



GEF-6 REQUEST FOR PROJECT ENDORSEMENT/APPROVAL

PROJECT TYPE: Medium-sized Project

TYPE OF TRUST FUND: GEF TRUST FUND

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PART I: PROJECT INFORMATION

Project Title: Enhancing sustainability of Protected Area systems in Malawi, and stabilizing agro-production in adjoining areas through improved IAS management			
Country(ies):	Malawi	GEF Project ID: ¹	9539
GEF Agency(ies):	UN Environment	GEF Agency Project ID:	01404
Other Executing Partner(s):	Environmental Affairs Department in the Ministry of Natural Resources, Energy and Mining	Resubmission Date:	February 12, 2018
GEF Focal Area (s):	BD	Project Duration (Months)	60
Integrated Approach Pilot	IAP-Cities <input type="checkbox"/> IAP-Commodities <input type="checkbox"/> IAP-Food Security <input type="checkbox"/>	Corporate Program: SGP <input type="checkbox"/>	
Name of Parent Program	[if applicable]	Agency Fee (\$)	142,739

A. FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES²

Focal Area Objectives/Programs	Focal Area Outcomes	Trust Fund	(in \$)	
			GEF Project Financing	Co-financing
BD-1 Program 1	Outcome 1.2: Improved management effectiveness of protected areas.	GEFTF	701,255	1,970,000
BD-2 Program 4	Outcome 4.1 Improved management frameworks to prevent, control, and manage invasive alien species (IAS)	GEFTF	801,256	3,194,147
Total project costs			1,502,511	5,164,147

B. PROJECT DESCRIPTION SUMMARY

Project Objective: To prevent new invasions and reduce the current impacts of invasive alien species (IAS) in protected areas and adjoining agro-ecosystems in Malawi						
Project Components	Financing Type ³	Project Outcomes	Project Outputs	Trust Fund	(in \$)	
					GEF Financing	Co-financing
1. Establishing a national framework and capacity to enhance IAS management in protected areas and associated agro-ecosystems	TA	Outcome 1.1. Strengthened national IAS frameworks and improved national capacity and coordination amongst different government agencies and the private sector to respond to existing and new invasive species problems throughout Malawi, with a focus on protected areas and their adjoining agro-ecosystems	1.1.1. National framework for the cross-sectoral management of IAS operational and supporting long-term development planning: 1.1.2. Evidence base informing policy and supporting IAS prevention and management in and around PAs	GEFTF	342,260	1,008,000
2. Strengthening IAS management in existing protected areas	TA/INV	Outcome 2.1. Reduced IAS impacts in two PAs (Mulanje FR and Nyika NP) resulting in enhanced	2.1.1. Two revised PA Management Plans including strategies and budgets for IAS prevention and control	GEFTF	670,000	2,409,432

¹ Project ID number remains the same as the assigned PIF number.

² When completing Table A, refer to the excerpts on [GEF 6 Results Frameworks for GETF, LDCF and SCCF](#) and [CBIT programming directions](#).

³ Financing type can be either investment or technical assistance.

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and adjoining agro-ecosystems		<p>conservation outcomes for endangered or threatened species.</p> <ul style="list-style-type: none"> • GEF TT scores up with 50% on IAS management & 10% up on PA METT • Increased budgets for IAS management in two protected areas, involving a total of 50,000 ha under IAS management • Invaded areas (150 ha total) in two protected areas cleared and restored <p>Outcome 2.2. Reduced IAS impacts in adjoining agro-ecosystems of Mount Mulanje FR and Nyika NP contributing to improved livelihoods and biodiversity conservation</p> <ul style="list-style-type: none"> • Invaded areas (total 100 ha.) adjoining two protected areas cleared and restored, through expanded partnership between PAs and farmers • 15 % enhanced tree cover in PA buffer zones (baseline to be set at PPG) • Sustainable farming practices adopted by 50 households and incorporating IAS prevention and control 	<p>2.1.2. Tested management plans for four IAS, including IAS control and habitat restoration in two protected areas (see Table 2)</p> <p>2.1.3. Capacity of 80 protected area staff improved and applied in the identification and management of IAS</p> <p>2.1.4. Biocontrol Working Group established and operational leading to the introduction of three host specific and damaging biocontrol agents</p> <p>2.2.1. Invaded rangelands (100 ha. total) in buffer zones/agro-ecosystems of two adjoining PAs cleared and restored (native trees) through enhanced partnerships between PA staff and farming communities, including the training of 100 farmers in IAS identification and management.</p> <p>2.2.2. Sustainable farming practices such as Farmer Managed Natural Regeneration (FMNR), Conservation Agriculture (CA), including crop rotation, crop integration and cover cropping adopted and promoted by 50 households as a result of training and demonstration trials.</p>				
3. Knowledge management and broader adoption	TA	<p>Outcome 3.1. Replication and increased adoption in the Malawi PA system of IAS prevention and management through national dissemination of best practice and awareness programs.</p>	<p>3.1.1. Communication strategy and outreach campaigns including use of media, workshops and meetings (targeting government officials, PA staff and affected communities)</p> <p>3.1.2. National information sharing procedures including the development of a Guide on the identification and management of invasive plant species in Malawi.</p> <p>3.1.3. Project M&E program, evidence of IAS monitoring capacity built and implemented in PA's and their agro-ecosystems</p>	GEFTF	353,659	1,230,300	
Subtotal						1,365,919	4,647,732
Project Management Cost (PMC) ⁴					GEFTF	136,592	516,415
Total Project Cost						1,502,511	5,164,147

⁴ For GEF Project Financing up to \$2 million, PMC could be up to 10% of the subtotal; above \$2 million, PMC could be up to 5% of the subtotal. PMC should be charged proportionately to focal areas based on focal area project financing amount in Table D below.
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C. CONFIRMED SOURCES OF CO-FINANCING FOR THE PROJECT BY NAME AND BY TYPE

Please include evidence for co-financing for the project with this form.

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount (\$)
Recipient Government	Environmental Affairs Department	Grant	187,500
Recipient Government	Environmental Affairs Department	In-kind	365,500
Recipient Government	Department of National Parks and Wildlife	Grant	60,000
Recipient Government	Department of National Parks and Wildlife	In-kind	450,000
Recipient Government	Department of Agricultural Research Services	Grant	100,600
Recipient Government	Department of Agricultural Research Services	In-kind	457,700
Recipient Government	Department of Land Resources Conservation	Grant	92,200
Recipient Government	Department of Land Resources Conservation	In-kind	595,500
Recipient Government	Forest Research Institute of Malawi	In-kind	354,052
Recipient Government	Department of Forestry	Grant	178,800
Recipient Government	Department of Forestry	In-kind	503,800
Recipient Government	National Herbarium and Botanical Gardens	In-kind	235,800
Recipient Government	Museums of Malawi	Grant	191,000
Recipient Government	Museums of Malawi	In-kind	110,000
Recipient Government	Peace Parks Foundation	Grant	355,000
GEF Agency	United Nations Environment	In-kind	100,000
Others	Mount Mulanje Mountain Conservation Trust	In-cash	100,000
Others	Mount Mulanje Mountain Conservation Trust	In-kind	200,000
Others	Nyika Vwaza (UK) Trust (NVT-UK)	In-kind	65,000
Others	Nyika Vwaza (MW) Trust (NVT-MW)	In-kind	75,000
Others	Total Land Care (TLC)	In-kind	60,000
Others	Queensland Biosecurity, Australia	In-kind	76,695
Others	Centre for Agriculture and Biosciences International (CABI)	In-kind	250,000
Total Co-financing			5,164,147

D. TRUST FUND RESOURCES REQUESTED BY AGENCY(IES), COUNTRY(IES), FOCAL AREA AND THE PROGRAMMING OF FUNDS

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	(in \$)		
					GEF Project Financing (a)	Agency Fee (b) ^{b)}	Total (c)=a+b
UNEP	GEFTF	Malawi	Biodiversity		1,502,511	142,739	1,645,250
Total GEF Resources					1,502,511	142,739	1,645,250

a) Refer to the Fee Policy for GEF Partner Agencies

E. PROJECT'S TARGET CONTRIBUTIONS TO GLOBAL ENVIRONMENTAL BENEFITS⁵

Provide the expected project targets as appropriate.

Corporate Results	Replenishment Targets	Project Targets
1. Maintain globally significant biodiversity and the ecosystem goods and services that it provides to society	Improved management of landscapes and seascares covering 300 million hectares	385,000+ ⁶ .

F. DOES THE PROJECT INCLUDE A "NON-GRANT" INSTRUMENT? NO

⁵ Update the applicable indicators provided at PIF stage. Progress in programming against these targets for the projects per the *Corporate Results Framework* in the GEF-6 Programming Directions, will be aggregated and reported during mid-term and at the conclusion of the replenishment period.

⁶ Total size of two PAs (NNP and MMFR) is 385,000 ha. Direct benefits through clearing of IAS in 150 ha in both PAs and 100 ha in adjoining agro-ecosystems. Indirect benefits to both PAs through improved prevention, early detection and rapid response of new infestations, as well as monitoring of IAS. These activities will also benefit other PAs in Malawi and biodiversity conservation throughout the country.
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(If non-grant instruments are used, provide an indicative calendar of expected reflows to your Agency and to the GEF/LDCF/SCCF/CBIT Trust Fund) in Annex D.

PART II: PROJECT JUSTIFICATION

A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN WITH THE ORIGINAL PIF⁷

PIF Elements & Text	CEO ER Elements	Explanation of Changes
Component 1: Establishing a national framework and capacity to enhance IAS management in protected areas and associated agro-ecosystems	Component 1: Establishing a national framework and capacity to enhance IAS management in protected areas and associated agro-ecosystems	No changes
Outcome 1.1: National IAS policy and improved national capacity and coordination amongst different government agencies and the private sector to respond to existing and new invasive species problems throughout Malawi, with a focus on protected areas and their adjoining agro-ecosystems	Outcome 1.1: National IAS frameworks and improved national capacity and coordination amongst different government agencies and the private sector to respond to existing and new invasive species problems throughout Malawi, with a focus on protected areas and their adjoining agro-ecosystems	Targeted ‘policy’ changed into ‘national framework’ also better in line with GEF strategic objective on IAS work,
Output 1.1.2: Evidence base established and communicated for IAS prevention and management in and around PAs	Output 1.1.2: Evidence base informing policy and supporting IAS prevention and management in and around PAs	Slight changes in wording to make it clearer as to which changes are envisaged
Component 2: Strengthening IAS management in existing protected areas and adjoining agro-ecosystems	Component 2: Strengthening IAS management in existing protected areas and adjoining agro-ecosystems	No changes
Outcome 2.1: Reduced IAS impacts in five selected protected areas resulting in enhanced conservation outcomes for endangered and threatened species	Outcome 2.1: Reduced IAS impacts in two selected protected areas resulting in enhanced conservation outcomes for endangered and threatened species	We have reduced the number of PAs to two - in which we will actively reduce the distribution and abundance of IAS in order to be more effective and have more of an impact. It was felt during the PPG workshop in Malawi that we would be spreading ourselves too thin by undertaking clearing activities in 5 PAs. As a result the total area for IAS control has been reduced from 75,000 ha to 50,000 hectares in total for the two PAs. METT score reduced from 20% to 10% for each PA based on field realities assessed during PPG
Output 2.1.1: Five revised PA Management Plans including strategies and budgets for IAS prevention and control	Output 2.1.1: Two revised PA Management Plans including strategies and budgets for IAS prevention and control	See explanation above
Output 2.1.2: Tested management plans for six IAS, including IAS control and habitat restoration in three of the five protected areas	Output 2.1.2: Tested management plans for four IAS, including IAS control and habitat restoration in two protected areas	In order to be more effective and have a greater impact we have reduced the number of targeted invasive plants from six to four. This will allow us to undertake more treatments and have more replicates – it will improve the scientific rigour of our trials. This was recommended during the PPG workshop in

⁷ For questions A.1 –A.7 in Part II, if there are no changes since PIF, no need to respond, please enter “NA” after the respective question.

PIF Elements & Text	CEO ER Elements	Explanation of Changes
		Malawi
Output 2.1.3: Capacity of 50 protected area staff improved and applied in the identification and management of IAS	Output 2.1.3: Capacity of 80 protected area staff improved and applied in the identification and management of IAS	Based on recommendations during the PPG workshop it was recommended that we increase the number of staff for training due to the fact that most Forestry Department and Department of National Parks and Wildlife staff are not aware of the IAS issue and how best to manage invasive plants
Outcome 2.1: Invaded areas (150 ha total) in three protected areas cleared and restored	Output 2.1.5: Invaded areas (150 ha total) in two protected areas cleared and restored	Should have been an additional output in the PIF. Invasive plants will only be cleared in two PAs (Nyika NP – 100 ha and Mount Mulanje FR – 50 ha)
Outcome 2.2: Reduced IAS impacts in adjoining agro- ecosystems of five selected protected areas contributing to improved livelihoods and biodiversity conservation	Outcome 2.2: Reduced IAS impacts in adjoining agro- ecosystems of two selected protected areas contributing to improved livelihoods and biodiversity conservation	Similar to some of the comments made above. Best to be focussed in our approach and make a significant difference at two sites than spread ourselves to thin and achieve little overall.
Output 2.2.1: Invaded areas (150 ha. total) in agro-ecosystems of three adjoining protected areas cleared and restored	Output 2.2.1: Invaded rangelands (100 ha. total) in buffer zones/agro-ecosystems of two adjoining protected areas (Nyika NP and Mount Mulanje FR) cleared and restored (native trees) through enhanced partnerships between PA staff and farmer communities, including the training of 100 farmers on IAS identification and management.	Combined outputs 2.2.1; 2.2.2; and 2.2.4 in order to reduce the number of outputs – no changes in the original outputs,; they have merely been combined. However, the area to be cleared has been reduced from 150 to 100 ha and only two instead of three areas will be cleared. Reasons are similar to those explained above – to have a more focussed approach which will increase the probability of success. The % increase in tree cover has now been confirmed and set as 15% increase of LOP
Output 2.2.2: Increased collaboration between PA managers and farmers with regard to IAS management including the promotion of native trees to enhance crop and livestock production		Included in the revised Output 2.2.1.
Output 2.2.3: Sustainable farming practices, including Farmer Managed Natural Regeneration (FMNR) adopted and promoted by 50 households	Output 2.2.2: Sustainable farming practices such as Farmer Managed Natural Regeneration (FMNR), Conservation Agriculture (CA), including crop rotation, crop integration and cover cropping adopted and promoted by 50 households as a result of training and demonstration trials	Expansion of the original Output 2.2.3 to include CA and other agricultural practices and something on training and demonstration trials to facilitate adoption. Needed to make it clear that we will be promoting other practices and that adoption will be facilitated by training and demonstration trials in line with the revised Output 2.2.1.
Output 2.2.4: One hundred farmers trained in the identification and management of IAS.		Included in the revised Output 2.2.1
Component 3: Knowledge management and broader adoption	Component 3: Knowledge management and broader adoption	No changes
Outcome 3.1: Lessons learnt, documented and disseminated and awareness programs to facilitate replication and broader adoption in the Malawi National PA system established.	Outcome 3.1: Replication and increased adoption in the Malawi PA system of IAS prevention and management through national dissemination of best practice and awareness programs.	Changed in wording based on QAS review of the results Framework; and in order to make it clearer
Output 3.1.1: Communication strategy developed and implemented for PAs	Output 3.1.1: Communication strategy and outreach campaigns including use of	Combined Output 3.1.1. and Output 3.1.2.

PIF Elements & Text	CEO ER Elements	Explanation of Changes
and agro-ecosystems	media, workshops and meetings targeting two levels of national and local government, as well as staff and affected communities of the two protected areas.	
Output 3.1.2: Outreach campaigns including use of media, workshops, and meetings, targeting government officials, protected area staff and affected communities		Combined Output 3.1.1. and Output 3.1.2.
Output 3.1.4: Project M&E program developed, IAS monitoring capacity built and implemented in PAs and their agro-ecosystems.	Output 3.1.4: Project Impact Monitoring System developed, capacity built and results reported.	Change in wording

A.1. Project Description

A.1.1 The global environmental and/or adaptation problems, root causes and barriers that need to be addressed

Threats:

Invasive alien species (IAS) are those plants, animals and microbes which are introduced to new regions, as a result of human activities, where they establish and spread, impacting negatively on biodiversity, agriculture, water resources, and human health (Pimentel et al., 2001). IAS pose one of the most important threats to biodiversity in Malawi. Malawi's Clearing House Mechanism under the CBD identifies four major threats to biodiversity -- habitat loss and fragmentation, invasive alien species, population pressure and poverty – and further states that “the major threats to biodiversity are from invasive plants.” Both protected landscapes and productive landscapes in Malawi are vulnerable to IAS. Productive lands are frequently subject to land degradation from human activities such as unsustainable agriculture and livestock grazing, overharvesting of forests, etc., which makes them more vulnerable to IAS, as healthy ecosystems are generally more resilient to plant invasions. As IAS establish and spread in degraded productive lands, reductions in crop yields and pasture production due to IAS impacts will increase the reliance of local communities on resources within PAs. In addition, established IAS within areas adjoining PAs will also, in time, invade PAs further threatening biodiversity and increasing IAS management costs. Therefore, in order to protect globally significant biodiversity within PAs, it is critical to not only manage invasive plants within PA sites, but also to restore degraded lands to improve productivity and increase resilience to re-invasion of cleared areas. As such PAs cannot be managed in isolation, a landscape approach is required.

Although national estimates on the costs of IAS in Malawi do not exist, reports from other countries indicate that IAS incur significant costs to the country. For example, the water hyacinth (*Eichhornia crassipes*) is widespread in the Shire River where it affects the generation of hydroelectric power and irrigation programs. The Malawi Compact Environment and Natural Resource Management Project estimates that power shutdowns cause by water hyacinth and other waterweeds that clog up the turbines cost US\$27,000 per day and lead to industrial losses worth ten times this amount. Invasive plants in water catchments and riparian zones, especially shrubs and trees, have a negative impact on water quantity and quality, affecting downstream users. Invasive plants can also have a negative impact on pollinators and reduce the abundance of natural enemies of crop pests, such as insect predators and parasitoids. Weeds, most of which have been introduced, also pose one of the most significant threats to food production by reducing crop yields, especially in developing countries (Oerke, 2006; Gianessi, 2009) such as Malawi, while also contributing to the erosion of ecosystem services (Turpie, 2004; van Wilgen et al., 2008; Strayer (2012). Studies undertaken in other parts of Africa have also revealed that invasive alien plants can reduce pasture production by as much as 71% if not controlled (van Wilgen *et al.*, 2008) – natural pasture is already heavily invaded in Malawi. Livestock production (dependent on pasture) contributes about 20% of the total value of agricultural production in Malawi, consisting mainly of subsistence grazing of sheep, cattle, goats, poultry and pigs (WTO, 2002). IAS also produce significant negative social impacts; in Malawi the vast majority of the population depend on natural resources for food, livelihoods, energy security, as well as a healthy living environment, and the degradation of ecosystem services and productivity from IAS is a major concern. Any activities which prevent the introduction and spread of IAS and mitigate the impacts of those that are already present will therefore benefit the most vulnerable members of Malawian society, especially the poor who are the least able to cope with the negative impacts of IAS on their livelihoods.

The following factors and root causes predisposes Malawi to IAS:

The IAS threatening the unique biodiversity of Malawi are being introduced at an increasing rate through trade, travel (tourism) and transport - the infamous “three Ts”, the major drivers of biological invasion. The risk of such introductions, intentional or accidental,

is growing rapidly as a result of globalization. The introduction of plants for agriculture, silviculture, soil improvement and amenity, including gardening, is increasing, as is the intentional importation of fish for aquaculture, including the aquarium and pet trades.

Trade routes in the form of road and rail and associated transport are the major pathways and vectors for IAS into Malawi. Most imports are from South Africa, followed by Zimbabwe, United Kingdom, Mozambique and the USA. This poses a significant threat as South Africa has the highest recorded number of invasive alien plants in Africa, closely followed by Zimbabwe. Surveys have already revealed that Malawi shares many invasive plants that are already widespread throughout much of South Africa. Imports of cereals from Mozambique are also increasing, another possible source of IAS. In fact imports into Malawi during the last five years have increased at an annualized rate of 0.8%, from \$2.21 billion in 2010 to \$2.29 billion in 2015.

Tourism is an important sector in Malawi with tourist numbers increasing year on year. In 2014 tourism contributed 8% to GDP with a vision to increase it to 13% by 2018. With thousands of tourists visiting Malawi every year and a lack of adequate information services and screening procedures at airports and land borders, the risk of both accidental and intentional introductions is significant.

The impacts of *climate change* in Malawi are being manifested in various ways including intense rainfall, changing rainfall patterns, floods, and prolonged dry spells. An increase in temperatures and intense rain in Malawi over the past 40 years has led to both drought and flooding, resulting in shorter growing seasons, poor crop yields, food shortages, hunger and the spread of disease in a country where 29% of people already now live in extreme poverty. An increase in extreme weather events as a result of climate change will facilitate plant and animal invasions.

Some invasive plant species will also benefit from higher carbon dioxide levels and temperatures (Kriticos and Filmer, 2007). For example, the invasive shrub *Acacia nilotica*, in Australia, is likely to benefit from increases in water-use efficiency as a result of increased CO₂ concentrations, allowing it to invade drier sites, while increased temperatures will allow it to complete its reproductive life cycle in areas which are currently too cool to sustain populations (Kriticos et al., 2003).

Malawi is also *extremely vulnerable* country because it is land-locked, surrounded by Mozambique, Zambia, and Tanzania. An invasive animal or plant species introduced into a neighbouring country within the region is likely to spread into Malawi. For example countries neighbouring Malawi, such as Tanzania, could easily be a source as well as a pathway for new IAS infestations into Malawi through their connected ecosystems, cross border trade and human migration, since hundreds of IAS are already recorded in neighbouring countries.

Rapid population growth coupled with high levels of poverty has contributed to the rapid depletion of natural resources, making Malawi very vulnerable to environmental perturbations which increase susceptibility to biological invasions. A very strong factor contributing to the spread of IAS in Malawi and the region as a whole is the massive conversion of natural habitats to other uses. Increased disturbance and land degradation are major drivers of plant invasions. Productive lands are frequently subject to land degradation from human activities such as unsustainable agriculture and livestock grazing, overharvesting of forests, etc., which makes them more vulnerable to IAS, as healthy ecosystems are generally more resilient to plant invasions. As IAS establish and spread in degraded productive lands, reductions in crop yields and pasture production due to IAS impacts will increase the reliance of local communities on resources within PAs.

Barrier Analysis:

Barrier 1: Inadequate policy, institutional framework and capacity for managing IAS – specifically in protected area landscapes and surrounding agro-ecosystems

One critical issue has been that Malawi does not have a single institution that is primarily responsible for dealing with IAS issues. The lack of clear institutional ownership or an overarching policy on IAS has led to ineffective coordination amongst various agencies, especially those in agriculture, forestry and the environment, and often leads to conflicting recommendations made by different agencies and institutions that constrain the government's ability to generate a unified response to IAS control. This may be partially resolved by the proposed establishment of an Malawi Environmental Protection Authority (MEPA) under the recently promulgated Environmental Management Act of 2017. MEPA will be mandated to coordinate IAS management activities, but until such time, IAS management will continue to be largely uncoordinated.

Another critical barrier to effective IAS management is the fact that Malawi has very few policies or laws specifically established for the management of invasive species, which is instead addressed primarily through sectoral policies and legislation that deal with biodiversity generally, or the prevention and control of agricultural pests. In addition, sectoral policies often promote or encourage the introduction of exotic species without evaluating their potential risk, especially to biodiversity. For example, government departments and NGOs often promote the introduction of exotic agroforestry species without adequate evaluation of the potential costs and benefits.

Only a few laws and regulations in Malawi make specific reference to and promote the management of invasive alien species in the country, two of which fall under the mandate of the Ministry of Agriculture, Irrigation and Water Development. One of these is the Plant Protection Act (Cap 64:01), which provides for the “eradication of pests and diseases destructive to plants to prevent the introduction and spread of pests and diseases destructive to plants, and for matters connected therewith and incidental thereto.” The other is the Noxious Weeds Act (Cap 64:02), which governs the management of declared noxious weeds. However, the existing Acts and their subsidiary regulations are seriously outdated and enforcement weak. That said, the recently promulgated EMA makes many references to IAS, and may provide for a more coordinated and consolidated policy and regulatory approach to IAS.

There is little capacity to develop and implement effective management strategies for IAS already present and impacting on communities, the PA system and various economic sectors; nor have these been incorporated into PA management plans..

There is currently very little or no information available on which IAS are present, their distribution and impacts. The Department of National Parks and Wildlife and the Forestry Department do not have the necessary experience or capacity to conduct proper risk analysis of IAS already in and around PAs. IAS have also not been adequately addressed in PA management plans. The Environmental Affairs Department, Ministry of Natural Resources, Energy and Mines, has no surveillance systems in place nor monitoring data on the main pathways by which these species were initially introduced, how new IAS may be introduced, and how they are currently being moved to new localities. There is also little to no knowledge among practitioners in Malawi on the current policies and regulations in the various Government Departments with responsibility for IAS management. This prevents the agencies from coordinating and collaborating in prevention and management of IAS of national importance.. Without adequate baseline data it is not possible for Malawi to develop or implement effective IAS management strategies at a national, regional, local or even PA level. These capacity issues and knowledge gaps need to be addressed. For example, IAS prevention and management is not incorporated in national agricultural development and poverty alleviation programs, nor adequately addressed in PA management directives or budgets; nor is it clearly targeted in the country’s (agriculture) quarantine and pest management systems.

Barrier 2: Limited experience, partnership and capacity to implement IAS management (prevention, control and restoration) in protected areas and adjoining landscapes

Implementation of IAS prevention and control strategies in Malawi is inadequate to support the conservation of biodiversity and the maintenance of ecosystem services and functions. For example, the GoM takes precautions with regard to the intentional introduction of pests under the Plant Protection Act, but it is mainly concerned with those that pose a risk to agriculture and human health rather than those that may threaten biodiversity. In other words pest risk assessments (PRAs) are often only mainly concerned with the pests associated with, for example, an imported plant rather than the plant itself.

Malawi does not have adequate systems in place to monitor or detect new invasions, or to take effective steps to eradicate them, except in the case of some agricultural pests. Control programs for well-established and widespread IAS are also often inadequate, mainly owing to lack of information, capacity and resources relating to the methodologies for management (mechanical/manual, chemical, biological and restoration). Shortages of institutional, human and physical resources all limit Malawi’s ability to address IAS effectively.

There is little awareness and capacity to develop and implement a national biocontrol programme despite the proven cost-effectiveness of this pest management strategy This is despite the fact that there are a large number of known host-specific and damaging agents for many of the invasive plants present in Malawi, which have been used with great success elsewhere. In addition, no policies in Malawi explicitly advocate Integrated Pest Management (IPM). The main barriers to the adoption of IPM are “insufficient training and technical support to farmers” followed by “lack of favorable government policies and support”.

The benefits of Conservation agriculture (CA) include a reduction in soil erosion, increases in soil organic matter, improvement in soil biological processes and soil fertility, and conservation of soil moisture, all of which have contribute to increased yields However, adoption remains a challenge. Some of the commonly cited barriers include a lack of awareness of the appropriate practices and their benefits, as well as low levels of investment in knowledge dissemination. Agriculture projects run by governments, NGOs, and others often fail to engage with farmers or effectively spread the word about how to accomplish rainwater harvesting, agroforestry, and other practices.

At a PA level the National Parks and Wildlife Act makes no reference to the management of IAS. That said it is stated clearly that the introduction of exotic species into PAs is prohibited. However, based on our preliminary surveys this is not being effectively implemented probably as a result of a lack of knowledge of what is native and exotic.

There is virtually no experience on the management (manual, chemical and cultural control) of environmental weeds other than those which have been targeted for management in Nyika NP and Mount Mulanje FR. These experiences have not been widely shared with staff from other PAs or with communities living adjacent to PAs.

Partnerships are critical in order to be effective in the control of shared IAS, especially for those invasive species which affect multiple sectors all of which are managed or controlled by different entities. IAS are biological pollutants and as such require holistic and coordinated interventions. In other words IAS cannot be managed in isolation. An absence of partnerships also leads to a situation where invasive or potentially invasive agroforestry or other species, such as exotic fish, are introduced by one Ministry without consulting or informing another.

Barrier 3: Insufficient information and understanding of IAS threats and impacts is preventing informed and strategic decision-making for IAS management

There is a serious lack of knowledge and understanding of the issues around IAS in Malawi, at all levels from senior policy makers to local communities. Water hyacinth is an exception, since it has had a serious negative impact on hydro-electric generation in Malawi. Almost everyone in Malawi, especially those living along the shores of Lake Malawi and the Shire River, are familiar with water hyacinth and its impacts. There is also some information on the impacts and management of invasive plants targeted for control in Mount Mulanje FR and NyikaNP. However, based on our preliminary surveys there are a large number of invasive plants in Malawi, the presence of which officials are unaware of, while communities may know the plants but have little knowledge with regard to best management practices. The situation is slightly different for introduced crop pests which are generally better known by officials and communities, although there is still insufficient information available on how best to control them.

Without clear information on IAS, it is not possible to prioritize species for action or to develop and implement national management strategies, especially with regard to early detection and rapid response. Another result of this lack of knowledge is unwillingness among policy makers and resource managers to interfere in the commerce and trade of exotic species. A further constraint is that the weak policy and institutional environment for IAS management in Malawi means that critical information needed for informed decision-making is not widely shared among national stakeholders and therefore does not inform decision-making. Few of the senior managers responsible for PA system planning and management have extensive knowledge of IAS, and as a result, protected areas in general have demonstrated little willingness to act in dealing with IAS threats and impacts.

A1.2 The baseline scenario or any associated baseline projects.

N.A. Please see section 2.6 of the Prodoc

A1.3 The proposed alternative scenario, GEF focal area⁸ strategies, with a brief description of expected outcomes and components of the project.

Invasive Alien Species (IAS) are one of the biggest threats to biodiversity and livelihoods. In Malawi IAS are adversely affecting locally and globally significant biodiversity, and are invading and threatening a range of habitats, as well as, indirectly, the livelihoods of millions of people depending on natural ecosystems for food, commodities and energy security. Malawi has recognized the need to implement Article 8 (h) of the CBD to mitigate the threats of IAS. They have also agreed to meet Aichi Target 9 which states that “by 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment”. The project will also address Aichi Target 12 by contributing to the conservation status of threatened species and Target 7 by enhancing the sustainable management of areas under agriculture. The project also addresses many of the SDG’s, including one of the targets under Goal 15 which encourages countries to “introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species.” The project will contribute to Malawi reaching many of these targets.

The project will contribute to the GEF meeting its targets with regard to improving the sustainability of protected area systems by improving the financial sustainability and effective management of the national ecological infrastructure (BD 1: Program 1) and by reducing threats to globally significant biodiversity through prevention, control, and management of invasive alien species (BD 2: Program 4). Much of this will be achieved by focussing on improving the management of IAS through capacity development and enhancing financial sustainability of IAS management interventions. Management interventions will include “comprehensive prevention, early detection, control and management frameworks that emphasize a risk management approach.”

Malawi already has some IAS management measures in place, but these are largely biased towards the agricultural sector. While building on the existing human capacity in a cost-effective manner, the MSP will expand the scope of these interventions focussing on

⁸ For biodiversity projects, in addition to explaining the project’s consistency with the biodiversity focal area strategy, objectives and programs, please also describe which [Aichi Target\(s\)](#) the project will directly contribute to achieving..

PAs of global significance (Nyika NP and Mount Mulanje FR) and adjoining agro-ecosystems. This is reflected by investing most of the allocated GEF funds into Component 2 to manage selected invasive plants from these two PAs of great conservation value. This will be institutionalized with the help of some international players, such as CABI and UNEP; National Government Institutions such as the Ministry of Natural Resources, Energy and Mining, Ministry of Agriculture, Irrigation and Water Development; local institutions such as the Forestry Department and Department of National Parks and Wildlife; and NGO's such as the Lilongwe Wildlife Trust, Mulanje Mountain Conservation Trust, Nyika-Vwaza Trust and Total Land Care.

National and local sharing, among all stakeholders, especially at PA level, of early warning about potential invaders, their rapid detection and identification, as well as the sharing of information, risk assessments, and monitoring and control techniques, are critical to prevent the establishment and subsequent spread of invasive species. This information exchange and integration will be systematically fostered throughout Malawi. IAS information exchange, especially between conservation and agricultural institutions, and local communities will be enhanced during the MSP.

The recognition of IAS issues as a major threat to biodiversity and livelihoods, especially in PAs and adjoining agro-ecosystems, and efforts made in addressing those threats, will form the basis for contributing additional information to globally accessible databases on the IAS present and their impacts.

Project components and expected results

COMPONENT 1: Establishing a national framework and capacity to enhance IAS management in protected areas and associated agro-ecosystems

Outcome 1.1: Strengthened national IAS framework and improved national capacity and coordination amongst different government agencies and the private sector to respond to existing and new invasive species problems throughout Malawi, with a focus on protected areas and their adjoining agro-ecosystems.

Output 1.1.1: National framework for the cross-sectoral management of IAS operational and supporting long-term development planning.

Key deliverables: (i) National Invasive Species Strategy and Action Plan developed addressing IAS threats, especially those to protected areas; (ii) High risk pathways and most damaging species in Malawi, especially those threatening protected area systems, identified; (iii) IAS Risk Analysis procedures established, including ones for protected areas; and (iv) National vigilance and surveillance systems, including rapid response to alerts

Any IAS management strategy requires a national framework which deals with all aspects related to IAS management such as policy, coordination, prevention, Early Detection and Rapid Response, best management practices, awareness creation, capacity development and even resource mobilization. Most of these are specifically addressed in considerable detail in this project under the various Components and will be included in the National Invasive Species Strategy and Action Plan (NISSAP). The NISSAP provides an over-arching strategy to address IAS at a national and local level, especially at a PA level where biodiversity is threatened by IAS and communities living adjacent to them.

NISSAP and improved coordination. A NISSAP is a sub-output which provides for an over-arching strategy to address IAS issues at both national and local level. The NISSAP is both a national consultative process with all stakeholders causing, impacted by or (potentially) managing invasive species, as well as the strategy document itself, incorporating agreed actions and suggested implementation arrangements on e.g. awareness creation, capacity development, prevention, early detection and rapid response (EDRR) and control, as well as options for cost recovery.

One of the key aspects addressed in a NISSAP is the formation of cross-sectoral management for shared IAS. Many IAS have cross-sectoral impacts and as such need to be managed by all affected sectors across the whole of Malawi. As such it is critical that a NISSAP be developed that addresses IAS issues at a national level, focusing on the protection of biodiversity and livelihoods, especially in PAs areas and adjoining agro-ecosystems. It is anticipated that the Malawi Environmental Protection Agency will be ultimately responsible, for the development and implementation of the NISSAP, given its mandate under the EMA of 2017.

The private sector is also an important stakeholder and coordination with this sector will be important. Private industry is often involved in the introduction of IAS, either through the pet trade, aquaculture or the horticultural industry. At the same time commercial farmers, such as the tea estates around Mount Mulanje, may be affected by a host of IAS. In order to get facilitate implementation of the NISSAP the private sector will be involved in some of the stakeholder meetings where issues pertaining to the importation, breeding and sale of exotic plants and animals will be discussed.

Prevention. Prevention is the most cost-effective IAS management strategy and will be a critical sub-output of the national framework and will be included in the NISSAP framework. Identifying pathways (see below) is critical in preventing IAS incursions. The Malawi Environmental Protection Agency (MEPA), once established, will also be mandated to take measures for

the “control, eradication or management of alien and invasive species,” including prevention. In fact the Environmental Management Act states that MEPA will be mandated to “ensure that environmental and risk assessments are undertaken” one of the key areas which needs strengthening in Malawi and will be tackled by the project. For intentional introductions at national level, the project will support the adoption of Pest Risk Assessments (PRAs) prior to importation, or at the port of entry, to identify species that pose a threat to biodiversity or economic development, PRA systems will be developed for use in PAs to ensure that no invasive or potentially invasive species that are already present in Malawi spread into PAs. By the end of the project it is envisaged that PRA’s will be conducted for at least 50% of legally imported plant species and five agro-forestry species already present in Malawi with an inclusive PRA system developed and adopted at PA level and at least 10 exotic species present in agro-ecosystems evaluated for risk to targeted PAs

Pathway risk analysis. As mentioned above the identification of pathways is critical in improving prevention mechanisms and as such also needs to be included in the NISSAP. In other words to strengthen prevention interventions it is also critical to understand the pathways through which exotic species are being introduced. The project will identify high risk pathways, pathways through which IAS are introduced into Malawi, and at a local level into PAs and adjoining agro-ecosystems, and propose ways in which they can be managed. By the 5th year of the project pathways for high risk species will be known and included in PA Management Plans – supported by specific resources, especially for targeted PAs.

Much of the pathway risk analysis work will be undertaken by the Department of National Parks and Wildlife in Nyika NP and Mount Mulanje Conservation Trust and the Forestry Department in Mount Mulanje Forest Reserve, coordinated by the Environmental Affairs Department. Unless there is a good understanding of the pathways, prevention protocols will largely be ineffective. By focussing on the identified high risk pathways prevention interventions will be considerably more cost-effective.

Early Detection and Rapid Response (EDRR). Managing IAS pathways more effectively and preventing IAS entry or incursions is the first step in an effective IAS management strategy or NISSAP. However, prevention is not fool proof and as such some exotic species may find their way into Malawi, establish and then spread. To deal with this issue it is important to establish a surveillance system (EDRR system) to detect and eradicate invasive species before they become widespread and abundant – specifically in the targeted national system of PAs. The identification and management of these species will be facilitated through the Identification Guide (Component 3). By the end of the project surveillance and rapid response systems will be part of the new PA Management Plans, and trialled in and around (buffer zones) Nyika NP and Mount Mulanje Forest Reserve for invasive and/or potentially invasive species.

Output 1.1.2: Evidence base established and communicated for IAS prevention and management in and around PAs.

Key deliverables: (i) Costs and benefits of three IAS, including ‘conflict’ species present in agro-ecosystems adjoining protected areas; (ii) National inventory on presence and distribution of priority invasive plants in five National Parks and Wildlife Reserves; and (iii) Information generated under Component 1 made available to policy and decision makers through communications

Cost-benefit analyses (CBA’s). CBA’s should form part of any Pest Risk Assessment (see project output 1.1.1), especially for agro-forestry species since they can contribute to the objectivity of the decision-making process. In developing countries many agro-forestry species are introduced for fuelwood, nitrogen-fixation or other purposes. Some of these species, despite their beneficial attributes, go on to become invasive. Studies have demonstrated that the costs of some of these species, to for example, ecosystem goods and services, are higher than the benefits which accrue from their use. Without any information or analyses of their negative impacts these species continue to be promoted/disseminated to the detriment of biodiversity and livelihoods, and in some cases also economic development. It is therefore important to gain better support for the development and implementation of IAS policies, regulations, and actions in the field through various project-sponsored activities including CBA’s of a few selected national priority IAS, national communications (Output 3.1.1) as well as capacity building. Staff and/or students from various learning institutions will undertake CBA’s of three ‘conflict’ species, the results of which will be published in peer-reviewed publications and communicated to more than three key national agencies, incorporated in the NISSAP, and included in two PA management plans. As part of project activities to carry out the analyses, the project will initially provide training by an international consultant to PPS staff that undertake PRA’s and university/college students/staff so that similar studies can be undertaken on other species in the future. The CBA process/research by local individuals/institutions will be supported by the consultant post-training.

National inventory on presence and distribution of priority invasive plants. There can be no effective management of IAS in PAs in Malawi without an IAS inventory. To that end detailed surveys of naturalized and invasive alien plants in five NPs, four Wildlife Reserves, and MMFR will be undertaken. This information will be invaluable when prioritizing species for management interventions and important for the implementation of an EDRR programme. These surveys will also contribute information which will be included in the Field Guide under Component 3. The Malawi Environment Protection Authority (MEPA), under the Environmental Management Act, is also required to publish a “list of alien and invasive species in respect of which a permit issued under this subsection may not be issued.” Without data on which naturalized and invasive plants are present in Malawi MEPA will not be able to fulfill its mandate. Multiple agencies will contribute to developing this inventory which will be made available on multiple websites [CABI’s ISC, GISD, GBIF, NVT (UK), and other relevant sites]. The IAS inventory will also be included in the NISSAP and relevant PA Management Plans.

Results targeting policy and decision makers through communications. Information generated by activities under this component will be important, especially to the Malawi Environment Management Authority (MEPA), who is mandated under the Environmental Management Act to “coordinate the promotion of public awareness and education on the protection and management of the environment.” Based on previous outcomes it has been determined that the best way to make policy and decision-makers aware of environmental and related issues is through the use of TV, radio, posters, sms, billboards, social media and workshops. However, in our case we envisage doing much of this through on-on-one meetings or small workshops. Much of this will be determined and outlined in detail under the Communication Strategy developed under Component 3.

COMPONENT 2. Strengthening IAS management in existing protected areas and adjoining agro-ecosystems

Outcome 2.1. Reduced IAS impacts in two selected protected areas resulting in enhanced conservation outcomes for endangered and threatened species

Key results and deliverables: (i) Two revised PA Management Plans (NNP and MMFR); (ii) Biocontrol Working Group established; and (ii) three biocontrol agents released; (iii) GEF TT scores up with 50% on IAS management and ~10% up on PA METT in MMFR and NNP; (iv) Increased budgets for IAS management in MMFR and NNP, involving a total of 50,000 ha under improved IAS management; and (v) Control of selected IAS in invaded areas, 100 ha in NNP and 50 ha in MMFR, and restored to semi-natural habitat.

Output 2.1.1. Two revised PA Management Plans including strategies and budgets for IAS prevention and control

Based on the revised PA Management Plans we expect to see a ~10% improvement on the METT scores for Nyika NP (NNP) and Mount Mulanje Forest Reserve (MMFR). In other words we expect to see an increase in current METT for NNP and MMFR of 63 and 61 to 69 and 67 by the end of the project, respectively, especially in terms of enhanced budget and improved IAS management, capacity and awareness. The current NNP Master Plan (2004) makes many references to IAS and the need to manage them. In fact it proposed management plans for a number of introduced and invasive species but few have been implemented. The Master Plan is currently being revised, providing an ideal opportunity to make substantive inputs through the GEF project. Likewise, the MMFR Management Plan is currently being developed and the inclusion of IAS management interventions will be proposed during project implementation. As such IAS management and control will be institutionalized into PA management plans in both MMFR and NNP. In addition, a mechanism will be developed for securing sufficient funding for development and implementation of the management plans. This will be addressed by undertaking a review and identification of gaps in the current policy, regulatory and institutional frameworks affecting the PA financing systems and current financial planning, accounting and business planning at the national and PA level. Diversification of revenue sources also needs to be considered and is key to reduce dependency on limited government budgets and may be addressed by seeking other sources such as tourism entrance fees, debt swaps, tourism concession arrangements, payments for water and carbon services and in some cases, carefully controlled levels of resource extraction. The Mount Mulanje Conservation Trust and the Nyika-Vwaza Trust may also be additional source of funds for IAS management activities.

Output 2.1.2. Tested management plans for four IAS, including IAS control and habitat restoration in two protected areas

The most widespread and damaging IAS in Nyika NP (NNP) are *Pinus patula*, *Acacia mearnsii*, *Rubus niveus*, *R. ellipticus* and *Pteridium aquilinum*. *Pteridium aquilinum* or bracken fern is a native plant that has become extremely abundant in NNP, displacing valuable forage species. It is also extremely problematic in Mulanje Mountain Forest Reserve (MMFR) together with *P. patula*, *A. mearnsii*, and *R. ellipticus*. Additionally, a host of other species have been introduced to staff villages and tourist accommodation facilities in both PAs which need urgent attention. IAS such as *Lantana camara*, *Tithonia diversifolia*, *Mimosa diplotricha*, and others, are abundant in agro-ecosystems immediately adjacent to these PAs and may spread into the PAs if not controlled soon. *Dolichandra unguis-cati* is, together with other invasive vines and herbs, a serious problem in tea plantations adjacent to MMFR.

Based on preliminary review of feasibility, costs and likelihood of sustained positive outcomes for both biodiversity conservation in the two PAs as well as crop production in adjacent production land, management trials will target the following four species: *Rubus* spp., *A. mearnsii*, *P. aquilinum*, and *D. unguis cati* and include manual, chemical and cultural control or a combination of these, in the form of demonstration trials, so that PA managers and their staff and communities living adjacent to the PAs can familiarize themselves with control methodologies, their efficacy and benefits (see Appendix 16 in ProDoc for additional information on physical and chemical control). It is envisaged, based on the implementation of best management practices, that *Rubus* spp. and *A. mearnsii*, will be eradicated from NNP and MMFR. Best management practices for *P. aquilinum* will be developed and adopted by PA staff and surrounding communities ensuring the long term control of this species. *Pinus patula* invasions will not be eradicated, but interventions made to clear significant areas, contributing to biodiversity conservation. Other species listed for interventions under the GEF TT are rare and localized and as such there will be no need to develop best management practices – they will merely be hand-pulled or uprooted and destroyed.

Best management practices for the selected species will then be implemented across a wider area – and as an integral part of the agreed PA Management Plan (2.1.1) focusing on the habitats of the most threatened species and/or impacted areas in PAs,

provisionally 100 ha. in NNP and 50 ha. in MMFR. This will also include clearing of all invasive and potentially invasive species from tourism facilities and staff quarters, provided populations are still localized and eradication is feasible; but may also include any buffer zones or multiple-use zones – if being formally part of the PA management area. Parts of the sites where IAS management has taken place will be restored. Information on best management practices will be widely disseminated among other PA staff (see Component 3). We expect to see a 50% improvement on the GEF TT scores on IAS management.

Key will be to involve senior management of MMFR, NNP, Department of Forestry, DNPW, MEPA (once established) and Africa Parks to replicate and sustain best management practices to other affected PAs in Malawi. The project will organize a minimum of two study tours for Government staff to enable this, as well as conduct high level seminars with national stakeholders to strengthen support and dissemination.

Output 2.1.3. Capacity of 80 PA staff improved and applied in the identification and management of IAS

PA staff will be capacitated with regard to the identification and management of IAS and in so doing the project will contribute to improved biodiversity conservation. The Field Guide, developed under Component 3, will be an important tool in facilitating invasive plant identification and enhancing management. Capacity will be further enhanced by taking staff into the field where they will receive practical training on invasive alien plant identification. By the end of the project there will be a measured increase in knowledge of 80 PA staff on IAS identification (with at least 25% women)

Some staff will also be involved in field trials– under Output 2.1.2, to test invasive alien plant management methodologies while others, not directly involved, will visit these “demonstration” trials to familiarize themselves with the various treatments. By the 5th year of the project at least four staff of each targeted PA (incl. at least one woman each) would have applied their new skills on IAS prevention and management in project PAs (measured through involvement in management work within and outside the project).

Output 2.1.4. Biocontrol Working Group established and operational leading to the introduction of three host specific and damaging biocontrol agents

Biological control as a safe and effective management strategy will be prioritized. Biological control, which is a cost effective approach to IAS control, should form an important component of any IAS management strategy in developing countries, such as Malawi, that do not have significant resources for chemical and mechanical control. Furthermore, biocontrol agents are optimal for use in PAs and adjoining agro-ecosystems as they reduce the excessive and unnecessary use of pesticides that have negative impacts on biodiversity and on human health. The project will promote the use of biocontrol measures in croplands adjoining PAs, and specifically the use of biocontrol agents that are known to be host-specific and damaging and that have been released elsewhere in Africa (see Appendix 17 in ProDoc for more information on biocontrol and the targeted species). The Project will facilitate their possible introduction by undertaking Risk Assessments, followed by the compilation of all relevant reports, which will be submitted to the Regulatory Authorities for their approval before the implementation of any biocontrol activities. By the end of the project there will be at least a 50% increase in awareness of biocontrol above baseline among PA staff and those in Ministry of Natural Resources, Energy and Mines and Ministry of Agriculture, Irrigation and Water Development. In order to facilitate the introduction of these and future biocontrol agents a single national Biocontrol Working Group will be established in PY2, to support the use of biological control methods.

Outcome 2.2. Reduced IAS impacts in adjoining agro- ecosystems of two selected protected areas contributing to improved livelihoods and biodiversity conservation

Targeted results: (i) Invaded areas in agro-ecosystems adjoining two protected areas (50 ha in NNP and 50 ha in MMFR) cleared and restored (non-cropland), through partnership between local government, PA management, commercial plantations/estates, and farmers; (ii) 15% enhanced tree cover in PA buffer zones as a result of tree planting and/or adoption of FMNR systems; and (iii) Sustainable farming practices such as CA, crop rotation, crop integration, use of cover crops, and/or FMNR in croplands adopted by 50 small-holder households to reduce impacts of invasive plants

Output 2.2.1. Invaded rangelands (100 ha total) in buffer zones/agro-ecosystems of two adjoining PAs cleared and restored (native trees) through enhanced partnerships between PA staff and farmer communities, including the training of 100 farmers on IAS identification and management

Selected community members, working in partnership with PA staff, will jointly develop best management practices in PAs (see 2.1.2). These community members are expected to become ‘champions’ and inform others on best management practices. Wider dissemination will take place through Farmer Field Schools based in adjoining agro-ecosystems. Best management practices developed under 2.1.2 on IAS control will also be implemented in agro-ecosystems adjoining Nyika NP (NNP) and Mulanje Mountain Forest Reserve (MMFR), resulting in the clearing and restoration of 100 ha (50 in NNP and 50 in MMFR buffer zones) of invaded natural pasture. Clearing will be undertaken by community members under the guidance of trained PA staff and those community members that were involved in activities under 2.1.2. Clearing will be followed by restoration. Communities living adjacent to PAs will be further capacitated with regard to the identification and management of IAS through training and in so doing

the project will contribute to improved pasture/rangeland production, as well as improved biodiversity conservation. Tools such as the Field Guide (Component 3) will contribute to building that capacity.

In order to enhance the management of shared species or species which may invade from an adjoining ecosystem it is critical to enhance collaboration between all stakeholders. In Nyika NP and Mount Mulanje Forest Reserve the project will build on existing relationships developed between communities and PA staff. By the end of the project PA staff and community members will be meeting at least three times annually to discuss IAS issues. This collaboration will ameliorate pressures on PAs and improve collaboration between farmers and PA staff, based on the consultations and strategies developed jointly under Output 2.1.1 towards the incorporation of IAS objectives, targets and budgets in the PA Management Plans.

Output 2.2.2. Sustainable farming practices such as Farmer Managed Natural Regeneration (FMNR), Conservation Agriculture (CA), including crop rotation, crop integration and cover cropping adopted and promoted by 50 households as a result of training and demonstration trials

Direct interventions and biological control can mitigate against the impacts of IAS. Other interventions such as crop integration, crop rotation and the growing of cover crops in croplands can also enhance weed control. These interventions will not only increase yields but also reduce pesticide use. These interventions will all be developed and implemented among communities living adjacent to PAs. By the end of PY 5 control practices would have been tested and efficacy determined for each of the three target species in community rangelands and invaded areas (100 ha total) around PAs cleared and restored with a 15% increase in tree cover. By that time sustainable farming practices would have been adopted by 50 households, incorporating IAS prevention and control. It is also envisaged that by then 100 farmers would have been trained in IAS identification and sustainable land-use practices such as Conservation Agriculture and FMNR. Fair gender distribution on all capacity building activities will be applied in terms of the selection of trainees, co-management groups at pilots, as well as decision making fora, which in most cases will be near 50:50. At pilot sites, at least 50% of field workers will be women.

COMPONENT 3. Knowledge management and broader adoption

Outcome 3.1. Lessons learnt, documented and disseminated and awareness programs established to facilitate replication and broader adoption in the Malawi National PA system.

Output 3.1.1. Communication strategy and outreach campaign including use of media, workshops, and meetings targeting government officials, PA staff and affected communities

One targeted national and two site specific awareness/communication strategies will be developed for the two targeted PAs in consultation with relevant sectors, including government officials, conservation agencies and representatives of rural communities. It will target those individuals and agencies which can contribute to the long-term sustainability of project interventions. Efforts will also be made to target potential IAS “champions”, especially at a local level, who will be able to drive the IAS agenda into perpetuity. Tried and tested methods will be used to increase IAS awareness, especially at local levels resulting in an increased average awareness of 50% over baseline by PY 5 with PA staff and communities showing an increased knowledge and skills of prioritized IAS and IAS management mechanisms, including biocontrol.

There are insufficient resources for an effective countrywide awareness programme hence the need for a focused campaign, targeting particular key national individuals or institutions with focused messaging. Based on previous experiences the most convincing arguments, at least for government policy-makers and politicians, are largely based on the costs and benefits of actual IAS control. To that end information on the costs and benefits of management interventions in the pilot sites/demonstration trials in Nyika NP and Mount Mulanje Forest Reserve (MMFR), and surrounding agro-ecosystems, will be made available to the Permanent Secretaries and other high-ranking Government officials during a high-level workshop hosted by the PMU, where additional information in the form of a booklet on the costs and benefits of management will be made available. Results of the CBA’s of “conflict” species will also be made available. Efforts will also be made to enhance capacity and awareness amongst women – gender sensitive awareness material will be developed and separate workshops will be held for women and men based on their availability, but more importantly to allow women in male dominated communities to comment and participate more freely in issues pertaining to IAS.

Output 3.1.2. National information sharing procedures including the development of a Guide on the identification and management of invasive plant species in Malawi

Much of the information sharing agenda has been discussed under 3.1.1. An additional information source will be the Identification Guide that will include descriptions of invasive plants, their distribution and management. The Guide will be made available to extension officers, PA managers and associated staff, quarantine officers, researchers, staff from the Forestry Department, private individuals in the plant nursery and associated trades, community members and others.

Output 3.1.3. Project M&E program developed, IAS monitoring capacity built and implemented in PAs and their agro-ecosystems

Monitoring and evaluation will be critical in measuring the success of project interventions and an M&E will continue throughout project implementation, especially with regard to changes in awareness levels. It is envisaged that by the end of the project there would have been an increase in awareness of 50% above baseline. Changes in capacity will be measured by undertaking pre- and

post-knowledge surveys awareness surveys prior to and after training workshops. Changes in biodiversity levels at sites where IAS are controlled will be measured prior to control interventions and then again at mid-term and end of project. All monitoring and evaluation activities will collect gender-disaggregated data, and where appropriate, women-only focus group discussions will be held regarding the impact of project activities on women's time (e.g. less or more time spent weeding). M&E will be led by a Malawi-based institution or M&E specialist to be confirmed at project initiation. This information will be an integral part of the reporting by the NEA to UN Environment.

A1.4 incremental/additional cost reasoning and expected contributions from the baseline, the GEFTE, and co-financing

Most of the past efforts of national institutions and international agencies to address IAS issues in Malawi have dealt with IAS in a peripheral way or as secondary/tertiary objective. As a result, impacts and problems related to IAS persist in the country, with negative impacts on effective conservation and management of PAs, the maintenance of critical ecosystem services and landscape productivity, and the protection of community interests. Nevertheless, the proposed project will seek to coordinate with and benefit from lessons learned under other programs and projects on IAS management, including those of donor and project co-financing partners.

In the **Baseline**, the Government of Malawi (GoM) is supporting efforts to strengthen (agriculture) quarantine requirements and to create awareness among relevant staff and other stakeholders about the threats posed by IAS, however no specific IAS prevention and control programs related to PA management – specifically biodiversity protection, are being funded through government right now. However, several other related government programs constitute a good baseline investment to build up and improve focus as well as additional activities towards IAS aspect. Under the Government's National Development Program, support is being provided to protected areas, mainly in the form of staff training and under the anti-poaching activities (see below). It is envisaged that training in the identification and management of key invasive alien plants will be included within this government training program through support by the GEF project. Over the next five years from 2015/2016 to 2018/2019 the GoM through its Ministry of Natural Resources, Energy and Mining is supporting several environment related programs including "Environment and Climate Change Management" (US\$ 8,941,513) and "Wildlife Conservation and Management" (US\$ 3,224,300), the latter much focused on species protection, anti-poaching, tourism development, and some activities related to management of their habitat. A very meagre US\$ 21,326 of this will be available for biodiversity conservation and management, which is the government program coming closest to IAS issues. Notwithstanding the low level of available government funding set aside specifically for BD conservation, the various ongoing and planned program activities under this latter baseline program offers much scope for collaboration and incremental activities focused on IAS prevention, management and control, including training, awareness building, inventory of IAS in (wildlife) reserves, (economic) impact analysis of emerging IAS to game tourism, as well as development of the national IAS strategy through partnership, also because the same Ministry is at the helm of both this as well as the GEF project. Because of the lack of GoM resources to meet the management costs of all PAs, they are entering into agreements with the private industry, bilateral donor and e.g. GEF support. Other current or past projects of this ministry relevant to the GEF IAS and agro-ecosystems work include the "Sustainable management of Nyika Transfrontier Conservation" (US\$ 366,398), "Combating deforestation and forest degradation for sustainable rural development" (US\$ 70,461), as well as "Improved forestry management for sustainable livelihoods" (US\$ 70,461), all relevant to the GEF IAS project.

The Ministry of Agriculture, Irrigation and Water Development in its 2016-2017 Program Budget Statement includes two Strategic Objectives: (i) To ensure sustained food security; and (ii) To ensure increased agro-based incomes, which are closely related to both the prevention as well as control of invasive pest species. Its Agricultural Productivity and Risk Management program budget is large at US\$ 177,598,400 over the next three years. The Ministry of Local Government and Rural Development will invest a minimum of US\$ 8,158,789 in rural development of which a small part may benefit the project through the planned livelihood improvement initiatives potentially benefitting communities involved in the agro-ecozones around the protected areas. The GoM also plans to achieve improved IAS management in order to meet its CBD obligations (Target 9 of the Aichi Biodiversity Target) by undertaking a range of activities requiring estimated funding in the range of US\$6,500,000, which will be requested from a number of agencies including UNEP, UNDP, NORAD, FAO, DFID, USAID, IrishAid, GIZ and the private sector (NBSAP, 2015-2025). To assist the GoM in achieving its mandate many private-public partnerships around the management of protected areas have already been developed. For example, 3 NP's in Malawi are now contractual parks, managed by the African Parks Foundation. This provides the proposed project with the opportunity to not only raise awareness among private and public stakeholders about the threat of IAS, but also to accrue resources from both sectors for the management of IAS. The Electricity Supply Commission of Malawi continues to support programs to reduce the impact of introduced waterweeds in the Shire River using Environmental Management Funds. Both the Blantyre and Lilongwe city assemblies are also involved in manual removal of *Salvinia molesta* that is threatening their water reservoirs.

Among non-governmental organizations, the Malawi Environmental Endowment Trust (MEET) and the Mulanje Mountain Conservation Trust (MMCT) provide sustainable sources of financing for the management of protected areas (MMCT continues to

support implementation of the management plan for the Mulanje Mountain Forest Reserve). MMCT has supported IAS management interventions in the past. In addition, the Nyika-Vwaza (UK) Trust Fund also is funding conservation and community projects in the Nyika NP and Vwaza Marsh Wildlife Reserve, including some management of IAS. WWF and IUCN have been involved in a number of Projects concerned with biodiversity conservation in Malawi, although none have focused primarily on invasive species management. The Wildlife and Environment Society of Malawi (WESM), a Birdlife International partner, supports the management of protected areas in Malawi in areas such as lobbying the government to establish protected areas; promotion of environmental education; infrastructure development; re-introduction and game management; promotion of effort-based law-enforcement; snare bounty scheme; research activities; and ecotourism. More recently they were involved in a NORAD-funded, which was active, amongst others in the Ntchisi Forest Reserve, with the specific objectives of improved governance structures in and around IBAs; improved community-based natural resources management; monitoring bird species and habitats and increased incomes from NRM-based enterprise development. The Wildlife Action Group (WAG) works on nature conservation and management in the Central Region of Malawi. Its main objectives are to protect Malawi's wildlife and environment, and to assist and support the Malawi Government in the protection of National Parks, Game and Forest Reserves. Total Friends supports Liwonde National Park with fencing, firebreaks and road network maintenance within the rhino sanctuary. 'Endangered species of Malawi Circle' attached to J&B's 'Care for the Rare' Programme is also involved in a number of conservation efforts. Finally, Lead-Southern and Eastern Africa, the Forestry Department and World Fish Centre are implementing the Lake Chilwa Basin (LCB) Climate Change Adaptation Program in collaboration with Machinga, Phalombe and Zomba district councils. The program is designed to secure the livelihoods of 1.5 million people in the Lake Chilwa Basin and enhance resilience of the natural resource base through the development and implementation of a basin-wide climate change adaptation program that will enhance the capacity of communities to adopt sustainable livelihood and natural resource management practices. The program includes the management of invasive species.

In agro-ecosystems CABI is working together with the Department of Agriculture in the Plantwise Program, whereby extension officers are trained to assist farmers in the identification of pests, including IAS, and how best to manage them. Advice focusses on the reduction of pesticide use through integrated pest management, of which biocontrol is an important component. The Plant Clinics, which have been established as part of the Program, play an important role with regard to early detection and rapid response and will be an integral component of the proposed Project. The Project will also work closely with Total Land Care, an NGO established in 1999, with a mandate "to improve the livelihoods of smallholder farmers in the region with a focus on community based approaches to increase agricultural production, food security and incomes within a context that ensures sound management of their natural resources." The Project will also benefit from previous interventions, including the Manda Wilderness Agricultural Project, which was initiated, with funding from CEPF, to introduce 360 subsistence farmers and their families to the concepts of conservation and sustainable agricultural practices in an attempt to protect the Manda Wilderness Area, an area of approximately 250,000 hectares.

In summary, Malawi does not have any **baseline** data on the presence and distribution of invasive alien species prevalent in the country; no national invasive alien species management plan; limited actions with regard to prevention and early detection and rapid response, including monitoring of current invasions; little awareness on the impacts of IAS; and insufficient capacity to identify and manage IAS. As a result existing sector policies continue to promote or encourage the introduction of exotic species without evaluating their potential risk, especially to biodiversity. Efforts to implement IAS management remain uncoordinated, with little collaboration/communication between various stakeholders, especially those in agriculture, forestry and the environment, resulting in duplication and a continued waste of resources. With no national IAS inventory contributing to the development of IAS management interventions IAS continue to be intentionally and unintentionally introduced into protected areas and adjoining agro-ecosystems, while IAS already present within these areas continue to spread and multiply to the detriment of threatened and endangered species and crop and pasture production. IAS within protected areas continue to invade adjoining agro-ecosystems and increase tensions between communities and protected area managers, and protected area managers remain powerless to prevent invasions from agro-ecosystems. A reduction in crop yields or pasture production due to IAS impacts continue to place increasing pressure on protected areas from people living adjacent to them. The few ad hoc and uncoordinated IAS control activities that are undertaken rely primarily on costly chemical and/or manual control methodologies, and as a result cannot be sustained. Resource managers and other stakeholders are still unaware of many IAS impacts and are unable to identify important IAS or pathways for their introduction and spread, and as a result IAS continue to be introduced and existing infestations continue to proliferate. The lack of information and coordination mechanisms and strategies limit the ability of the GoM to convey knowledge and information generated on IAS threats and management strategies to communities and protected area staff.

The GoM is very aware of these gaps and needs and is attempting to address them more effectively through the promulgation of the Environment Management Act (2017), which has many clauses pertaining to the management of IAS. The Malawi Environment Protection Authority (MEPA) which is to be established under the Act "shall, in consultation with relevant lead agencies, take measures for control, eradication or management of alien and invasive species". The Authority "shall ensure the coordination and implementation of programmes for the prevention, control or eradication of listed alien species and invasive plants". The

promulgation of the Act is extremely timely since many of the activities/outputs of this proposed project will provide MEPA with the tools/information which it requires to fulfil its mandate. It is also timely since the threats of IAS are likely to increase due to factors such as climate change, land degradation, and an escalation in trade, travel and tourism, and thus the longer that Malawi waits to address critical IAS management priorities, the greater the likelihood of severe negative impacts from IAS on biodiversity, ecosystem services, and livelihoods and the greater the costs will become to address those impacts.

The project alternative and its interventions will result in changes in policies, enhanced capacities, and increased awareness which will significantly enhance IAS management. The project will support the development of a National Invasive Species Strategy and Action Plan (NISSAP), cost-benefit analyses of selected IAS, and the development of a national invasive plant inventory, all of which will increase the knowledge base on IAS in the country and the ability of stakeholders to address IAS in a strategic manner. Risk Analyses and Early Detection and Rapid Response systems will be put into place that will enable early and effective detection and identification of priority potential invaders, the rapid sharing of information among all stakeholders, and monitoring and control techniques that will prevent the spread and establishment of potential invasive species. At the site level, the development and implementation of IAS management plans that include control and restoration activities will reduce the negative impacts of IAS on key biodiversity habitat and important agro-ecosystems, while also reducing existing and potential conflicts over the intentional introductions / uses of non-native species that may become invasive. Communication and awareness activities will greatly increase understanding and awareness among resource managers and local communities on IAS and their impacts, thereby producing increased support for IAS management and increased participation and allocation of resources to reducing IAS introduction and spread. In summary, the project will result in a scenario where the status of biodiversity, ecosystem services and agro-ecosystem production levels and livelihoods support are all more effectively protected from existing and potential future IAS impacts at the national level and at the level of targeted demonstration areas with adjoining protected and productive landscapes. GEF support will ensure that the majority of IAS targets as set out in the revised NBSAP (2015-2025) are reached.

The Increment: This will be achieved through incremental GEF support of US\$342,260 further strengthened with a total of US\$1,008,000 in co-funding to the establishment of a national framework and capacity to enhance IAS management in protected areas and adjoining agro-ecosystems through the development of a NISSAP, Pest Risk Analysis procedures, and Early Detection and Rapid Response systems under Component 1. These outputs will be strengthened by undertaking cost-benefit analysis and developing a national IAS inventory. In order to strengthen IAS management in protected areas and adjoining agro-ecosystems the project will, under Component 2, through US\$670,000 incremental GEF support towards development of best management practices for selected IAS, the clearing and restoration of 100 ha in Nyika NP, 50 ha in Mulanje Mountain Forest Reserve, and 50 ha of rangeland in each of the PAs adjoining agro-ecosystems; implementation of sustainable farming practices resulting in reduced land degradation and enhanced yields and the training of 80 PA staff and 100 community members in the identification and management of IAS. This is made possible through a total of US\$2,409,432 in co-funding to Component 2. The project will allocate US\$353,659 in incremental GEF support under Component 3 for knowledge management and broader adoption, including US\$1,230,300 in co-funding resources..

Co-financing: Contributions totalling US\$5,164,147 will be provided to the project by a variety of partners, including several Ministries, a number of NGOs and institutes, and UNEP.

A1.5 [global environmental benefits \(GEFTF\)](#) and/or [adaptation benefits \(LDCF/SCCF\)](#).

Global Environmental Benefits

The expected global benefits of this project include contributions firstly to reduce the loss of biodiversity and maintain the quality of protected habitats in the Protected Area system of Malawi, and secondly, as an indirect benefit, reducing the negative impacts of IAS on local livelihoods around the targeted Protected Areas specifically, and the economy of Malawi in general. Nyika NP (NNP), one of the pilot sites, has high levels of biodiversity and endemism. The Nyika plateau is part of the Eastern Afromontane Biodiversity Hotspot, which encompasses several widely scattered but biogeographically similar mountain ranges in eastern Africa. Endemism levels in the hotspot are high, with 31% of plants, 21% of mammals, 30% of reptiles, 30% of amphibians, and 69% of fish occurring nowhere else in the world. The Nyika Plateau supports more than 215 orchid species, of which four species and two subspecies are thought to be endemic. A total of 1,927 plant species and subspecies have been identified in the NNP, of which 33 are endemics only found in the park and a further 13 are considered near-endemics. The NP also harbours globally significant mammals. Nyika's butterfly fauna is the richest in Malawi, with some 120 of the 200 species present in the country. Over 420 species of birds have been recorded in the park.

Another pilot site, Mount Mulanje is the highest massif in the country, located in the southeast near the border with Mozambique. The Mount Mulanje FR (MMFR) occupies 60,000 hectares, including montane grassland and shrubland, small patches of Widdringtonia cedar forest, and lowland, mid-altitude and montane rainforest. The Reserve provides important habitat for numerous bird species, and it is the most important centre of plant endemism in Malawi. In all there are over 1,100 species of plants in Mulanje/Michesi of which 57 are strict endemics including one subspecies and four varieties. Seven of the bird species recorded are

endemic or near endemic. There are 14 endemic reptile species and 4 near endemics. There are 60 species of snails (8 endemics), 10 of slugs, 22 of dragonflies, 233 of butterflies (11 endemics or near endemics), and 145 of beetles (7 endemics or near endemics). Mulanje is the only known locality in Malawi for the rodent *Aethomys namaquensis*. Due to its species richness and high levels of endemism, Mt. Mulanje was identified by the World Wildlife Fund as one of 200 global ecoregions in the world for the conservation of biodiversity, and designated as an Afrotropical Regional Centre of Endemism, and as a UNESCO World Heritage Site.

Both NNP and MMFR are directly threatened by a host of invasive species such as *Rubus ellipticus*, *Pinus patula*, *Acacia mearnsii*, and *Pteridium aquilinum*, especially at higher elevations while species such as *Tithonia diversifolia*, *Mimosa diplotricha* and *Lantana camara* are abundant in the foothills. By managing invasive plants that are already present in NNP and MMFR and surrounding agro-ecosystems will contribute significantly to biodiversity conservation. Communities will also benefit from the project's IAS management interventions, as IAS have a significant impact on the goods and services provided by ecosystems (Turpie, 2004; Strayer, 2012; van Wilgen et al., 2013). Management of IAS can therefore contribute significantly to sustaining ecosystem functions and services (van Wilgen et al., 2013). For example, both Mount Mulanje and Nyika Plateau are critical water towers. Invasions by woody invasive plants such as pines and Australian acacias are known to reduce water run-off by up to 80%. Management of woody weeds will contribute to water quantity and quality for downstream water-users.

In order to address the issue of invasive alien species and it so doing contribute to biodiversity conservation and ecosystem services within and adjacent to these two PAs and enhance livelihoods in the adjoining agro-ecosystems the project will develop a NISSAP, improving coordination and cross-sectoral management at a national and local level (especially between PA staff/management and adjoining communities as IAS cannot be managed in isolation); identify and manage IAS pathways (IAS being introduced into PAs and adjoining agro-ecosystems); improve prevention and EDRR mechanisms (include the use of Pest Risk Assessments); manage invasive plants within two PAs and surrounding agro-ecosystems (include the development of best management practices for selected IAS); and build capacity and create awareness about the threats and management of IAS. The project will clear 100 ha. of invasive *Pinus* and *Rubus* spp., and *A. mearnsii* in Nyika NP and 50 ha. of invasive *Rubus* spp. and other invasive plants in Mount Mulanje FR. Invaded areas in lands adjoining these PAs will also be cleared of invasive plants (50 ha around MMFR and 50 ha around NNP) and sustainable farming practices developed and implemented. Implementation of sustainable farming practices such as Conservation Agriculture, Farmer Managed Natural Regeneration, crop rotation, crop integration and cover cropping will not only help to suppress the weed burden but also increase yields, contributing to improved livelihoods. As a result of project interventions it is envisaged that the METT scores for both MMFR and NNP will be improved by approximately 10% and that forest/tree cover in adjoining areas will increase by about 15% as a result of project interventions. Project interventions will also result in a 50% increase in the GEF TT scores on IAS management.

It is important to recognise that by addressing IAS management among communities living in areas adjacent to PAs, the project also will reduce negative IAS impacts on the protected areas themselves, both by removing IAS populations that might spread into PAs, and by protecting agricultural production from negative IAS impacts and thereby reducing the reliance of rural communities on resources within PAs. Project interventions described above will also reduce pesticide use, one of the biggest contributors to biodiversity loss in agro-ecosystems. Reduce pesticide use will improve water quality and risks associated with their use to human and livestock health.

It should also be recognized that Malawi and many of its PAs are representative of many other ecosystems and habitats in the region and elsewhere in Africa. Activities in Malawi will act as a model for the wider dissemination of the project findings throughout Africa especially with regard to the management of bracken fern, one of the worst weeds in the world.

A1.6 Innovativeness, sustainability and potential for scaling up.

Innovation

This project is innovative in that it not only addresses IAS within PAs to protect biodiversity but also in crop fields and communal grazing lands – this is critical since IAS know no boundaries, as well as in this case concerns joint responsibility for management between the conservation authorities as well as the agriculture sector. Additionally, the project approach of activities contributing to reduction in IAS in lands adjoining PAs, a source of current and future invasions, but also enhancing crop yields to the benefit of communities, will strengthen the likelihood of conservation partnerships between farmers and the Protected Area management. Improved livelihoods and recognition of stewardship will also reduce other pressures on PAs such as poaching, deforestation and encroachment. There are significant opportunities for replication which will benefit biodiversity conservation and livelihoods throughout Malawi. The project design in itself is innovative in that it builds the case towards enhanced national policy under Component 1 through first of all establishing and communicating the evidence base of the spread, analysis of costs (and benefits), as well as mapping existing pathways of intentional and non-intentional introductions of IAS in and around PAs, which will contribute to sustainability; targeted management action, and increase in budget allocations for IAS management under Component 2; and the targeted outreach for national and local decision makers under Component 3 to enable upscaling and replication of best management practise and the implementation of the NISSAP.

Sustainability

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Sustainability is largely built by developing capacity which will generate information on IAS presence, distribution, impacts and management. This information is then used to create awareness to change behaviour among decision makers and affected parties which in turn will drive the process in terms of developing and strengthening policy and its implementation. Capacity will be developed through training but also through demonstration trials within PAs and surrounding agro-ecosystems. Information on best practices and their benefits will then be made available to all interested parties, including policy-makers. Sustainability will be enhanced by being able to demonstrate that management costs are significantly lower than the benefits that accrue from IAS control.

The project has been designed to ensure that activities and outputs are key elements contributing to and enhancing sustainability of project outcomes beyond the project. Examples include strengthening of the legal and policy framework for IAS prevention, EDRR and control; and improving coordination of activities relating to IAS management at the national level through the process of drafting, endorsement as well as implementation of the NISSAP (see Component 1). The recently promulgated Environment Management Act (EMA) will contribute significantly to our efforts in terms of sustainability. Under the EMA, the Malawi Environmental Protection Agency (MEPA) will be mandated, once established, to not only coordinate IAS management activities but also take measures to control, eradicate or manage alien and invasive species. Based on EMA the costs of management activities will be borne by landowners.

Increased awareness among the general public, government officials and other stakeholders is an essential prerequisite for sustainable results in IAS control and management, and this will be another major focus of the project (see Component 3). Capacity building, which is fully or partly addressed in each of the three components, and awareness creation, will contribute to the sustainability of institutional and policy support for IAS management, while tools such as the IAS Identification Guide, which will also include information on best management practices, will facilitate more cost efficient and effective IAS management interventions. The development of best management practices under Component 2, and their wider dissemination will also contribute to more effective IAS control. The successful introduction of damaging and host-specific biocontrol agents will provide a mechanism whereby target species can potentially be controlled in perpetuity without additional activities or costs required.

It is expected that working together with the private sector and NGO's (Lilongwe Wildlife Trust, MMCT, NVT); Wildlife and Environmental Society of Malawi, Total Land Care) will contribute to the sustainability of IAS management activities in a manner similar to what has been achieved in Malawi with regard to PA management, where the private sector has been involved in lobbying the government on PA establishment, environmental education, infrastructure development, re-introduction and game management, promoting effort-based law-enforcement, a snare bounty scheme, research activities, and ecotourism (Mauambeta, 2003). The existence of PA financing mechanisms will contribute to the financial sustainability of IAS management interventions, especially in NNP and MMFR. By training PA staff from a number of other PAs and raising awareness among DNPW senior management as to the impacts of IAS it is envisaged that there will be increased investments in PA management. The Lilongwe Wildlife Trust is well established in Malawi and involved in a range of activities, including environmental education. As a project partner the Trust will contribute to awareness raising during the project and continue to do so post-project. This will be facilitated through the production of modules which the Trust can use to raise awareness even once the project has closed. This material will also be made available to the Wildlife and Environment Society of Malawi which is also involved in creating awareness among the public on environmental issues. The Malawi Environment Endowment Trust (MEET) also finances a range of environmental programs in Malawi and may be expected to allocate more funding to IAS issues as their profile in the country increases through the activities of the proposed project.

Scaling Up

Many of the project outputs are focused on two PAs, namely NNP and MMFR. This includes the identification of high risk pathways, IAS Risk Analysis procedures and improved surveillance and eradication mechanisms. IAS pathways will be similar for all PAs in Malawi and RA procedures and EDRR systems to enhance IAS management will be generic and as such there will be opportunities to also implement them elsewhere. Many of the invasive plant species targeted in these two PAs are also problematic elsewhere and as such the development of best management practices will also benefit other stakeholders, especially PA managers. IAS management strategies which will be developed and integrated into NNP and MMFR PA management plans will also be useful for other PAs since most of the issues that will be addressed are generic. As such majority of activities undertaken in MMFR and NNP will benefit all of the PAs in Malawi to some or other degree – great opportunities for replication. This replication will be enhanced by working closely with the DNPW and by providing training to PA staff on invasive plant identification and management, including prevention and EDRR.

Approaches for improved IAS management and sustainable farming practices in surrounding agro-ecosystems will also be of benefit to other communities in Malawi, especially those that share many of the same IAS. The partnership between PA staff, Local Government and communities in the control of IAS and the experience in habitat restoration through Farmer Managed Natural Regeneration and other activities, could easily be replicated elsewhere. This collaboration will enable the DNPW, Forestry

Department and communities to establish surveillance and monitoring systems for new and existing IAS in other PAs in Malawi, as well as target particular species for containment and control through their routine PA programs and budgets. Since many PAs in Africa are facing similar problems the information generated and management systems implemented and trialled will also be useful for other PAs throughout Africa, including TFCA's.

At a broader level the project will also lay the foundations to ensure that there will be potential for scaling up in the future. The development and implementation of IAS policies, capacity building and awareness creation will all contribute to scaling up of IAS management activities in Malawi, and elsewhere, in the future. This model has worked well in other African countries such as Ethiopia and Uganda, supported which were supported through the GEF Project "Removing Barriers to Invasive Plant Management in Africa" (GEF 2140). For example, the coffee-table book produced through this Project is not only widely used as a reference/information source for IAS management in the project countries but also elsewhere on the continent. As such we expect that many of the project outputs of the Malawi Project will have relevance for other countries in Africa.

The development of baseline data on the distribution of IAS and their impacts, together with some cost-benefit analyses, will provide policy makers and government officials with the necessary information to develop and implement additional policies to manage IAS in Malawi more effectively. For example, training on cost-benefits analyses will allow the Malawi authorities to replicate these studies on other 'conflict' species. In addition, the results of the cost-benefit analyses will also be useful for other countries in the region, and on the continent as a whole, since the same or similar invasive agro-forestry species have been promoted elsewhere.

The Communication campaign will be key in making information generated during project activities available to others. Without information dissemination there will be insufficient adoption and replication. Much of the information will be disseminated through workshops and Farmer Field Schools and other media, but adoption by DNPW and the Forestry Department will be key in ensuring that IAS issues are addressed and budgeted for across all PAs.

The development of identification tools will also make more information available on how to identify and best manage IAS, information largely lacking to date in Malawi. This information will be very useful to other PA managers in Malawi and elsewhere on the continent, allowing for the improved management of invasive plants. Since the impacts and management of particular IAS are generic this allows for replication.

A.2. Child Project? If this is a child project under a program, describe how the components contribute to the overall program impact.

N/A

A.3. Stakeholders. Identify key stakeholders and elaborate on how the key stakeholder's engagement is incorporated in the preparation and implementation of the project. Do they include civil society organizations (yes x /no)? and indigenous peoples (yes x /no)?⁹

The key stakeholders were consulted in a national workshop that was held in March 2017 followed by a subsequent meeting in October 2017. The October workshop reviewed the project goals, objectives and budget. For full details on how these stakeholders both contribute through e.g. co-funding, as well as benefit as being targeted stakeholders under the GEF incremental support, please see paragraph 62 of the prodoc. The table below provides a short summary.

Country/Stakeholder	Sector/Actor	Current role or function
Ministry of Natural Resources, Energy and Mining: Environmental Affairs Department (EAD)	Public sector: Environment – natural resource management	EAD is solely responsible for dealing with environmental issues, including IAS. They also undertake EIA's. They will be the National Executing Agency and house the National Project Coordinator
Ministry of Natural Resources, Energy	Public sector: Environment - forest	Custodian of all Forest Reserves in Malawi including IAS management. Manage Mount

⁹ As per the GEF-6 Corporate Results Framework in the GEF Programming Directions and GEF-6 Gender Core Indicators in the Gender Equality Action Plan, provide information on these specific indicators on stakeholders (including civil society organization and indigenous peoples) and gender.

and Mining: Department of Forestry	management	Mulanje FR, one of the pilot sites
Ministry of Natural Resources, Energy and Mining: Department of National Parks and Wildlife	Public sector: Environment - National Parks and Wildlife Reserves management	Responsible for management of all NP's and Wildlife Reserves in Malawi, including IAS management. Manage Nyika NP, one of the pilot sites
Ministry of Natural Resources, Energy and Mining: Forestry Research Institute of Malawi	Public sector: Environment – forest research	Research and development in forestry sector including control of pests of plantation species
Ministry of Natural Resources, Energy and Mining: Environmental Management Authority (EMA)	Public sector: Environment – environmental protection	Principal agency for the protection and management of the environment and sustainable management of natural resources. Will be, once established, the principle agency responsible for IAS management
Ministry of Agriculture, Irrigation and Water Development: Department of Agricultural Research Services	Public sector: Agriculture – research on crop production	Undertake research to improve crop production, including pest management and Conservation Agriculture.
Ministry of Agriculture, Irrigation and Water Development: Plant Protection Services	Public sector: Agriculture – plant quarantine	Mainly involved in plant quarantine issues, including undertaking Pest Risk Assessments. Also mandated to screen potential biocontrol agents
Ministry of Agriculture, Irrigation and Water Development: Department of Land Conservation Resources	Public sector: Agriculture – sustainable agricultural practices	Promotion of sustainable agricultural practices such as Conservation Agriculture, Farmer Managed Natural Regeneration, crop integration, etc.
National Museums of Malawi	Public sector – curation of museums including research	
National Herbarium and Botanical Gardens of Malawi	Public sector -	Collection and curation of plant specimens, plant surveys, research and management of Botanical Gardens
University of Malawi	NGO: Learning institution	Research in environmental issues, including IAS impacts and management
Mzuzu University	NGO: Learning institution	Research in environmental issues, including IAS impacts and management
Lilongwe University of Agriculture and Natural Resources (LUANAR)	NGO: Learning institution	Research in environmental issues, including IAS impacts and management
United Nations Environment Programme (UN Environment)	UN Agency: Environment	Implementing Agency and will also provide technical advice where possible and provide monitoring and supervision services for the project.

African Parks Foundation (APF)	NGO: Environment - PA management	Currently manage three NP's in Malawi in a public-private partnership
Peace Parks Foundation (PPF)	NGO: Environment – TFCA's	Establishment and development of Transfrontier Conservation Areas in Africa
Mulanje Mountain Conservation Trust (MMCT)	NGO: Environment - MMFR management	Co-manage MMFR together with the Forestry Department, including IAS management, awareness creation, anti-poaching, etc.
Nyika-Vwaza Trust (NVT)	NGO: Environment - NNP management	Contribute towards the management of NNP, including co-financing
Lilongwe Wildlife Trust (LWT)	NGO: Environment	Involved in environmental awareness creation in Malawi
Total Land Care (TLC)	NGO: Agriculture – sustainable agriculture	Promotion of sustainable agriculture in Malawi including Conservation Agriculture and FMNR
Centre for Agriculture and Biosciences International (CABI)	IGO: Environment and Agriculture – pest management	Development and implementation of IAS policies, awareness creation, capacity development and best management practices
Queensland Biosecurity, Australia	Public sector: Environment and Agriculture – weed and pest management	Biological control of environmental weeds

A.4. Gender Equality and Women's Empowerment. Elaborate on how gender equality and women's empowerment issues are mainstreamed into the project implementation and monitoring, taking into account the differences, needs, roles and priorities of women and men. Did the project conduct a gender analysis during project preparation (yes /no)? **This analysis will be done during the inception phase of the project.** Did the project incorporate a gender responsive project results framework, including sex-disaggregated indicators (yes X /no)? what is the share of women and men direct beneficiaries (women X%, men X%)? ¹⁰

According to a GISP report on mainstreaming *gender* issues women generally rate risks due to invasive species higher than men. This can be attributed to a range of factors including the fact that weeds cause significant human health problems. For example, of the 25 plant species in Australia which cause seasonal allergies, 20 are introduced. As such, gender issues are considered under each of the components described above. For example, the cost-benefit analysis of three 'conflict' species under Component 1 will assess gender-specific impacts, costs and the role of women in their management and control through agricultural practices. Under Component 2, strengthening of IAS management will include supporting community participation, and a communication and outreach to those living in and around protected areas will target not only community leaders but also women and women's groups. This approach will be extended to the national communications and outreach programs under Component 3, ensuring that the whole community learns which plants are invasive, how to manage them, and how to reduce the negative impacts and prevent the spread of IAS. Targeting women is key to the control of IAS weeds in agricultural landscapes, as women are typically responsible for weeding and their constant presence in the fields makes them likely to identify IAS more quickly than others in the community. At the same time, IAS control plans developed by the project will take account of the potential burden that could be placed on women if they become responsible for IAS control activities. Women-only focus group discussions will be held at the community level to ensure that women have the information necessary and a forum to discuss their roles in IAS management. The project manager will be responsible for the monitoring and review of gender sensitivity in the training workshops and the application of gender-disaggregated indicators. To ensure that the progress of gender mainstreaming can be monitored throughout the project, gender disaggregated targets will be developed and used to monitor indicators.

The involvement of women in the project is key because women generally perceive IAS as more of a threat than men. The project will build on this and apply guidelines to target fair gender distribution on its capacity building activities – e.g. selection of trainees,

¹⁰ Same as footnote 8 above.

co-management groups at pilots, as well as decision making fora, which in most cases will be near 50:50 throughout all strata of the project stakeholder groups. At pilot sites, where communities will be directly involved in IAS management activities, at least 50% of field workers will be women. Additional efforts will also be made to enhance capacity and awareness amongst women – gender sensitive awareness material will be developed and separate workshops will be held for women and men based on their availability, but more importantly to allow women in male dominated communities to comment and participate more freely in issues pertaining to IAS.

A.5 Risk. Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation. (Table format acceptable):

Risk analysis and risk management measures are summarized in the table below:

Description	Probability & Impact 1(low) to 5 (high)	Mitigation Measures	Responsible oversight agency
<p>Rapid changes in climate conditions could outstrip the ability of Malawi to successfully manage IAS</p> <p>Type: Environmental</p>	P = 2; I = 1	Managing IAS in PAs and adjoining agro-ecosystems will strengthen the health of these ecosystems and their resilience to the impacts of CC. In addition, project interventions will mitigate against some of the impacts of CC such as an increase in the frequency and intensity of droughts. Woody and aquatic weeds are known to increase evapo-transpiration. By removing these from water catchments, such as Mulanje and Nyika, the project will secure the provision of water to downstream water-users. This is related to the concept of ecosystem-based adaptation which is a cost-effective means of protecting human and ecological communities against the impacts of climate change. Ecosystem based-adaptation is described as “building nature’s resilience to the impacts of climate change, while also helping to meet people’s basic needs.” These ecosystem-based approaches are therefore not just about protecting ecosystems, but also about using ecosystems to help sustain people and the resources on which they depend. Such an approach can also provide an integrative framework to address impacts from both climate change and invasive species.” ¹¹	Lead NEA, CABI
<p>Lack of interest and support from key national stakeholder groups and organizations in IAS management</p> <p>Type: Socio-political</p>	P = 2; P = 4	Training and awareness-raising activities will improve communication and coordination as well as increasing stakeholder engagement, including the communities involved through support towards sustainable agriculture practices and pest management (communities will be eager to collaborate if the project is benefitting their day-to-day interests). The implementation of a communication strategy will also facilitate a better understanding of IAS issues amongst all stakeholders and as such contribute to improved decision making. In addition, the promulgation of the Malawi Environment Management Bill which includes the establishment of the Malawi Environment Protection Agency (MEPA) indicates that the GoM is serious in addressing the IAS issue. The Bill clearly states that the MEPA will coordinate IAS activities among all stakeholders and take measures for the control, eradication or management of alien and invasive species. The National Parks and Wildlife Act has clauses that are explicit about the illegality of introducing exotic species into PAs. The MMCT and the NVT have existing programs to manage IAS. The Peace Parks Foundation is also investing in IAS management in Nyika.	Lead NEA, CABI
<p>Insufficient funding and Government support to continue implementation of</p>	P = 2; I = 4	Several factors will increase the likelihood that increased funding and support will be available for IAS management post-project. First, the GoM has promulgated the Malawi Environment Management Bill which deals extensively with the need to manage IAS. The Bill also has clauses	Lead NEA, CABI, UN Environment

¹¹ |Burgiel, S.W. and Muir, A.A. (2010) Invasive Species, Climate Change and Ecosystem-Based Adaptation: Addressing Multiple Drivers of Global Change. Global Invasive Species Programme, Washington, DC, and Nairobi, Kenya
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<p>IAS activities after the project ends</p> <p>Type: Political</p>		<p>placing the onus for IAS management on landowners. For example, “if an alien species establishes itself as an invasive species due to actions of a specific person, the person shall be liable for all costs incurred in the control and eradication of that species.” The MMCT and the NVT continue to fund IAS management activities. The Peace Parks Foundation also continues to fund IAS management activities in the Malawi-Zambia TFCA - Nyika NP is part of that TFCA.</p> <p>The project will also increase awareness and understanding of decision makers on the full range of benefits provided by IAS management, not only in terms of agricultural production and livelihoods but also in terms of hydrological services and other ecosystem functions and services. This will be demonstrated by undertaking cost-benefit analyses which will clearly demonstrate that the benefits of IAS management outweigh the costs. In addition, IAS management in agricultural practices will demonstrate to local communities the tangible economic and social (e.g. health) benefits of effective IAS prevention and control practices, while the introduction of host-specific and damaging biocontrol agents will result in cost-effective and sustainable control of invasive plants, which together will incentivize local communities to continue these practices even in the absence of external support.</p>	
<p>Conflicts of interest where certain invasive alien plants provide benefits to individuals or groups (e.g. for fuelwood)</p> <p>Type: Socio-political</p>	<p>P = 4; I = 4</p>	<p>The project will develop and disseminate information regarding the pros and cons of various IAS. Cost-benefit analyses (CBA) will be undertaken - specifically on those species characterized as ‘conflict’ IAS, to inform all stakeholders of the true costs of these species, including impacts on livelihoods, ecosystem services, and biodiversity, and a comparison of the benefits they provide. In addition, participatory and consultative approaches will be used to get a consensus among stakeholders on policies towards conflict IAS, and to raise awareness of alternative natural resources to conflict IAS. Results of the CBA will be communicated as part of Component 3 activities to policy and decision makers at national level related to PA, agriculture, and forestry management. It should also be noted that the Malawi Environment Management Bill makes reference to the use of so-called ‘conflict’ species by stating that “a person authorized by a permit under subsection (2) to carry out an activity involving a specimen of an alien species or invasive species shall take all required steps to prevent or minimize harm to biodiversity.”</p>	<p>Lead NEA, CABI</p>
<p>Farmers and others living adjacent to PAs may expect to receive remuneration for their involvement in IAS management</p> <p>Type: Socio-political</p>		<p>The project will mitigate this risk by providing farmers with information regarding the long-term benefits they will accrue by participating in IAS management actions, and by providing farmers with non-monetary incentives in the form of fruit trees and other valuable native plant species, including valuable medicinal plants (in the PA buffer zones), to support sustainable agricultural production activities. By using demonstration trials farmers will see the benefits of practicing crop rotation, crop integration, cover crops and FMNR – these will mitigate against the need for any compensation.</p>	<p>Lead NEA</p>
<p>Environmental damage from IAS management</p> <p>Type: Environmental</p>	<p>P = 1; I = 4</p>	<p>Even though the project will make a positive contribution to biodiversity conservation, it should be recognized that IAS management activities, such as the use of agrochemicals and large-scale clearance in control /eradication activities, can sometimes result in negative environmental impacts. The project will undertake risk analyses with regard to the introduction of any potential biocontrol agents, and environmental & social impact assessments (ESIA) to examine the possible negative consequences of any proposed interventions, and propose measures to reduce/mitigate these. The ESIA's will be publicly disclosed in draft form prior to undertaking appraisal.</p>	<p>Lead NEA, CABI</p>
<p>Inability to demonstrate impact of project</p>	<p>P = 2; I = 3</p>	<p>The nature of the project is to demonstrate and to establish the necessary systems, make appropriate tools available, and raise awareness rather than actually targeting large scale impacts (at the pilot sites). The size of the</p>	<p>Lead NEA</p>

<p>interventions due to complex natural interactions and a long time span until impacts are noticed</p> <p>Type: Environmental</p>	<p>available GEF budget does not allow even the minimum requirements needed to start clearing large tracts of land of IAS, but will allow the project to demonstrate that this is needed and feasible. Additionally, stakeholders will be informed and capacitated, to continue and replicate the work started under the GEF project; as well as conduct participatory monitoring about immediate and long-term developments and the impacts of IAS, thus additionally motivating them to continue the work tested in the pilot sites.</p>	
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A.6. Institutional Arrangement and Coordination. Describe the institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.

On institutional arrangements for project implementation, please refer to Section 4 of the Project Document.

On planned coordination with other relevant GEF-financed projects and other initiatives, please refer to Section 2.7 of the Project Document.

Additional Information not well elaborated at PIF Stage:

A.7 Benefits. Describe the socioeconomic benefits to be delivered by the project at the national and local levels. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF)?

IAS have a negative impact on biodiversity, crop and pasture production, human and animal health, water resources, tourism and economic development in general, including hydro-electricity generation. As such the expected global benefits of this project include contributions to reducing the loss of biodiversity and reducing the negative impacts of IAS on the national economy of Malawi in general, and local livelihoods of communities living around the two targeted Protected Areas specifically. Management of IAS in Nyika NP and Mount Mulanje FR will contribute to the conservation of many endemic and threatened species, many of which are a major drawcard for national and international tourists, a sector which employs thousands of people in Malawi. Communities will also benefit from the project's IAS management interventions, as several crop pests affecting their agro-production systems are IAS, and additionally have a significant impact on the goods and services provided by ecosystems (Turpie, 2004; Strayer, 2012; van Wilgen et al., 2013), and management of IAS can contribute significantly to sustaining ecosystem functions and services (van Wilgen et al., 2013). By addressing IAS management among communities living in areas adjacent to PAs, the project also will reduce negative IAS impacts on the PAs themselves, both by removing IAS populations that might spread into PAs, and by protecting agricultural production from negative IAS impacts and thereby reducing the reliance of rural communities on resources within PAs.

Under unweeded conditions crop yields can be reduced significantly (see table below from Gianessi, 2009). For example, the introduced weed *Parthenium hysterophorus* reduced sorghum yields by 82-95% in unweeded sorghum field trials in Ethiopia (Tamado and Milberg, 2004). The majority of farmers in Ghana identified weeding as the main constraint in their farming system, with a major effect on yields (Amanor, 1994). Weeding is also time-consuming. According to Harsch (2004), out of the total labour input of African women in rice production, 40-60% is spent on weeding. Reducing weed populations in agro-ecosystems, through improved management, will therefore contribute to increased yields and in so doing enhance livelihoods and reduce pressure on PAs. Farming practices such as crop rotation, crop integration and cover cropping not only improve yields per hectare but also reduce the weed burden. For example, cover crops integrated or grown together with maize can reduce weed growth by 80-100%. Improved IAS management can also enhance livestock production in adjoin agro-ecosystems. It is estimated that 71% of natural pasture will be lost in South Africa if invasive plants are not managed (van Wilgen et al., 2008). We suspect the same for many other regions in Africa, including Malawi. Loss of pasture to invasive plants in adjoin agro-ecosystems will result in increasing overgrazing and associated land degradation in communal land leading to increased pressure on PAs for access to grazingland.

Crop	Yield reductions due to weeds in croplands
Maize	55-90
Common bean	50
Sorghum	40-80
Cowpea	40-60
Rice	50-100

Cotton	80
Wheat	50-80
Groundnut	80
Cassava	90

A.8 Knowledge Management. Elaborate on the knowledge management approach for the project, including, if any, plans for the project to learn from other relevant projects and initiatives (e.g. participate in trainings, conferences, stakeholder exchanges, virtual networks, project twinning) and plans for the project to assess and document in a user-friendly form (e.g. lessons learned briefs, engaging websites, guidebooks based on experience) and share these experiences and expertise (e.g. participate in community of practices, organize seminars, trainings and conferences) with relevant stakeholders.

Communication and information are crucial in building understanding, support and action on national and multisectoral IAS issues. The design of the MSP recognizes this by dedicating a whole component of the project (Component 3) to knowledge management and communications. Without awareness it is not possible to change behaviour and bring about the long term sustainable management of IAS. However, to be effective communication needs to be integrated into all project activities. For example, the establishment of demonstration sites under Component 2 to show the efficacy of various management interventions is one way of creating awareness, especially among rural communities. Workshops and meetings to enhance capacity should also be used to create awareness as to the threats of IAS and benefits of management. Ways of enhancing awareness of individual project outputs need to be addressed during the development of the Strategy and then implemented.

Information and awareness building needs will be identified by the development and implementation of a Communications Campaign. The campaign will focus on the most relevant target audiences using tailored forms of communication in order to raise awareness of IAS, especially identification, impacts and costs, and as a result bring about behaviour change with those decision makers involved in e.g. managing the national system of Protected Areas, quarantine services etc.. The project will mainly target PA staff, local government, forestry, tourism and agri-businesses and communities living adjacent to MMFR and NNP. The efficacy or impact of the Strategy will be assessed at pre- and end of project, and if there is no change in awareness among target audience's appropriate changes will be made to the Strategy itself. It is hoped that the information channelled through the communications campaign will provide the impetus for all stakeholders, especially government officials and policy-makers to provide significant resources to manage IAS and promote and endorse IAS policies.

MMCT has undertaken a survey to determine the efficacy of its education and communications strategies. Five categories of communication, the print media, electronic media, shirt messaging; sports infotainment and social infotainment were used and their efficacy ascertained (<http://www.africaforest.org/country-profiles/country-profiles-malawi.html>). The use of print media makes the assumption that all target audiences are literate. Leaflets and fliers were largely found to be ineffective and were reportedly being used for packaging with one parent from Phalombe area saying that: "Fliers and leaflets are meant for school boys and girls and not elders." Information made available through TV and radio was well received with radio being more effective due to the fact that TV's are more costly and need to be connected to the national power grid. TV also require viewers to be seated or unmoving while people can undertake activities while still listening to the radio. That said power sources for radios can also be costly for some families. Radio broadcasts were found to be more impactful if they were "backstopped with authoritative, village based interpersonal sources". Radio jingles were not that successful. That said combining radio messages with print media like posters and pamphlets were regarded as good reminders or reinforcers of broadcasts, and interpersonal sources. Shirt messaging was found to be ineffective and expensive. Attracting people to sponsored sports tournaments did allow for environmental messaging to be shared and discussed although impact was hard to measure. Hosting of global events such as the World Environment Day, World Biodiversity Day and many others (social infotainment), were considered to be effective in getting conservation messages across to local communities, allowing for the use of multiple messaging at one venue to a targeted audience. Targeting learners at school-based environmental clubs has also been successful.

Information on the impacts of IAS and benefits of control will be collated/developed at the initiation of the project, based on available information, and then disseminated to relevant audiences using appropriate forms of communication as determined by experts such as Lilongwe Wildlife Trust, who will be developing the Communications Campaign/Strategy and have been involved in awareness creation on a range of biodiversity issues in Malawi over many years. For example, available information on the impact of invasive woody plants on water resources will be made available to individuals in the MoAIWD to get buy-in for the project right at the onset. This will be linked to issues such as climate change and the fact that Mount Mulanje, an important water tower, is invaded by woody weeds, which impacts on Lake Chilwa, a Ramsar site which has dried up every year for the last 6 years. Similar information will be made available to the MoNREM to highlight the fact that woody weeds in all water catchments are reducing water flows into Lake Malawi, the level of which was down to 473.15 m a.s.l. in October 2016 reducing hydro-electricity generation to 150 MW. This resulted in 321 hours of load shedding (an average of 10 hrs/day) in October alone with significant negative impacts on the economy. The project findings, information and data generated, as well as best practice on IAS management GEF6 CEO Endorsement /Approval Template-August2016

will be disseminated through various means, largely determined by the Communication Strategy as additional information becomes available.

Based on a review of MMCT's communication activities the project will focus on the use of radio in combination with brochures or pamphlets. Meetings and workshops will also be widely used. The Field Guide on the identification and management of naturalized and invasive plants of Malawi will be made available to all interested and affected parties in the form of hard copies and an e-book – the e-book will be available on relevant websites such as those of the CBD, CABI, FISNA, NVT, Lilongwe Wildlife Trust (LWT), and national websites. Other awareness material and relevant project outputs will be made available on a dedicated project website and that of the LWT (<https://www.lilongwewildlife.org/>) and NVT (<http://www.nyika-vwaza-trust.org/>). The development and dissemination of awareness material be largely be supported by co-funding from Peace Parks Foundation, NVT, MMCT and LWT.

All international, regional, national and local partners will be regularly apprised of progress via reports and/or meetings. This will also provide an opportunity to capture their feedback for discussion and consideration.

The project will systematically collate existing information (inventories, databases, etc.) and will link to global initiatives such as CABI's Invasive Species Compendium and the Global Biodiversity Information Facility (GBIF).

B. Description of the consistency of the project with:

B.1 Consistency with National Priorities. Describe the consistency of the project with national strategies and plans or reports and assessments under relevant conventions such as NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.

Malawi makes many references to IAS in its NBSAP and reports to the CBD. In Malawi's 3rd National Report to the CBD it identifies the need for programs and activities to address: mechanisms for national and cross-sectoral coordination; review of policy, legislation and institutions (since there is no single policy framework that specifically addresses the control, prevention and management of invasive species); and development of policies and tools to promote activities to reduce the threats of IAS. These goals are also reflected in other documents such as the Forest Ecosystems Biodiversity Conservation Action Plan and the NBSAP. In the revised NBSAP (2015-2025), Target 9 is "By 2025, invasive alien species and their pathways are identified and prioritized for control and prevention from movement and spreading in and out of the country", and identifies the following targets/actions related to IAS that need to be achieved by 2025: 1) compile documentation and maps on IAS in Malawi including an inventory of invasive alien species prevalent in the country 2) develop a national invasive species management plan for management of IAS; iii) conduct awareness campaigns and build capacity of different stakeholders on how to identify, track and prevent IAS in their localities and on the threats of invasive alien species to biodiversity (cross-border inspection, quarantine and certification); iv) procure and upgrade inspection infrastructure for tracking and identifying IAS in Malawi; v) conduct capacity building initiatives on invasive alien species monitoring; vi) monitor the entry and spread of invasive alien species; and vii) regulate and control movement and spreading of IAS.

The Noxious Weeds Act, although outdated, clearly states that "It shall be the duty of every person responsible under this Act to clear or cause to be cleared any noxious weeds growing or occurring on the land in respect of which he is responsible. It shall further be the duty of any person to report forthwith to the nearest known weed inspector the occurrences of any noxious weeds on any land in respect of which such person is responsible". Water hyacinth and lantana are both listed as noxious weeds.

Malawi's National Parks and Wildlife Act of 1992 states that it is illegal to introduce any exotic plants or animals into PAs in Malawi. The clause reads as follows, "any person who conveys or introduces any plant, whether of a wild or cultivated species, into a national park or wildlife reserve shall be guilty of an offence" and the "The Chief Parks and Wildlife Officer may order the destruction or removal of any plant, and any seedling or off-shoot thereof, brought into a national park or wildlife reserve in contravention of subsection (1)."

Malawi's Environment Management Act of 2017 has many clauses pertaining to the management of IAS. The Malawi Environment Protection Agency which is to be established under the Act "shall, in consultation with relevant lead agencies, take measures for control, eradication or management of alien and invasive species". The Authority "shall ensure the coordination and implementation of programmes for the prevention, control or eradication of listed alien species and invasive plants".

Although the the GoM, through the MoNREM, is not investing directly in IAS management they are supporting other conservation-related activities. From 2015/2016 to 2018/2019 support will be provided to "Environment and Climate Change Management" (US\$ 8,941,513) and "Wildlife Conservation and Management" (US\$ 3,224,300), the latter much focused on species protection, anti-poaching, tourism development, and some activities related to management of their habitat. A very meagre US\$ 21,326 of this will be available for biodiversity conservation and management, which is the government program coming closest to IAS issues.

Malawi's recently revised National Agricultural Policy (NAP) of 2016 is focused on sustainable agricultural production and productivity; sustainable irrigation development; mechanization of agriculture; agricultural market development, agro-processing and value addition. With NAP, the GoM hopes for improved management of agricultural resources, increased agricultural exports and incomes, and improved food and nutrition security. The agricultural sector also recognizes the threat posed by weeds and IAS. For example, maximum maize yields are achieved if croplands are kept weed-free for the first 56 weeks after weeding. A one week delay in first weeding can reduce yields by one-third. In Malawi, one-third of the area planted to maize by smallholders is either left un-weeded or weeded after the critical first six weeks (Orr et al., 2002). Shortages of labor early in the season results in delayed weeding and subsequent maize yield losses of 15 to 90% due to weed competition (Kibata et al., 2002). Other NAP priority areas are empowerment of youth, women and vulnerable groups in agriculture; and institutional development, coordination and capacity strengthening; which is supported through the project by e.g. the partnership on weed management and IAS control through Conservation Agriculture in the bufferzones surrounding the two Protected Areas.. The NAP has identified eight policy priority areas one of which is "Agricultural Risk Management" which makes reference to pests and diseases which it is said "can have devastating effects on food security and agricultural growth" and should be addressed through the promotion of integrated pest management. This should include the empowerment of "communities, through capacity strengthening initiatives, to manage infrastructure for pest and disease control" and strengthening of "surveillance systems for monitoring outbreaks of pests and diseases".

With regard to International Conventions, Malawi is a signatory to the Convention on Biological Diversity (CBD). The proposed MSP clearly supports Article 8(h) of the CBD, which calls on signatories to: "Prevent the introduction of, control or eradicate those alien species which threaten ecosystems, habitats and species". The MSP will also help Malawi to meet the Aichi Biodiversity Targets, in particular Target 9: "By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment".

The project also supports Malawi to achieve targets outlined in the Global Strategy for Plant Conservation 2011-2020, including "Effective plans in place to prevent new biological invasions and to manage important areas that are invaded for plant diversity" and to address priorities identified in the International Plant Protection Convention (IPPC). The IPPC "aims to secure coordinated, effective action to prevent and to control the introduction and spread of pests of plants and plant products." The National Plant Protection Organization in Malawi is Plant Protection Services in the Ministry of Agriculture, Irrigation and Water Development.

Malawi is a member of the WTO, which has produced numerous relevant International Standards for Phytosanitary Measures (ISPMs); ISPMs are defined as legislation, regulation or official procedure aimed at preventing the introduction or spread of plant pests (which include invasive plants and other pests). Plant Protection Services are required to implement the various Standards.

Malawi is a signatory to the Convention on Wetlands of International Importance (the Ramsar Convention), which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources; the convention calls upon all Contracting Parties to, wherever possible, address the environmental, economic and social impact of invasive species on wetlands within their jurisdictions. Mulanje Mountain is also an important water catchment for Lake Chilwa, a Ramsar site.

C. DESCRIBE THE BUDGETED M & E PLAN:

The MSP will follow UN Environment standard monitoring, reporting and evaluation processes and procedures. Monitoring and evaluation activities fall under Component 3 of the project.

Progress and financial project reporting requirements are summarized in Appendix 8 in the prodoc. Reporting requirements and templates are an integral part of the UN Environment legal instrument to be signed by the NEA and UN Environment.

The project M&E plan is consistent with the GEF M&E policy. The Project Results Framework presented in Appendix 4 of the prodoc includes SMART indicators for each expected outcome as well as mid-term and end-of-project targets. These indicators, along with the key deliverables and benchmarks are listed in Appendix 6 of the prodoc, will be the main tools for assessing project implementation progress and whether project results are being achieved. The means of verification and the costs associated with obtaining the information to track the indicators are summarized in the table below (Costed M&E Plan). Other M&E related costs are also presented in the costed M&E Plan and are integrated in the overall project budget.

The main outputs of the M&E plan will be:

- Establish and implement a Project M&E Plan
- Develop and implement pilot site monitoring plans to show improvement in biodiversity levels from baseline

- Develop and implement monitoring plans to evaluate improved invasive alien plant management and increased yields in agro-ecosystems
- Changes in (national) awareness levels monitored to show increase in IAS awareness across targeted sectors
- External audits
- Midterm review (UNEP independent study)
- Terminal evaluation (UNEP independent study)

Monitoring protocols will be developed at the initiation of the project in order to provide baseline data. The monitoring will continue throughout the project as the control programmes are implemented at the pilot sites, providing indicators of progress with respect to both the invasive plant and the biodiversity at the site.

Monitoring changes in awareness levels is critical to determine the efficacy of the awareness strategy. This will be determined by undertaking regular surveys of various stakeholder groups which have been targeted in the awareness campaign.

The M&E plan will be reviewed and revised as necessary to ensure that project stakeholders understand their roles and responsibilities vis-à-vis project M&E. Indicators and their means of verification will be fine-tuned at the inception workshop. Day-to-day project monitoring is the responsibility of the National Project Coordinator and his/her team in the PMU but other project partners will have responsibilities to collect specific information to track the indicators. A project M&E specialist will be contracted – to assist the NEA to design, run and report on the impact and performance monitoring aspects. It will be the responsibility of the NPC to inform UN Environment of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely fashion.

The NSC will receive annual reports on progress and will make recommendations to UN Environment concerning the need to revise any aspects of the Results Framework or the M&E plan. Project oversight to ensure that the project conforms to UN Environment and GEF policies and procedures will be the responsibility of the UN Environment-GEF Task Manager, who will also review the quality of draft project outputs and provide feedback to the project partners.

Project supervision will take an adaptive management approach. The Task Manager will develop a project supervision plan at the start of the project which will be communicated to the project partners during the inception workshop. The emphasis of the Task Manager supervision will be on outcome monitoring but without neglecting project financial management and implementation monitoring. Risk assessment and rating is an integral part of the Project Implementation Review (PIR). The quality of project M&E will also be reviewed and rated as part of the PIR. Key financial parameters will be monitored quarterly to ensure cost effective use of financial resources.

The principal means of assessment of project performance will be the mid-term and terminal evaluations. These will provide an opportunity to apply the GEF IAS SP7 Tracking Tool Draft, and to verify the information it provides. The tracking tool will be updated at mid-term and at the end of the project and will be made available to the GEF Secretariat along with the project PIR report.

In-line with UN Environment Evaluation Policy and the GEF's Monitoring and Evaluation Policy the project will also be subject to a Terminal Evaluation (TE). Additionally, a Mid-Term Review (MTR) will be commissioned and launched by the Project Manager before the project reaches its mid-point. The MTR will be carried out using a participatory approach whereby parties that may benefit or be affected by the project will be consulted. The NSC will participate in the MTR and review and approve a management response – as to be developed by the NEA/PMU, to the recommendations along with an implementation plan. It is the responsibility of the UN Environment Task Manager to monitor whether the agreed recommendations are being implemented. However, if project is rated as being at risk, a Mid-Term Evaluation will be conducted by the Evaluation Office instead of a MTR.

The Evaluation Office will be responsible for the TE and will liaise with the Task Manager and Executing Agency(ies) throughout the process. The TE will provide an independent assessment of project performance (in terms of relevance, effectiveness and efficiency), and determine the likelihood of impact and sustainability. It will have two primary purposes: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote learning, feedback, and knowledge sharing through results and lessons learned among UN Environment, the GEF, executing partners and other stakeholders. The direct costs of the evaluation will be charged against the project evaluation budget. The Terminal Evaluation will be initiated no earlier than six months prior to the operational completion of project activities and, if a follow-on phase of the project is envisaged, should be completed prior to completion of the project and the submission of the follow-on proposal. Terminal Evaluations must be initiated no later than six months after operational completion.

The draft Terminal Evaluation report will be sent by the Evaluation Office to project stakeholders for comments. Formal comments

on the report will be shared by the Evaluation Office in an open and transparent manner. The project performance will be assessed against standard evaluation criteria using a six point rating scheme. The final determination of project ratings will be made by the Evaluation Office when the report is finalised and further reviewed by the GEF Independent Evaluation Office upon submission. The evaluation report will be publicly disclosed and may be followed by a recommendation compliance process. An independent terminal evaluation (TE) will take place at the end of project implementation. This will again make use of the GEF Tracking Tool. The Evaluation and Oversight Unit (EOU) of UN Environment will manage the terminal evaluation process. A review of the quality of the evaluation report will be done by EOU and submitted along with the report to the GEF Evaluation Office not later than 6 months after the completion of the evaluation.

The table below summarizes main M&E costs showing the total budget (consolidated GEF and co-finance) for the 4 years of project implementation.

Type of M&E activity	Responsible Parties	GEF Budget US\$	Co-financed Budget - US\$	Time Frame
Inception Workshop	<ul style="list-style-type: none"> Lead: NEA/National Project Coordinator PMU UN Environment 	8,000 – 100% of costs under PMC	5,000	Within 2 months of project start-up
Inception Report	<ul style="list-style-type: none"> Lead: NEA/National Project Coordinator 	No additional M&E costs	None	1 month after project inception meeting
Development and implementation of the Project Impact Monitoring System: IAS control pilots, capacity building and awareness & Logframe and GEF TTs	<ul style="list-style-type: none"> Lead: National Project M&E Consultant/Institution (9 pm: 3 months in PY1; 1,5 months/year in PY2-5) Co-lead: National Project Coordinator local implementing partners at two Pas 	36,000 (US\$4,000/month (includes travel, accommodation and reporting costs – 24K under Comp 3 and 12K under PMC)	None	<ul style="list-style-type: none"> Design of Project Impact Monitoring System: 6 months after start project. M&E Manual Impact M&E reports: Midterm and end of project Reporting on logframe indicators: Semi-annually GEF Tracking Tools: Start, mid and end of project Progress/performance review: annually at NSC meeting Gender, as part of M&E reports, PIR and SA progress reports
Communications on M&E activities	<ul style="list-style-type: none"> Lead NEA/National Project Coordinator Administrator 	1,394 – 46% of total costs under PMC		Regularly during project period
Semi-annual Progress Reports to UN Environment	<ul style="list-style-type: none"> Lead: NEA/National Project Coordinator 	No additional M&E costs	No additional M&E costs	Every 6 months
Quarterly Expense reports	<ul style="list-style-type: none"> PMU finance & NEA 	No additional M&E costs	No additional M&E costs	Every 3 months
PIR	<ul style="list-style-type: none"> Lead: NEA/National Project Coordinator UN Environment 	No additional M&E costs	No additional M&E costs	Annually, part of reporting routine
Project Steering Committee meetings	<ul style="list-style-type: none"> Lead: NEA/National Project Coordinator 	20,592 – 100% of costs under PMC	20,000	Once a year minimum

Type of M&E activity	Responsible Parties	GEF Budget US\$	Co-financed Budget - US\$	Time Frame
	<ul style="list-style-type: none"> • Secretariat to NSC – by PMU • NPSC 			
Mid-Term Evaluation – supported by Comp 3 M&E data	<ul style="list-style-type: none"> • National Project Coordinator • Lead: National Project M&E Consultant • UN Environment • NSC • MTR consultant(s) 	25,000 – 100% of costs under Comp 3	-	At mid-point of project implementation; PY2.5
Terminal Evaluation	<ul style="list-style-type: none"> • UN Environment • External TE consultant 	35,000 – 100% of costs under PMC	-	During last 2 months of project implementation
5 annual Financial Audits	<ul style="list-style-type: none"> • NEA/PMU finance staff • UN Environment 	12,000 – 100% of costs under PMC	-	Annually
Project Terminal Report	<ul style="list-style-type: none"> • NEA/National Project Coordinator 	No additional M&E costs	No additional M&E costs	During last 2 months of project implementation
Capturing lessons and best practice	<ul style="list-style-type: none"> • National Project Coordinator 	No additional M&E costs	No additional M&E costs	Part of Semi-annual reports, PIR & Project Final Report
Monitoring visits to field sites	<ul style="list-style-type: none"> • M&E Specialist • NEA/National Project Coordinator • Project Technical Advisor 	10,000 – 100% of costs under component 2 (local travel)	10,000	
Indicative budget for M&E Plan	<ul style="list-style-type: none"> • Master Total 	US\$147,986 (of which US\$88,986 under PMC and US\$59,000 from other component budgets)		

PART III: CERTIFICATION BY GEF PARTNER AGENCY(IES)

A. GEF Agency(ies) certification

This request has been prepared in accordance with GEF policies¹² and procedures and meets the GEF criteria for CEO endorsement under GEF-6.

Agency Coordinator, Agency Name	Signature	Date (MM/dd/yyyy)	Project Contact Person	Telephone	Email Address
Kelly West, Senior Programme Manager & Global Environment Facility Coordinator Corporate Services Division UN Environment		February 12, 2018	Max Zieren Task Manager	+662 2882101	zieren@un.org

¹² GEF policies encompass all managed trust funds, namely: GEFTF, LDCF, SCCF and CBIT
GEF6 CEO Endorsement /Approval Template-August2016

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

Please refer to appendix 4 of the project document.

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF

N.A. as there are no GEFSEC comments for follow up; no STAP review conducted on this MSP, as well as no Council Comments received.

ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS¹³

A. Provide detailed funding amount of the PPG activities financing status in the table below:

PPG Grant Approved at PIF: 50,000			
<i>Project Preparation Activities Implemented</i>	<i>GETF/LDCF/SCCF/CBIT Amount (\$)</i>		
	<i>Budgeted Amount</i>	<i>Amount Spent To date</i>	<i>Amount Committed</i>
Project Personnel	35,200	35,200	
Travel on official business	3,400	4,749	
Sub contract to supporting organizations	8,000	6,000	
Meetings and Conferences	3,400	2,233	
Sundry	0	1818	
Total	50,000	50,000	

¹³ If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue to undertake the activities up to one year of project start. No later than one year from start of project implementation, Agencies should report this table to the GEF Secretariat on the completion of PPG activities and the amount spent for the activities. Agencies should also report closing of PPG to Trustee in its Quarterly Report.

ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used)

Provide a calendar of expected reflows to the GEF/LDCF/SCCF/CBIT Trust Funds or to your Agency (and/or revolving fund that will be set up)

NA