



**PROJECT IDENTIFICATION FORM (PIF)**

**PROJECT TYPE: Full-sized Project**

**TYPE OF TRUST FUND:SCCF**

**PART I: PROJECT IDENTIFICATION**

Project Title:	Enhancing capacity, knowledge and technology support to build climate resilience of vulnerable developing countries		
Country(ies):	Global. West Africa, South Asia and SIDS (Small Island Developing States)	GEF Project ID: <sup>1</sup>	4934
GEF Agency(ies):	UNEP (select) (select)	GEF Agency Project ID:	859
Other Executing Partner(s):	China National Development and Reform Commission (NDRC), African Climate Policy Centre (ACPC), Institute of Geographical Science and Natural resource Research, Chinese Academy of Sciences (IGSNRR-CAS) and Stockholm Environment Institute (SEI)	Submission Date: Resubmission date:	30 March 2012 19 April, 2012
GEF Focal Area (s):	Climate Change	Project Duration (Months)	48
Name of parent programme (if applicable): ● For SFM/REDD+ <input type="checkbox"/>		Agency Fee (\$):	490,000

**A. FOCAL AREA STRATEGY FRAMEWORK:**

Focal Area Objectives	Expected FA Outcomes	Expected FA Outputs	Trust Fund	Indicative Grant Amount (\$)	Indicative Co-financing (\$)
CCA-1: Reducing Vulnerability	Outcome 1.2	Output 1.2.1	SCCF	1,252,000	4,810,000
CCA-2: Increasing Adaptive Capacity	Outcome 2.3	Output 2.3.1	SCCF	90,000	260,000
CCA-3: Adaptation Technology Transfer	Outcome 3.1	Output 3.1.1	SCCF	2,293,000	11,600,000
CCA-3: Adaptation Technology Transfer	Outcome 3.2	Output 3.2.1	SCCF	1,020,000	6,030,000
Sub-Total				4,655,000	22,700,000
Project Management Cost <sup>2</sup>			SCCF	245,000	300,000
<b>Total Project Cost</b>				<b>4,900,000</b>	<b>23,000,000</b>

**B. PROJECT FRAMEWORK<sup>1</sup>**

<b>Project Objective: To build climate resilience using an ecosystem management approach in vulnerable developing countries by increasing institutional capacity, mobilizing knowledge and transferring appropriate adaptation technologies.</b>						
Project Component	Grant Type	Expected Outcomes	Expected Outputs	Trust Fund	Indicative Grant Amount (\$)	Indicative Co-financing (\$)
Component 1: Capacity building for developing countries to plan and implement climate change adaptation	TA	1. Strengthened capacities of vulnerable developing countries to plan and implement best-practice adaptation	1.1. A task force of climate change adaptation experts, with a primary mandate to build capacity in developing countries by transferring adaptation technologies, accessing adaptation	SCCF Window B	1,000,000	7,180,000

<sup>1</sup> Project ID number will be assigned by GEFSEC.

<sup>2</sup> GEF will finance management cost that is solely linked to GEF financing of the project.

technologies.		technologies with a focus on an ecosystem management approach to build climate resilience.	<p>finance, designing projects and implementing adaptation technologies, established and operational.</p> <p>1.2 Partnership of public and private institutions established that promotes inter-regional dialogue on and dissemination of best-practice adaptation technologies with a focus on an ecosystem management approach within selected regions (i.e. West Africa, South Asia and SIDS).</p> <p>1.3. Institutional capacity developed within selected regions for implementing long-term adaptation research to analyse the predicted impacts of climate change on vulnerable ecosystems and the efficacy of selected adaptation technologies.</p> <p>1.4. A set of policies, strategies and legislation developed and/or revised in each targeted region to promote appropriate best-practice adaptation technologies with a focus on an ecosystem management approach in vulnerable, developing countries.</p> <p>1.5. Strategies for financing and scaling up successful adaptation technologies (one per region) developed for the selected regions (i.e. West Africa, South Asia and SIDS).</p>			
Component 2: Inter-regional knowledge support for climate change adaptation.	TA	2. Increased availability of information and improved public awareness on best-practices for implementing and financing best-practice adaptation technologies with a focus on an ecosystem	<p>2.1. A database established on best-practice adaptation technologies for the targeted countries, with a particular focus on an ecosystem management approach.</p> <p>2.2. An interactive, web-based platform developed to disseminate information, promote dialogue and facilitate learning on best-</p>	SCCF Window B	1,000,000	5,460,000

		management approach in developing countries.	practices in adaptation with a focus on an ecosystem management approach.  2.3. Knowledge generated by the project's research, workshops and web-based dialogue packaged for the general public, scientists, policy-makers, restoration practitioners and students.			
Component 3: Technology and know-how support through integration and demonstration.	Inv	3. Increased climate resilience of priority ecosystems in pilot countries in the selected regions (i.e. West Africa, South Asia and the SIDS).	3.1. Best-practice adaptation technologies - with a focus on an ecosystem management approach - implemented at sites with highly vulnerable communities in pilot countries.	SCCF Window B	2,655,000	10,060,000
Sub-Total					4,655,000	22,700,000
Project Management Cost				SCCF Window B	245,000	300,000
<b>Total Project Costs</b>					<b>4,900,000</b>	<b>23,000,000</b>

#### C. INDICATIVE CO-FINANCING FOR THE PROJECT BY SOURCE AND BY NAME IF AVAILABLE, (\$)

Sources of Cofinancing	Name of Cofinancier	Type of Cofinancing	Amount (\$)
National Government	National Development and Reform Commission of China <sup>3</sup>	Grant and in-kind	5,000,000
National Government	Chinese Academy of Sciences	In-kind	3,000,000
Bilateral Aid Agency	SIDA: Nile Equatorial Lakes Subsidiary Action Programme (NELSAP)	Grant	3,000,000
Bilateral Aid Agency	SIDA: Building Climate Resilience of Communities and Ecosystems in the Lancang-Mekong Basin (LCMB) <sup>4</sup>	Grant	5,000,000
GEF Agency	UNEP: Ecosystem Based Adaptation Programme in Mountainous Ecosystems	Grant	6,000,000
GEF Agency	UNEP: Global Adaptation Network	Grant	1,000,000
(select)		(select)	
(select)		(select)	
(select)		(select)	
<b>Total Cofinancing</b>			<b>23,000,000</b>

#### D. GEF/LDCF/SCCF RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY<sup>1</sup>

GEF Agency	Type of Trust Fund	Focal Area	Country Name/Global	Grant Amount (a)	Agency Fee (b) <sup>2</sup>	Total c=a+b
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0

<sup>3</sup> Further co-financing possibilities from the Government of China to be explored in the PPG.

<sup>4</sup> To be confirmed.

(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
(select)	(select)	(select)				0
<b>Total Grant Resources</b>						

<sup>1</sup> In case of a single focal area, single country, single GEF Agency project, and single trust fund project, no need to provide information for this table

<sup>2</sup> Please indicate fees related to this project.

## **PART II: PROJECT JUSTIFICATION**

### **A. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:**

#### **A.1.1 the GEF focal area/LDCF/SCCF strategies:**

The Government of China (GoC) is seeking SCCF resources (window B) for a Full-Sized Project (hereafter referred to as ‘the SCCF project’) to build climate resilience in vulnerable communities in developing countries by increasing institutional capacity, mobilizing knowledge and transferring appropriate best-practice adaptation technologies with a focus on an ecosystem management approach. The SCCF project is consistent with the ‘Revised Programming Strategy on Adaptation to Climate Change for the LDCF and SCCF’ and follows the Results-Based Management Framework (RBM). Table A above indicates the Focal Areas under the RBM that are being funded and Annex 1 indicates how the activities in the SCCF project relate to those Focal Areas. The SCCF Project will contribute to Climate Change Adaptation (CCA) Focal Area 1: Reducing Vulnerability, CCA Focal Area 2: Increasing Adaptive Capacity and CCA Focal Area 3: Adaptation Technology Transfer.

Climate change is an unprecedented and increasing global threat to livelihoods and to the supply of life-supporting ecosystem goods and services, particularly in developing countries. There is consequently an urgent need for immediate effective action to adapt to climate change before its impacts become unmanageable. The vulnerability of communities in developing countries to climate change will be reduced as a result of the SCCF project because the capacity of national institutions to plan and implement best-practice adaptation technologies will be strengthened and public access to improved information on adaptation technologies will be increased. The SCCF project will pre-invest in new and innovative options to pilot concrete adaptation interventions with a focus on an ecosystem management approach, which will build natural capital to manage climate change risks. Findings from the interventions will be used to develop national approaches to up-scaling of adaptation activities.

#### **A.1.2. For projects funded from LDCF/SCCF: the LDCF/SCCF eligibility criteria and priorities:**

**Developing country parties:** The SCCF project will be conducted in developing countries that are non-Annex 1 Parties to the United Nations Framework Convention on Climate Change (UNFCCC) in accordance with SCCF funding eligibility criteria. Three types of countries will be selected for demonstration activities, namely those from West Africa, South Asia and the Small Island Developing States (SIDS). The SCCF project will also extend support through adaptation technology transfer to other developing countries.

**Building on and complementary to existing GEF initiatives:** The SCCF project will complement and collaborate with existing GEF initiatives and mechanisms such as the Technology Needs Assessments (TNAs), the Pilot Asia-Pacific Climate Technology Network and Finance Center, and the African Climate Policy Center (ACPC). Lessons learned will be built on, and the SCCF project will provide a suitable mechanism to disseminate new findings for the benefit of other developing countries. The project will also work in conjunction with relevant ongoing and proposed adaptation projects in the selected regions (i.e. West Africa, South Asia and the SIDS; see Section B.6).

**SCCF funding priorities:** These include addressing the adverse impacts of climate change and supporting the transfer of climate resilient technologies among developing countries and regions in line with the recommendations from national communications, TNAs and other relevant country specific information. Sixty percent of the total SCCF project fund has been allocated to technology transfer to support concrete adaptation actions on the ground. In addition, the SCCF project seeks to assist developing regions and countries that are most vulnerable to climate change impacts (i.e. countries in West Africa, South Asia and the SIDS). Lastly, the project recognizes the link between adaptation and poverty reduction and seeks to maximise the poverty reduction benefits of project activities.

**Gender equality:** The SCCF project will pursue a gender-sensitive approach whereby women representation at training workshops, demonstration activities and management committees will be strongly promoted.

## **A.2. National Strategies and Plans or Reports and Assessments Under Relevant Conventions, if applicable, i.e. NAPAs, NAPs, NBSAPs, National Communications, TNAs, NIPs, PRSPs, NPFE, etc.:**

The SCCF project will support and complement China's South-South Cooperation Programme on Climate Change which is the first initiative of such kind in the world, the Eleventh Five-Year Plan for National Economy and Social Development, the National Guideline on Medium and Long Term Programme for Science and Technology Development (2006) and the China National Climate Change Programme (2007). The project is also in line with the global priorities for attaining the Millennium Development Goals (MDGs). Specifically, it will contribute towards achieving: i) MDG 1: 'eradicating extreme poverty and hunger'; ii) MDG 3: 'promoting gender equality and empowering women'; iii) MDG 7: 'ensuring environmental sustainability'; and iv) MDG 8: 'develop a global partnership for development'.

The SCCF project also complements the Long-Term Programme of the Poznan Strategic Programme on Technology Transfer that the GEF has been implementing under COP guidance. This technology transfer programme encompasses cooperative actions on technology and dissemination of environmentally sound technologies to developing countries, and includes a Technology Transfer Programme for Climate Change Adaptation. In addition, the SCCF project will be aligned with TNAs – a set of country-driven activities that identify and determine the mitigation and adaptation technology priorities of developing countries<sup>5</sup>. Particularly, the SCCF project will complement the Global TNA project (outlined below).

This SCCF project will also be consistent with the national strategies of the individual countries including PRSPs in which the pilot projects will be implemented in the selected regions (i.e. West Africa, South Asia and the SIDS). These national strategies will include NAPAs and National Communications, NAPs and LDC work program under UNFCCC, where appropriate. Finally, the project will be aligned with UNDAF process in each participant country.

## **B. PROJECT OVERVIEW:**

### **B.1. Describe the baseline project and the problem that it seeks to address:**

#### **B.1.1. Baseline project:**

The SCCF project will build on a number of existing avenues of support which will therefore constitute the elements/components of the baseline project. Projects emanating from national strategies, including the NAPAs and National Communications of relevant countries (as mentioned above) will be used as baselines on a country specific basis. The existing avenues are detailed below:

- **The South-South Cooperation Programme on Climate Change** is a National Development and Reform Commission (NDRC) initiative recently developed with UNEP to assist in capacity building and technology transfer for climate change actions in developing countries and regions of the South. The Chinese government will provide essential technical and financial assistance to least developed countries (including SIDS). Specifically, the programme will promote adaptation technologies, including sustainable agriculture assistance, action towards drought resistance, water conservation, and biodiversity. The programme is increasingly being recognised as one of the key mechanisms assisting vulnerable developing countries and communities fighting climate change. It contributes to the implementation of the Bali Strategic Plan for Technology Support and Capacity Building (BSP) (a cornerstone of UNEP's work), particularly with regards to capacity building. UNEP's South-South Cooperation Coordination Unit will provide technical support for the implementation of this project.
- **The Poznan Strategic Programme of Technology Transfer** was created by the LDCF and the SCCF in 2008 in recognition of the fact that technology transfer plays an important role in the global response to climate change risks. Transfer of adaptation technologies and know-how to developing countries is increasingly a key priority for countries vulnerable to climate change, and consequently

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<sup>5</sup> UNEP. Technology Needs Assessments.

this Programme was welcomed by parties at COP 14. The Poznan Strategic Programme on Technology Transfer was recognised by COP 14 as an important step towards scaling up the investment in technology transfer in developing countries around the world, including in West Africa, South Asia, and SIDS. The Programme consists of three funding windows: i) TNAs; ii) piloting priority technology projects; and iii) disseminating viable technologies. TNA is a country-driven activity to assist in identifying and analyzing the priority technology needs for mitigating and adapting to climate change (explained in further detail below). Piloting of priority technologies supports the deployment, diffusion, and transfer of technologies that are identified to be national priorities through TNAs, as well as National Communications and other means. Projects are developed to pilot innovative and diverse technologies in a number of fields, including water management and carbon capture and storage. The programme aims to disseminate successful technologies by: i) providing a better understanding of the technology transfer process by developing case studies for specific technologies; and ii) disseminating knowledge to a wider range of countries. The SCCF project will collaborate strongly with this programme to share lessons learned on best practices for transferring technologies to developing countries and SIDS.

- **The Global Technology and Needs Assessments (TNA) Project** will use GEF grant financing to support 35 to 45 developing countries (including SIDS) in Africa, Asia, the Pacific, Latin America, and the Caribbean. The TNAs provide an opportunity for identifying new equipment, techniques, knowledge, and skills for mitigating GHG emissions and reducing vulnerability to climate change. The project will involve in-depth analysis and prioritisation of technologies and an analysis of the potential barriers hindering the transfer of these technologies. Within this project, National Technology Action Plans (TAPs) (i.e. sequels to TNAs) will outline enabling frameworks for the transfer of the identified technologies within the selected countries. Training and supportive materials for prioritising technologies, market assessments, and access to data on technologies will be developed and distributed within the relevant countries. The SCCF project will build on the analysis of technologies and development of handbooks/training material by the global TNA project.
- **The African Climate Policy Centre (ACPC)** was established in 2010 to be the knowledge-management and policy-facilitation arm of the Climate for Development (ClimDev) Africa Programme. The ACPC is consequently an integral part of the ClimDev-Africa programme; a joint initiative of the African Union Commission (AUC), the United Nations Economic Commission for Africa (UNECA) and the African Development Bank (AfDB). The goal of the centre is to become a knowledge hub, and reduce poverty using adaptation and mitigation technologies. ACPC focuses on: i) knowledge generation, sharing and networking; ii) advocacy and consensus building; and iii) advisory services and technical cooperation. The centre orientates its projects around the following themes: i) adaptation; ii) mitigation; iii) technology transfer; and iv) financing. The SCCF project partnership with the ACPC will assist in streamlining the collation of adaptation knowledge and presenting it effectively in a global database. It will be an avenue through which on-the-ground experiences in Africa on adaptation planning, accessing appropriate finance and implementation of success technologies can be shared. The SCCF project will be a platform through which the ACPC (and NDRC) can provide support to the adaptation actions of vulnerable, developing countries.
- **The Global Adaptation to Climate Change Network (GAN)** was developed by UNEP to mobilize resources of existing relevant regional centers and ground networks to enhance key scientific, technical and institutional capacity for adaptation to climate change. The GAN will enhance the capacity of developing countries (including SIDS) for monitoring climate change and its impacts, assessing vulnerabilities, piloting adaptation interventions and planning longer-term adaptation efforts. In particular, the GAN will provide support for the UNFCCC Nairobi Work Programme (NWP) and other UN-led Climate Change Adaptation initiatives. The GAN is composed of Regional Networks in four developing areas: i) Africa; ii) Asia-Pacific; iii) Latin America and Caribbean; and iv) West Asia, through which services will be delivered such as knowledge, capacity and technology support to vulnerable countries. To date, the regional networks in Asia-Pacific and Latin America and Caribbean have been established and started providing services. UNEP is working with the African Climate Change Policy Centre (ACPC) to develop the African Network. This initiative will

be supportive and complementary to the proposed SCCF project in terms of knowledge sharing, capacity building and technology transfer.

- **The Pilot Asia-Pacific Climate Technology Network and Finance Centre** is jointly implemented by the Asian Development Bank (ADB) and UNEP, as well as other partners. The project objective is to increase climate technology investments in the countries of the Asia-Pacific region. UNEP components for the project focus on the development and strengthening of networks and institutions, and the creation of enabling policies. ADB components focus on the facilitation of investment into climate technologies, supporting the integration of identified technology needs into national development plans, and mobilizing finance for these priority technology investments. The UNFCCC has recognised that technology transfer is an important means of assisting developing countries in the transition to low-carbon and climate-resilient pathways. These low-carbon technologies, for example, can help countries to “leapfrog” the carbon-intensive phase of development that most developed countries have experienced during the past century, and move directly towards cleaner and more advanced energy, transport, and land use solutions. The Pilot Asia-Pacific Climate Technology Network and Finance Centre is assisting developing countries (including SIDS) in Asia and the Pacific to make the transition towards low-carbon and climate-resilient economies. Consequently, this project is complementary to the SCCF project, and both could benefit from exchange of ideas and lessons learned. The development and transfer of environmentally and socially sound technologies achieved by the Pilot Asia-Pacific Climate Technology Network and Finance Centre will, for example, be used to guide the technology sharing (Component 3) proposed in the SCCF project.
- **Building Climate Resilience of Communities and Ecosystems in the Lancang-Mekong Basin (LCMB) by Ecosystem-Based Adaptation (EBA)** is a UNEP project being considered for funding by the Swedish International Development Agency (SIDA). The project will incorporate an ecosystem services approach into national development plans and regional strategies to improve the welfare of humans and ecosystems in the LCMB. This region is of great economic importance and has a rich biodiversity of global importance, but due to impacts such as climate change, poverty, population growth, and economic development, the health of the ecosystem is deteriorating rapidly. The livelihoods of those depending on the ecosystem services in the area are consequently declining. The project will integrate Ecosystem-Based Adaptation (EBA) into national adaptation plans and regional strategies by providing knowledge, capacity, policy and demonstration support for governments and communities in the LCMB. The project will also assist policymakers and contribute to the global knowledge base of climate change adaptation and sustainable ecosystem management. The SCCF project will collaborate with the LCMB to share lessons on how to build climate resilience by enhancing the supply of ecosystem goods and services.
- **The Nile Equatorial Lakes Subsidiary Action Programme (NELSAP)** was a Nile Basin Initiative (NBI) project funded by SIDA and the Royal Norwegian Government and was implemented over a four year period (January 2006 – March 2010). The objectives of the project were to: i) establish a sustainable framework for the joint management and development in the Nile River Basin; ii) prepare investment plans based on the resources endowments in the basin; iii) undertake feasibility studies of investment projects; and iv) implement small-scale investment projects (water supply, irrigation, transport, watershed management). The project has already achieved a large number of outcomes, including *inter alia* the development of a cooperative framework for water management, a capacity building plan for three regions, a stakeholders’ participation plan for three regions, a sub-basin information database and decision support system, and a gender mainstreaming plan for three regions. The Nile Equatorial Lakes Subsidiary Action Programme is an existing project from this SIDA initiative which the SCCF project could use for building further technical capacity, ensuring effective stakeholder participation, and developing/running an information database.
- **The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) - Ecosystem Based Adaptation in Mountain Ecosystems** project is implemented by UNEP, UNDP and IUCN. The project will strengthen the institutional capacities of Nepal, Peru and Uganda to implement EBA options and to reduce the vulnerability of communities, with particular emphasis on mountain ecosystems. Specifically the project will support: i) the development of methodologies and



tools for mountain ecosystems; ii) the application of the above tools and methodologies at the national level; iii) the implementation of EBA pilots at the ecosystem level; iv) the formulation of national policies; and v) the building of an economic case for EBA at the national level. The project will also facilitate dialogue and learning between regions and among countries with similar mountainous ecosystems. The SCCF project and BMU projects will collaborate to increase the dissemination of knowledge on adaptation technologies emerging from both projects.

### **B.1.2 The problem that the baseline project seeks to address**

The problem that the baseline project seeks to address is the widespread impacts of climate change on developing countries. The resilience of developing countries to climate change is currently very low, and this jeopardises the livelihoods of billions of poor urban and rural people. This is because there is limited knowledge and capacity to manage climate related impacts in developing countries. There is also little sharing of climate change adaptation knowledge, and although effective adaptation technologies exist, the transfer of these technologies is very limited. These interacting factors result in negligible implementation of adaptation technologies in developing countries. The above-described projects focus on addressing these interacting factors to increase the dissemination and implementation of adaptation technologies.

### **B. 2. Incremental/Additional cost reasoning: describe the incremental (GEF Trust Fund) or additional (LDCF/SCCF) activities requested for GEF/LDCF/SCCF financing and the associated global environmental benefits (GEF Trust Fund) or associated adaptation benefits (LDCF/SCCF) to be delivered by the project:**

The NDRC, the lead government agency on climate change in China, has begun to develop and implement a South to South Cooperation Programme on Climate Change to support developing countries in adaptation as the priority area (described above). This project will incentivize and support the first National South-South Cooperation Programme between developing countries to help build climate resilience through capacity building, knowledge sharing and technology support.

Additional activities are required by the SCCF project which will build upon the avenues of support described above. The SCCF and baseline project teams will work closely to ensure that synergies are created and lessons learned are disseminated between the projects. Frequent meetings between project managers will, for example, take place to ensure that the SCCF project builds upon the baseline project foundations. The rationale of the SCCF project and the additionality of its activities are described below under the following headings: i) the current and expected climate change impacts facing developing countries; ii) adaptation solutions and benefits; iii) geographic location of the SCCF project's adaptation interventions; iv) barriers to the adoption of adaptation solutions; and v) proposed components of the SCCF project. Annex 2 shows the comparison between Business-as-Usual and adaptation alternatives of the SCCF project.

### **B.2.1 Current and expected climate change impacts facing developing countries in the selected regions (i.e. West Africa, South Asia and the SIDS):**

Food security and water availability are likely to be severely compromised by rising temperatures and greater variability in rainfall in developing countries. Situated in the world's poorest and most rainfall-dependent regions, developing countries are extremely vulnerable to climate change impacts. Across most developing countries, agricultural producers are operating with limited resources in fragile environments sensitive to even minor shifts in temperature and rainfall patterns. The livelihoods of rural farmers are particularly precarious because of isolation, small farm sizes, lack of secure land tenure, lack of access to technology, lack of access to electricity and fluctuations in global commodity prices and farm inputs. Furthermore, climate information and vulnerability assessments are severely restricted in developing countries because of a shortage of climate data and very few meteorological stations.

It is evident from the above that climate exerts a strong influence on the day-to-day economic activities and overall economic development of developing countries, particularly in terms of food security and water supplies. Changes in the frequency of extreme events such as droughts and floods have major implications for developing country economies because they are often heavily reliant on climate-sensitive sectors such as rain-fed agriculture, fisheries, natural resources, and tourism. Droughts during the mid-1980s in the Sahel, the Horn of Africa and southern Africa, for example, resulted in economic losses of several hundred million dollars. Floods are also frequently damaging to developing country economies. Flooding occurs not only in high rainfall areas, but also dry countries such as Algeria, Tunisia, Egypt, Niger and Somalia.

The future vulnerability of developing countries to climate change during the 21<sup>st</sup> century is dependent on five main factors. These are: i) the extent of warming; ii) the changes in amount and variability of precipitation (e.g. reduced mean annual rainfall, reduced length of wet season); iii) the increase in extreme events (e.g. flash floods, prolonged droughts); iv) the extent of sea level rise; and v) the capacity of developing countries to respond to these changes. The level of vulnerability varies significantly between countries depending on the interaction of these factors, and is the central factor upon which the baseline project above is based.

As with the rest of Africa, climate change projections for **West Africa** are associated with high levels of uncertainty. IPCC AR4 models<sup>6</sup> for Africa have significant systematic errors (excessive rainfall in the south, southward displacement of the Atlantic Inter-Tropical Convergence Zone (ITCZ), insufficient upwelling off the West Coast) that make it difficult to assess the consequences for climate projections in and around the continent. For example, the absence of realistic variability in the Sahel in most 20th-century AR4 simulations casts doubt on the reliability of coupled models in this region. Other weaknesses in IPCC AR4 models for Africa include the exclusion of the feedback effects of vegetation and dust aerosol production and the failure to take into consideration possible future land surface modification in the projections. As a result the extent to which current regional models for Africa can successfully downscale precipitation over Africa is unclear. Although there is broad agreement that temperatures will rise in West Africa, there is little consensus on what will happen to rainfall in the region.

Downscaled scenario studies for West Africa have produced contradictory results with some predicting a progressive desiccation of large parts of the region and others predicting the opposite. Under the first set of scenarios, adaptation measures in the region will need to buffer the region against greater fluctuations in rainfall and a progressive decline in food production, whereas in the second scenario, adaptation interventions will need to meet challenges of increasing rainfall, attendant floods and erosion. However in West Africa, climate variability, not climate change, is at present the more significant problem at local, regional and national levels. The variability of rainfall, defined as the average deviation from the mean, is high, sometimes up to 40-80% and increases with decreasing annual rainfall. Especially in marginal areas, such as the Sahara desert, the Sahel and the sub-humid Sudan zone, rainfall unpredictability poses extreme threats to food security and deficits lead to localised and general food crises most years. Intra-season droughts often lead to harvest losses and crop failure even in years where rainfall totals could potentially allow a normal harvest.

Climate change is expected to lead to increased average temperatures and enhanced variability in rainfall patterns in **South Asia**. IPCC AR4 models for South Asia show a median increase of 3.3°C for in annual mean temperature by the end of the 21st century. The median warming varies seasonally from 2.7°C in June-July-August to 3.6°C in December-January-February, and is likely to increase northward in the area, particularly in winter, and from sea to land. Downscaled projections using the Hadley Centre Regional

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<sup>6</sup> IPCC, 2007: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp.

Model (HadRM2) indicate future increases in extreme daily maximum and minimum temperatures throughout South Asia due to the increase in greenhouse gas concentrations. This projected increase is of the order of 2°C to 4°C in the mid-21st century under the IPCC Scenario IS92a in both minimum and maximum temperatures. Results from a more recent Regional Climate Model (RCM), PRECIS, indicate that the night temperatures increase faster than the day temperatures, with the implication that cold extremes are very likely to be less severe in the future. Regional high-resolution simulations have demonstrated the potential for significant local variation in projected precipitation change. The simulations showed considerable regional detail in the simulated patterns of change, but had little consistency when compared with each other. The lack of consistency between the models has been attributed to the significant deficiencies in the current-climate simulations of the models.

The changes in temperature and precipitation in South Asia are expected to have direct impacts on yield in rural areas with low resilience to the impacts. Given that approximately three-fifths of the cultivated area in South Asia is rain-fed, the effects of climate change on the onset, duration, spatial extent, and total precipitation of the monsoon are going to impact the livelihoods of large numbers of people in the rural areas. South Asia is also expected to experience more intense tropical cyclone intensity in the future although there is less consistency on how cyclone occurrence will change. Climate change induced sea level rise will also have significant impacts on the low-lying coastal systems and islands. Sea level changes will furthermore affect salinity levels of groundwater reserves, amplify storm-surge effects, and change both sedimentation patterns and ocean currents. A wide variety of adaptation interventions are consequently needed to increase resilience to climate change impacts in the region.

Climate change induced sea-level rise is a key concern for **SIDS**. A large proportion of the population in many SIDS lives in the low elevation coastal zone, defined as the contiguous area along the coast that is less than 10m above sea level. These settlements are extremely vulnerable to sea-level rise, storm surges, floods and other climate change-induced hazards. In 2007, the IPCC estimated that by 2100 global warming will lead to a sea-level rise of 180 to 590mm, while more recent research suggests that these estimates are likely to be at least twice as large, up to about two meters. Sea level rise is expected to exacerbate inundation, storm surge, erosion and other coastal hazards, thus threatening vital infrastructure, settlements and facilities that support the livelihood of island communities. Deterioration in coastal conditions, for example through erosion of beaches and coral bleaching, is expected to affect local resources. SIDS such as Kiribati, Maldives, Marshall Islands and Tuvalu will become uninhabitable in this scenario, while a large share of the population of many other SIDS will be displaced or otherwise adversely impacted. By mid-century, climate change is expected to have reduced water resources in many small islands, e.g. in the Caribbean and Pacific, to the point where they become insufficient to meet demand during low-rainfall periods. With higher temperatures, increased invasion by non-native species is expected to occur; particularly on mid- and high-latitude islands. The need for technologies for adaptation to climate change impacts is thus especially severe in SIDS.

**The problems facing developing countries in the selected regions (i.e. West Africa, South Asia and the SIDS) that the SCCF project seeks to address:** Given the expected and existing impacts described above, it is evident that communities as well as most economic sectors are highly vulnerable to current climate variability and change. This vulnerability is exacerbated by factors such as i) widespread poverty; ii) a high dependence on rain-fed agriculture; iii) wide-spread ecosystem degradation; iv) limited technical capacity of regional and national institutions to plan and implement adaptation technologies; v) limited knowledge on cost-effective adaptation technology options; and vi) limited pre-investment by developing countries for adaptation technologies.

**The preferred solution** to these problems is to build capacity in developing countries to plan and implement best-practice adaptation technologies and increase the availability of information on cost-effective adaptation technology options, with a focus on the ecosystem management approach. The SCCF project will pilot these adaptation interventions in countries of the selected regions (i.e. West Africa, South Asia and the SIDS) as a pre-investment in adaptation technologies to build climate resilience.

## **B.2.2 Adaptation solutions and benefits:**

There are numerous interventions available to vulnerable developing countries to build their resilience to the above-described climate change impacts. These include, for example, construction of climate change-proof infrastructure, establishing early warning systems, and developing best-practice adaptation technologies to manage ecosystems to minimize climate change impacts. The SCCF project focuses on the latter intervention and will centre around an ecosystem management approach to pilot adaptation technologies to build climate resilience in developing countries.

The ecosystem management approach is defined as ‘an integrated process to conserve and improve ecosystem health that sustains ecosystem services for human well-being’<sup>7</sup>. As described above, climate change increases the risks of climate-related disasters and exacerbates ecosystem degradation, which in turn triggers more disasters and reduces nature’s and societies’ resilience against climate change. To counter these impacts, the ecosystem management approach: i) increases the resilience of natural systems and human societies to climate change impacts; ii) maximises co-benefits of mitigation of climate change; iii) provides a physical defence from climate related disasters; and iv) integrates climate change adaptation and disaster risk reduction to increase the resilience of ecosystems. The SCCF will focus on the ecosystem management approach to pilot concrete adaptation interventions. Examples of this approach include:

- a) China’s “Grain for Green Programme” in the Loess Plateau, which includes the transformation of sloping farmlands into terraced high quality farmlands, vegetation rehabilitation, enclosing hills and banning grazing, building dams to trap silt, planting commercial forests and fruit trees etc. The programme has achieved remarkable ecological and economic benefits: regional evapotranspiration has decreased by 6.2% and surface water runoff by 13.6%; over 153 million tons per year of soil has been retained; and there has been a positive impact on carbon sequestration, with 69.21 TgC in soil, and 23.76 TgC in rehabilitated vegetation. Food production rose 18% between 2000 and 2008, and per capita income in rural areas increased from RMB 1000/year (US\$ 159) in 1998 to more than RMB 3000/year (US\$ 476) in 2007.
- b) In South Africa, the ecosystem restoration programme “Working for Water” combined control of invasive alien species with rural economic and social development. The project treated 3,387 ha of land and created 91 person years of employment. Contracting costs up to 2001 were R 2.7 million, with an estimated total cost of R 4.9 million (including project management costs and all other transaction costs). The action prevented losses of between 1.1 and 1.6 million m<sup>3</sup> of water annually in the context of increasing water scarcity due to climate change impacts.

These experiences and good practices can be shared across similar regions in the developing world, which would have a global benefit.

## **B.2.3 Geographic location of the project’s adaptation interventions:**

The selection of pilot regions (i.e. West Africa, South Asia and the SIDS) was based on the type of vulnerable ecosystems affected by climate change impacts and the potential to improve the livelihoods of vulnerable communities through a package of viable adaptation interventions. The three regions selected and reasons for their selection (vulnerability, climate changes impacts and typical ecosystems) are shown in Table 1.

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<sup>7</sup> UNEP. 2009. The Role of Ecosystem Management in Climate Change Adaptation and Disaster Risk Reduction. Copenhagen Discussion Series: Paper 2. United Nations Environment Programme, Nairobi.

The selection of specific pilot countries for each region (i.e. West Africa, South Asia and the SIDS) for the demonstration interventions will be undertaken during the PPG phase. This will be done through consultation with a wide range of stakeholders at local and national levels. Criteria for site selection will include *inter alia*: i) vulnerability of local communities to climate change impacts; ii) severity of ecosystem degradation; iii) vulnerability of the ecosystem to climate change impacts; iv) potential of restored ecosystem to buffer extreme climate change-induced; and v) potential to complement and/or upscale related projects/initiatives. Results from the pilot countries will be used to develop approaches to up-scaling of adaptation activities in other developing countries.

**Table1. List of selected regions.**

Region	Type of Vulnerability	Type of Climate Change Impact	Typical Ecosystems
West Africa	<ul style="list-style-type: none"> <li>• Poverty.</li> <li>• Degraded ecosystems.</li> <li>• Lack of viable technologies.</li> </ul>	<ul style="list-style-type: none"> <li>• Drought.</li> <li>• Desertification.</li> </ul>	Forest, grassland and dryland ecosystems.
South Asia	<ul style="list-style-type: none"> <li>• Poverty.</li> <li>• Low adaptive capacity.</li> <li>• Degraded ecosystems.</li> </ul>	<ul style="list-style-type: none"> <li>• Flood.</li> <li>• Drought.</li> </ul>	High mountain, forest, rangeland flood plain and coastal ecosystems.
SIDS	<ul style="list-style-type: none"> <li>• Low adaptive capacity.</li> <li>• Degraded coastal ecosystems.</li> </ul>	<ul style="list-style-type: none"> <li>• Sea level rise.</li> <li>• Inundation of low-lying coastal areas.</li> </ul>	Low-lying coastal ecosystems.

#### **B.2.4 Barriers to the adoption of adaptation solutions:**

Barriers to adopting and implementing effective adaptation technologies in the selected developing countries include: i) limited institutional capacity to prioritise and plan the interventions, ii) poor availability of adaptation best-practice, iii) lack of evidence of successful local implementation, iv) limited number of sectoral policies and legislation favouring adaptation interventions, v) lack of awareness of financing options, vi) poor public awareness of likely climate change impacts and appropriate adaptation technologies; and vii) limited dialogue and exchange of views between adaptation practitioners.

#### **B.2.5 Project objectives and components:**

The project has been designed to address the above-described barriers and will be undertaken under three main components described in detail below. The **overall objective** of the project is to help build climate resilience in vulnerable countries through providing capacity, knowledge and technology support for key adaptation actions. This project aims to provide a core set of services for developing countries:

- capacity building for climate policy setting, planning, and implementation,
- knowledge support for national and regional adaptation decision-making, and
- transfer of cost-effective technologies and know-how for adaptation in selected countries.

Through implementation of this project, the cooperation between China and other developing countries will be enhanced as a new dimension of international cooperation on climate change.

#### **Project Components:**

The project has three main components that are consistent with the above project aims and objective. Importantly, there will be a ‘learning by doing’ ethos throughout the project, and there will be active promotion of the concept of ‘dynamic, learning organizations’ that have an adaptive management approach, changing policies rapidly as new scientific information becomes available. The rationale for this approach is: i) policies that incorporate climate change risks will be based on imperfect knowledge; ii) knowledge on climate change is increasing in an exponential manner in the international arena, and iii) developing countries need to invest in research to place the knowledge in a local context and maximize

adaptation benefits. The project activities will build on baseline activities projects mentioned above (Section B.1.1).

### **Component 1: Capacity building for developing countries to plan and implement climate change adaptation.**

In this component the capacity of local, national and regional institutions in developing countries to plan and implement concrete, best-practice adaptation technologies with a focus on an ecosystem management approach will be strengthened in order to build resilience to climate change. Main outputs will include the development of:

- a task force of climate change adaptation experts (an assemblage of experts from the Chinese Academy of Science (CAS) and UNEP) that will facilitate capacity building in developing countries (hereafter referred to as the ‘project task force’);
- a network of public and private institutions that will promote inter-regional dialogue on and dissemination of best-practice adaptation technologies with a focus on an ecosystem management approach within selected regions (i.e. West Africa, South Asia and SIDS);
- institutional capacity for implementing long-term adaptation research to analyse the predicted impacts of climate change on ecosystems and the efficacy of selected adaptation technologies;
- and/or revision of policies, strategies and legislation to promote appropriate adaptation technologies with an ecosystem management approach focus in vulnerable developing countries; and
- strategies for financing and scaling up successful adaptation technologies developed for the selected regions (West Africa, South Asia and SIDS).

*Outcome 1: Strengthened capacities of vulnerable developing countries to plan and implement best-practice adaptation technologies with a focus on an ecosystem management approach.*

Without SCCF intervention (baseline): There is currently insufficient local, national and regional institutional capacity in developing countries to plan and implement best-practice technologies to adaptation through ecosystem restoration. Reducing the vulnerability of communities in developing countries to the impacts of climate change requires considerable institutional capacity to plan and implement the appropriate adaptation technologies. There are several institutions providing developing countries, particularly in Africa and Asia, with the capacity and know-how to implement adaptation to climate change activities, but the effectiveness of these activities is largely limited to very specific geographic locations and they do not operate at a global scale. Examples of such institutions include firstly the African Climate Policy Centre (ACPC) which was established by the United Nations Economic Commission for Africa to serve as the knowledge-management and policy-facilitation arm of the Climate for Development (ClimDev) Africa Programme. The centre aims to become a knowledge hub, and reduce poverty through a number of established adaptation and mitigation programmes. The Nairobi Work Programme, for example, was established under the ACPC to assist developing countries to improve their understanding and assessments of impacts, vulnerability, and adaptation to climate change. Secondly, the Pilot Asia-Pacific Climate Technology Network and Finance Centre – implemented by the ADB and UNEP to accelerate the climate technology investments in the countries of the Asia-Pacific region – assists developing countries in Asia and the Pacific to make the transition towards low-carbon and climate-resilient economies by developing and transferring environmentally and socially sound technologies. Thirdly, the SIDA project ‘Building Climate Resilience of Communities and Ecosystems in the Lancang-Mekong Basin (LCMB)’ incorporates an ecosystem services approach into national development plans and regional strategies to improve the welfare of humans and ecosystems in the LCMB. The project is designed to provide knowledge, policy and demonstration of EBA to governments and communities to enhance the institutional capacity of the Lancang-Mekong Basin to adapt to the impacts of climate change.

The above projects are examples of the significant steps that developing countries are taking towards adaptation to climate change. The projects, however, do not focus on global coordination/ cooperation, and consequently the adaptation technologies generated by their initiatives are not systematically transferred to other vulnerable developing countries requiring the expertise and knowledge. This is because the projects do not have designated networks or expert groups which facilitate dialogue between specific regions on adaptation implementation, and there are few examples of on-the-ground research and/or demonstrations to inform the development of adaptation approaches. Furthermore, without the SCCF project, institutions and individuals within vulnerable developing countries will continue to have limited access to the best available information and training on adaptation technologies focussing on an ecosystem 'management approach'.

With SCCF intervention (adaptation alternative): Additional funding of US\$ 1,000,000 is requested for Outcome 1. A comprehensive list of potential activities for this outcome is detailed in Annex 1. During the PPG phase, activities will be prioritised and selected through consultation with stakeholders.

The **first step** in this outcome will be the establishment and operationalisation of a project task force of climate change adaptation experts from the CAS and UNEP that will facilitate capacity building in developing countries. The project task force will collate and synthesize information on best-practice adaptation technologies with a focus on an ecosystem management approach for the selected developing regions (i.e. West Africa, South Asia and the SIDS), with a focus on fragile ecosystems such as mountains, watersheds and low-lying coastal areas. The project task force will also train regional advisors, country specific task teams, policymakers and decision-makers (e.g. parliamentarians) from selected developing countries and within China-led international cooperation programmes on climate change impacts, adaptation technologies, accessing adaptation finance, designing projects and implementing adaptation technologies. In addition, the project task force will facilitate workshops for scientists, adaptation practitioners and government technical staff focused on specific ecosystem management adaptation themes (e.g. water harvesting adaptation technologies in the Sahel) within selected developing countries. Lastly, the project task force will train regional advisors, country-specific task teams and stakeholders within China-led international cooperation programmes to develop long-term, dynamic planning mechanisms and institutional frameworks for implementing and financing adaptation technologies with a focus on an ecosystem management approach at national and local levels. The training will include establishing systems for effective monitoring and evaluation of the technologies to ensure effective delivery of the targeted ecosystem services. Institutional mapping will be undertaken in each of the selected countries in the three regions to guide this activity.

The **second step** will include the development of a network of public and private institutions that will promote inter-regional dialogue on and dissemination of best-practice adaptation technologies with a focus on an ecosystem management approach within selected regions (i.e. West Africa, South Asia and SIDS). The project task force will establish formal collaborative relationships with relevant NGOs and existing networks (e.g. Technology Needs Assessment (China), Pilot Asia-Pacific Climate Technology Network and Finance Centre, African Climate Policy Centre (APCP), IUCN, ILTER, CGIAR, Delta Alliance and WWF) as well as private sector initiatives (e.g. ClimateWise) and develop communication protocols for disseminating information generated by the SCCF project, including all lessons learned, via the network. Additionally the project task force will develop partnerships and link relevant national institutions and organisations with the global network established above.

The **third step** will be the development of institutional capacity for implementing long-term adaptation research to analyse the predicted impacts of climate change on ecosystems and the efficacy of selected adaptation technologies. The project task force will train technical staff of selected research institutions on the principles and implementation of long-term climate change adaptation research. The project task force will also develop institutional protocols and research frameworks for selected research institutions and government departments to establish long-term adaptation research sites. This will include the development of systems for transferring knowledge generated from the research site into adaptation

management decisions (i.e. adaptive management). This will be preceded by institutional mapping exercises. The project task force will also facilitate the selection of sites and adaptation technologies to be analysed using long-term research (through multi-stakeholder consultation) within the selected developing countries. The project task force will also develop post-doctoral, PhD and MSc. Research projects for initiating the long-term research on both biophysical and socio-economic factors within the selected ecosystems.

The **fourth step** will be the development and/or revision of policies, strategies and legislation to promote appropriate adaptation technologies with an ecosystem management approach focus in vulnerable, developing countries. The project task force will review existing global, national and/or regional policies, strategies and legislation influencing the adaptation approach of the selected countries in the three regions. This information will be used to develop, and/or revise policies, strategies and legislation to promote appropriate adaptation technologies in selected vulnerable developing countries. An ecosystem management approach will be promoted within key economic sectors including: water, agriculture, energy and natural resources.

The **fifth step** will develop strategies for financing and scaling up successful adaptation technologies developed for the selected regions (i.e. West Africa, South Asia and the SIDS). The project task force will collate, synthesise and package information on mechanisms and options for financing large-scale adaptation technologies that focus on an ecosystem management approach (including international grant and/or loan funding, national budgets, tax incentives, subsidies). The project task force will also conduct in-depth market assessments for the products generated from the adaptation technologies (e.g. water, food, fodder, carbon, fibre, timber, resin, fertile topsoil) to be implemented. Based on market assessment results and cost/benefit analyses undertaken in Component 3, the project task force will develop detailed business plans/funding proposals for public sector and private sector investments in adaptation technologies, including public private partnerships (PPPs) where appropriate. The project task force will also develop Payment for Ecosystem Services (PES) implementation plans, where commercially viable, for example in degrading watersheds that presently service large urban areas and/or hydro-electric power plants. A summary of the analysis of baseline versus alternative scenario is provided in Annex 2

## **Component 2: Inter-regional knowledge support for climate change adaptation.**

In this component the availability of information and public awareness on best-practices for implementing and financing adaptation technologies with an ecosystem management approach in developing countries is increased and improved. This will be achieved through the establishment of a dynamic interactive database and website. Main outputs will include the:

- establishment of a database on best-practice adaptation technologies for targeted developing countries, with a particular focus on an 'ecosystem management approach';
- development of an interactive, web-based platform to disseminate information, promote dialogue and facilitate learning on best-practices in adaptation using an ecosystem management approach; and
- packaging of knowledge generated by the project's research, workshops and web-based dialogue for the general public, scientists, policy-makers, restoration practitioners and students.

*Outcome 2: Increased availability of information and improved public awareness on best-practices for implementing and financing best-practice adaptation technologies with a focus on an ecosystem management approach in developing countries.*

### Without SCCF intervention (baseline):

There is currently limited sharing of knowledge and technologies for adaptation to climate change between countries and regions, and the public awareness on adaptation technologies is largely negligible in developing countries. There are, however, several existing institutions which focus on increasing the availability of knowledge and improving public awareness on climate change adaptation technologies. Firstly, the South-South Cooperation Programme on Climate Change assists in the transfer of technology



on environmental management between developing countries, however, the project is in its early stages. Secondly, the global TNA is identifying mitigation and adaptation priorities for the selected developing countries. This project will publish a handbook to provide a general framework to countries developing their respective TNA's, however the handbook will be designed for the management of the individual projects, and thus without the SCCF project, the TNA will not contribute directly to the SCCF outcome of improved public awareness of adaptation technologies. Thirdly, the Asia and the Pacific Adaptation Network focuses on capacity building through the mobilization of knowledge and adaptation technologies. The objectives of the network are in strong alignment with the SCCF project, however the Network focuses on the Asia and Pacific region, and thus without the SCCF project, there will not be a strategy for global knowledge sharing. Fourthly, the Nile Equatorial Lakes Subsidiary Action Programme (NELSAP) successfully achieved capacity building for areas throughout the Nile River Basin and the implementation of an information database. Despite the project success, the achievements were localised to the Nile River Basin, and thus without the SCCF project, the objective for global knowledge availability and increased public awareness will not be realised.

The above projects are examples of progress by various initiatives to increase the availability of knowledge and improve public awareness on best-practices for implementing adaptation technologies. The projects do not, however, focus on an improvement in global knowledge and public awareness, and are instead limited to the specific focal areas of each project. There is consequently a lack of global databases that are widely known and available to a broad range of stakeholders e.g. government, NGOs, science and general public. There is also no current mechanism for facilitated global discussion on climate change related knowledge and technology, and production of appropriately packaged handbooks or toolkits summarising the best-practices in adaptation technology. Without the SCCF project, there is also no centralised funding for professional researchers, postdoctoral, PhD and MSc. students to publish their research on adaptation technology best-practice in developing countries in international journals and the popular media.

With SCCF intervention (adaptation alternative): Additional funding of US\$ 1,000,000 is requested for Outcome 2. A comprehensive list of potential activities for this outcome is detailed in Annex 1. During the PPG phase, activities will be prioritised and selected through consultation with stakeholders.

The **first step** in this outcome will be the development of a web-based database under the direction of the project task force using information on global best-practices developed in Component 1 and Chinese experiences using adaptation technologies. This will include a mechanism to take stock of best-practices in the transfer of adaptation technologies. The database will be revised by the project task force on a quarterly basis to incorporate additional information acquired from Component 3 activities. The project task force will also develop a project website into which the database will be embedded. Along with the website and database, the project task force will develop: i) a webinar programme that will run for the duration of the project and focus on topics and information generated in Component 1; and ii) an 'e-discussion' programme, facilitated by a professional online facilitator/expert, that will also run for the duration of the project and focus on topics and information generated in Component 1. The dialogue in 'e-discussions' will be collated and published as information briefs. The website will be linked to appropriate learning networks such as the Climate Change Adaptation Knowledge Platform for Asia, UNEP's Global Adaptation Network (GAN), UNEP's regional adaptation network for Asia and Pacific; the Adaptation Learning Mechanism<sup>8</sup> (ALM) and WikiADAPT<sup>9</sup>. The website, webinar and 'e-discussions' will also be linked to social media such as Facebook and Twitter.

The **second step** will involve funding professional researchers, postdoctoral, PhD and MSc. students to publish their work in internationally renowned peer-reviewed journals as well as local magazines/newspapers. Other information dissemination activities will include the; i) production of

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<sup>8</sup> See: <http://www.adaptationlearning.net/>.

<sup>9</sup> See: <http://www.wiadapt.org>.

handbooks, toolkits and policy briefs tailored for use by adaptation policymakers and practitioners in the selected developing countries; ii) development of school and university curricula on best-practice adaptation technologies with a focus on an ecosystem management approach; and iii) training of school teachers and university lecturers to teach the curricula (i.e. ‘train the trainers’) in the selected developing countries. Documentary films will also be produced to promote best-practice adaptation technologies with a focus on an ecosystem management approach in developing countries. A summary of the analysis of baseline versus alternative scenario is provided in Annex 2.

### **Component 3: Technology and know-how support through integration and demonstration.**

In this component climate resilience of ecosystems in developing countries of the selected regions, i.e. West Africa, South Asia and the SIDS will be increased through the development and implementation of concrete adaptation technologies. Main outputs will include:

- prioritization of adaptation interventions following the UNEP Adaptation Decision Support Framework that is presently under development;
- baseline surveys of the intervention sites using a robust statistical approach; and
- implementation of the selected concrete adaptation technologies within the long-term ecological research frameworks developed in Component 1.

*Outcome 3: Increased climate resilience of priority ecosystems in pilot countries in the selected regions (i.e. West Africa, South Asia and the SIDS).*

#### Without SCCF intervention (baseline):

There are currently still few examples of concrete, on-the-ground demonstrations of adaptation technologies which are being actively used to inform policy and best-practice within developing countries. A range of adaptation initiatives implemented by UNEP and other agencies are presently underway in developing countries (e.g. Africa Adaptation Programme, Least Developed Country Fund projects, Adaptation Fund projects, Spanish MDG Fund projects, Special Climate Change Fund projects, EBA BMU Ecosystem Based Adaptation in Mountain Ecosystems, Poznan Strategic Programme of Technology Transfer etc). These initiatives will generate information on best-practice in adaptation technologies, however, most of the information will be from a defined and limited geographic area. Without the SCCF project, there will be few examples of demonstration measures being tested across a variety of ecosystem types within a single initiative. By conducting pilot schemes within a single country or ecosystem, the lessons learnt and feedback mechanisms will be limited and specific to that ecosystem alone. Without the SCCF project, there is thus no centralised body that can collect and disseminate information acquired from pilot projects in three markedly different bio-geographical regions, i.e. West Africa, South Asia, and SIDS.

With SCCF intervention (adaptation alternative): Additional funding of US\$ 2,655,000 is requested for Outcome 3. A comprehensive list of potential activities for this outcome is detailed in Annex 1. During the PPG phase, the concrete, on-the-ground adaptation interventions will be prioritised and selected through consultation with relevant stakeholders. Activities under Component 3 should also draw on lessons learnt from ongoing adaptation projects (including those from LDCAF, SCCF, AF) implemented by UNEP and other agencies. This project component will also build on other GEF and non-GEF projects by sharing the lessons learnt from effective adaptation measures, thereby contributing towards the climate proofing of these other projects.

The **first step** in this outcome will be to prioritize adaptation technologies following the UNEP Adaptation Decision Support Framework that is presently under development. The potential impacts of the adaptation technologies include *inter alia* greater: i) fodder/crop production; ii) soil infiltrability; iii) control of topsoil erosion; iv) river flows; v) groundwater recharge rates; vi) dam longevity; vii) flow of goods and services from ecosystems (e.g. timber and non-timber forest products); and v) physical protection of local communities against floods, sea level rise, sea spray and salt water intrusion.

The **second step** will be to conduct baseline surveys of the intervention sites using a robust statistical approach. These surveys will identify appropriate areas for the pilot scheme intervention, and result in a baseline report for each site which will be used as a comparison for monitoring the efficacy of each technology (see step three).

Finally, the **third step** will be the application of the selected adaptation technologies within the long-term ecological research frameworks developed in Component 1. A system of scientifically rigorous monitoring will be put in place that will focus on biophysical effects as well as quantification of socio-economic costs and benefits of the adaptation technologies. Examples of these technologies can be categorised into two scales:

- Extensive approach – technologies for adaptation to climate change including land and water management and desertification control will be collected, documented, evaluated and disseminated. Examples of these technologies include, but are not limited to:
  - o techniques for farming in drylands;
  - o development of cotton varieties that are tolerant to saline and alkaline conditions;
  - o techniques for restoring and conserving grassland production;
  - o techniques for fixing sand dunes in deserts and growing plants in these environments;
  - o technology for establishing plantations on sandy soils;
  - o technology for monitoring soil water content levels;
  - o techniques for evaluating the drought resilience of desert shrubs and for developing more resilient varieties; and
  - o restoration of degraded forests with multi-use tree species that enhance timber and non-timber forest products and stabilise topsoils.
- Intensive approach – integration of various technologies for water-saving and agriculture, particularly those from China and other developing countries, will be tested in vulnerable communities and ecosystems in selected countries to support adaptation decision-making. Examples of these technologies include, but are not limited to:
  - o techniques for establishing drought-resilient tree and shrub seedlings using holes to capture water and maintain soil water content;
  - o technologies to irrigate crops using drip irrigation under plastic sheeting;
  - o techniques to increase the water efficiency of drip irrigation;
  - o technologies to use solar energy-based water pumps and irrigation equipment;
  - o development of water retention agents (organic and inorganic compounds) and water retention fertilizers for field crops;
  - o techniques to enhance rainwater collection, storage and utilization; and
  - o conservation agriculture interventions including minimal mechanical soil disturbance/tillage, maintenance of a mulch of carbon-rich organic matter covering, and rotations/associations of crops including trees which could include nitrogen-fixing legumes.

A summary of the analysis of baseline versus alternative scenario is provided in Annex 2. Finally, during the PPG phase there will be detailed feasibility studies and environmental/social impact assessments for the proposed demonstrations in the project sites. These will be conducted before the final design of pilot demonstration is confirmed with stakeholders in order to ensure that the proposed adaptation measures are environmentally sound.

**B.3. Describe the socioeconomic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF). As a background information, read Mainstreaming Gender at the GEF."**

The socio-economic benefits of the SCCF project include a greater technical capacity of a wide range of policymakers, decision-makers and technical staff in national governments and scientific institutions on climate change adaptation, particularly through activities undertaken in Outcomes 1 and 2. The demand for adaptation technologies using ecosystem management approaches in vulnerable developing countries is predicted to increase markedly as climate change impacts increase in intensity. The transfer of technical skills in adaptation will consequently benefit individuals (with respect to career development) and local communities with respect to climate resilience. Apart from skills in adaptation technologies, the project will transfer generic skills such as methods for assessing costs and benefits of different on-the-ground interventions. Importantly, women will be preferentially selected by the project for skills development and capacity building.

A further major socio-economic benefit of the project will be improved access for the general public, government, private sector, educators, students and local communities to information on best-practice adaptation technologies through workshops, handbooks, toolkits, films, radio, TV, websites, databases and web-based dialogues.

Through the implementation of selected adaptation technologies in Outcome 3, ecosystem goods and services, including food and water supplies, will be enhanced in relevant ecosystems. The project will therefore also contribute to food and water security of vulnerable local communities while also conserving important fragile ecosystems such as mountain catchments, river basins, and low-lying coastal areas. Lastly, the adaptation technologies implemented by the project will serve to buffer communities against extreme events such as floods, landslides and droughts.

**B.4. Indicate risks, including climate change risks that might prevent the project objectives from being achieved, and if possible, propose measures that address these risks to be further developed during the project design:**

Identified Risks	Risk rating	Mitigation Measures
Local adaptation capacities can vary significantly among the targeted regions and this may impact project execution.	Medium	<ul style="list-style-type: none"> <li>• Conduct rigorous baseline studies to identify present adaptation capacities in the selected regions.</li> <li>• Allocate resources to regions according to the existing adaptation capacity of the area.</li> </ul>
The large geographic area of the targeted regions and the wide variety of activities within the project may prevent effective implementation.	Medium	<ul style="list-style-type: none"> <li>• Undertake detailed planning for all adaptation interventions and capacity building activities, accounting for the geographic extent of the region, and use best-practices identified in prior projects.</li> <li>• Ensure that the geographic spread of selected sites is realistic for the proposed adaptation technologies.</li> <li>• Employ a sufficient number of highly skilled managers within the project team for implementing the wide variety of activities.</li> </ul>
Current climate and seasonal variability and/or hazard events may result in poor adaptation results.	Medium	<ul style="list-style-type: none"> <li>• Ensure that region-specific current climatic variability is taken into account in the selection of the adaptation technologies.</li> <li>• When plant species are used in the adaptation intervention, use climate resilient plant species, and techniques to: i) assist plant growth particularly in the seedling/sapling phases; and ii) reduce risk of damage from hazard events.</li> <li>• Plant species in appropriate seasons to reduce risk of hazard impact.</li> </ul>

Communities may not adopt proposed adaptation technologies.	Medium	<ul style="list-style-type: none"> <li>Undertake capacity building and training of the communities to improve their awareness and understanding of the benefits of the climate change adaptation technologies.</li> </ul>
Capacity constraints of local institutions may limit the ability to undertake the proposed long-term research on adaptation technologies.	Medium	<ul style="list-style-type: none"> <li>Identify and develop human resource capacity as required.</li> <li>Ensure effective collaboration and exchange between local institutions and international research institutes.</li> <li>Employ a technical advisor from the task-force to work closely with regional project leaders to ensure timely delivery of project outputs.</li> </ul>
Lack of commitment/buy-in from local communities may result in failure of demonstration projects.	Medium	<ul style="list-style-type: none"> <li>Develop a stakeholder engagement plan during the project planning phase.</li> <li>Engage community stakeholders during the project planning as well as implementation phases to ensure their support.</li> <li>Raise public awareness of the need for adaptation technologies through radio and television.</li> <li>Foster a bottom-up grassroots approach during the project's development and implementation phases.</li> </ul>
Disagreement amongst stakeholders with regards to intervention site selection.	Low	<ul style="list-style-type: none"> <li>Select intervention sites according to strict criteria to ensure a transparent, rational and equitable process.</li> <li>Use a participatory approach throughout the project planning and implementation, particularly with regards to intervention site selection.</li> </ul>
Loss of government support in the selected countries may result in lack of prioritisation of SCCF project activities.	Low	<ul style="list-style-type: none"> <li>Undertake regular stakeholder consultations to foster support.</li> </ul>
Priority interventions implemented are not found to be cost-effective.	Low	<ul style="list-style-type: none"> <li>Cost-effectiveness will be a key criterion in the selection of adaptation technologies.</li> <li>Adjust adaptation technologies during the implementation phase, based on data from the monitoring and evaluation process, to improve cost-benefit ratios.</li> </ul>

**B.5. Identify key stakeholders involved in the project including the private sector, civil society organizations, local and indigenous communities, and their respective roles, as applicable:**

The main stakeholders in the proposed SCCF project are: i) the Chinese government's NDRC; ii) ACPC; iii) the Institute of Geographical Science and Natural Resource Research, Chinese Academy of Sciences (IGSNRR-CAS); iv) the Stockholm Environment Institute (SEI); and v) farmers, local communities and governments in the sites/ regions to be selected.

The NDRC is actively developing a National International Cooperation Programme (NICP) on climate change to provide support to developing countries, especially LDCs, SIDS and Africa. Adaptation to climate change is a priority of this programme and focuses on capacity building, knowledge and technology support on climate change. To prevent duplication of efforts, the programme will build on, and be complementary to, existing multi-lateral and bilateral initiatives worldwide. The NICP will also be consistent with the South-South Cooperation Programme on Climate Change.

**B.6. Outline the coordination with other related initiatives:**

There are many related initiatives which could be used to complement the SCCF project. Co-ordination mechanisms will be developed during the PPG phase to ensure synergies are created with these initiatives. The following initiatives have been identified as potential partner programmes:

- South East Asia Climate Change Network (SEAN-CC).
- Programme of Research on Climate Change Vulnerability, Impacts and Adaptation (PROVIA) (July 2010 – ongoing) - Africa, Asia-Pacific and Latin American countries.
- Partnership for Environment and Disaster Risk Reduction (PEDRR) (Nov 2010 – ongoing) - first pilot project implemented in Sri Lanka.
- Territorial Approach to Climate Change (TACC) – UN partnership with sub-national authorities towards lower carbon and carbon resilient territories (June 2009 – June 2013) - Africa, Latin America and the Caribbean, Europe, Asia and the Pacific, and West Asia.
- Implementation of the National Adaptation Programme of Action (NAPA) in the Gambia: Strengthening early warning systems. (June 2009 – ongoing) – Gambia.
- Adapting water resource management in Comoros to increase capacity to cope with climate change. (July 2010 – ongoing) – Comoros.
- Vulnerability Assessment and Adaptation Programme for Climate Change in the coastal zone of Cambodia considering livelihood improvements and ecosystems (July 2010 – ongoing) – Cambodia.
- UNDP/UNEP Poverty and Environment Initiative: Bangladesh, Bhutan, Malawi, Tajikistan, and Tanzania (2008 – 2013) - Bangladesh, Bhutan, Malawi, Tajikistan, and Tanzania
- Integrating Climate Change Adaptation into National Development Processes in Latin America and the Caribbean (June 2010 - May 2014) - Latin America and the Caribbean.
- Preparatory workshops for climate change negotiators (ongoing) - Africa, Asia, Latin America, Small Island States, and Least Developed Countries.
- Ecosystem management for improved human well-being in the Lake Faguibine system: conflict, mitigation and adaptation to climate change (August 2009 – July 2015) – Mali.
- Adapting to climate change induced water stress in the Nile River Basin (November 2009- October 2012) - Nile River Basin countries.
- Climate Change Adaptation and Disaster Risk Reduction in Jamaica (Aug 2010-Feb 2013) - Jamaica
- Ecosystem-based adaptation in SIDS (January 2010 – December 2013) – Belize and Seychelles

Following the site selection within the three project areas (i.e. West Africa, South Asia and SIDS), further ongoing initiatives will be added to this list and coordination with them will be sought. The coordination mechanism will be further determined and agreed during the PPG phase, and the feasibility of a "project coordinators" group will be sought. Should the project proponents agree to establish this group, it will be composed of project coordinators from relevant ongoing projects. The group will meet bi-annually and members will be regularly updated on the progress of the SCCF project, and vice versa, and the chair of the group (who will be changed every 6 months on rotation basis) will hold a position in the Project Steering Committee (PSC). It will be the responsibility of this group to reduce the duplication of efforts by this SCCF project, and to maintain regular, open communication with the related initiatives.

### **C. DESCRIBE THE GEF AGENCY’S COMPARATIVE ADVANTAGE TO IMPLEMENT THIS PROJECT:**

UNEP has considerable experience in implementing climate change adaptation projects and providing scientific guidance in the field of climate change. The agency’s work on climate change adaptation focuses on three main areas: i) Science and Assessments; ii) Knowledge and Policy Support; and iii) Building the Resilience of Ecosystems for Adaptation. To date, UNEP has facilitated the completion of 15 NAPAs and has assisted 38 countries in developing their National Communications, which have included vulnerability assessments and studies on adaptation measures. The agency is also assisting LDCs and other developing countries to implement their adaptation priorities identified by the NAPAs, National Communications and Technology Needs Assessments. In addition, UNEP has implemented or is in the process of implementing approximately 80 adaptation projects at global, regional and national levels. Through these projects, UNEP works to develop innovative solutions for national governments and local communities to adapt to climate change in an environmentally sound manner. This includes providing methods and tools to support decision making, addressing barriers to implementation, and testing and demonstrating the solutions. A large proportion of UNEP’s adaptation work entails building climate

resilience through restoration of ecosystems vulnerable to climate change (e.g. river basins, mountains, coasts and drylands).

The proposed SCCF project is consistent with UNEP's comparative advantage as identified through the GEF Council paper C.31/5. This paper delineates UNEP's comparative advantage in providing the GEF with a range of relevant experiences, a proof of concept, the testing of ideas, and the best available science and knowledge upon which it can base its investments. The SCCF project is also in accordance with the GEF Council paper C.28/18 that delineates UNEP's comparative advantage areas as including: "developing and using climate information to effect changes in relevant sectoral policies based on climate science". Importantly, UNEP differs from other agencies (e.g. FAO, IFAD, WB) in that its primary focus is environmental management. There are myriad factors affecting ecosystems and managing this complexity requires a dedicated focus as well as in-depth ecological expertise. Climate change adaptation approaches are particularly challenging in this regard. UNEP can provide both the prerequisite focus and scientific expertise to meet this challenge, and is uniquely positioned to undertake this innovative approach to adaptation to climate change. Importantly, the adaptation interventions of this SCCF project hinge around knowledge of ecosystems and adaptation technology. Given that UNEP's core business is providing technical advice on managing environments in a sustainable manner, it has a significant comparative advantage for implementing the proposed SCCF project. The technical and scientific knowledge that UNEP brings to the SCCF project will be fundamental for its success.

It is also noted that UNEP is the only UN GEF agency with its headquarters in a developing country, taking a strategic geographical position to facilitate and support S-S cooperation in the domain of climate change. In recent years, UNEP has listed climate change as its top priority and has strongly engaged with developing countries in the field of climate change adaptation, including but not limited to i) the successful implementation of CC-DARE project in 15 African countries, ii) regional knowledge networks in Asia-Pacific and Latin-America and the Caribbean, iii) Ecosystem-based Adaptation activities in Africa, Asia and Latin-America, and iv) Technology Needs Assessments.

### **C.1 Indicate the co-financing amount the GEF agency is bringing to the project:**

UNEP has secured grant and in-kind co-financing commitments of US\$ 23,000,000. This includes co-financing from the GoC (NDRC and CAS), SIDA (NELSAP and LCMB), and co-financing that UNEP is providing through the Ecosystem Based Adaptation Programme for Mountainous Ecosystems funded by BMU and the Global Adaptation Network.

### **C.2 How does the project fit into the GEF agency's programme (reflected in documents such as UNDAF, CAS, etc.) and staff capacity in the country to follow up project implementation:**

The SCCF project contributes to the achievement of three expected outcomes (outcomes a, c and e) in Sub-programme 1 (Climate Change) of UNEP's Proposed Biennial Programme of Work for 2012-2013. Sub-programme 1 seeks to strengthen the ability of countries, in particular developing countries, to integrate climate change responses into national development processes. The sub-programme has five expected outcomes (a-e). In the first outcome UNEP seeks to facilitate the incorporation of adaptation into country development planning and policy-making based on scientific assessments, policy and legislative advice and lessons learned from pilot programmes, while in the third outcome it seeks to facilitate target countries' access to climate change finance and promote successful innovative financing mechanisms at regional and global levels. Lastly, in the fifth outcome UNEP aims to increase access of target audiences to relevant climate change assessments and information for decision-making and long-term planning.

The SCCF project will also take cognisance of country specific strategies and needs as determined by World Bank Country Assistance Strategies (CAS) and United Nations Development Assistance Frameworks (UNDAFs). Through its regional office and capacity to work directly with governments

anywhere in the world, UNEP will be able to mobilise staff time and resources to supervise the project where appropriate.




**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 Operational Focal Point endorsement letter(s) with this template. For SGP, use this OFP endorsement letter).

NAME	POSITION	MINISTRY	DATE (MM/dd/yyyy)
Ms. Jiandi Ye	GEF Operational Focal Point	MINISTRY OF FINANCE OF CHINA	MARCH 12, 2012

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

<b>This request has been prepared in accordance with GEF/LDCF/SCCF policies and procedures and meets the GEF/LDCF/SCCF criteria for project identification and preparation.</b>					
Agency Coordinator, Agency name	Signature	DATE (MM/dd/yyyy)	Project Contact Person	Telephone	Email Address
Maryam Niamir-Fuller, Director, GEF Coordination Office, UNEP		04/19/2012	Ermira Fida	+ 254 714 636329	ermira.fida@unep.org

**ANNEX 1. Detailed SCCF project activities, relevant GEF Focal Areas and financing totals.**

<b>Outcomes</b>	<b>Outputs</b>	<b>Indicative activities</b>	<b>Relevant GEF Focal Area Objective</b>	<b>Indicative Grant Amount (\$)</b>	<b>Indicative Co-financing (\$)</b>	<b>Total financing for activity (\$)</b>
1. Strengthened capacities of vulnerable developing countries to plan and implement best-practice adaptation technologies with a focus on an ecosystem management approach to build climate resilience.	1.1. A task force of climate change adaptation experts, with a primary mandate to build capacity in developing countries by transferring adaptation technologies, accessing adaptation finance, designing projects and implementing adaptation technologies, established and operational.	1.1.1. Collate and synthesize information on best-practice adaptation technologies using an ecosystem management approach for the selected developing regions/countries (i.e. West Africa, South Asia and SIDS), with a focus on fragile ecosystems such as mountains, watersheds and low-lying coastal areas.	3.1.1	50,000	590,000	640,000
		1.1.2. Train regional advisors, country specific task teams, policymakers and decision-makers (e.g. parliamentarians) from selected developing countries and within China-led international cooperation programmes on climate change impacts, adaptation technologies using an ecosystem management approach, and adaptation financing options.	3.2.1	100,000	810,000	910,000
		1.1.3. Facilitate workshops for scientists, adaptation practitioners and government technical staff focused on specific ecosystem management adaptation themes (e.g. water-harvesting adaptation technologies in the Sahel) within selected developing countries.	3.1.1	70,000	420,000	490,000

	1.1.4. Train regional advisors, country-specific task teams and stakeholders within China-led international cooperation programmes to develop long-term, dynamic planning mechanisms and institutional frameworks for implementing and financing adaptation technologies using an ecosystem management approach at national and local levels. The training will include establishing systems for effective monitoring and evaluation of the technologies to ensure effective delivery of the targeted ecosystem services. Institutional mapping will be undertaken in each of the selected countries to guide this activity.	3.2.1	40,000	710,000	750,000
1.2 Network of public and private institutions established that promotes inter-regional dialogue on and dissemination of best practice adaptation technologies following an ecosystem management approach within selected regions (i.e. Africa, South Asia and SIDS).	1.2.1. Establish formal collaborative relationships with relevant NGOs and existing networks (e.g. IUCN, ILTER, CGIAR, Delta Alliance and WWF) as well as private sector initiatives (e.g. ClimateWise).	3.1.1	30,000	180,000	210,000
	1.2.2. Develop communication protocols for disseminating information generated by the SCCF project, including all lessons learned, via the network.	3.1.1	20,000	120,000	140,000
	1.2.3. Develop partnerships and link relevant national institutions and organisations with the global network established activity 1.2.1.	3.1.1	30,000	220,000	250,000

1.3. Institutional capacity developed within selected regions for implementing long-term adaptation research to analyse the predicted impacts of climate change on vulnerable ecosystems and the efficacy of selected adaptation technologies.	1.3.1. Train technical staff of selected research institutions on the principles and implementation of long-term climate change adaptation research.	3.2.1	30,000	280,000	310,000
	1.3.2. Develop institutional protocols and research frameworks for selected research institutions and government departments to establish long-term adaptation research sites. This will include development of systems for transferring knowledge generated from the research sites into adaptation management processes (i.e. adaptive management). It will be preceded by institutional mapping exercises.	3.1.1	60,000	330,000	390,000
	1.3.3. Facilitate the selection of sites and the adaptation technologies to be analysed using long-term research (through multi-stakeholder consultation) within the selected developing countries.	3.1.1	50,000	290,000	340,000
	1.3.4. Develop post-doctoral, PhD and MSc. research projects for initiating the long-term research on both biophysical and socio-economic factors within the selected ecosystems.	3.2.1	60,000	460,000	520,000
	1.4. A set of policies, strategies and legislation developed and/or revised in each targeted region to promote appropriate best-practice adaptation	1.4.1. Review existing global, national and/or regional policies, strategies and legislation influencing the adaptation approach of the selected countries.	3.1.1	40,000	180,000

technologies with a focus on an ecosystem management approach in vulnerable, developing countries.	1.4.2. Based on the review in activity 1.5.1. and information generated in Outcomes 2 and 3, develop and/or revise policies, strategies and legislation to promote appropriate adaptation technologies in selected vulnerable developing countries. An ecosystem management approach will be promoted within key economic sectors including: water, agriculture, energy and natural resources.	3.1.1	60,000	310,000	370,000
1.5. Strategies for financing and scaling up successful adaptation technologies (one per region) developed for the selected regions (i.e. West Africa, South Asia and SIDS).	1.5.1. Collate, synthesise and package information on mechanisms and options for financing large-scale adaptation technologies that focus on ecosystem management approach (including international grant and/or loan funding, national budgets, tax incentives, subsidies).	3.1.1	40,000	220,000	260,000
	1.5.2. Conduct in-depth market assessments for the products generated from the adaptation technologies (e.g. water, food, fodder, carbon, fibre, timber, resin, fertile topsoil) implemented in pilot countries.	3.2.1	120,000	770,000	890,000

		1.5.3. Based on the market assessment results and cost/benefit analyses undertaken in activity 3.1.3, develop detailed business plans/funding proposals for public sector and private sector investments in adaptation technologies, including public private partnerships (PPPs) where appropriate.	3.2.1	120,000	680,000	800,000
		1.5.4. Develop Payment for Ecosystem Services (PES) implementation plans, where commercially viable, for example in degrading watersheds that presently service large urban areas and/or hydro-electric power plants.	3.2.1	80,000	610,000	690,000
2. Increased availability of information and improved public awareness on best practices for implementing and financing adaptation technologies with an ecosystem management approach in developing countries.	2.1. A database established on best-practice adaptation technologies for the targeted countries, with a particular focus on an ecosystem management approach.	2.1.1. Develop a web-based database using information on global best practices developed in Output 1.1 and Chinese experiences using adaptation technologies.	3.1.1	140,000	800,000	1,140,000
		2.1.2. Revise the database on a quarterly basis to incorporate additional information acquired from the project's Component 3 activities.	3.1.1	50,000	530,000	580,000
	2.2. An interactive, web-based platform developed to disseminate information, promote	2.2.1. Develop SCCF project website and embed database developed in Output 2.1.	3.1.1	100,000	740,000	840,000

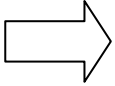
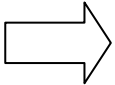
dialogue and facilitate learning on best practices in adaptation using an ecosystem management approach.	2.2.2. Develop a webinar schedule for the project that focuses on topics and information generated in Output 1.1.	3.1.1	90,000	700,000	790,000
	2.2.3. Develop an ‘e-discussion’ programme for the project, facilitated by a professional online facilitator/expert, that focuses on topics and information generated in Output 1.1.	3.1.1	100,000	730,000	930,000
	2.2.4. Produce information briefs from the webinars and dialogue in the ‘e-discussions’ in activities 2.2.3 and 2.2.4.	3.2.1	60,000	310,000	370,000
	2.2.5. Link website, webinars and ‘e-discussions’ to social media such as Facebook and Twitter.	3.1.1	10,000	40,000	50,000
2.3. Knowledge generated by the project’s research, workshops and web-based dialogue packaged for the general public, scientists, policy-makers, restoration practitioners and students.	2.3.1. Fund professional researchers, postdoctoral, PhD and MSc. students to publish their work in internationally renowned peer-reviewed journals as well as local magazines/newspaper.	3.2.1	160,000	70,000	230,000
	2.3.2 Produce handbooks, toolkits and policy briefs tailored for use by adaptation policymakers and practitioners in the selected developing countries.	3.2.1	100,000	350,000	450,000

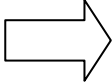

		2.3.3. Develop school and university curricula on best-practice adaptation technologies using an ecosystem management approach and train school teachers and university lecturers to teach the curricula (i.e. 'train the trainers') in the selected developing countries.	3.2.1	90,000	790,000	880,000
		2.3.4. Produce documentary films to promote best-practice adaptation technologies using an ecosystem management approach in developing countries.	3.1.1	100,000	400,000	500,000
3. Increased climate resilience of priority ecosystems in pilot countries in the selected regions (i.e. West Africa, South Asia and SIDS).	3.1. Best-practice adaptation technologies - with a focus on an ecosystem management approach - implemented at sites with highly vulnerable communities in pilot countries.	3.1.1. Prioritise adaptation interventions following the UNEP Adaptation Decision Support Framework (presently under development). Potential impacts of the adaptation technologies include inter alia greater i) fodder/crop production; ii) soil infiltrability; iii) control of topsoil erosion; iv) river flows; v) groundwater recharge rates; vi) dam longevity; vii) flow of goods and services from ecosystems (e.g. timber and non-timber forest products); and v) physical protection of local communities against floods, sea level rise, sea spray and salt water intrusion.	1.2.1, 2.3.1, 3.1.1	90,000	230,000	320,000
		3.1.2. Conduct baseline surveys of the intervention sites using a robust statistical approach.	1.2.1, 2.3.1, 3.1.1, 3.2.1	240,000	740,000	980,000



		3.1.3. Apply the selected adaptation technologies within the long-term ecological research frameworks developed in Output 1.4. The scientifically rigorous monitoring and evaluation will focus on biophysical effects as well as quantification of socio-economic costs and benefits of the adaptation technologies.	1.2.1, 3.1.1	2,325,000	9,090,000	11,510,000
			<b>Total</b>	<b>4,655,000</b>	<b>22,700,000</b>	<b>27,355,000</b>

## ANNEX 2: Comparison of business-as-usual and adaptation alternative of the SCCF project.

	<b>Business-As-Usual</b>		<b>Adaptation alternative scenario</b>
<b>Problem Description</b>	There is currently: i) insufficient information and public awareness on best practices for implementing and financing adaptation technologies; ii) weak institutional capacity to plan and implement best-practice adaptation technologies; and iii) limited use of best practice adaptation technologies in developing countries of the selected regions, i.e. West Africa, South Asia and the SIDS.		The SCCF project will: i) increase the availability of information and public awareness on best practices for implementing and financing adaptation technologies; ii) strengthen the capacity of local, national and regional institutions to plan and implement best-practice adaptation technologies in order to build resilience to climate change; and iii) increase the climate resilience of ecosystems in developing countries of the selected regions, i.e. West Africa, South Asia and the SIDS through the development and implementation of adaptation technologies.
<b>Project Outcomes</b>	<p><b>Outcome 1:</b></p> <ul style="list-style-type: none"> <li>• Insufficient local, national and regional institutional capacity in developing countries to plan and implement best-practice technologies to adaptation through ecosystem restoration.</li> <li>• Baseline adaptation projects in developing countries and regions do not focus on global coordination/ cooperation, and consequently the adaptation technologies generated by their initiatives are not systematically transferred to other vulnerable developing countries requiring the expertise and knowledge.</li> <li>• No designated networks or expert groups to facilitate dialogue between specific regions on adaptation implementation.</li> <li>• Few examples of on-the-ground research and/or demonstrations to inform the development of adaptation approaches.</li> <li>• Limited access to the best available information and training on adaptation technologies focussing on an ecosystem ‘management approach’.</li> </ul>		<p>The SCCF project will strengthen the capacity of local, national and regional institutions in developing countries to plan and implement best-practice adaptation technologies with a focus on an ecosystem management approach in order to build resilience to climate change. Main outputs will include the development of:</p> <ul style="list-style-type: none"> <li>• a task force of climate change adaptation experts that will facilitate capacity building in developing countries by transferring adaptation technologies, accessing adaptation finance, designing projects and implementing adaptation technologies;</li> <li>• a network of public and private institutions that will promote inter-regional dialogue on and dissemination of best-practice adaptation technologies with a focus on an ecosystem management approach within selected regions (i.e. West Africa, South Asia and SIDS);</li> <li>• institutional capacity for implementing long-term adaptation research to analyse the predicted impacts of climate change on ecosystems and the efficacy of selected adaptation technologies;</li> <li>• and/or revision of policies, strategies and legislation to promote appropriate adaptation technologies with an ecosystem management approach focus in vulnerable developing countries; and</li> <li>• strategies for financing and scaling up successful adaptation technologies developed for the selected regions (West Africa, South Asia and SIDS).</li> </ul> <p><b>Cost: SCCF US\$ 1,000,000</b></p>

	<p><b>Outcome 2:</b></p> <ul style="list-style-type: none"> <li>• Limited sharing of knowledge and technologies for adaptation to climate change between developing countries and regions.</li> <li>• Negligible public awareness on adaptation technologies is largely negligible in developing countries.</li> <li>• Existing information gathering projects do not focus on an improvement in global knowledge and public awareness, and are instead limited to the specific focal areas of each project.</li> <li>• Lack of global databases that are widely known and available to a wide range of stakeholders e.g. government, NGOs, science and general public.</li> <li>• No current mechanism for facilitated global discussion on climate change related knowledge and technology, and production of appropriately packaged handbooks or toolkits summarising the best-practices in adaptation technology.</li> <li>• No centralised funding for professional researchers, postdoctoral, PhD and MSc. students to publish their research on adaptation technology best-practice in international journals and the popular media.</li> </ul>		<p>The SCCF project will increase the availability of information and public awareness on best practices for implementing and financing adaptation technologies with an ecosystem management approach in developing countries through the establishment of a dynamic interactive data base and website. The main outputs will include the:</p> <ul style="list-style-type: none"> <li>• establishment of a database on best-practice adaptation technologies for targeted developing countries, with a particular focus on an ecosystem management approach;</li> <li>• development of an interactive, web-based platform to disseminate information, promote dialogue and facilitate learning on best practices in adaptation using an ecosystem management approach; and</li> <li>• packaging of knowledge generated by the project’s research, workshops and web-based dialogue for the general public, scientists, policy-makers, restoration practitioners and students.</li> </ul> <p><b>Cost: SCCF US\$ 1,000,000</b></p>
	<p><b>Outcome 3:</b></p> <ul style="list-style-type: none"> <li>• Few examples of concrete, on-the-ground demonstrations of adaptation technologies which are being actively used to inform policy and best-practice within developing countries.</li> <li>• Few examples of demonstration measures being tested across a variety of ecosystem types within a single initiative.</li> <li>• No centralised body that can collect and disseminate information acquired from pilot projects in three markedly different bio-geographical regions, i.e. West Africa, South Asia, and SIDS.</li> </ul>		<p>The SCCF project will increase the climate resilience of ecosystems in developing countries of the selected regions, i.e. West Africa, South Asia and the SIDS through the development and implementation of adaptation technologies. Main outputs will include:</p> <ul style="list-style-type: none"> <li>• prioritization of adaptation interventions following the UNEP Adaptation Decision Support Framework that is presently under development;</li> <li>• baseline surveys of the intervention sites using a robust statistical approach and</li> <li>• implementation of the selected adaptation technologies within the long-term ecological research frameworks developed in Component 1.</li> </ul> <p><b>Cost: SCCF US\$ 2,655,000</b></p>
Cost	<b>Business-As-Usual Development Cost</b>		<b>Additional Adaptation Cost</b>
Financed by:	GoC and Bilateral Aid Agencies		SCCF

<sup>i</sup> Detailed outcomes, outputs, associated activities and budgets can be seen in Annex 1