



# PROJECT IDENTIFICATION FORM (PIF)

PROJECT TYPE: Full-sized Project

THE GEF TRUST FUND

Submission Date: 12/3/2009

## PART I: PROJECT IDENTIFICATION

GEF PROJECT ID: PROJECT DURATION: 30 months

GEF AGENCY PROJECT ID:

COUNTRY(IES): China, Peoples Republic

PROJECT TITLE: Technology Needs Assessment on Climate Change

GEF AGENCY(IES): World Bank

OTHER EXECUTING PARTNER(S): In China – National Development and Reform Commission (NDRC)

GEF FOCAL AREA (S): Climate Change

GEF-4 STRATEGIC PROGRAM(S): Enabling Activities

NAME OF PARENT PROGRAM/UMBRELLA PROJECT (if applicable):

INDICATIVE CALENDAR*	
Milestones	Expected Dates mm/dd/yyyy
Work Program (for FSP)	March 2010
CEO Endorsement/Approval	August 2010
Agency Approval Date	Sept 2010
Implementation Start	October 2010
Mid-term Evaluation (if planned)	
Project Closing Date	April 2013

\* See guidelines for definition of milestones.

## A. PROJECT FRAMEWORK

**Project Objective:** The objective of this project is, within the international climate change agenda and linking to the second national communication (SNC), to support China's efforts in technology needs assessment, to complete a detailed assessment of the current situation of the technology development and potential technology needs in mitigation and adaptation, including implementation options (technical, institutional, policy, regulatory and capacity dimensions) and support to the pilot implementation of novel technology transfer (TT) and innovation strategies for a few priority technologies.

Project Components	Indicate whether Investment, TA, or STA <sup>b</sup>	Expected Outcomes	Expected Outputs	Indicative GEF Financing <sup>a</sup>		Indicative Co-Financing <sup>a</sup>		Total (\$) c = a + b
				(\$) <sup>a</sup>	%	(\$) <sup>b</sup>	%	
1. Technology needs assessment in mitigation area	TA, Investment	<ul style="list-style-type: none"> <li>•Technology and capacity building needs in mitigation area identified;</li> <li>•Effective strategies and programs to promote the development, demonstration, transfer, and diffusion of key mitigation technology, including removal of the barriers to technology development, transfer and deployment with a special attention to regulatory, technical, financial and intellectual property rights barriers;</li> <li>•Novel technology transfer and innovation strategies are demonstrated and implemented for 2 to 3 priority technologies.</li> </ul>	<ul style="list-style-type: none"> <li>•A list of priority, cost-effective technologies needed for development and transfer, based on specific survey and investigation in key sectors and industries with experts and enterprises both at the national and local levels to gather primary and secondary information and other required data For each priority technology, the capacity building needs will be identified;</li> <li>•The project will identify barriers to technology R&amp;D, transfer and diffusion in market, policy, financial area, and put forward means to overcome them.</li> <li>•Select two to three priority technologies to demonstrate innovative strategies for technology R&amp;D, transfer and diffusion.</li> </ul>	2,000,000	40	336,00	42	2,336,000
2. Technology needs assessment in adaptation area	TA, Investment	<ul style="list-style-type: none"> <li>•Technology and capacity building needs in adaptation area identified;</li> <li>•Effective strategies and programs to promote the development, demonstration, transfer, and diffusion of key</li> </ul>	<ul style="list-style-type: none"> <li>•A list of priority, cost-effective technologies needed for development and transfer based on specific survey and investigation in key sectors and industries with experts and enterprises both at the national and local levels to gather primary and secondary</li> </ul>	1,600,000	32	216,000	27	1,816,000

		mitigation technology, including removal of the barriers to technology development, transfer and deployment with a special attention to regulatory, technical, financial and intellectual property rights barriers; •Novel technology transfer and innovation strategies are demonstrated and implemented for 2 to 3 priority technologies.	information and other data. For each priority technology, the capacity building needs will be identified; •The project will identify barriers to technology R&D, transfer and diffusion in market, policy, financial area, and put forward means to overcome them. •Select two to three priority technologies to demonstrate innovative strategies for technology R&D, transfer and diffusion.					
3. Develop a national model for ongoing technology needs assessment. build up a data base and a stakeholders network	TA	•Build up the capacity to implement the technology needs assessment independently in terms of methodology, information, and expertise. •Set up a long standing mechanism to regularly implement technology needs assessment, lay a solid foundation for updating the technology needs list and implement a round of technology needs assessment.	•Design and develop a technology needs assessment indicator system, operation procedures and measures, which adapt to the Chinese situation and are replicable for both mitigation and adaptation. •Set up a database which includes the following information: Energy performance and quality standards for key technologies, investment and operation costs, sources of technologies, development status in China and in the world, potential future development, information on policies and measures and barrier removal approaches, and other important data as determined by the consultation process. •Set up stakeholders network(e.g. an information exchange website) to assist in the areas of climate change mitigation and adaptation at the grassroots level as a way of accessing the expertise, influence, and support of local stakeholders; •Based on practical experience gained in undertaking TNAs, suggestions for future revisions to the TNA handbook.	900,000	18	168,000	21	1,068,000
4. Project management				500,000	10	80,000	10	580,000
<b>Total project costs</b>				A5,000,000	86	B800,000	14	5,800,000

<sup>a</sup> List the \$ by project components. The percentage is the share of GEF and Co-financing respectively of the total amount for the component.

<sup>b</sup> TA = Technical Assistance; STA = Scientific & Technical Analysis.

**B. INDICATIVE CO-FINANCING FOR THE PROJECT BY SOURCE and by NAME** (in parenthesis) if available, (\$)

Sources of Co-financing	Type of Co-financing	Project
Project Government Contribution	In-kind	800,000
GEF Agency(ies)	(select)	
Bilateral Aid Agency(ies)	(select)	
Multilateral Agency(ies)	(select)	
Private Sector	(select)	
NGO	(select)	
Others	(select)	
<b>Total Co-financing</b>		B800,000

**C. INDICATIVE FINANCING PLAN SUMMARY FOR THE PROJECT (\$)**

	Previous Project Preparation Amount (a) <sup>①</sup>	Project (b)	Total c = a + b	Agency Fee
GEF financing		A5,000,000	5,000,000	500,000
Co-financing		B800,000	800,000	
<b>Total</b>		5,800,000	5,800,000	500,000

**D. GEF RESOURCES REQUESTED BY AGENCY (IES), FOCAL AREA(S) AND COUNTRY(IES)<sup>1</sup>**

GEF Agency	Focal Area	Country Name/ Global	(in \$)		
			Project (a)	Agency Fee (b) <sup>2</sup>	Total c=a+b
(select)	(select)				
(select)	(select)				
(select)	(select)				
(select)	(select)				
(select)	(select)				
(select)	(select)				
(select)	(select)				
(select)	(select)				
(select)	(select)				
<b>Total GEF Resources</b>					

<sup>1</sup> No need to provide information for this table if it is a single focal area, single country and single GEF Agency project.

<sup>2</sup> Relates to the project and any previous project preparation funding that have been provided and for which no Agency fee has been requested from Trustee.

<sup>①</sup> Include project preparation funds that were previously approved but exclude PPGs that are awaiting for approval.

## **PART II: PROJECT JUSTIFICATION**

### **A. STATE THE ISSUE, HOW THE PROJECT SEEKS TO ADDRESS IT, AND THE EXPECTED GLOBAL ENVIRONMENTAL BENEFITS TO BE DELIVERED:**

Technology transfer, diffusion, and application play a critical role in helping developing countries in GHG mitigation and adaptation to the climate change. Technology development and transfer has long been a key issue in the agenda of UNFCCC and Kyoto Protocol. In the G8+5 and APP 6 initiatives, technology has also been attracting attention from all concerned parties. Developing countries, in particular, are in a certain stage of economic development, and if they fail to update their technology and adopt environmentally friendly technology, they will "lock in" poor performing equipment with high GHG emissions. Therefore, it is perfect timing to implement large scale high efficient technology development and transfer now. If we fail to grab this opportunity, we will lose the chance to control GHG intensity for decades.

From an early date, UNFCCC negotiations have highlighted the importance of technology in helping countries reduce GHG emissions and lowering emission growth trajectories, as well as in helping vulnerable populations adapt to the changes brought on by global warming. Many developing countries do not have access to the technologies required to obtain energy with fewer GHG emissions. Where those technologies do exist in the world, they need to be made available to those countries needing them most. Where they do not yet exist or are not yet available on a commercial basis, there is a need for further investment in research and development and demonstration to bring those technologies closer to maturity. The UNFCCC established the Expert Group on Technology Transfer (EGTT) in a decision that defined a five-part framework to increase and improve the transfer of environmentally sound technologies. Elements of the framework include:

1. Country-driven activities to determine technology needs and priorities through a widespread stakeholder consultation process;
2. Availability of thorough, actionable technology information;
3. Enabling environments defined by government actions, including the removal of technical, legal and administrative barriers to technology transfer; sound economic policy; and regulatory frameworks that facilitate private and public sector investment in technology transfer;
4. Capacity building, a process of building, developing and strengthening existing scientific and technical skills, capabilities and institutions in developing country Parties so they can assess, adapt, develop and manage environmentally sound technologies; and
5. A set of mechanisms that support financial, institutional, and methodological activities and enhance coordination among stakeholders.

Since its establishment, the EGTT has encouraged all non-Annex I Parties to the Convention to engage in a process of assessment, such as defined in the first element above, to identify what their specific technology needs are in order to develop and respond to the challenges of the climate change convention. The specific activities that have been supported are referred to as Technology Needs Assessments or TNAs.

As a developing country, China is a non-Annex I Party to the UNFCCC. As such, its population faces considerable vulnerabilities to the adverse effects of climate change. At the same time, due to its rapid economic growth, its large population, and its widespread use of indigenous coal resources, China's GHG emissions are the highest of any country. If it is going to continue to grow economically and improve the livelihoods of its population, China will have to become a world leader in developing, adopting, and utilizing climate-relevant technologies. Meanwhile, China, as a big developing country, seeks to address the imbalances between economic and technology development by advancing its industrial and technological capacities. To effectively implement international cooperation in the technology development and technology transfer area, it is important to implement technology needs assessment now.

Given China's vast size, its rapid economic growth, and its continued growth in GHG emissions, the technological needs of China are immense. This project will provide information on technology needs, barriers on technology transfer, capacity building needs, and technology transfer opportunities in different sectors and different areas. It will help China better understand: current technology developments; which technologies are in need; what are the key technical, policy and market barriers; and how to promote environmental friendly technology transfer and diffusion in the area of mitigation and adaptation. With this China can avoid the "lock in" effect in its urbanization and industrialization and contribute climate change mitigation and adaptation.

This project is designed to help China not only assess its technology needs in the context of the UNFCCC and climate change, but also to develop concrete pathways to speed up the adoption, development, and transfer of key technologies that will be strategically critical in pursuing its national development needs in the face of climate change.

In order to ensure the project goes beyond the keys steps of identification and prioritization of climate technologies, the TNA will pursue as much as possible pilot activities that work towards operationalizing key findings from this work. Specifically, programs that target and reduce barriers that have been identified as impeding diffusion of priority technologies will be designed in consultation with stakeholders and, as much as possible, be launched on a pilot basis. Design of such programs will rest on findings of the TNA itself but will likely promote private sector innovation, establish international partnerships, leverage other sources of funding, develop regulatory environments favorable to new clean technologies, build China's clean technology capacity, and engage effectively with any new technology programs or institutions emerging from the UNFCCC process.

China has a tremendous opportunity to take the lead in innovating the new clean energy and climate technologies that will dominate the 21st century. To date, China has played more of a role as "technology taker", adding some changes and applying its formidable manufacturing capacity. Going forward, China can augment its policies to support self-innovation and be more active in creating new technologies. The TNA will examine how Chinese research and industry can move up the technology curve to become a leader in design and innovation.

Given China's importance in the global economy and climate change equation, many public, private and multinational initiatives are addressing issues with which the TNA will occupy itself. This project will ensure that it builds upon existing work, effectively links with other efforts, and provides key value-added by filling needs that are not currently being met. Getting a picture of these other efforts and linking to them through stakeholder networking will be a key component of this project. During project preparation and by the time of GEF CEO endorsement, specific government projects in this area to which the TNA will link are to be identified. This will allow the TNA to leverage its effectiveness by supplementing and influencing many of the existing and planned government-supported initiatives on climate technologies.

In the area of mitigation, surveys and investigations will be conducted in the following sectors: power, coal mining, oil exploration, iron and steel, chemicals, aluminum, cement, transport, buildings and residencies, agriculture, forestry, and waste management. In the area of adaptation, the survey and investigation should be conducted in the disaster mitigation and prevention, water resources, agriculture and natural ecosystem sectors. In the early stages, the project will achieve a preliminary focus on specific technology categories based to a great extent on existing public and private analyses. It will then pursue more in-depth analyses of prospective technologies within those categories to determine which hold most promise and warrant further attention for their development and transfer.

While further project preparation and the early stages of the TNA itself are designed to target areas where most value can be added, preliminary assessment indicate there are still many areas within the Chinese climate technology field that could benefit from additional analysis and capacity building. Some examples of areas that could be pursued include:

- Ensure that less-sophisticated technologies are included: Much of the climate technology focus has been on the most advanced, cutting-edge options. This is clearly important but this project will also include an area with much less attention but no less importance: technologies that are appropriate for 60% of the Chinese population living in rural areas that have not seen substantial industrialization.
- The proper technology updating and recruitment strategy for SMEs - small and medium enterprises - represent an important component of China's economy, and play a extremely important role in generating employment. Certain factors, such as availability of early stage financing and the problem of unemployment, has impeded the process of technology updating and recruitment for SMEs. This project will examine the SME environment, identify barriers, and develop strategies to overcome them.
- Consider new approaches to IPR –the existing IP system does not match the increasing needs for speeding up the D&T of ESTs to meet the challenges of climate change. The contradiction between private technology owners' concerns about violation of IPRs or lower profits/returns from IPRs, and potential technological recipients' concerns about high costs and market monopoly of technologies needs to be addressed by innovations in the mechanisms or

approaches for both patented technologies and those not patented but controlled by monopoly market powers. A great deal of work has been done examining IPR issues so the project would build on that, looking at and building on the existing practices that are taking place with climate technologies in China. IPR analysis must be applied to the specifics of climate technology which differ markedly from technology sector to technology sector. In addition, a great deal of work still needs to be done at the local province level with training and other capacity building.

•Climate Technology Innovation Centers – The concept for Innovation Centers is gaining a great deal of ground. Such Centers would be a focal point for researchers, entrepreneurs, financiers, manufacturers and costumers to commercialize promising climate technologies. Such Centers are being pursued in India, South Africa and other countries. The project would examine this promising model in a Chinese context and, whenever possible, building upon existing institutions.

In addition to such activities, the experience and lessons learnt in the implementation of this project can be used as real cases for the Manual on Technology Needs Assessment and therefore provide input for the improvement and update of the Manual. It can also be used as reference and evidence for building up the general model for technology needs assessment with proven approaches disseminated globally.

In the implementation of this project, a broad stakeholder network will be established with experts, government officials, NGOs, and technology developers and users from energy, climate change, and adaption area. This network will facilitate information exchange and knowledge sharing among different stakeholders and will also increase the capacity of China to implement the technology needs assessment and build up the long standing mechanism to implement technology needs assessment. Activities to be carried out as part of the final implementation stage of the project may include: 1) Transfer of existing technologies by providing some incremental support; 2) Field trials for demonstration and certification of new technologies<sup>①</sup>; 3) Technology development through RD&D grant programs and innovation prizes; 4) Regulatory reform to encourage technology transfer and market entry of new vs. incumbent technologies; 5) Processes to help local and international new technologies companies for both joint R&D and local deployment, including: networking, market intelligence, business incubation, venture capital funds, assistance on IPR; and 6) Local innovation capacity building through training, development of centers of excellence and other activities.

## **B. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH NATIONAL/REGIONAL PRIORITIES/PLANS:**

With the development of the international agenda, climate change has become one of the most important parts of China's national strategy. In June 2007, the Government of China issued "China's National Climate Change Program" which highlights China's efforts and achievements in mitigating climate change from the time of the Rio conference until the present. Primary components of this program include economic restructuring, promoting technology advancement and improving energy efficiency. Great progress has been made in this regard in the previous twenty years. In many fields, China has become a technology leader. Technology has been and will continue to be key to China's economic development as well as its response to the challenges of climate change. To the extent possible, this project strives to bring China into a leadership position with respect to technologies relevant for the mitigation of climate change.

This Program clearly indicates the targets, basic principles, key areas and policy approaches by 2010. It requests that by 2010, the energy intensity per unit of GDP should be reduced by 20% compared with 2005, and that renewable energy should constitute at least 10% of the primary energy mix by 2010 and 15% by 2020. The Program also states that technology development and innovation should play a leading and fundamental role in mitigation. Therefore it is necessary to enact efforts on technology development, innovation, and transfer to allow appropriate technologies to effectively mitigate climate change.. The Government of China also issued a "Special Science and Technology Act on Climate Change" to support the implementation of the Program. At the same time, China has listed the key technologies for climate change into the Medium and Long Term National Science and Technology Development Plan as a priority. In March 5, 2009, the Chinese Prime Minister, stressed in his speech in the National People's Congress's (NPC) annual meeting that "we will implement the National Climate Change Program and increase our capacity to face climate change. Again in June 5, 2009, Premier Wen emphasized in the meeting of National Climate Change Leading Group and the

---

<sup>①</sup> Depending on the specifics of the selected technology, demonstration projects may well be beyond the scope and budget of this TNA. Such demonstration projects could, however, be the basis for follow-on projects with the TNA providing strong rationale in support of the selected technology and parameters for any demonstration project.

Leading Group of State Council on Energy Saving and Emission Reduction that China will incorporate climate change and CO2 emission reduction into national social and economic development plans, making use of comprehensive legislation, economic, and scientific means to face the climate change. In August 27, 2009, in its eleventh meeting of the National People Congress, the NPC Actively Facing Climate Change Act was passed. The Act stressed that China should follow the principles of the Convention on Climate Change, dealing with mitigation and adaptation with the technology and capital support from advanced countries. At the same time, the Act also pointed out that China should enhance its own technology innovation, and use science and technology development as a key means to increase its capacity to face climate change.

These development plans and scenarios recognize the importance of technology development. They recognize that wider economic and national development will in many ways rely on technology development. Assessing technology effectiveness, cost, and ease of diffusion are preconditions for making decisions on technology transfer. Therefore, the implementation of this TNA will very much help China to reach its Program targets under various future scenarios.

**C. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH [GEF STRATEGIES](#) AND STRATEGIC PROGRAMS:**

As an enabling activity, this project is entirely consistent with the GEF's strategy for technology transfer as defined in the document entitled "Elaboration of a Strategic Program to Scale-Up the Level of Investment in the Transfer of Environmentally Sound Technologies" (GEF/C.34/5.Rev.1), also referred to as the Poznan Strategic Program on Technology Transfer. This project will assist China to evaluate previous work done to assess technological needs and capabilities in the context of climate change, and to identify where the focus should be placed to increase technology transfer and development to favorably influence both China's sustainable development and its efforts to reduce GHG emissions.

In addition,, successful implementation of this project will provide rich information on technology transfer, which could be used to help the parties of the UNFCCC further identify key issues and possible solutions for future technology transfer activities to be supported by the Convention.

**D. JUSTIFY THE TYPE OF FINANCING SUPPORT PROVIDED WITH THE GEF RESOURCES:**

The GEF resources will be provided as a grant to the Government of China to enable them to carry out a comprehensive assessment of the technologies relevant to development in a climate-constrained world. The GEF project will be part of a holistic national plan to address future national energy security and environmental degradation as well as climate change.

The proposed project is not an investment project, but rather a systematic process for the evaluation of past work undertaken on China's technology needs; an assessment of current state-of-the-art technologies in China's strategic sectors; a detailed assessment of the obstacles preventing China from utilizing the most advanced, environmentally sound technologies; and a concrete plan of activities to enable China either to access those technologies from abroad through investment or to develop their own best-practice technologies in cases where the needed technologies are not accessible or do not exist. All of this will be undertaken with guidance from the UNFCCC framework established for technology transfer, drawing from sources such as the new "Handbook for Conducting Technology Needs Assessment for Climate Change" (UNDP, UNFCCC, UN, 2009).

**E. OUTLINE THE COORDINATION WITH OTHER RELATED INITIATIVES:**

The current activity to prepare China's Second National Communication (SNC) does contain a component devoted to assessing China's technological needs. Fortunately, this enabling activity funded by GEF is also being implemented by NDRC, so coordination can be facilitated. The initial overview of technological needs being undertaken with GEF-UNDP support will lay the foundation for this much more detailed, focused and action-oriented technology needs assessment. This general technology component of the Second National Communication undertaken through GEF support via UNDP will be coming to a close in December 2009. This project will clearly build upon and incorporate the results of this initial undertaking.

China's initial national communication addressed the issue of technology transfer. In the report to COP10 in December 2004, the Government of China provided some information on technology needs both in mitigation and adaptation. In the China Climate Change Program published in June, 2007, the following types of technologies were discussed: technology for measuring, forecasting, stimulating, and calculating climate change, including observation technology for atmosphere,

ocean, and land; satellite technology for methodology, ocean, and natural resources; climate system simulation and calculation technology; energy technology, including efficient and low emission power generation technology, large hydro power generation unit technology, new nuclear power generation technology, renewable energy technology, building energy efficiency technology, clean energy vehicles, and hybrid fuel automobile; other technologies, including building energy efficiency, new materials, and modern transportation. Beside traditional technology, many new technologies were listed in the Program, e.g. fuel cell and hydrogen and the rehabilitation and construction of wetland, mangrove forests, and coral reefs. For implementing the Program, 31 provinces were requested to prepare their provincial level climate change programs, including establishing institutions and enhancing capacity on climate change. The provincial programs have all completed the draft and in the Program, technology needs in provinces were also listed.

China has already implemented certain technology needs assessment activities in other projects, e.g. “China-EU Energy and Environment Project-Initial Technology Needs Assessment for the Ten Major Energy Saving Programs” and “National Climate Change Expert Group Consultation Program-Initial Technology Needs Assessment on Mitigation and Adaptation”. Eight working group were set up under the APP6 program, covering clean fossil fuel energy, renewable energy and distributed generation, iron and steel, aluminum, cement, coal mining, power generation and transmission, and transportation and home electric appliances. Experts were invited to do initial evaluation on the technology development status and barriers for technology transfer. These activities laid a good foundation for the proposed project in terms of methodology and information.

In addition, this project will work within the framework on technology transfer developed for the UNFCCC, and provide case studies and lessons learned on best-practice to inform evolution of the TNA approach for other countries.

**F. DISCUSS THE VALUE-ADDED OF GEF INVOLVEMENT IN THE PROJECT DEMONSTRATED THROUGH INCREMENTAL REASONING :**

As discussed above, technology needs assessment will facilitate technology transfer; promote the development, demonstration, distribution and application of mitigation and adaptation technologies; and raise the capacity of China to implement mitigation and adaptation projects, which in turn will help world efforts on climate change. Given that technology needs assessment substantially advance technology transfer, cooperation, and utilization of climate technologies, the parties of the Convention have encouraged GEF to enhance its support to the developing countries for technology needs assessment.

In addition, given the uncaptured externality of GHG emissions, there is no direct economic benefit for investors to individually pursue technology needs assessments. It is a research work with fundamental public goods, and universal benefits. China, as a developing country, lack of sufficient financial resources to support this activity and therefore needs support from GEF.

A number of activities already undertaken have helped China assess its technological needs in the context of climate change. The GEF is currently supporting an assessment of technology needs as part of the SNC. However, this project remains incremental to these previous activities. Given China’s vast size, its rapid economic growth, and its continued growth in GHG emissions, the technological needs of China are immense – and detailed, forward-looking policy analysis is beyond the scope of the SNC. Based on findings of previous activities, this TNA will focus on concrete actions that can be readily implemented through policy adjustments; capacity building; information access; and possible innovative approaches to stimulate technology transfer and development. GEF’s resources will be incremental in this area.

**G. INDICATE RISKS, INCLUDING CLIMATE CHANGE RISKS, THAT MIGHT PREVENT THE PROJECT OBJECTIVE(S) FROM BEING ACHIEVED, AND IF POSSIBLE INCLUDING RISK MITIGATION MEASURES THAT WILL BE TAKEN:**

The most significant risk in this project stems from the difficulty of guaranteeing broad stakeholder engagement. Inadequate support could result in the assessment not reflecting the real situation in technology development, and failing to reflect the real needs in technology transfer. In this case, the TNA would not reach consensus on national technology development scenarios or reach consensus without taking into account important points of view.

To mitigate this risk, the project team expects to get full support from the National Climate Change Leading Group. With its support, stakeholders from different fronts will be more actively involved in this assignment. Secondly, large scale surveys and investigation will be preceded by consultations to better involve the people from policy research institutes,



financial institutions, enterprises, and individuals. With this first hand information, knowledge sharing can be promoted. Thirdly, the technology needs assessment can be linked to policy making and development planning processes, e.g. energy-saving target setting and sectoral development planning. This will provide incentives to the stakeholders to take part in the relevant activities. Fourthly, standard methodologies and operational procedures will be developed to implement the assessment. Quality control, monitoring and evaluation mechanisms will be set up to guarantee the quality of the output of the assessment.

Given that the statistical system is still emerging in the energy and emissions sectors, risks also lie in proper information collection. In some cases, only traditional data is available. To guarantee the reliability of the data, the project team will cross check those data from sufficient samples, to eliminate or reduce the deviation.

Another risk is that this activity will repeat other technological assessments undertaken in China. Three actions are helping to minimize this risk. The first relates to the fact that the same unit of NDRC is supervising China's Second National Communication and will be specifically tasked with minimizing duplication. The second is that the initial stock-taking exercise will be both systematic and quick — and designed to ensure that previous findings are considered and incorporated into the design of the TNA and its follow-on. The third is that the TNA will rely extensively on industrial associations for both information collection and information dissemination – something that has not been done to date with regard to climate change-related technologies.

#### **H. DESCRIBE, IF POSSIBLE, THE EXPECTED COST-EFFECTIVENESS OF THE PROJECT:**

Technology need assessment is one of the most cost-effective ways to identify the most appropriate applicable and feasible technologies that China will need for application, research and development in mitigating and adapting to climate change.

The proposed project would indirectly benefit the whole world in areas related to climate change. The project will identify the cost-effective technologies which will help China in mitigation and adaptation, and will address the barriers of technology development and transfer -- therefore creating the framework conditions for more cost-effective development and diffusion of both mitigation and adaptation technologies. If the project can be successfully implemented, it will help China proceed along a comparatively low carbon and sustainable development path, and at the same time, reduce the vulnerability of China in facing climate change. It will also help China to achieve its updated national climate change program and other related targets.

At the same time, this project will help China explore a set of methodologies to implement technology needs assessment, train a large group of professional experts to independently carry out technology needs assessment, and build up a long standing technology needs assessment mechanism. It is expected that when this project is completed, China will be able to update the results and conclusions of the technology needs assessment in the future by itself. This will lay a solid foundation for a larger scale technology needs assessment in the future.

In addition, the project will also provide the case studies for the most recently updated Technology Needs Assessment Manual, while the experience and lessons learnt in China, if applied in other developing countries, will help the whole world achieve a bigger impact on climate change.

#### **I. JUSTIFY THE COMPARATIVE ADVANTAGE OF GEF AGENCY:**

Having this project implemented by the Bank will ensure that the focus of the activity remains on implementation: how to achieve the concrete results of technology transfer and development that are intended. The World Bank's largest climate change investment program in the world is in China, involving investments in virtually every relevant technology sector – ranging from power generation to energy efficiency, renewables, hydropower, grid management, industrial efficiency (in steel, coal mining, cement), building efficiency, urban transport, inter-city transport, agriculture, reforestation, and both urban and rural biogas. The program also involves every available financing mechanism, ranging from IBRD loans to GEF projects, carbon finance (the World Bank in China accounts for about one third of the CDM market), trust funded-programs, and IFC investments. This TNA will help both China and the World Bank better shape further areas of collaboration, and future partnerships with other private sector, public sector, and international agencies.

The World Bank is a leading international financial institution with strong experience in implementing capacity building and packaging investment projects focusing on institution building, infrastructure development, policy reform, and market transformation across all the focal areas of the GEF. Since GEF's inception in 1991 and formal establishment in 1994, the Bank has an extensive portfolio of energy and climate change projects which have been generally satisfactory. In China, there has been a close working relationship between the government and the World Bank since GEF's establishment. The World Bank has an excellent team of experts specializing in conceptualization, development, implementation, and monitoring of energy and climate change related projects.

**PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)**


**A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S):**

(Please attach the [country endorsement letter\(s\)](#) or [regional endorsement letter\(s\)](#) with this template).

NAME	POSITION	MINISTRY	DATE ( <i>Month, day, year</i> )
LIU, Fangyu	Director, GEF Operational Focal Point	International Financial Institution Division III Department of International Affairs Ministry of Finance, China	November 2009 (fax received on November 24, 2009)

**B. GEF AGENCY(IES) CERTIFICATION**

This request has been prepared in accordance with GEF policies and procedures and meets the GEF criteria for project identification and preparation.

Agency Coordinator, Agency name	Signature	Date ( <i>Month, day, year</i> )	Project Contact Person	Telephone	Email Address
Steve Gorman, WB GEF Executive Coordinator		December 3, 2009	Jiang Ru	202-473-8677	jru@worldbank.org