

**PROJECT INFORMATION DOCUMENT (PID)  
APPRAISAL STAGE**

Report No.: PIDA1021

<b>Project Name</b>	China Renewable Energy Scale-Up Program Phase II (P127033)
<b>Region</b>	EAST ASIA AND PACIFIC
<b>Country</b>	China
<b>Sector(s)</b>	Other Renewable Energy (100%)
<b>Theme(s)</b>	Climate change (100%)
<b>Lending Instrument</b>	Specific Investment Loan
<b>Project ID</b>	P127033
<b>GEF Focal Area</b>	Climate change
<b>Borrower(s)</b>	PEOPLE'S REPUBLIC OF CHINA
<b>Implementing Agency</b>	National Energy Administration (NDRC)
<b>Environmental Category</b>	C-Not Required
<b>Date PID Prepared/Updated</b>	07-Jun-2013
<b>Date PID Approved/Disclosed</b>	10-Jun-2013
<b>Estimated Date of Appraisal Completion</b>	28-Jun-2013
<b>Estimated Date of Board Approval</b>	29-Oct-2013
<b>Decision</b>	

**I. Project Context**

**Country Context**

China's Gross Domestic Product (GDP) tripled from 2000 to 2011. During the same period, China's total primary energy consumption more than doubled from 1,455 million tons of coal equivalent (Mtce) in 2000 to 3,478 Mtce in 2011. Electricity consumption grew at about 12 percent per annum on average, from 1,347 Terawatt-hours (TWh) in 2000 to 4,700 TWh in 2011. Coal continues to dominate the energy mix in China with consumption of 2,390 Mtce, accounting for 68.8 percent of the primary energy consumption in 2011. China is the world's largest coal producer and consumer, but became a net coal importer in 2009, a clear sign that coal will not meet all the growth in its energy needs. This made the country more vulnerable to energy imports, as China already relies on import to meet half of its oil consumption.

**Sectoral and institutional Context**

Government's commitment to renewable energy development: Concerned with the adverse health and environmental consequences associated with coal combustion, energy security risks, and resource scarcity challenges, the Government of China (GoC) is making continued efforts to increase renewable energy (RE) contribution to meet primary energy and electricity needs. The GoC set an ambitious target to increase the share of non-fossil fuel (RE and nuclear) to 15 percent of the

country's 2020 primary energy supply. In addition, the GoC set an ambitious target to reduce carbon intensity by 40-45 percent during 2005-2020, to which RE is expected to contribute significantly.

RE achievements during the 11th Five-Year Plan: The 2005 Renewable Energy Law, one of the first in the developing world, set a solid foundation for developing RE to meet increasing demand for electricity. The GoC adopted feed-in tariffs for wind and biomass power, and more recently solar PV, and set up several schemes to compensate RE generators for the incremental costs between RE and fossil fuels. As a result, RE has experienced an unprecedented growth during the 11th Five Year Plan (FYP, 2006-10). China has currently the world's largest RE capacity. China is the world leader in small hydro installed capacity. Its wind capacity has doubled every year since 2005, reaching 31 GW in 2010, second only to the U.S. The installed biomass power capacity also increased substantially to reach 5 GW in 2010, even though it failed to meet the planned targets. Solar photovoltaic (PV) made big strides but remains marginal in the total installed RE-based power capacity due to its high costs. Finally, China now has more than half of the global solar water heaters, and the world's leading solar and wind manufacturers.

RE priorities for the 12th Five-Year Plan: For the 12th FYP (2011-15), the GoC has set ambitious RE targets – increasing the share of RE to 9.5 percent of primary energy supply and 20 percent of power generation by 2015 (see Table 1). At the end of 2012, grid-connected wind capacity reached 61 GW, the largest in the world, and solar PV capacity soared to 3.3 GW as a result of the solar PV feed-in tariff. The RE 12th FYP aims to continue scale-up of RE and increase the competitiveness of the RE industry with a combination of regulatory policies and market-based mechanisms. In particular, the National Energy Administration (NEA) is preparing a RE Quota Decree to allocate mandatory non-hydro RE quota to each province, grid companies, and large-scale RE developers. The 12th FYP laid out eight priority RE programs, with a focus on the planned large-scale Wind Power Bases (with an installed capacity of 5-10 GW each) in the North, Northeast, and Northwest regions; off-shore wind development; and large-scale grid-connected Solar PV Bases in desert areas. Complementary to the large-scale grid-connected RE development, the 12th FYP made RE distributed generation a priority, particularly in the planned 100 pilot New Energy Cities and 200 pilot Green Counties.

Barriers to renewable energy: The continued and sustainable scale-up of RE development in China faces new challenges and barriers. In particular, a large share of wind power cannot get connected to the grids and the cost of the RE program could become prohibitive without reduction of the incremental costs between renewable and fossil fuels and improvement of efficiency of RE operations.

Grid integration and access bottleneck: Progress towards greening China's energy sector is now blocked by the stalled sector reforms. In particular, the irrational power pricing structure is a fundamental barrier to RE development. First, without incorporation of environmental external costs, fossil fuel pricing provides an un-level playing field for RE resources. Second, the existing one-part fixed wholesale tariff is not conducive to economic dispatch and is the only reason for resistance of coal-fired power plants to reduce their generation to accommodate more wind into the grids, during windy periods—a key impediment of a large share of wind power without access to the grids. Third, the existing tariff structure with only wholesale and retail energy tariffs does not include transparent transmission and distribution pricing, and provides disincentives for the grid companies to accommodate more intermittent renewable.

The grid companies are reluctant to accommodate an increasing share of intermittent RE and distributed generation in the grids, due to policy, institutional, operational, and technological barriers. Mandatory grid access policy and its enforcement are essential for both grid-connected RE and RE distributed generation.

Coordination failures between government agencies also contributed to the wind grid integration bottleneck. First, the development of power generation capacity and the electrical grids is not well coordinated. For example, China had proposed to construct 7 x 10 GW Wind Power Bases, but did not lay down plans for how that electricity would be transmitted and distributed. Second, the coal-dominated power mix provides an inflexible dispatch for wind, and the fact that the development of wind power is not well integrated with the development of other generation sources further diminish the flexibility in the generation mix. Third, provincial and regional interconnections for trade are critical to balance the supply and demand for RE, given the uneven distribution of RE resources and load centers in China, and share the use of flexible resources with neighbors to manage the variability of RE resources. With the right incentives and market-based policies, inter-provincial power trade can be increased. Finally, coordination failures between different government agencies (e.g. Energy, Ocean, Maritime, Fishery, and Environment agencies) have stalled off-shore wind development.

Looking ahead, China is envisaging further reform of the power sector to increase its market orientation. The design of such reforms should take into account the specific characteristics of RE technologies, and RE policies need to be adapted to the new competitive operational environment to ensure unfettered access of RE to the systems.

High cost of the RE program: With the rising share of RE in the power mix, a continued increase in the power tariff surcharge for RE ran into political resistance and may increase the financial burden on consumers, particularly the poor. A World Bank study estimated that the current RE surcharge could triple to reach the 15 percent target by 2020. Inter-provincial RE trading can drive down the cost to achieve the government's targets. The coordination failure mentioned above and less-than-optimal wind farm design and layout, particularly for the large-scale wind bases, reduced considerably the efficiency and performance of the wind farms, thereby electricity generation and GHG emission reduction. If not addressed adequately, the high level of inefficiencies could increase the cost to the nation.

Therefore, if the non-fossil market in China is going to grow in a sustainable and affordable way to achieve the government's target, it is essential to close the incremental cost gap therefore cutting the subsidy levels by shifting to more market-oriented policies such as RE trading, improving cost competitiveness of RE industry through research and development, increasing efficiency through improved design and better layout of projects, and optimizing RE mix through prioritizing least-cost RE technologies.

The partnership between GEF/World Bank and Chinese RE institutions remains vital to support GoC's efforts to address these new challenges and barriers facing RE development and to achieve its ambitious RE and carbon intensity reduction targets.

Achievements of CRESPI Phase I: The First Phase of the China Renewable Energy Scale-Up Program (CRESPI), a fully blended project with GEF grant (US\$40.22 million) and IBRD loan (US \$159 million) completed in December 2011, has made significant contributions to the scale-up of RE in China and triggered government investment in supporting RE development on a large scale

during the 11th Five-Year Plan. The recommendations made in many policy studies supported by CRESPI Phase I have been adopted by policy makers and strongly influenced RE policy development, RE Law and supporting regulations in China. In addition, CRESPI played an essential role in rapid growth and quality improvement of the domestic wind, and to a less extent biomass, manufacturing industry through supporting domestic manufacturers on technology improvement and certification of wind turbines with cost-shared sub-grants. Finally, CRESPI has contributed to large-scale RE investments through financing large-scale wind farms, biomass power plant, and small-hydro power plants, and supporting investors on project preparation of an investment pipeline. As a result, the global environmental objective of CRESPI Phase I has been achieved, and project targets have been well exceeded.

## II. Proposed Development Objectives

The objective of the CRESPI program (three phases) is to enable commercial renewable electricity suppliers to provide energy to the electricity market efficiently, cost-effectively and on a large scale. The objective of CRESPI Phase II is to support the ambitious RE scale-up program in China with a focus on efficiency improvement and reduction of incremental costs.

## III. Project Description

### Component Name

Component 2. Grid Integration/Access and Technical Design

### Comments (optional)

### Component Name

Component 3. Technology Improvement

### Comments (optional)

### Component Name

Component 4. Pilot Demonstration

### Comments (optional)

### Component Name

Component 1. Policy Support

### Comments (optional)

### Component Name

Component 5. Capacity Building and Investment Support

### Comments (optional)

## IV. Financing (in USD Million)

Total Project Cost:	71.38	Total Bank Financing:	0.00
Total Cofinancing:		Financing Gap:	0.00

<b>For Loans/Credits/Others</b>	<b>Amount</b>
BORROWER/RECIPIENT	44.10
Global Environment Facility (GEF)	27.28
Total	71.38

## V. Implementation

### A. Institutional and Implementation Arrangements

This project will be implemented under the leadership of NEA, who will coordinate with other key stakeholders such as the National Development and Reform Commission (NDRC) Pricing Bureau, Ministry of Finance, Ministry of Water Resources, Ministry of Agriculture, Ministry of Forestry, Ocean Bureau, grid companies, RE power generators, pilot municipal governments, and the relevant agencies in the pilot demonstration areas.

A Project Steering Committee will be set up to provide overall strategic and policy guidance and coordinate between various government agencies to the implementation of the project activities. The Steering Committee will be chaired by NEA. A Project Management Office (PMO) has been established under the NEA, and will function as the executive office of the Steering Committee. On behalf of NEA, the PMO will be responsible for overall implementation, coordination, monitoring and reporting during project implementation.

### B. Results Monitoring and Evaluation

Monitoring of the implementation of the proposed project will involve: (a) the monitoring of performance indicators as included in the results framework in Annex 1; (b) annual progress reports; and (c) a midterm review of implementation progress. The PMO will be responsible for overall monitoring and systematic evaluation of implementation progress including collection of project performance information and reporting on the impact and results of the project.

### C. Sustainability

The likelihood of sustainability of the project is high. The government's unwavering commitment to RE scale-up is clearly indicated by the implementation of the RE Law with unprecedented speed and transparency as well as the ambitious RE targets. This commitment propelled the country to the forefront of global RE development. In addition, the GoC places a high priority with strong ownership of the CRESP program. The program design integrated policy support, technical studies, technology improvements, pilot demonstration, capacity building, with investment support to ensure sustainability and replication of the proposed interventions to achieve an efficient and sustainable growth of RE development in China.

## VI. Safeguard Policies (including public consultation)

<b>Safeguard Policies Triggered by the Project</b>	<b>Yes</b>	<b>No</b>
Environmental Assessment OP/BP 4.01	<b>x</b>	
Natural Habitats OP/BP 4.04		<b>x</b>
Forests OP/BP 4.36		<b>x</b>
Pest Management OP 4.09		<b>x</b>

Physical Cultural Resources OP/BP 4.11		x
Indigenous Peoples OP/BP 4.10		x
Involuntary Resettlement OP/BP 4.12		x
Safety of Dams OP/BP 4.37		x
Projects on International Waterways OP/BP 7.50		x
Projects in Disputed Areas OP/BP 7.60		x

**Comments (optional)**

**VII. Contact point**

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