low carbon development by working with international organizations and contributed to expanding the region's knowledge on CCS. The TA is on course to achieve its targets. Specifics of the achievements are as follows: i) three COEs have been established in PRC and Indonesia and research on three capture technologies based on membrane, amine and carbonate have been initiated; ii) CCS related information is increasingly distributed through knowledge portals and three CCS related workshops have been completed; iii) focused consultation workshops have been supported and further work on this is already planned with the COEs.
Geographical Location	

Summary of Environmental and Social Aspects

Environmental Aspects	
Involuntary Resettlement	
Indigenous Peoples	
Stakeholder Communication, Participation, and Consultation	
During Project Design	
During Project Implementation	

Business Opportunities

Consulting Services	1. Three consulting firms (49 person-months of inputs per firm, 147 person months total) 2. Two individual consultants (international, 12 person-months; and national, 24 person-months) Each consulting firm will require a total of 13 person months of international consulting inputs and 36 person months of national consulting inputs.

Responsible Staff

Responsible ADB Officer	Zhai, Yongping
Responsible ADB Department	SDSC
Responsible ADB Division	SDSC-ENE

Executing Agencies	*Asian Development Bank* *6 ADB Avenue,* *Mandaluyong City 1550, Philippines*

Timetable

Concept Clearance	18 Jun 2014
Fact Finding	-
MRM	-
Approval	29 Aug 2014
Last Review Mission	-
Last PDS Update	30 May 2017

TA 8714-REG

Milestones					
Approval	Signing Date	Effectivity Date	Closing		
			Original	Revised	Actual
29 Aug 2014	-	29 Aug 2014	31 Jul 2017	31 Aug 2019	-

Financing Plan/TA Utilization							Cumulative Disbursements	
ADB	Cofinancing	Counterpart				Total	Date	Amount
		Gov	Beneficiaries	Project Sponsor	Others			
0.00	3,300,000.00	0.00	0.00	0.00	0.00	3,300,000.00	29 Aug 2014	853,486.62

Project Page	https://www.adb.org/projects/48282-001/main
Request for Information	http://www.adb.org/forms/request-information-form?subject=48282-001
Date Generated	06 July 2017