



PROJECT IDENTIFICATION FORM (PIF)
PROJECT TYPE: Full-sized Project
TYPE OF FUND: LDCF

PART I: PROJECT IDENTIFICATION

| | | | |
|--------------------|--|------------------|----------------|
| Project Title: | Climate proofing local development gains in rural and urban areas of Machinga and Mangochi Districts - Malawi | | |
| Country: | Malawi | GEF Project ID | 4797 |
| GEF Agency: | UNDP | GEF Agency ID | 4508 |
| Executing partners | Ministries of Local Government; Agriculture, Irrigation & Water Development; Natural Resources, Energy & Environment, Finance & Development Planning, Public Works, Gender and Communities | Submission Date: | April 16, 2012 |
| Focal Area: | Climate Change | Duration | 60 months |
| Parent programme: | N/A | Agency Fee: | 531,820 |

FOCAL AREA STRATEGY FRAMEWORK

| FA Objectives | Expected FA Outcomes | Expected FA Outputs | LDCF (\$) | Co-Fin (\$) |
|--|---|---|------------------|-------------------------------|
| CCA-1: Reduce vulnerability to the adverse impacts of climate change, including variability, at local, national, regional and global level | 1.1: Mainstream adaptation in broader development frameworks in targeted vulnerable areas | 1.1.1: Adaptation measures and necessary budget allocations included in relevant frameworks | 865,000 | 6,000,000 |
| | 1.2: Reduced vulnerability to climate change in development sectors | 1.2.1: Vulnerable physical, natural and social assets strengthened in response to climate change impacts, incl. variability | 2,500,000 | 15,000,000 |
| Objective CCA-2 - Increasing Adaptive capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level | Outcome 2.2: Strengthened adaptive capacity to reduce risks to climate-induced economic losses | Output 2.2.1: Adaptive capacity of national and regional centers and networks strengthened to rapidly respond to extreme weather events Output 2.2.2: Targeted population groups covered by adequate risk reduction measures | 1,000,000 | 8,000,000 |
| Objective CCA -3 - Adaptation Technology Transfer: Promote transfer and adoption of adaptation technology | Outcome 3.1: Successful demonstration, deployment, and transfer of relevant adaptation technology in targeted areas | Output 3.1.1: Relevant adaptation technology transferred to targeted groups | 703,200 | 6,000,000 |
| Project management cost | | | 250,000 | 1,000,000 |
| Total Project Cost | | | 5,318,200 | 36,000,000¹ |

¹ This value is only a small part of the baseline described in section B.1 (Baselines), and represents the part of the national baseline invested in the Shire River Basin.

A. PROJECT FRAMEWORK

| Objective: Using ecological, physical and policy measures to reduce vulnerability to climate change driven droughts, floods and post harvest grain losses for rural and urban communities of Machinga and Mangochi Districts of Malawi (reaching over 0.5 million people) ² | | | | | |
|---|--------|--|--|-------------|--------------|
| Component | | Outcomes | Expected Outputs | LDCF | CoFin |
| Ecological and physical works demonstrated as climate smart measures for water, soil fertility and post harvest management practices that reduce climate change induced risks to the productivity gains of the agricultural input subsidy programme | inv | Outcome 1.1: Public and domestic water harvesting, storage and distribution reduces climate change driven flooding and regulates availability of water throughout the year in flood & drought hotspots | <p>Output 1.1.1: Public water harvesting and storage: 3 community based check dams constructed in strategic places to capture and store water, reducing risk of climate change induced floods while regularizing availability of water through wet and dry seasons</p> <p>Output 1.1.2: Water harvesting from dwellings: %age of farmers harvesting water from rooftops increase by at least 50% and boosts the percentage of farmers accessing clean domestic water in years of drought from a low of 10% to at least 25%³</p> <p>Output 1.1.3: Water harvesting and use on farms: percentage of farmers adopting improved water harvesting and retention (such as pools, dams, pits, retaining ridges, etc.) and using it to irrigate crops in the pilot communities increases by at least 25% and increase yields of key crops by more than 30%;</p> | 3,375,000 | 15,000,000 |
| | inv | Outcome 1.2: Landscape level ecological measures complementing physical water management infrastructure to reduce risk of climate change induced floods and enhance resilience against unusually harsh and frequent droughts in selected hotspots (covering over 500,000 ha of farmlands and 6 urban centres): | <p>Output 1.2.1: Rehabilitation of badly degraded lands in selected hotspots improves land cover, infiltration and base flow; increasing the ability of the landscape to regulate water flow during droughts and floods, offering ecological protection from climate change induced droughts and floods;</p> <p>Output 1.2.2: Adoption of conservation agriculture practices, integration of agroforestry species, short-cycle, drought-tolerant crop varieties and multiple-use tree species by more than 30% of the farmers increases water retention capacity by the soils, reducing impacts of climate change intensified drought by at least 30%</p> <p>Output 1.2.3: Water use efficiency in small scale irrigation systems improved by over 40% to address climate induced irregularity of rainfall patterns (drought) while improving productivity of the land by more than 10%.</p> <p>Output 1.2.4: Establishment of small-scale flood reduction infrastructure in selected urban areas (such as water diversion structures, gabions, culverts) integrated with ecological measures (such as protective vegetation, hillside terraces planted with perennial trees and shrubs, stone bunds) improve water drainage and reduce damage from intense climate change induced floods.</p> | | |
| | | Outcome 1.3: Adoption of climate safe post harvest management technologies and practices by > 50% of grain farmers reduce climate induced grain loss by > 30% | <p>Output 1.3.1: Skills and institutional arrangements for individual and/or communal climate safe post harvest management practices and storage facilities disseminated, leading to adoption of improved practices by more than 50% and a reduction in post harvest losses of more than 30% of current baseline (baseline to be established at ppg);</p> <p>Output 1.3.2: Financing institutions, local artisans, marketing channels and the extension service set up to support the demonstration, upscaling and sustainability of the improved climate safe post harvest management practices and technologies</p> | 880,000 | 10,000,000 |
| Upscaling - Results from outcome 1 used to transform local and national implementation of the baseline programmes, | T A | Outcome 2.1: Capacity of District level technical officers to support implementation, maintenance and monitoring of the activities under component 1 and to mainstream climate risks into all local | <p>Output 2.2.1: The extension service capacitated with skills (through training) and other support systems to integrate up-to-date information and techniques for mainstreaming climate change risks into the current and future extension support to land users and farmers;</p> <p>Output 2.2.2: Research on local impacts of climate change and adaptation techniques supported to provide a scientific backbone to the mainstreaming of climate change considerations into local development, and linked to extension service for dissemination of more up to date information on weather, risks of drought and flooding to farmers and urban dwellers.</p> <p>Output 2.2.3: A participatory M&E system formulated and</p> | 813,200 | 10,000,000 |

² The combined population of the two districts is 980,000 people over an area of 10,000km² (Mangochi with 610,239 people over 6,273 km.², and Machinga has 369,614 people over 3,771 km.²)

³ These percentages (particularly the baseline) will be confirmed during PPG

| | | | | | |
|--|--------|--|---|-----------|-------------------------|
| upscaling the resilience of the productivity gains and decentralized development processes | | development process (skills, legislation, information, | implemented to monitor effects of the project on the baseline investments and livelihoods; lessons drawn and disseminated through the regional and national platforms (as well as used to support adaptive management); Output 2.2.4: District councils, local authorities, district planning units and officers of the Ministry of Finance and Development Planning and National Housing Development Authority trained to recognize climate risk problems in new and existing investment projects and apply/recommend/enforce targeted risk reduction and risk management measures; Output 2.2.5: Structural engineers, urban and rural infrastructure planners and teaching staff from technical colleges and vocational training institutes provided with skills on climate-resilient construction, land use and water resources planning | | |
| | T A | Outcome 2.2:– Local and national development policies influenced by the project supported pilots to strengthen policies and policy enforcement for climate consideration in development. | Output 2.2.1: Two districts revise local development policy making it mandatory to integrate climate risk considerations in the design, appraisal and approval process of district development, including the implementation of the agricultural input subsidy programme and civil works (infrastructure and building); Output 2.2.2: Agreement on, and operationalization of district level institutional arrangement for the long-term implementation of the ecological and physical measures and management plans, including enforcement of environmental regulations identified, and operationalized; Output 2.2.3: Two Districts review planning processes to provide greater coherence, coordination and integration between climate change, agricultural-led local development and food security policy processes; Output 2.2.4: A national “Year of Land Care ” launched to promote wide scale awareness of the cost effectiveness of integrating ecological and physical measures as a means of mitigating impacts of climate change driven floods and droughts; Output 2.2.5: Lessons generated at the project/district level fed into the national climate programme, SLM platform and other national planning debates, to lobby and influence the adoption of climate risk considerations as minimum criteria for accessing agricultural input subsidy benefits. | | |
| Project management cost | | | | 250,000 | 1,000,000 |
| Total Project Cost | | | | 5,318,200 | 36,000,000 ⁴ |

B: Indicative co-finance for the project by source

| Type | Name | Type of Co-financing | Amount (\$) |
|---------------------------|--------------------------------------|----------------------|-------------------------|
| National Government | GoM | Grant | 21,000,000 |
| National Government | GoM | Grant | 9,600,000 |
| GEF Agency | UNDP | Grant | 1,000,000 |
| GEF Agency | UNDP | Grant | 4,000,000 |
| Private Sector | Irrigation farmers/local communities | Grant | 400,000 |
| Total Co-financing | | | 36,000,000 ⁵ |

⁴ This value is only a small part of the baseline described in section B.1 (Baselines), and represents the part of the national baseline invested in the Shire River Basin.

⁵ As above

C: GEF RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY

| AGENCY | FUND | FA | Country | Project amount | Agency fee | Total |
|----------------------------|-------------|-----------|----------------|-----------------------|-------------------|------------------|
| UNDP | LDCF | CC | Malawi | 5,318,200 | 531,820 | 5,850,020 |
| Total GEF Resources | | | | 5,318,200 | 531,820 | 5,850,020 |

PART II: PROJECT JUSTIFICATION

A. Description of the consistency of the project with:

A.1.1 GEF focal area strategies:

1. Malawi's high dependency on rainfed, maize dominated agriculture, combined with poor urban planning in rural towns makes 85% of its populations highly vulnerable to climate change induced droughts, floods and post harvest grain losses. The government has embarked on two highly ambitious programmes: one on national agricultural input subsidy, to increase the use of inorganic fertilizers and maize production; the second on decentralized governance, making the District Councils and other local institutions the primary focus for delivery of developmental services to the rural populations. The Agricultural Extension reform of 2000 forms a third (and supporting) baseline programme. Implemented through the decentralized governance system, the District Extension service System is meant to increase the participation of the local communities in the formulation and implementation of a development vision. The effectiveness of these programmes is however being weakened by inadequate consideration of climate change induced risks to local development, particularly floods, droughts, pests and diseases affecting harvested but badly stored grains. The proposed LDCF project will use two components to facilitate the use of an integrated package of ecological, physical and policy measures to reduce climate change related risks and improve the effectiveness of the baseline initiatives in Mangochi and Machinga Districts, in the upper Shire Basin. Ecological and physical infrastructure measures for water management will be adopted to regulate baseflow and reduce risk of climate change driven floods while mitigating against droughts. In addition, climate safe post harvest management technologies and practices will reduce grain loss and increase food security. Replication and sustainability of these initiatives will be secured through mainstreaming climate change considerations and financing into local development programmes and a capacitated extension service. This is in line with CCA1 - **Reducing Vulnerability** (Reduce vulnerability to the adverse impacts of climate change, including variability, at local, national, regional and global level) where it will contribute to Outcome 1.1 and 1.2. It also contributes to CCA2 - Increasing Adaptive capacity to respond to the impacts of climate change, including variability, at local, national, regional and global level, where it contributes to outputs 2.2 and 2.3.

A.1.2. LDCF/SCCF eligibility criteria and priorities:

2. The proposed project targets climate change adaptation measures that are complementary and additional to those funded by the GEF and other bilateral and multilateral donors in Malawi. This is in line with work programme under the LDC Fund, established under decisions 5/CP.7 and 7/CP.7 of the Seventh Conference of the Parties, United Nations Framework Convention on Climate Change. The Republic of Malawi signed the UNFCCC in June 1992 and ratified it in April 1994, when it became a Party to the Convention. Its Initial National Communication was submitted in 2002, and the Second National Communication has been finalized and will be officially launched in late 2011. The country has prepared a National Adaptation Programme of Action (NAPA) and is among forty-nine countries designated as Least Developed by the UN; hence it is eligible to receive funding for NAPA implementation under LDCF. The proposed project responds to NAPA priorities 1, 2 and 3 (1: Improving Community's Resilience to climate Change through the Development of Sustainable Rural Livelihoods: 2 - Restoring forests in the Upper, Middle and Lower Shire Valleys catchments to reduce siltation and the associated water flow problems; and, priority 3: Improving Agricultural Production Under Erratic and

Changing Climatic Conditions). During the project development process, the government will ensure that the project complies with the other LDCF project eligibility criteria, such as participatory approaches, supporting a “learning-by-doing” approach, multi-disciplinary, and gender equality. The project will serve as a catalyst to leverage additional resources, and efforts have been made to maximize co-financing from other sources (GEF/C.24/12, paragraph 25). The selected sectors (agriculture, water resources management; infrastructure development) are in line with priorities outlined in paragraph 44 of the GEF/C.24/12 document.

A.2: National Strategies and Plans or reports and Assessments under Relevant Conventions:

3. The project will utilize community based approaches to adaptation to mainstream climate change considerations into the baseline programmes, in order to increase resilience of local economic development in the Shire River basin. This will safeguard livelihoods and food security in the face of climate change, which is in line with Malawi’s National Adaptation Programme of Action (NAPA), the (Draft) Second National Communication to the UNFCCC; the Malawi Growth and Development Strategy (MGDS), which features both Key Priority Areas (KPAs): a) Climate Change, Natural Resources and Environmental Management, and b) Disaster Risk Management and Social Protection. The priority is also linked to thematic 3 of the Millennium Development Goals - Social Support and Disaster Risk Management; specifically, MDG 1 “eradication of extreme poverty and hunger” and MDG 7 “ensuring environmental sustainability”. It is directly linked to the MDG priority areas on Agriculture and Food Security and Climate Change, Natural Resources and Environmental Management. This is in line with the Malawi government priority to mainstream climate risks in agriculture led development in order to drive national development within the context of the Malawi Growth and Development Strategy. The project is also in line with the following policies and programmes: a) National Environmental Management Plan (NEMP-E); b) National Action Programme to Combat Desertification and Mitigate the Effects of Drought; c) Food Security Strategy; d) Agricultural Sector Wide Approach (SWAp), specifically the pillars on Sustainable Land & Water Management and Risk Assessment.

4. The project specifically contributes to NAPA priority projects 1-4 as shown in Annex 1 (which maps the proposed project outcomes along the NAPA priority projects). Its budget therefore draws from the various priority projects, bearing in mind that the total funds available to the country from the LDCF funds have increased considerably since the priority project budgets were concluded. The increase in available funds has made it possible to design one project that addresses several NAPA priorities. The country is also preparing to revise the NAPA in 2012, partly in recognition of the fact that the NAPA needs to be more strategic in order to identify more transformative projects that move the country along a low carbon, climate resilient development trajectory.

B. Project Overview:

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

5. Malawi has an erratic rainfall pattern, with rainfall varying widely in space and time, and frequent bouts of droughts and floods. This poses great suffering to urban dwellers and farmers, who depend on agriculture as the main economic activity. Agriculture, which is a major contributor to national and household food security employs over 80% of the country’s workforce, contributes over 80% of its foreign exchange earnings and 35% to GDP. Maize is particularly important to the economy and to the livelihoods of most people, but it is associated with low agricultural productivity and individual/household food insecurity. These conditions are set to get worse in the face of climate change.

6. The First National communication reported that Global Circulation Models predicted a temperature increase of 1-3 degrees in the country by 2100, with some areas expected to get wetter while others get drier. Indeed, the country already experiences a variety of extreme weather events whose impacts have been reported to increase in frequency of occurrence and intensity, resulting in loss of life and damage to

infrastructures and buildings⁶. Floods occur in the south, particularly in the Shire River valley and the low lying lakeshore areas of Lake Malawi, Lake Malombe and Lake Chilwa, as well as in the lower reaches of the Songwe River in the northern region. The NAPA (2006) reported that between 1967 and 2003, 18 floods were recorded killing at least 570 people, rendering 132,000 homeless, and affecting a total of 1.8 million people. Six major droughts also occurred in the same period, affecting over 21 million people in total. The UN Country Assessment, which was undertaken in 2010, and which forms the basis of the new UNDAF and CPD, states that the geographical coverage of floods and drought has increased: Before 2001 only 9 districts in Malawi were classified as flood-prone; in 2010 14 districts are classified as flood-prone. More importantly the number of people affected by these disasters has increased sharply since 1990, with currently some 15% of the rural population living on the fringes of high flood-risk areas, and dry spells being a common occurrence in many parts of the country, which can cause between 20-30% of the losses of total yield/ha.

7. A recent evaluation of the impacts of the natural hazards using probabilistic risk analysis⁷ for Malawi and Mozambique reported that Malawi lost on average 4.6% of the maize production (nationally) each year due to droughts, and 12% to flooding in the southern region, where about one-third of Malawi's maize is grown. These losses equate to 1.7 percent of the gross domestic product, equivalent to almost US\$22 million in 2005 prices. Economic losses are much higher during extreme droughts; for example, during a 1-in-25 year drought experienced in 1991/92, GDP contracted by as much as 10.4 percent. Droughts also exacerbate Malawi's already high levels of income poverty, causing a 1.3 percentage point increase in poverty, which rises to almost 17 percentage points during a 1-in-25 year drought (this is equivalent to an additional 2.1 million people falling below the poverty line). Importantly when droughts do occur, their impacts vary considerably across regions and population groups with smaller-scale farmers most vulnerable to drought induced economic losses.

8. Climate change further exacerbates food insecurity through increased post-harvest losses of grain. A recent FAO GoM joint study (2009) reported that climate change is likely to increase post harvest loss of grains due to, *inter alia*: i) an increase in episodes of heavy rainfall, which may prolong growing period; ii) an increase in the frequency and intensity of droughts, which will increase food gaps, requiring better management of post harvested grain; iii) an increase in temperature and extreme heat days, which will dry out and crack grain; vi) an increase in duration and occurrence of dry spells during the rainy season, which will also increase the food gaps. Additionally, the combination of changes in various climatic variables such as temperature and humidity, is likely to create new environments for new pests and pathogens to successfully breed and prosper, increasing the number of pests and diseases which attack stored crops, for which no local or traditional knowledge of management and control exists. For example the LGB (Larger Grain Borer (*Prostephanus truncates*)) accidentally introduced in Malawi and Kenya through food aid in the early 1990s has become the greatest threat to post harvested grain⁸. No grain storage facility is safe from LGB, which can bore through even very thick wooden boards to consume the stored grain.

9. Non-farm and urban households are also vulnerable, especially the poor who spend a large proportion of their income on food, and occupy regions vulnerable to floods. Urban areas (and people living in them) experience additional problems from floods, resulting from unplanned urban growth, the occupation of flood plains, and poor solid waste and stormwater drainage management, often dumping of solid waste into river and stormwater systems. Malawi urban growth, which at 6% is one of the highest in the world, is characterized by unplanned and poorly regulated informal settlements; with some urban centres located in flood plains and wetland or river fringes without organised stormwater drainage systems. This is exacerbated by poor housing construction materials and building standards, coupled by

6 Malawi NAPA 2006

7 World Bank, Global Facility for Disaster Risk Reduction and others: 2009; Economic Vulnerability and Disaster Risk Assessment in Malawi and Mozambique: Measuring Economic Risks of Droughts and Floods

poor site locations either close to rivers or wetlands or areas with high water tables, especially by the poorer urban dwellers. Lack of solid foundation and poor construction standards often lead to seepage through the floors and leakage from poorly constructed roofs, walls and doors. Urban flooding exposes the poorer populations (particularly children) to ill health especially respiratory infections; colds and flu.

10. **Baseline:** the baseline to the proposed project consists of several programmes related to decentralization of governance and administration systems, subsidized agricultural input for increased food security, flood risk management, irrigation and conservation agriculture, all delivered through the regional extension service; with a combined value of over US\$130,000,000 of government and development partners' investments. The baseline initiatives are described below.

11. **Agricultural Input subsidy programme: US\$126,000,000 per year (started in 2006 and projected to continue to 2015):** Following severe food security difficulties in the early part of this century, and particularly after the poor 2004/5 production season, the government introduced a very large scale input subsidy programme across the country. The core objective of the programme is to increase food security and incomes for resource poor farmers, through improved access to subsidized agricultural inputs. The programme works through increasing use of fertilizers and improved seed in both maize and tobacco production in order to increase agricultural productivity and food security. Working through the Ministry of Agriculture Irrigation and Water Development (MoAIWD), the programme distributes fertilizer and seed coupons via districts and Traditional Authorities (TAs). The programme also supports adoption of post harvesting management practices, advanced through the District Agricultural Extension Service System (DAESS). Both the post harvest management practices and the DAESS are described below. Investment in the programme has been rising steadily, rising from just over 60% of Ministry of Agriculture and Food Security budget in 2006/7 and 2007/8 to 74% in 2008/9⁹. In 2009/10, it accounted for 80% of the public budget to agriculture and 15% of the total national budget. During the 2011/2012 agriculture season government has allocated US\$126,000,000 for the farm subsidy programme, targeting 1.4 million people¹⁰.

12. **Government Flood risk management strategy – 2009-2019:** US\$ 3,000,000: the government has recently developed a flood risk management strategy which focuses on risk mitigation, preparedness, response and recovery. Under this strategy, the districts prepare flood disaster contingency plans and establish rapid response teams. They also prepare and disseminate early flood warnings messages, using seasonal weather forecasts from the Department of Meteorology. Implementation of this strategy in the River Shire has received a boost from a World Bank study which is currently generating flood inundation maps for use in spatial planning to zone development away from high risk flood areas. These maps will assist in the refining flood mitigation measures including the citing of structures such as dams, culverts, bridges, levee heights, etc. These sets of data will form the basis of a flood forecasting model to be developed in the future and inform the emergency planning and response units.

13. **Decentralization Policy (US\$10,000,000) - (originated in 1999 and projected to continue for the foreseeable future):** The government of Malawi has also invested heavily in decentralization, in a bid to empower regional governance for more effective local level development. This has been driven by the Decentralization Policy, which provides for the establishment of Local Governments as the basis and a framework for the devolution of functions, responsibilities, powers and resources to District Assemblies. The objectives of the decentralization programme and policy are: to create a democratic environment and institutions for governance and development at the local level, which facilitates the participation of the grassroots in decision making; to eliminate dual administration (field administration and local government) of the district level with the aim of making the Public Service more efficient, more economical and cost effective; to increase accountability and good governance at the local level in order to help government reduce poverty; and to mobilize the masses for socio-economic development at the

¹⁰ Andrew Dorward, Ephraim Chirwa, T.S. Jayne – 2010: Review of the Malawi Agricultural Inputs Subsidy Programme, 2005/6 to 2008/9

local level. Although elections are still to be held, the Local Government Act of 1998 made the Assemblies the operational units for preparing district development plans and implementing them. The district development plans provide a better information base to all local stakeholders upon which they can make effective decisions on various developmental programmes, in line with the national development plans, and comprise of programmes and projects to be implemented over three year periods. This model of devolution is expected to continue until there is a policy change on devolution, which is not likely in the foreseeable future.

14. **District Agricultural Extension Service Systems (US\$ 10,000,000)** – Reformed in 2000 and projected to continue for the foreseeable future: The objective of Malawi’s Agriculture Extension Service is to promote adoption of agricultural technologies and farmer innovation in order to increase productivity and production so as to meet household or market requirements¹¹. This is in recognition of the fact that smallholder farmers producers of both cash and food crops are important drivers of the agriculture sector in country. The current agricultural extension policy was transformed in 2000 to allow for a pluralistic, demand driven, decentralized extension services. The policy is implemented through the District Agricultural Extension Services System (DAESS), which is part of the Decentralized governance system. The policy ensures that agricultural extension services are more inclusive to allow other service providers such as farmer based organization, the private sector and the civil society organizations to take active roles in the delivery of extension services. This is to give the clientele a wider choice of services from diverse service providers.

15. In line with the decentralization policy which gives power to the grassroots people to create and actively implement a vision for local development, the District Extension Services uses the village as the entry point for planning and implementation of all interventions. In their role as coordinators for the delivery of the extension service by the service providers (NGOs, private sector, etc.), the District staff facilitates the assessment of farmer, organizes response by service providers, and facilitates fund raising/acquisition of funds for agricultural extension services from a diverse base of resources. This is done within the six principles spelt out in the guidelines of the DAESS harmonization framework: namely, i) a policy focus and policy environment; ii) identification of gaps and issues; iii) approaches and Strategies; iv) technology packaging; v) out-scaling technologies; vi) monitoring and evaluation. This approach is meant to: increase extension coverage with extension messages; improve coordination and collaboration amongst stakeholders; increase farmers’ access to markets for farm inputs and produce; availed agro-dealers a readily available market since farmers are organized; and, make farmers’ voice heard to service providers. The extension service delivery itself uses a variety of innovative methods for facilitating farmer access to information, knowledge and technologies, including on-farm harmonized demonstrations, field days, radio, simple publications and mobile vans. Others such as farming clusters and Lead farmers are innovative strategies used in farmer mobilization to adopt innovative technologies for agricultural enterprises of their choices. Farmers are more empowered and organized to mobilize resources to undertake different agricultural enterprises. The The DAESS also supports the post harvest management programme, which is part of the National Input Subsidy Programme. In this regard, it is developing and delivering awareness raising material on the use of post harvest technologies such as storage silos and chemical pest controls. This effort is supported by Bunda College which is currently undertaking post-harvest management research focusing on processing, but and not on storage.

16. **The National irrigation Expansion Strategy: 2010-2015: US\$ 2,000,000:** The government has established a National irrigation strategy to supplement rainfed cropping and optimize the cost of irrigation. The implementation of the irrigation strategy in the Shire Basin is being supported by “**The Irrigation, Rural Livelihoods and Development project (IRLADP)**” project, a World Bank/IFAD financed initiative which started in May 2006 and is expected to continue until 2016. The total budget for

¹¹ Department of Agricultural Extension Services (2008) Guidelines for Clusters and Ulimi wa M’ndandanda for various stakeholders –revised (unpublished).

the project was US\$52.5 million out of which US\$40.0 million grant from IDA, US\$8.0 million loan from IFAD and US\$2.8 million GOM. The project is engaged in developing new irrigation mini-schemes and rehabilitating existing ones. It is also building capacity of local institutions to effectively engage in irrigation through training and provision of micro loans. In this regard, the project has supported 4 large schemes totalling 1,797ha namely: Muona in Nsanje, Likangala in Zomba, Nkhate in Chikhwawa, and Limphasa in Nkhata Bay. It has also supported smaller schemes in other districts namely Chitipa and Rumphi in the north, Lilongwe, Dedza and Salima in the centre, and Phalombe and Blantyre in the south. Currently over 1500 hectares of land are already under irrigation; this expected benefit about 197,000 farming households in 11 of Malawi's 28 districts by the end of the project.

17. **Transforming agriculture through conservation agriculture in Malawi** – USD 5 million: on-going since 2006, expected to continue until 2014: The government has since 2005 engaged in a programme of conservation agriculture that has received technical and financial support from various development partners, notably CIMMYT, Total Land Care and IFAD. The programme has facilitated an innovative network of researchers, extension agencies and lead farmers to demonstrate the techniques and benefits of conservation agriculture. The network engages in participatory interaction and dialogue with farmers and encourages them to raise social capital, subsequently boosting interest in the conservation agriculture within their own communities and the surrounding areas. The project has also linked farmers to input suppliers and local banks, increasing access to soft loans for herbicides and improved seed. The programme has also developed, tested and actively promoted the adoption of prototype agroforestry; particularly the systematic inter planting with *Faidherbia albida*, short term fallows with leguminous shrubs, homestead planting, woodlots, fodder banks and boundary planting (live fences). Other commonly adopted technologies under this programme include minimum tillage, vetiver hedgerow planting, contour ridging, contour Stone lines, raising of foot paths and garden boundaries, gully reclamation, surface runoff harvesting, point-source water harvesting from common infrastructure, retention ditches/ infiltration trenches/ swales, check dams, storm drains; stream bank protection, etc.

18. **Barriers to securing economic growth and resilient livelihoods in the face of a changing climate:** Despite the large baseline programmes, economic development and livelihoods of the communities in the 2 districts of Mangochi and Machinga (part of the Shire River Basin) are still threatened by uncertainties associated with climate change, particularly floods and droughts. This is because under the business as usual, the baseline programmes fail to integrate additional risks expected from the uncertainties associated with the changing climate. A recent review of the fertilizer subsidy programme reported that the sustainability of the impacts achieved by the programme so far (increased grain and other crops productivity) is threatened by climate change induced intense cycles of droughts and floods as well as an emergence of new pests and conditions that render traditional post harvest management and storage ineffective. These threats are exacerbated by shortfalls in the supporting programmes namely; the flood management strategy, the irrigation strategy, and the specific soil and water management programmes and projects; which jointly fail to cater for the effects of climate change adequately.

19. During the last ten years the Shire River Basin has experienced some of the worst droughts and floods in living memory. These floods undermine the achievements of the baseline programmes by causing severe crop losses and hunger, infrastructure damage, disruption of electricity, loss of human and animal life, and compromised water quality (leading to diseases such as diarrhoea, cholera and malaria). Average annual crop and livestock losses range from 4 percent in Blantyre to 6.8 percent in Machinga. The two districts of Machinga and Mangochi have particularly high rates of loss. Yet the flood contingency plans used as the main tools of flood management have three major failings: i) they are too focused on responses to floods, inadequately factoring in effects of climate change or land-based climate smart mitigative measures to control water flow; ii) the Department of Risk Mitigation (DoDMA) does not have the authority to enforce mainstreaming of flood mitigation into the functions of other line ministries, reducing its impacts in mainstreaming climate change considerations and mitigative measures on flood management. This is compounded by inadequate capacity in the department for factoring in

climate change into the strategy and coordinating other ministries to mainstream these considerations into their own development activities. Currently disaster management in the districts is carried out by District Assembly staff designated as Disaster Management Desk Officers on part-time basis only.: iii) the formulation of these District strategies inadequately involve community participation, thereby missing out on any localized knowledge and experiences on climate smart technologies.

20. The effects of these shortcomings are multi-fold: flood management does not feature prominently in the national priorities, both politically and financially, hence it tends to be underfunded. The politicians fail to realize that flood risk management activities also address poverty reduction. In the absence of enforcement of regulations has allowed the population pressure and limited availability of land to influence settlement in flood-prone areas. The lack of flood zoning maps and related land-use regulations in rural areas makes it difficult to regulate these settlements. Lack of adaptation measures has resulted in living conditions in these communities becoming unbearable during floods, as houses are not adapted to flood conditions and there are no appropriate means of transportation for purposes. There are several challenges in the integration, coordination and synchronization of flood management interventions within and between government ministries and departments, District Assemblies, NGOs and donors. This is manifested, for instance, in the duplication of efforts in flood mitigation, in conflicting policies on the use and non-use of riverbanks for agricultural, and in failed resettlement schemes for flood victims caused by insufficient integration of planning. There is an apparent lack of application of basic principles and approaches of Integrated Water Resources Management (IWRM) and Integrated Flood Risk Management (IFRM).

21. Although there is high potential for the construction of flood protection works in most flood prone areas in Malawi, there are still an inadequate number of such structures, and the existing ones are either too old or fallen into disrepair. Most villages and farmland in flood prone areas are not protected by dykes or levees, and the levee along the North Rukuru River and flood protection works in Nsanje and Chikwawa are ineffective. Similarly, the dyke along the Shire River, constructed in the 1920s is no longer functional. Although part of the problem with all these flood control works was due to either poor workmanship and/or improper design of the structures, their design and maintenance plans did not take the effects of climate change into consideration, particularly the impacts of more frequent and higher intensity water flow, with higher silt loads. Although this could be improved if the knowledge and capacity of the affected communities were used more extensively in the formulation and implementation of various interventions, there is little community participation. With better participation of communities, a more profound ownership of mitigation structures could be achieved, which would enhance their sustainability. The current World Bank-led modelling exercise is expected to correct some of these shortfalls. However, it is still just a modelling strategy, which is far from being implemented.

22. In addition, although the 850 mm of rainfall received on an average normal year would be adequate for rain-fed crop production and for recharging underground aquifers, its distribution and intensity is erratic and water storage capacity is limited, further compromising the ability of the subsidized fertilizer to increase productivity. This results in an overall water scarcity situation, primarily due to lack of water storage. Only 20 percent of the total farmed area in Malawi is under water management (less than 900,000 ha), and only a limited proportion of this (54,000 ha, making 7%) is irrigated. Nationally, the irrigated land constitutes only 10 percent of the estimated physical potential; with the 2 districts registering less than the national average. Although seasonal flooding is a huge problem, the river flows in Malawi are highly seasonal and require significant inter-seasonal storage to meet demand for water year round supply. A recent World Bank study however reported that only irrigation which delivers “*high benefits*” relative to its water use is economically justified upstream of Lake Malawi because of adverse impacts on Shire hydro-electric generation; and advised that “High benefits” can be achieved in various ways including increased yield, higher crop value, improved water efficiency, etc. While the two districts are good candidates for high benefit irrigation, there is limited capacity for improving agriculture in line with the criteria for benefiting from national investment in irrigation. In addition, there is a high for increasing water availability through localized water harvesting, to capture the high volumes of water

during the seasonal rains. However, the limited capacity in the district makes it particularly difficult to identify and facilitate adoption of climate smart water harvesting technologies such as check dams and household tanks.

23. Soil erosion further compromises the potential of the subsidized fertilizer to increase food production by negatively affecting natural soil fertility. Currently, the basin experiences annual losses of up to 11-50 tons of soil per hectare NAPA (2006) even on a normal rainfall year. Floods exacerbate these losses. The consequent loss of soil organic matter reduces the effectiveness of fertilizer, lowering profitability, and undermining sustainability of the programme. The 2010 review of the fertilizer subsidy programme reported that long-term sustainability of the fertilizer use on maize produced by smallholder farmers is constrained by profitability and affordability, and recommended substantial reductions in fertilizer prices and/or the development of low cost and accessible financial services. It further suggested that development of such financial services for fertilizer use in maize production requires that maize be profitable, that smallholders have other sources of cash income that can be used to repay fertilizer loans when the majority of the maize they produce is for home consumption, and that very low-cost systems are used for loan disbursement and recovery. These measures are difficult because rural credit markets are underdeveloped and the costs of credit administration are too high, as are risks for both borrowers and lenders. Poor infrastructure and high transport costs lead to high input costs, inhibiting the development of input supply systems in less accessible areas. Highly variable maize prices add to the risks of input use (whether purchased with cash or credit)¹².

24. There are however cheaper and more sustainable ways of making the fertilizer subsidy programme more profitable – through community based landscape level adaptation measures and technologies that reduce soil erosion, increase soil fertility and mitigate the damaging effects of droughts and floods. The use of trees and shrubs in agricultural systems help to tackle the triple challenge of securing food security, mitigation and reducing vulnerability and increasing the adaptability of agricultural systems to climate change. In addition to diminishing the effects of extreme weather events such as heavy rains, droughts and wind storms, trees and shrubs can improve the effectiveness of fertilizer by increasing soil moisture and soil organic matter. Studies indicate that fertilizer is more effective in soils with high organic matter. Under conservation agriculture, trees stabilize soils, raise infiltration rates, reduce soil erosion, and, halts land degradation. Nitrogen-fixing leguminous trees and shrubs can be especially important to soil fertility where there is limited access to mineral fertilizers, or they increase the use efficiency of added inorganic fertilizers. These measures are even more effective when combined with physical water management infrastructure such as check dams, terraces, gabions, etc., that control floods and regulate water availability.

25. Despite the great potential of using community based approaches to enforce the adoption of ecological and physical measures to increase landscape resilience to the effects of climate change, and therefore increase the sustainability of the baseline investments, there has been no attempt to systematically link the baseline to these approaches; and although there are numerous projects and initiatives supporting land management practices (such as conservation agriculture, water harvesting, etc.), they rarely factor in the additional risks associated to climate change in the selection of technologies. They are also largely adhoc and not necessarily integrated in packages that make their adoption a prerequisite for receiving the subsidized agricultural inputs.

26. The sustainability of the impacts of the input subsidy programme is further threatened by climate change induced post harvest losses; this is because the post harvest management practices advocated through the programme have not factored in the new climate change driven challenges to post harvest management. While the government recognizes the importance of maize in the economy and livelihoods, adoption of climate-safe post harvest management practices is still hampered by several technical, financial, policies, skills and market barriers. Although climate safe post harvest management technology

¹² Andrew Dorward, Ephraim Chirwa, T.S. Jayne – 2010: Review of the Malawi Agricultural Inputs Subsidy Programme, 2005/6 to 2008/9

that is pest and disease proof is emerging slowly, particularly in South Africa and a few countries in west Africa, grain handling in the majority of rural Malawi is still by 'traditional methods' characterized by the granaries or simply any large empty rooms, infrequently supplemented by pesticides. Research on post harvest technologies in the country is limited, and the few innovations have been poorly disseminated. Private sector involvement in market development for post harvesting technologies has been limited, compounding the inaccessibility of the technologies by farmers, which further reduces the demand for the technologies. This in turn keeps the supply low, which consequently keeps the cost of production (and prices) relatively high. These barriers are compounded by the lack of policy based incentives for both research and private sector involvement in the post harvest technology development, dissemination and adoption. The productivity gains from the subsidized input programme are therefore threatened by the lack of an explicit policy based incentives to support the adoption of climate safe post harvest management practices.

27. The decentralization process provides an opportunity for mainstreaming climate change considerations in the agricultural input subsidy programme. Because local governance and development processes is coordinated by the district councils, mainstreaming mandatory climate change considerations in their policies, programmes and plans would make all local development more resilient to the effects of climate change, including the agricultural input subsidy programme. While agricultural production systems will be expected first and foremost to increase productivity and resilience to support food security, they also provide an opportunity to engage in low emission development trajectories without compromising economic advancement and food security goals. Key requirements for an enabling policy environment to promote local development led by climate-smart smallholder agricultural transformations is greater coherence, coordination and integration between climate change, local level agriculture based development and food security policy processes. But the district councils are still very weak and have unclear policies on climate change and development. In addition, they have no skills or finances to enforce the mainstreaming of climate change considerations in the local development processes.

28. In addition to continuing to expose the gains from the agricultural subsidy programme to the additional risks of climate change, these failures are compromising the sustainability of urban development which is currently threatened by the inadequate integration of measures to reduce impacts of floods on public infrastructure, urban houses, health and livelihoods. Although the upper Shire has only a few small towns, urbanization is projected to grow. Given the low levels of planning in rural towns, urbanization increases the risk of floods by altering the hydrology and the geomorphology of the natural landscape around towns. In the Malawi, these are exacerbated by inefficient urban management, inadequate planning, poorly regulated population densities, inappropriate construction practices, ecological imbalances, and poor infrastructure. Disaster risk reduction at the district and local level requires a multi-disciplinary approach, with input and expertise required from many fields. However, the scarcity of resources in the District Assemblies exacerbates the uncertainty in future socio-economic status, making it difficult to invest in physical water management and flood control infrastructure solutions. Adopting a community based approach that uses ecological measures to strengthen the limited physical flood control infrastructure, supported by policies to integrate climate resilience into development strategies provide the most cost effective means of ensuring that urban development secured through the district development plans is not undermined by climate driven floods.

29. The effectiveness of the baseline programmes to secure economic development and resilient livelihoods despite the changing climate can be further enhanced by bridging climate data and information gaps: the imperative of climate change requires increased capacity of people (planners, urban dwellers and farmers) to make both short and long term planning decisions and technology choices. Improving the use of climate science data for urban and agricultural planning can reduce the uncertainties generated by climate change, improve early warning systems for drought, flood, and pest and disease incidence and thus increase the capacity of farmers and agricultural planners to allocate resources

effectively and reduce risks¹³. Although this information is becoming increasingly available at the global and national level, the baseline programmes lack the “translators” of climate information at district and community level, who can bridge the divide between science and field application, assisting communities and planners to understand the implications of their immediate planning decisions. Making climate change information a mandatory part of the baseline programmes would go a long way in transforming current development processes, moving Malawi along the path of low emission climate resilient development trajectory. As explained in the baseline programmes section, the Agricultural extension system is part of the decentralized governance. While the reforms undertaken in 2000 have improved the Service, some challenges impede implementation and out-scaling of technologies. These include: i) inadequate operational resources (human, material and financial) to fully out-scale the success stories; ii) inadequate transport capacity reducing poor mobility and the timely reach of extension service; iii) inadequate integration of up-to-date climate change information in the extension package; iv) inadequate capacity building opportunities for staff; v) inadequate coordination, collaboration and networking amongst service providers; vi) weak linkages between research, extension and farmers, thereby weakening the support of current research to the farming communities. Problems with delivering information at a relevant spatial and time scale, difficulty in communicating the information and lack of user participation in development of information systems have all weakened the access to climate risk information in real time, undermining the sustainability of the baseline programmes.

B.2: Additional Cost Reasoning: Activities requested for LDCF financing and the associated adaptation benefits to be delivered by the project:

30. The proposed project will create the conditions necessary for transforming the baseline programmes described in Section B.1 to make them systematically integrate measures to address additional risks associated with climate change, in order to secure gains on local development and food security from uncertainties related to the changing climate. This will be done by making it mandatory for the baseline programmes to be built on a community based cost effective and integrated package of ecological and physical measures, implemented at a landscape level, to improve water management (and mitigate the effects of drought and floods), reduce soil erosion and increase soil fertility, climate proofed post harvest management technologies, and reduce vulnerability of urban infrastructure (hosing, roads) to floods. These will be supported by policies and capacities (skills, information and institutions) for mainstreaming climate change considerations into district council-led local development processes, programmes and plans. The proposed project will pilot this approach in two districts, Machinga and Mangochi. A strengthened District Extension Service System will be used to support the implementation of the project initiatives and scale it up to other districts; lessons generated will be upscaled through the information management systems of the national climate change programme, and used to influence the national agricultural input subsidy programme and decentralized governance. This will be in line with the NAPA (as mapped in annex 1) and the Malawi Growth and Development Strategy (MGDS).

31. The project planning phase (PPG) will be based on a broad-based consultative process with national, provincial, district and local authorities (including representatives from the Ministry of Finance and Development Planning (MoFDP), Ministry of Public Works, Ministry of Natural Resources, Energy & Environment, Ministry of Local Government & Rural Development, District Councils, local authorities, multilateral development agencies (ADB, WB, UN, FAO), bilateral missions (JICA, USAID, EU, GiZ, Norway, Irish Aid), International and National NGOs (ICRAF, Goal Malawi, Action Aid, etc.) and CBOs. By the end of this consultative process, activities under each proposed component and outcome will be defined, priority sites in the district will be identified, and the institutional arrangements for project execution will be agreed. To secure upscaling and sustainability, the materials developed,

¹³ Integrating Seasonal Forecasts and Insurance for Adaptation among Subsistence Farmers: The Case of Malawi. Policy Research Working Paper 4651, World Bank, Washington DC, US:

technologies and experience gathered by the project will be shared with other districts via Government and other donor funded programmes.

Component 1: Ecological and physical works demonstrated as climate smart measures for water, soil fertility and post harvest management practices that reduce climate change induced risks to the productivity gains of the agricultural input subsidy programme

32. **Baseline situation** - As highlighted in the NAPA and the MGDS (Malawi Growth and Development Strategy), Malawi's economic development will continue to depend on its natural resources, particularly agriculture, which employs more than 80% of the labor force and supplies food and energy to urban areas. The use of natural resources must undergo a significant transformation in order to meet the related challenges of achieving food security and responding to climate change. The government and its development partners have put in place a strong baseline to improve agricultural productivity, such as the agricultural input subsidy programme, the soil and water conservation and harvesting programmes and drought and flood risk mitigation programmes. What these programmes are doing, upon which LDCF funds will build on include: training farmers on improved farming practices, agroforestry and improved post harvest management; providing farmers with coupons for inputs (fertilizer, seeds, bags, etc.); support construction of soil and water harvesting infrastructure in rural and urban places such as terraces, small catchment dams, levees, drainage pathways, etc.; overseeing the compliance with building regulations in urban centres, etc., preparing droughts and flood response teams and materials, etc.; Implementation of these activities does not take adequate consideration of the effects of climate change such as the increased incidents of prolonged dry spells, droughts, floods, and temperature variability, which tend to compound the stress on the natural resource base, reducing the effectiveness of the baseline programmes. For example the baseline Agricultural Input subsidy programme has indeed increased productivity particularly of maize, but these productivity gains are threatened because the baseline soil conservation programmes have been ineffective in stemming the loss of soil and soil fertility from climate change accelerated soil erosion; similarly, the irrigation and water harvesting programmes have been inadequate to curb the periodic dramatic losses occasioned by the increasingly frequent droughts and floods. The project will facilitate a landscape approach combining ecological measures and physical infrastructure to build the resilience of the system to the effects of climate change and to secure the productivity gains.

Adaptation scenario

33. The LDCF funds will be used to secure the productivity gains of the **baseline programmes** by piloting measures to comprehensively and systematically address additional risks associated with climate change as part of the **implementation of these baselines in two districts** of the Shire river Basin. These measures consist of a cost effective package of landscape level, community based practices, combining ecological measures and physical works (infrastructure) that improve water and soil fertility, increase baseflow, reduce flooding and increase resilience of agriculture to the effects of expected increased frequency of drought. By taking into account likely scenarios of climate change, they will also be used to improve public and domestic **water harvesting, storage and distribution systems to regulate water and even distribution between dry and wet seasons, improving the effectiveness of the soil and water harvesting and irrigation baselines**. Additional measures will facilitate the adoption of climate sensitive post harvest management practices to ensure that increased production is secured from current and anticipated climate change driven risks. Implementation of these measures will be supported by a strengthened district extension service system, which will integrate climate change information (challenges and options) into the extension package, which will be delivered in a timelier manner. The component will include the realization of four key outcomes described below:

34. **Outcome 1.1: Climate smart public and domestic water harvesting, storage and distribution regulates availability of water throughout the year in flood & drought hotspots**: Specifically, three small scale check dams will be built in strategic places to capture and store water, reducing risk of floods while regularizing availability of water through wet and dry seasons. The site selection and actual

construction of the dams will take landscape and climate resilience factors into considerations such as sites likely to be flooded, use of re-enforced construction material, etc. Combined with localized water harvesting infrastructure on individual farms, the check dams will be a means of capturing water during heavy rains, reducing the likelihood of flooding. They will also supply water for irrigating crops during dry seasons, in particular during drought years. Institutional arrangements, capacity and water governance systems will be agreed and established to ensure sustained management and functioning of the dams as water management systems that double up as flood control and drought water reservoirs. **This outcome will be closely coordinated with the baseline programmes on irrigation and water harvesting, ensuring that the increase in the number of households using small scale irrigation during climate change induced droughts is sustained and lessons generated are mainstreamed into the rest of the baseline.**

35. **Outcome 1.2: Landscape level ecological measures complementing physical water management infrastructure** to reduce risk of climate change induced floods and enhance resilience against unusually harsh and frequent droughts in selected hotspots (covering over 500,000 ha of farmlands and 6 urban centres): The physical water management infrastructure will be complemented by ecological measures to restore the ability of the landscape/ecosystem to provide a comprehensive array of environmental services such as water catchment to regulate water flow, soil regeneration/fertility management etc., to support agriculture and reduce vulnerability to flooding and damages to infrastructure, urban and rural dwellings. In the agriculture areas, the project will work with the baseline to ensure that key ecological technology include climate smart agriculture which integrates trees and conservation agriculture into farming; this offers climate change adaptation and mitigation solutions while simultaneously improving food security. **Under this outcome, the project will support the baseline programmes to adopt a suite of farming practices that, *inter alia*, promote soil fertility management, through increased organic matter. Climate smart agriculture (and conservation agriculture) will follow three key characteristics: i) minimal mechanical soil disturbance (i.e. no tillage and direct seeding); ii) maintenance of a mulch of carbon-rich organic matter covering and feeding the soil (e.g. straw and/or other crop residues including cover crops); and iii) rotations or sequences and associations of crops including trees and nitrogen-fixing legumes.**

36. Maintaining a mulch layer will provide a substrate for soil-inhabiting microorganisms which helps to improve and maintain water and nutrients in the soil. Avoiding tillage will further minimize net losses of carbon dioxide by microbial respiration and oxidation of the soil organic matter, promoting the improvement of soil structure and biopores through soil biota and roots. This also contributes to net increase of soil organic matter - derived from carbon dioxide captured by photosynthesis in plants, whose residues above and below the surface are subsequently transformed and sequestered by soil biota¹⁴. Climate Smart Agriculture will also contribute to adaptation to climate change by reducing crop vulnerability. The protective soil cover of leaves, stems and stalks from the previous crop shields the soil surface from heat, wind and rain, keeps the soil cooler and reduces moisture losses by evaporation.

37. The key measures to protect infrastructure, urban and rural dwellings will be the identification and rehabilitation of badly degraded areas critical to the integrity of the landscape (such as the wetlands around Lakes Chilwa and Malombe and the urban areas). These will be rehabilitated, using a mixture of ecological and physical infrastructure including tree planting, water diversion structures, gabions, culverts, protective vegetation, hillside terraces planted with perennial trees and shrubs, stone bunds, etc. This will improve land cover, infiltration and base flow, increasing the ability of the landscape to regulate water flow during droughts and floods. These measures will be complemented by the policy, capacity and institutions to be supported under component 2, as described in the relevant sections below.

38. **Outcome 1.3: Adoption of climate safe post harvest management technologies and practices by more than 50% of grain farmers reduce climate induced grain loss by more than 30% in the 2 districts:** As described in the background section, the current level of post harvest management practices

¹⁴ ibid

is both inadequate and not climate sensitive. The **project will work with baseline programme on post harvesting management to** demonstrate a range of postharvest management technologies, selected on the basis of their likely effectiveness under different climate change scenarios. Since the long-term adoption of post harvest technologies can only be ensured through market mechanisms, the project will engage the government and other relevant stakeholders in review of the taxation regimes on the material used to make climate safe storage technologies; and, through cost benefit analysis of loss to the country via lost spoiled grains versus gains through taxation, demonstrate the benefits of adopting policy and market based incentives for incentivizing wide scale local production of affordable climate safe post harvest technologies. The project will then identify efficient pathways of dissemination of the selected technologies, including use of demonstration farmers. In addition, the project will engage local artisans and train them on use of local materials to make post harvest storage facilities; and, engage micro-finance institution to provide affordable loans to the farmers so that they are able to access the technologies. This will create demand for the technologies which will be fulfilled through the linkages with the entrepreneurs who will be scaling-up and commercializing the products. These arrangements will ensure sustainability of the benefits even after the end of the project. Where surplus grains per household is too low to justify investments in individual climate safe storage tanks, the project will facilitate community grain storage systems, including local institutional arrangement and governance systems to ensure effective and sustainable adoption. The project will also develop a communication strategy to disseminate the best practices and facilitate the revision of extension packages of relevant ministries (and development partners) to reflect policy changes and best-bet post harvest practices.

Component 2: Results from the demonstrations sites used to transform local & national implementation of the baseline programmes, upscaling the resilience of the productivity gains & decentralized development

39. Baseline – While the LDCF project will demonstrate cost effective measures of building resilience in two districts, these measures need to be mainstreamed country-wide. The decentralization programme and the regional extension services provide the two key mechanisms for facilitating rural development country-wide in Malawi. The two programmes have staff throughout the country and provide the direct, day to day support to the implementation of the baselines. The activities that they facilitate, on which the project will build on include: the delivery of training on improved farming practices, sharing lessons, experiences and extension materials with other districts, providing a link between practitioners and policy makers, in particular interpreting national policy for farmers and other land users, and, using field experience to influence national debates on policy formulation. In addition to those, the regional council formulates local by-laws (in line with national policies), oversees their implementation, and allocates regional budgets to regional programmes. While the two initiatives provide a clear opportunity to upscale lessons on mainstreaming climate change considerations into local development processes country-wide, this is unlikely to happen for two interrelated reasons: i) as described in the foregoing sections, the baseline programmes (on agricultural input subsidy, soil and water harvesting, irrigation, are not themselves adequately integrating climate related risks; ii) and more critical, the decentralization and the extension service are not adequately equipped with knowledge, information or technologies to upscale climate risk considerations into their programmes. Without the project, country-wide investments by all the baseline programmes described in B will continue in a “business as usual” mode, thereby exposing the modest development and productivity gains to uncertainties related to climate change. Without the relevant capacities (skills, information, and institutional set up), the experiences will not be effectively used to influence larger development process, reducing the impacts of the project in transforming the developing strategy of Malawi towards a climate smart low carbon trajectory.

Adaptation alternative:

40. The LDCF funds will create the conditions necessary for successful project experiences to be used to transform the national and local baseline programmes, contributing to the country’s movement towards

a more climate safe development trajectory. The project will achieve this by developing the individual and institutional capacities in key public institutions at the local and district level to achieve two critical objectives: i) to support the design, implementation and long-term maintenance of the pilot initiatives described in component 1: ii) to adopt principles of climate risk resilience and environmental sustainability in the design, review and approval of new and existing development processes, programmes and plans, particularly those related to the local level implementation of the baseline programmes: iii) to feed project experiences to the national policy and planning processes (particularly of the baseline programmes), through the dialogue platform provided by the National Climate Change programme. The project will therefore develop capacity (skills, rules and regulations, institutional set up) to support the implementation of activities for component 1 and for integrating climate-resilient land-use planning, climate resilient construction of physical infrastructure, climate-resilient communal water resources management and ecosystem-based adaptation.

41. The use of these tools will be a mandatory requirement in local development, and will be integrated into the design and approval processes of other UNDP-supported baseline projects as well as the review and approval processes of District planning units, which comprise of departments from all relevant ministries (such as Finance and Development Planning, Natural Resources & Environment, Local Government & Rural Development, Agriculture, Irrigation & Water Development, Housing Development Authority), and local authorities (district, municipal and urban councils). This will ensure that climate change-related risks and hazards are recognized before communal infrastructure is constructed in hazardous zones, and that new physical infrastructure has sufficient structural integrity to withstand extreme weather events. To support the long-term enforcement of these tools, the project will design and launch a robust training programme for engineers, builders, urban and rural planners and small-and medium-sized enterprises who are concerned with physical construction and/or land use planning tasks in their day-to-day occupations. This will be complemented by a robust awareness building programme to inform/educate the farmers, land users and urban dwellers of the additional risks from climate driven weather changes and the options available for mitigating them.

42. Working with the National Climate Change Programme, the project will lobby the adoption of landscape level community based water and soil management measures as mandatory requirements for the local level implementation of the various baseline programmes. This will be complemented by the launch of a national “Year of Land Care” to promote wide-scale awareness of the cost effectiveness of integrating ecological and physical measures as a means of mitigating impacts of climate change driven floods and droughts. Development and delivery of the training and awareness programme will be done in collaboration with universities, technical colleges, vocational training institutions as well as schools in the 2 districts. In addition, the two districts will review policies and planning processes to provide greater coherence, coordination and integration between climate change, agricultural development and food security policy processes. A participatory M&E system will also be formulated and implemented to track the effects of the project on the baseline investment and livelihoods. Lessons will be captured and disseminated through the national Climate Programme, through which the proposed project will link with other adaptation initiatives.

B.3. Socioeconomic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support adaptation benefits

43. The proposed project will improve the effectiveness of the baseline programmes by securing the productivity gains in spite of climate change driven risks, primarily in two districts (Mangochi and Machinga), which cover an area of over a million hectares with a total population of about one million people, with a roughly 50:50 distribution on gender lines. The project is expected to work directly in villages with about 25% of the population (up to 250,000 people). Women and youth constitute a large percentage of farmers; broad participation of all relevant groups will be secured through formulation of a gender strategy to guide targeting of project initiatives. Specifically, it will improve household food security, nutrition and incomes by increasing and diversifying farm productivity with low input costs and

expansion of irrigation. Adoption of the climate safe post harvest management technologies and practices will increase food security by reducing post harvest losses of grains. The Agroforestry systems to be introduced by the project will be an important source of timber and fuelwood. This will take pressure off forests, reducing deforestation. Agroforestry systems also tend to sequester much greater quantities of carbon than agricultural systems without trees. Planting trees in agricultural lands is therefore a relatively efficient and cost effective mitigation strategy, and provides a range of co-benefits important for improved farm family livelihoods and climate change adaptation. Trees in the farming system will help increase farm incomes and diversify production and thus spread risk against agricultural production or market failures, furthering their resilience to climate change. Trees on farm also provide an opportunity for Integrated Food and Energy Systems (IFES), which increase food and energy simultaneously.

44. Improved water harvesting will modify water flow during both droughts and heavy rains, further reducing the impacts of droughts and floods on farmers and food security. Together with increased water harvesting by rural dwellings, these measures will increase water availability, reducing the cost (labour, illnesses) incurred through the current difficulties in regulating water for domestic use throughout the year. Better regulation of water to reduce floods during heavy rainfall years will further reduce the damages to infrastructure, including urban dwellings. This will reduce vulnerability to climate change induced disruptions and damages to urban dwellers, who constitute about 15% of the one million people (in the two districts).

B.4 Risks, including climate change risks that might prevent the project objectives from being achieved, and risk mitigation measures (to be further developed during PPG):

45. The success of this project is predicated upon shifting the mindset of district administrations, local authorities and land and resource users to accept and act on two issues: i) that the integration of climate change adaptation in development plans, programmes and land use practices makes economic sense and reduces the risks of climate-induced losses and damages over the long term; ii) that a combination of ecological, physical and policy measures provide a more cost effective means of adaptation, and thus of improving the effectiveness of the baseline programmes. The greatest risk to the project is resistance to the inter-departmental collaboration in a harmonised approach to the project implementation, driven by reluctance to change the sectoral approach to development. An additional risk is that development planners prioritize speed over quality of infrastructure investments, especially if the required coordination and cooperation within the sectors is perceived to be difficult and/or complicated.

46. This risk will be mitigated by creating the highest political support and buy-in of the project initiatives, particularly through the involvement of the Ministries of Finance and Development Planning and Local Government and Rural Development, starting from the PPG stage. This will be complemented by an awareness raising programme and support to a simplified institutional arrangement for the collaboration. The training programme will also raise awareness and provide relevant skills and an incentive for climate risk considerations. There is considerable awareness in the project area about the need to deal with the risks of climate change. This awareness is however of a general nature, raised through the considerable work on climate change conducted by UNDP and other development partners, including local NGOs. What is lacking is specific engagement with the key stakeholders, providing them with specific information, tools and technologies of addressing specific problems. The project will build on the conducive environment to mitigate risks of limited stakeholder engagement.

47. There are two additional risks to the long-term impacts of the project: i) that local systems, capacities and skills are inadequately applied to run and maintain the infrastructure introduced through the project, at a personal and/or common/public level, particularly the small dams, the terraces, soil bunds, and, the improved grain storage systems: ii) that the political considerations cause a reluctance to linking some of the baseline programmes (particularly the agricultural subsidy programme) to adoption by district councils of climate smart policies as a prerequisite for a communities/districts accessing the agricultural subsidy benefits. It is the mitigation of the two risks that forces this project to have a strong component on institutional arrangement for continued maintenance and mainstreaming of policy considerations,

supported by a training programme that is geared towards increasing the understanding of the risks posed by climate change to the current levels of development, no matter how modest the development, at the individual, household, community and national levels.

48. The appropriate institutional arrangement required for the long term maintenance of the infrastructure introduced through the project will be identified and its operationalization facilitated under component two, output 2.2.1. Linking this project to the National Climate Change programme will provide additional risk mitigation measures. The extension service will be strengthened to lead, at the district level, the awareness, knowledge and skills required for integrating climate smartness into the district and household development initiatives.

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:

49. As discussed in section B.1 of this PIF, the proposed project will coordinate closely with public, private and communal stakeholders that are involved in the Agriculture Input subsidy programme and the decentralized development process, led by the Ministry of Agriculture, Irrigation & Water Development and Local Government and Rural Development respectively, with heavy involvement of the Ministry of Finance and Development Planning, who apart from setting up and distributing budgets, is also the parent ministry for the National Climate Change programme and chair of the Steering Committee. This project will be led by the Ministry of Local Government and Rural Development, with the involvement of other government, civil society and private sector entities. Execution will be led by the District Councils of Mangochi and Machinga Districts. All the relevant ministries are represented in the District councils including the following:

- The Ministry of Natural Resources, Energy and Environmental Affairs, which has been instrumental in the formulation of environmental policies, and coordination of their implementation through the other ministries. This includes the national adaptation strategies, which now need to be localized at the district level.
- The ministry of Agriculture, Irrigation and Water development, which drives the agricultural input subsidy programme and is mandated to implement the ASWAp. This ministry hosts the extension service, which is the knowledge hub for drought risk assessment and trains farmer communities on adopting strategies to mitigate negative impacts of climate change on crop production. The ministry has the expertise to train in-service officers on climate change impacts on agriculture and water resources. These programmes are conducted at schools of agriculture and in-service training institutions of throughout the country.
- Ministry of Finance and Development Planning, which approves fiscal flows to regions, monitors the MGDS, and has a stake in ensuring that regional development is balanced and not undermined by environmental risks;
- Ministry of Education, Science and Technology – which is responsible for the development and delivery of basic and higher education, and has a strategic position in ensuring that i) climate change training becomes part of the school curricula; ii) research informs education and the development and/or modification of technologies for addressing climate change risks.
- Transport and Public Infrastructure and Lands, Housing and Urban Development, which are responsible for the infrastructure development, and has a stake in ensuring that climate change risks are factored into existing and new developments, to secure long-term safety.
- Gender, Child & Community Development, responsible for ensuring equitable development across gender and communities.

50. Climate change is affecting women, men and the youth differently in Malawi, making the gender dimension of equality and women's empowerment a critical consideration in the design of the project. The participation of all sectors of the population (men, women, youth) is critical for identifying appropriate adaptation measures and their sustainability. For example, women in Malawi are often in charge of household food security and water management; if they are not consulted about the location of

new water collection and storage infrastructure, or their views about household water shortages during dry periods are not integrated into the design of new buffer capacities, the new infrastructure may fail to provide sufficient water security in times of the greatest need. In addition, improper land use planning of new water infrastructure may actually increase women's burdens. Targeting of project driven solutions is enhanced by the complementarities of the specific knowledge and skills of the gender groups, which will increase the precision of responding to their specific needs and ensuring that both benefit equally from the proposed project.

51. Vulnerable communities and local authorities are the key stakeholders of this project and will be engaged in all project components. They will contribute to the ground-truthing of hazard zonation maps and vulnerability profiles; develop skills in recognizing and addressing climate risk issues in village development plans; and benefit from additional investments that make particular investment plans in vulnerability hot-spots more resilient to climate change-related shocks and stresses. NGOs and CBOs which are active and committed to work on issues of natural resource and disaster risk management in the target districts will be trained through the project to work as local partners on the development of community-based adaptation schemes. Existing institutional relationships that have emerged from the Agricultural input subsidy programme will be utilized, thereby saving costs and avoiding risks of duplication.

52. The proposed project will work closely with Universities in Malawi, Research institutions and professional bodies for engineering, architecture, environment, agriculture, irrigation and others as appropriate to source technical expertise. It will form close partnerships with civil society and advocacy bodies to raise the profile of the climate change issue and support project activities, particularly those aimed at building awareness of the decision makers. Partnerships with public sector training institutions such as the Malawi Institute for Development Administration and the Local Government Institute will support training of civil servants under Outcome 2 of the proposed project.

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

53. The implementation of the proposed project will ensure that the LDCF investments builds on all other related investments in the project area (and national level) described in the baseline section, ensuring that it does not duplicate efforts or waste resources. **It will therefore be closely coordinated with all the programmes and projects described in the baseline section.** It will also be closely coordinated with the additional programmes (not described in the baseline) outlined below. In will be coordinated with the national level initiatives on undertaken by other development partners, including the 3 GEF financed projects in the Shire Basin; these are the UNDP SLM project, the Africa Development Bank LDCF project on agriculture and climate change and the World Bank led project on natural resources management and climate change. Although all the three projects share similar objectives on adaptation, none of them overlap geographically. Preliminary investigations during the PIF preparation verified that there is no project in Mangochi and Machinga districts which makes a targeted effort at integrating climate change adaptation and climate risk management principles into the two important baseline programmes (input subsidy and decentralized development). The proposed project will therefore be particularly closely coordinated with the non-GEF part of the AfDB LDCF project grant of US\$ 23.6 million dollars approved in 2009 to finance the Malawi Agricultural Infrastructure Support Project (AISP). The objective of the AfDB Grant support is to enhance agricultural productivity and strengthen Malawi's overall food security through increased irrigation and efficient agricultural water management in the three Agricultural Development Divisions of Salima, Blantyre and Shire Valley. It is expected that when fully implemented this AfDB grant would enhance the participation of an estimated 10,000 household commercial agriculture farmers within the region. The main components of the project include infrastructure development, capacity building, as well as project management and coordination.

54. The project will also be closely coordinated with the Post-Harvest Loss Reduction and Small Scale Irrigation Enhancement (PHASE), a CARE/GoM project that aims to increase food security through three interrelated objectives namely; i) increased agricultural production through small-scale irrigation

activities; ii) disseminate information on appropriate technologies for grain harvest and post-harvest loss reduction; iii) enhanced community capacity to sustain food security initiatives. The proposed LDCF project will also be closely coordinated with the recently launched European Community (EC) initiative, calling on private sector and other interested parties to bid for grants to improve the Livelihood of Rural Households in Malawi through Improvement in Post-harvest Storage and agroprocessing, diversification of agricultural production and increased agribusiness.

55. The EC grants (mobilized through proposals) will be issued to ensure that post harvest storage and processing is improved through measures that increase agro-processing, improve post harvest storage capacity (building improved granaries, storage warehouses), reduce post harvest losses (drying and storage of foods) and increase packaging facilities. They will also support increased productivity and diversification of smallholder agriculture through measures that assist in the dissemination of marketing information between potential supplies / production and demand / market, that promote agri-business, support farmers through training and learning by doing exercises in agriculture business management, and, promote agribusiness in various commodities (piggery, dairy, feed, horticultural, meat and abattoirs, aquaculture and other business).

56. In addition, the proposed project will be closely coordinated with community-based initiatives financed by the GEF Small Grants Programme, which has been operational in Malawi since 1996. The SGP in Malawi supports capacity development in community-based organizations and have provided a number of opportunities for community-based adaptation, mitigation and the diversification of livelihoods. So far, more than 7 million US\$ have been disbursed through the Small Grants Programme mechanism in Malawi over the course of the last 14 years, much of it in the southern region. Some of the good models developed are currently being replicated in conflict affected areas. The project will further be closely coordinated with the Millennium Village Development, which works with leading companies, non-governmental organizations, philanthropies, and millions of interested citizens, to unite efforts to achieve the Millennium Development Goals in the world's poorest countries. In Malawi, it assists one village in Mchinji and one village in Zomba districts to access basic development support including health, water, financial services and diversification of agriculture.

57. Coordination between the proposed and the existing GEF (and other adaptation projects) in the Shire basin (and nation-wide) will be ensured through two platforms, one national and one regional, as follows: i) the Sustainable Land Management Platform – this is a national platform supported by the TerrAfrica Partnership which brings together key stakeholders (including communities, academia, civil society, government and donors) to dialogue on important factors around land management and the factors influencing it in Malawi. Climate change is a one of the pillars of the National SLM Platform and dialogue. Indeed, the Climate Change Programme is coordinated by the partners under this pillar, which forms linkages between climate change and other aspects of land management. The World Bank, AfDB, Norwegian government, UNDP are all members of this pillar, providing an avenue for generating and sharing lessons on the various climate change projects and initiatives under their portfolios: ii) The District Councils – at the regional level, the climate change pillar of the SLM Platform will interact with the project through the district council, which is constituted by members of all the relevant government ministries, local community groups and local civil society. This platform will be used to channel lessons from outside the project area and out of the project implementation to the rest of the country.

C. UNDP's comparative advantage to implement this project:

58. UNDP has a long-standing history of supporting climate change adaptation and disaster risk reduction in the world, Africa and Malawi. Currently, UNDP's portfolio in Malawi has 30 active projects under 4 clusters namely: Environment/Climate Change/Disaster Risk Reduction, Growth and Millennium Development Goals, Capacity Development, and Governance. The portfolio balances between policy and programme support, spanning from national facilitation to local level implementation support. At the policy level, UNDP is supporting the government to mainstream climate change considerations into national development through the National Climate Change Programme (US\$4,200,000, with

contributions from DfID, Norway, Spain and Flemish Government, routed through the One UN Fund). The National Climate Change project partners with the Africa Adaptation Programme (US\$3,900,000 from the Japanese Government), another project supported UNDP, to build the capacity of national and local government institutions and key civic-society stakeholders towards climate change. Piloted in the 7 NAPA districts, the partnership programme supports the development of comprehensive climate change adaptation strategies linked to long-term investment plans. Coordinated by the Ministry of Finance and Development Planning (MoFDP), the programme works with other Priority Sector Ministries, most notably the Ministry of Natural resources, Energy and Environment, as well as non-state implementing agencies and coordinating institutions that are represented in the National Climate Change Technical Committee. The programme is overseen by the National Climate Change Steering Committee. Experiences and lessons gained from this partnership will inform component 2 of the proposed LDCF project on: mainstreaming climate change considerations into the district development programmes, climate proofing the decentralization policy implementation.

59. Further mainstreaming experience, knowledge and lessons will be provided by additional initiatives: the Poverty and Environment Initiative: UNDP-UNEP Poverty and Environment Initiative (PEI) which supports the Government to include environmental sustainability as a core objective in national development planning (e.g. Malawi Growth and Development Strategy) & implementation so that poverty reduction and other economic development objectives are not undermined by the unsustainable use of natural resources. Build capacity so that decision-makers know: How environmental sustainability contributes to development; and How to include environmental sustainability in development planning & implementation. Further lessons on mainstreaming policy will be provided from the UNDP project titled: “Financial Inclusion in Malawi (FIMA): 2007-2011”; a partnership between UNDP and the United Nations Capital Development Fund (UNCDF) that supports the Ministry of Finance to expand the participation of local communities in the financial sector. Under the new UNDAF 2012 – 2016, emphasis is being laid on the support to Government to prepare and operationalize the Integrated Rural Development Strategy, in coordination with other Development Partners (Norway, GiZ)

60. Practical field level experiences will be provided through the current portfolio of field-based initiatives, primarily through the expansive Small Grants Programme, which has to-date implemented projects worth USD 7 million in Malawi, several of them on climate change initiatives (both mitigation and adaptation). Under the Governance programme, UNDP is supporting the implementation of a project on “Democracy Consolidation and Improved Local Service Delivery”, which aims at increasing the effectiveness of participation of communities in decision-making, and in advocating changes to policies, laws, and practices which affect their livelihoods and rights; including holding public bodies accountable. Through these two initiatives, UNDP has gained useful experience in facilitating local process, particularly with local councils and the land users. This experience will be applied in both component 1 and 2 of the proposed LDCF project.

61. UNDP has also gathered experience in working with District Councils. Under the “Access to Justice Programme”, UNDP has worked with the Malawi Human Rights Commission (MHRC) to ensure that human rights are protected and promoted at the district level through sensitization on human rights and their responsibilities to influential local leaders like chiefs, village headmen and other community leaders. In 2010, a total of 52 cases from various districts in the country on allegations of violations of rights were investigated with 26 cases litigated. Alternative Dispute Resolution (ADR) was conducted to identify the appropriate remedies on the major human right issues.

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

62. A large component of the UNDP 2012-2016 CPD and the UNDAF Action Plan will focus on strengthening climate and disaster risk reduction, mainstreaming environment into development and building capacity for delivering pro-poor development at all levels. UNDP will therefore contribute US\$3,500,000 as direct co-financing and indirect co-finance to the proposed LDCF project. These funds will be used to support the development of the baseline capacity required for the effective implementation

of the project in the two districts. These will include training on climate change related subjects, assessing policies and identifying policy gaps for mainstreaming climate change considerations into development processes, as well as providing operational capacity such as office space and equipment. This will also be enhanced through the recently approved UN:CC Learn programme, implemented through the United Nations Institute for Training and Research (UNITAR) and funded through the Swiss development Cooperation (US\$180,000), which focuses on Climate Change Learning at different levels.

C.2 Project fit into UNDP's programme (reflected in documents such as CPD, UNDAF, etc.) and staff capacity in the country to follow up project implementation:

63. The project is in line with the new Country Programme Document (CPD) and UNDAF for 2012-2016. The UNDAF's goal is to promote equitable and sustainable growth in Malawi that contributes to faster and more effective poverty reduction and sustainable use of natural resources in a changing climate. Guided by the UN comparative advantage, findings of the UN Country Assessment and the goals and targets of the MGDS II, the UNDAF has four priority areas of cooperation deemed to be particularly critical for United Nations support to the people and the Government of Malawi. They are: (i) sustainable and equitable economic growth and food security; (ii) basic social and protection services; (iii) HIV and AIDS; and (iv), governance. UNDP's 2012-2016 CPD will contribute to all the UNDAF's themes, and in particular deliver on the Key Performance area on KPAs: Agriculture and food security, Climate change, Natural Resources and Environmental Management; where it will be embedded in outcome 1.3 on "Targeted population in selected districts benefit from effective management of environment, natural resources, climate change and disaster risk by 2016". The proposed project is therefore in full compliance with UNDAF, its Action Plan and UNDP CPD. The UNDAF Action Plan in particular has an adaptation-related focus, and seeks to reduce vulnerability to climate change through the sustainable management of natural resources and the systematic promotion of disaster risk reduction.

Part III: Approval/endorsement by GEF Operational focal point and GEF agency

Endorsement of GEF Operational Focal Point on Behalf of the government:

| NAME | POSITION | MINISTRY | DATE <i>(MM/DD/YYYY)</i> |
|-------------------------|---|---|------------------------------------|
| Dr. A.M. Kamperewera | Director, Environmental Affairs Department, and GEF Operational Focal Point | Ministry of Natural Reources, Enenrgy & Environment | December 9, 2011 |

UNDP Certification

| This request has been prepared in accordance with GEF policies and procedures and meets the GEF criteria for project identification and preparation. | | | | | |
|--|---|----------------|---|------------------|------------------------------|
| Agency Coordinator, Agency name | Signature | Date | Project Contact Person | Telephone | Email Address |
| Yannick Glemarec, Executive Coordinator, UNDP/GEF |  | April 16, 2012 | Veronica Muthui Regional Technical Advisor (Gr-LECRDS) | +27123548124 | veronica.muthui@ undp.org |

Annex 1: Mapping project outcomes against the Malawi NAPA priority projects

| NAPA Projects | Proposed LDCF Project outcomes mapped alongside the NAPA projects | | | |
|---|--|---|--|--|
| 1: Improving community resilience to climate change through the development of sustainable rural livelihoods | | Outcome 1.2: Ecological measures complementing physical water management infrastructure to reduce risk of climate change induced floods and enhance resilience against unusually harsh and frequent droughts in selected hotspots (covering over 10,000 ha of farmlands); Outcome 2.2: Upscaling – An upscaling strategy defined and implemented to increase the resilience of upper Shire communities from climate change-induced risks | Outcome 2.1: Adoption of climate safe post harvest management technologies and practices by more than 50% of grain farmers reduce climate induced grain loss by more than 30% in Machinga district | Outcome 2.1: District level civil works (infrastructure / building) regulations integrate climate risk information and adaptation measures |
| 3. Improving agricultural production under erratic rains and changing climatic conditions | Outcome 1.1: Public and domestic water harvesting, storage and distribution reduces climate change driven flooding and regulates availability of water throughout the year in flood & drought hotspots | | | |
| 4. Improving Malawi's preparedness to cope with droughts and floods | | | | |
| 2. Restoring forests in the Upper, Middle and Lower Shire Valleys catchments to reduce siltation and the associated water flow problems | | | | |