

UN Environment GEF PIR Fiscal Year 2019
(1 July 2018 to 30 June 2019)

| | | |
|---|---|---|
| 1. Identification | GEF ID.: 5824 | Umoja no.: P1-33GFL-000570 SB-000883 |
| Project Number + Project Title | Sharing knowledge on the use of biochar for sustainable land management, or Biochar for Sustainable Soils (B4SS) | |
| Duration months | <i>Planned</i> | 48 months |
| | <i>Extension(s)</i> | 02/11/2018 - 3 Months |
| Division(s) Implementing the project | UN Environment | |
| Name of co-implementing Agency | | |
| Executing Agency(ies) | Starfish Initiatives | |
| Names of Other Project Partners | Nanjing Agricultural University, China | |
| | Jimma University, Ethiopia | |
| | World Agroforestry Centre (ICRAF), Kenya | |
| | Asociación para la promoción del desarrollo sustentable (APRODES), Peru | |
| | Thai Nguyen University of Sciences (TNUS), Viet Nam | |
| | Cornell University, USA | |
| | New South Wales Department of Primary Industries (NSW DPI) | |
| | Norwegian Geotechnical Institute (NGI) | |
| | University of Udine, Italy | |
| Project Type | Medium size project | |
| Project Scope | Global | |
| Region (<i>delete as appropriate</i>) | Africa, Asia Pacific, Latin America and Caribbean | |
| Names of Beneficiary Countries | China, Ethiopia, Indonesia, Kenya, Peru and Vietnam | |
| Programme of Work | Programme of Work (2015- 2016), particularly with its ecosystem management thematic priorities, contributing to the achievement of expected accomplishment (EA) (a): Use of the ecosystem approach in countries to maintain ecosystem services and sustainable productivity of terrestrial and aquatic systems is increased; and (b): Tools, technical support and partnerships to improve food security and sustainable productivity in agricultural landscapes through the integration of the ecosystem approach. | |
| GEF Focal Area(s) | LD1: Outcome: 1.2: Improved agricultural management. Outputs: 1.2. Types of innovative SL/WM practices introduced at field level; 1.5: Information on SLM technologies and good practice guidelines disseminated. LD4: Outcome: 4.2: Improved GEF portfolio monitoring using new and adapted tools and methodologies, Outputs: 4.2: GEF-financed projects contribute to SLM/SFM/INRM | |

| | | |
|---|--|-------------------|
| | knowledge base. | |
| UNDAF linkages | <p><u>China</u> Priority area: Improved and Sustainable Environment</p> <p><u>Ethiopia</u> Priority area: Sustainable and inclusive growth</p> <p><u>Indonesia</u> Priority area: Environmental Sustainability and Enhanced Resilience to Shocks</p> <p><u>Kenya</u> Priority area: Sustainable and inclusive growth</p> <p><u>Peru</u> Priority area: Environmental sustainability, disaster risk reduction, fight against climate change and increased resiliency</p> <p><u>Vietnam</u> Priority area: Inclusive, equitable and sustainable growth</p> | |
| Link to relevant SDG target(s) and SDG indicator(s) | 2.4 – 2.4.1 15.3 – 15.3.1 | |
| GEF financing amount | USD 1,826,484 | |
| Co-financing amount | USD 1,257,800 | |
| Date of CEO Endorsement | May 22, 2014 | |
| Start of Implementation | April 2015 | |
| Date of first disbursement | 9 February 2015 | |
| Total disbursement as of 30 June | \$ 1,744,428.00 | |
| Total expenditure as of 30 June | \$ 1,744,428.00 | |
| Expected Mid-Term Date | December 2016 | |
| Completion Date | <i>Planned</i> | 30 September 2018 |
| | <i>Revised</i> | 31 December 2018 |
| Expected Terminal Evaluation Date | 8-9 March 2017 | |
| Expected Financial Closure Date | 31. December 2018 | |

2. OVERVIEW OF PROJECT STATUS

| | |
|--------------------------------|--|
| UN Environment Subprogramme(s) | Specify the relevant Expected Accomplishment(s) & Indicator(s) |
|--------------------------------|--|

| | |
|--|--|
| | POW 2016-2017: EA (a): Use of the ecosystem approach in countries to maintain ecosystem services and sustainable productivity of terrestrial and aquatic systems is increased (b): Tools, technical support and partnerships to improve food security and sustainable productivity in agricultural landscapes through the integration of the ecosystem approach. |
| The project demonstrated and promoted the adoption of SLM practices involving the use of innovative organic amendments, based on biochar, that improve the capture and efficient use of nutrients, and enhance productivity, improve climate resilience, support rural livelihoods, and contribute to watershed management. As such, the project particularly contributed to EA (b) through tools, technical support, demonstration of application at local and broader scales, integration of local knowledge into biochar production and application, and through broad scientific partnerships at global scale. | |

For all GEF 6 and later projects:

| GEF Core Indicators | Indicative expected Results |
|------------------------------------|-----------------------------|
| N/A, project was approved in GEF 5 | Indicative expected Results |
| | |

| Planned linkages with UNDAF | |
|--|--|
| <p>The project is aligned to UNDAF strategic objectives indirectly, since the project did not use the objectives to build the project strategy. However, the project does address the priority area “Sustainable and inclusive growth”, this is a priority area for China, Ethiopia, Kenya, and Vietnam. Sustainable and inclusive growth is addressed in the project strategy by increasing land productivity and addressing mismanagement of nutrient resources will improve livelihoods for the farming groups in these nations.</p> <p>The project addresses the priority area “Environmental sustainability, disaster risk reduction, fight against climate change and increased resiliency”, this is a priority area for Indonesia and Peru. The improvement of degraded land will increase resilience against desertification, droughts and floods.</p> | |

| Planned contribution to relevant SDG target(s) and SDG indicator(s) | |
|--|--|
| <p>The project does not track the individual SDG indicators, but it is aligned with the goals and would logically contribute to the indicators. The project framework to improve agricultural management through innovative sustainable land use practices relates to target 2.4 and the associated indicators. Target 2.4 ensures sustainable food production systems and implementation of resilient agricultural practices, biochar techniques contribute to target 2.4 by improve productivity and addressing issues of declining soil fertility and mismanagement of nutrient resources.</p> <p>Effective adoption of sustainable land management practices such as biochar will contribute to target 15.3. Specifically, biochar techniques restore degraded agricultural soil and improve fertility which will in effect move towards a land degradation-neutral world.</p> | |

| | |
|--|--|
| | |
|--|--|

| Implementation Status | FY 2016 | FY 2017 | FY 2018 | FY 2019 |
|-----------------------|---------------------|---------------------|---------------------|---------|
| | 1 st PIR | 2 nd PIR | 3 rd PIR | 4th PIR |

| Development Objective Rating FY | FY 20__ | FY 2016 | FY 2017 | FY 2018 | FY 2019 |
|---------------------------------|---------|----------|-----------|-----------|-----------|
| | e.g MS | S | HS | HS | HS |

Results were consistently beyond expectation for nearly all targets.

For indicator of outcome 1 – the number of farmers participating in the evaluation of the effects of biochar in soil and generate useful information for sustainable land management – the result at project end was nearly double the initially set target, i.e. 205 instead of 120. Outcome 2's indicator, the number of visitors to demonstration sites, was exceeded manifold, as the project had over 1,000 visitors instead of the envisaged target of at least 120.

| Implementation Progress Rating | FY 20__ | FY 2016 | FY 2017 | FY 2018 | FY 2019 |
|--------------------------------|----------------|----------|----------|----------|----------|
| | e.g. not rated | S | S | S | S |

Nearly all activities and outputs were achieved in line with the implementation plan. Only final evaluation and compilation of results and scientific review of the vast body of country reports and publications took slightly longer than anticipated.

Output 1a contributed strongly to the overall very good success of the project, as it was able to establish 13 biochar demonstration sites instead of the envisaged 6; under output 1b, 34 different biochar formulations were evaluated, exceeding the end of project target of at least 24 formulations, and the related report on recommendable practices was completed with a slight delay (output 1c). The outputs under outcome 2 also mainly achieved highly successful ratings, as the number of guidelines produced was double the initial target (12 instead of 6 for output 2a); the project established 7 biochar networks, in line with the targeted 6 under output 2b and trained more than 660 smallholders, over 560 more than the originally targeted 100 smallholders (output 2c)

| Risk Rating | FY 20__ | FY 2016 | FY 2017 | FY 2018 | FY 2019 |
|-------------|---------|----------|----------|----------|----------|
| | e.g. L | L | L | L | L |

Except for a few delays in reporting, due to inconclusive data sets caused by extreme weather and pests in one of the project countries, neither project implementation nor execution faced any major risk, leading to the project continuously exceeding its targets.

| | |
|-------------------------------|---|
| Stakeholder engagement | <p>The B4SS had various target groups, the primary one being farmers. These were key beneficiaries of the project and were involved throughout the project. Perhaps the best practice example of enhancing farmer ownership and championship was Kenya's ParTriDes methodology. In Ethiopia, farmer participatory methods were also employed which, in the evaluator's opinion, created the platform for champion farmers. This was also evident, to a lesser degree, in Vietnam.</p> <p>Another key target group was the extension support of agriculture at government level. In all six countries an effort was made to include and integrate this stakeholder into the project activities, with varying success. In Kenya, this was not as successful, as an example, as in Ethiopia.</p> |
|-------------------------------|---|

| | |
|--|--|
| | <p>A key (unintended) stakeholder in the project were students. Because most country partners were universities, or at the very least, research-based institutions, students were involved throughout the project. This included training, exposure to the Scientific Advisory Panel members, supporting project outcomes through individual master's and PhDs, co-publishing with their supervisors, and more. In some countries, e.g. Indonesia, students who were not directly studying biochar-related thematic areas, were exposed to on-farm training and continued sharing what they had learned (even at household level with their parent-farmers). In many cases, the project, through its relationships fostered, allowed for several students to pursue their PhD and Post-doctorals (and continue to do so). This is a key (unintended, yet positive) outcome of the project – the catalysing of a new generation of biochar scientists.</p> <p>The business community was a target group in some countries more than others, most particularly in China, and to a lesser extent, in Peru. In China, the large-scale operation lent itself to supporting the large-scale value chain of biochar – compound fertilizer production. Business was a key player in this regard.</p> <p>Partnerships were extremely important, and relationships forged and strengthened through the project have turned into long-lasting professional collaborations. Most respondents highlighted that this was one of the key successes of the project – the strengthening of these relationships for further collaborations and biochar uptake.</p> <p>Stakeholder participation and cooperation is rated as <i>Satisfactory</i>.</p> |
|--|--|

| | |
|------------------------------------|--|
| <p>Gender mainstreaming</p> | <p>The project, in its design, laid out the project implementation in its responsiveness to human rights and gender equality. The project aimed, through its research, to improve lives for farmers and in general, food security.</p> <p>In some countries, the project was able to strengthen and empower women farmers (particularly in Vietnam) through the project implementation activities. In other countries, the project did well to empower women scientists (e.g. in Indonesia).</p> <p>The project seemed to be very self-aware of the gender-differentiated roles within the countries, and the biochar application and uptake had differing results because of these roles. For instance, in Vietnam, women farmers felt that they were not equipped to deal with the intensive labour needed to collect and apply biochar. In Ethiopia, women had many other responsibilities, and as a result there were differing levels of uptake between male and female farmer demo plots. These were discussed in detail and reflected on in the various discussions held during the international project workshops.</p> <p>Responsiveness to human rights and gender equality is rated as <i>Satisfactory</i>.</p> |
|------------------------------------|--|

| | |
|---|---|
| <p>Knowledge activities and products</p> | <p>The achievement of the project's objective, namely to "demonstrate and promote the adoption of SLM practices involving the use of innovative</p> |
|---|---|

| | |
|--|--|
| | <p>organic amendments, based on biochar, that improve the capture and efficient use of nutrients, and enhance productivity, improve climate resilience, support rural livelihoods, and contribute to watershed management” will be evaluated based on the two outcomes of the project.</p> <p><u>Outcome 1: Increased understanding of the potential of biochar in improving productivity and addressing issues of declining soil fertility and mismanagement of nutrient resources</u></p> <p>As per the logical framework indicator for this outcome, the final project report showed that 205 farmers participated in the evaluation of the effects of biochar in soil and supported the generation of useful information for sustainable land management (the Outcome-level Indicator target was 120).</p> <p>Based on extensive interviews with farmers and other relevant stakeholders in three countries, as well as reviews of the project implementation documentation, there is a definite increase in understanding and appreciation of biochar’s role in soil health and crop productivity.</p> <p>Outcome 1 is an important step towards the intermediate state whereby enhanced use and access to greater information and good practices for biochar amendments leads to increased use of biochar application to enhance soil health in the pilot sites of the six countries in question. The project has certainly created a strong evidence base, and an understanding, which has led to increased use in each of the countries, the level of increased use depends on factors outside the control of the project. The project certainly helped to drive enhanced use and access through the strengthening of the farmer-local scientist, and local scientist-international scientist networks, as well as the connection between the scientific community and the practitioners, which resulted in co-learning for uptake.</p> <p><u>Outcome 2: Knowledge generated and disseminated on the appropriate use of biochar to improve the capture and efficient use of nutrients, while reducing air and water pollution; and increased awareness and improved management amongst stakeholders on the use of biochar to address soil constraints, and most effective application rates and formulations to achieve agronomic benefits</u></p> <p>According to the final project report, 1042 landholders, researchers, students and other stakeholders visited the demonstration sites (and/or were trained). This target outperformed on the outcome-level indicator by almost 10-fold (original target was 120).</p> <p>The project also outperformed in the amount and quality of communication and outreach materials (videos, cartoons, posters, pamphlets, guides, etc), which are an important and valuable resource not only for the project countries, but also for other countries (e.g. other countries in South America are making use of the Peruvian-developed biochar videos).⁴³</p> <p>Training and capacity development, particularly through learn-by-do, participatory design, as well as exposure (students being able to join</p> |
|--|--|

| | |
|--|---|
| | <p>projects etc), had a large role to play in having this outcome come to fruition successfully.</p> <p>Most project proponents especially highlighted the value of the knowledge sharing between countries and the support by the Scientific Advisory Panel.</p> <p>This outcome, as achieved through the project, will lead to the intermediate state that more informed farmers and users are able to (in some cases) make, and use, biochar for application. The assumption that biochar production is easy did not hold for the project, at least in some of the countries (Indonesia, Vietnam, China) where they would prefer to have easy access through e.g. biochar compost, or compound fertilizer. Championship and behaviour change for uptake will eventually lead to increased use in the six countries in question. This is an assumption that will further be elaborated on in the sustainability section, suffice it to say, that where championship (particularly farmer championship) was strong, uptake was stronger.</p> <p>Achievement of direct outcomes is rated as <i>Highly Satisfactory</i>.</p> |
|--|---|

| | |
|------------------------------------|--|
| <p>Stories to be shared</p> | <p>Diffusing biochar-compound fertilisers: a recommended practice for large-scale biochar implementation in China Xiaoyu Liu, Genxing Pan, Lianqing Li, Nanjing Agricultural University – B4SS partners in China</p> <p>In China, about 0.9 billion tonnes of crop straw are produced every year. Traditionally, the straw has been used as cooking fuel in rural China. However, straw is now considered a waste that hinders development. Returning the straw directly to the field, the common practice, is being challenged due to its negative impact on plant seedlings. There are many harmful insects or the eggs of these insects in the returned straw. Once returned to the soil, these insects will propagate and so the application of pesticides. Moreover, the straw in the soil decomposes very slowly, whereas the time between crop seasons is very short. The undecomposed straw affects the emergence of seedlings and crop straw decomposition increases the use of nitrogen fertiliser. As demonstrated in the B4SS project, converting the crop straw into biochar is a very promising way of managing biomass residues. The results show that biochar amendment increased crop yield by 15% using 605 pairs of field experimental dataset across China. Moreover, many biochar production systems have been developed in the last 10 years in China (Fig. 1).</p> |
|------------------------------------|--|



Fig 1. Many biochar production systems have been developed in the last 10 years in China

However, there are still some barriers that restrict large scale biochar implementation in China. One of the barriers is the high cost of biochar application due to the relatively high price of biochar and high application rate. The average biochar application rate in the field experiments conducted in 2005-2017 was approximately 23 t ha⁻¹, which is equivalent to about USD 13,800 per hectare. It is difficult for farmers to spend so much money on farming. We found that another challenge is the biochar application method. The farmers who participated in the B4SS survey, in a village of Anhui in central China, did not like to use raw biochar because it is dusty and dirty on their clothes, hands and faces, and cannot be applied easily to the field using the machines they currently own. One possible solution to overcome these barriers is to reduce the biochar application rate and increase its efficiency. After 5 years of research and B4SS project implementation, Prof. Genxing Pan and his group from Nanjing Agricultural University (NAU) found that one solution is to mix biochar with fertilisers and make biochar-compound fertilisers (Fig 2). These unique fertilisers are a combination of biochar, chemical fertilisers (nitrogen, phosphorous and potassium) and binders. They come in small granules and can be easily applied to the field with current machines. The recommended application rate is equivalent to that of the commonly used chemical fertilisers. In 2017, NAU conducted experiments with biochar-compound fertilisers and found that the application of biochar-compound fertiliser to soil increased maize yield by 5.3%, rice yield by 9.8% and soybean yield by 6.8% compared to chemical fertilisers. To scale up biochar technologies, NAU developed a pathway for large-scale biochar implementation in China (Fig 3): to convert crop straw into biochar and make biochar-compound fertilisers. There are already four companies that produce biochar and biochar-compound fertilisers in China. This has proven to be economically viable and cost effective for farmers. This strategy could be replicated in other countries or regions with large volumes of unused biomass residues.



Fig 2. Biochar compound fertilisers are a mixture of biochar, chemical fertilisers and binders

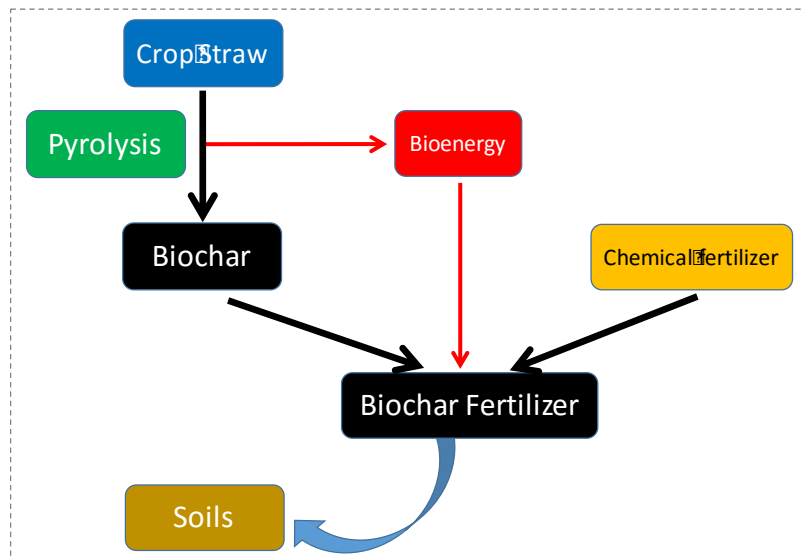


Fig 3. A recommended pathway for crop straw management and biochar use in China

Also, a story on the B4SS project in Vietnam will be published by the UN Environment's GEF Communications team.

3. RATING PROJECT PERFORMANCE AND RISK

Based on inputs by the Project Manager, the **UNEP Task Manager**¹ will make an overall assessment and provide ratings of:

- (i) Progress towards achieving the project Results(s)- see section 3.1
- (ii) Implementation progress – see section 3.2

Section 3.3 on Risk should be first completed by the Project Manager. The UNEP Task Manager will subsequently enter his/her own ratings in the appropriate column.

3.1 Rating of progress towards achieving the project Results(s)

| Project objective and Outcomes | Indicator | Baseline level | Mid-Term Target or Milestones ² | End of Project Target | Observations/ justification on rating | Progress rating ³ |
|--|--|----------------|--|-----------------------|---------------------------------------|------------------------------|
| Objective⁴ | To demonstrate and promote the adoption of SLM practices involving the use of innovative organic amendments, based on biochar, that improve the capture and efficient use of nutrients, and enhance productivity, improve climate resilience, support rural livelihoods, and contribute to watershed management. | | | | | |
| Outcome 1: <i>Increased understanding of the potential of biochar in improving productivity and addressing issues of declining soil fertility and mismanagement of nutrient resources.</i> | Number of farmers that will participate in the evaluation of the effects of biochar in soil and generate useful information for sustainable land management. | 0 | ≥ 60 | ≥ 120 | 205 | HS |

¹ For joint projects and where applicable ratings should also be discussed with the Task Manager of co-implementing agency.

² Some projects are adopting/planning to adopt milestones for tracking the achievement of outcomes. Add the corresponding milestones in this column when applicable to inform the rating. Milestones are optional and may substitute for Mid-Term Target.

³ Use GEF Secretariat required six-point scale system: Highly Satisfactory (**HS**), Satisfactory (**S**), Marginally Satisfactory (**MS**), Marginally Unsatisfactory (**MU**), Unsatisfactory (**U**), and Highly Unsatisfactory (**HU**).

⁴ Add rows if your objective has more than 3 outcome indicators. Same applies for the number of outcomes.

| Project objective and Outcomes | Indicator | Baseline level | Mid-Term Target or Milestones ² | End of Project Target | Observations/ justification on rating | Progress rating ³ |
|--|--|----------------|--|-----------------------|---------------------------------------|------------------------------|
| Output 1.a: <i>Collation of demonstration results comparing biochar with alternative management practices.</i> | Number of demonstration sites established and visited. | 1 | ≥ 3 | ≥ 6 | 13 | HS |
| Output 1.b: <i>Evaluation of a range of formulations and application rates of nutrient-enhanced biochar.</i> | Number of biochar formulations/rates/s oil type/crop type combinations evaluated in all the six participating countries. | 0 | ≥ 12 | ≥ 24 | 34 | HS |
| Output 1.c: <i>Collation of recommended practices for the use of biochar in SLM.</i> | Report documenting recommended practices. | N/A | N/A | Completed report | Currently preparing the draft report | S |

| Project objective and Outcomes | Indicator | Baseline level | Mid-Term Target or Milestones ² | End of Project Target | Observations/ justification on rating | Progress rating ³ |
|--|--|----------------|--|-----------------------|---------------------------------------|------------------------------|
| <p>Outcome 2: <i>Knowledge generated and disseminated on the appropriate use of biochar to improve the capture and efficient use of nutrients, while reducing air and water pollution; and</i></p> <p><i>Increased awareness and improved understanding amongst smallholders, including women's farming groups, and resource managers of the use of biochar to address soil constraints, and most effective application rates and formulations (e.g. mix with other organic and mineral amendments) to achieve agronomic benefits.</i></p> | <p>Number of landholders, researchers, students and other stakeholders visiting demonstration sites.</p> | <p>0</p> | <p>≥ 60</p> | <p>≥ 120</p> | <p>1,042</p> | <p>HS</p> |

| Project objective and Outcomes | Indicator | Baseline level | Mid-Term Target or Milestones ² | End of Project Target | Observations/ justification on rating | Progress rating ³ |
|--|---|----------------|--|-----------------------|---------------------------------------|------------------------------|
| Output 2.a: <i>Guidelines for the use of biochar in SLM.</i> | Number of guidelines produced in all countries. | 0 | 0 | 6 | 12 | HS |
| Output 2.b: <i>Networks of demonstration sites and farming groups.</i> | Number of networks created due to the implementation of this project. | 1 | 6 | 6 | 7 | S |

| Project objective and Outcomes | Indicator | Baseline level | Mid-Term Target or Milestones ² | End of Project Target | Observations/ justification on rating | Progress rating ³ |
|--|--|----------------|--|-----------------------|---------------------------------------|------------------------------|
| Output 2.c: ⁵ <i>At least 100 smallholders, farmers, resource managers, development agents, agricultural extension staff, researchers, B4SS project members, producers of biochar-making ovens, and university students trained in the production and use of biochar as soil amendment.</i> | Number of smallholders, farmers, resource managers, development agents, agricultural extension staff, researchers, B4SS project members, producers of biochar-making ovens and university students trained in the production and use of biochar as soil amendment. | 0 | ≥ 50 | ≥ 100 | 661 | HS |

Overall rating of project progress towards meeting project Result(s) (*To be provided by UNEP GEF Task Manager.*)

| FY2018 rating [previous] | FY2019 rating [current] | Justification of the current FY rating and explanation of reasons for change (positive or negative) since previous reporting periods. |
|--------------------------|-------------------------|---|
| HS | HS | The project exceeded all its targets. For indicator of outcome 1 – the number of farmers participating in the evaluation of the effects of biochar in soil and generate useful information for sustainable land management – the result at project end was nearly double the initially set target, i.e. 205 instead of 120. Outcome 2's indicator, the number of visitors to demonstration sites, was exceeded manifold, as the project had over 1,000 visitors instead of the envisaged target of at least 120. |

⁵ Add rows if your project has more than 5 Outcomes.

Risks to the delivery of results

The second column should be completed by the Project Manager and the third column should summarize the recommendations that the Project Manager and Task Manager have agreed upon to address the problem/risk. Projects should complete only the relevant sections and are free to add/delete problems/risks. This section should inform the risk rating in section 3.3.

| Problems/risks identified | Description of the problem/risk | Agreed recommended actions |
|-----------------------------------|---------------------------------|----------------------------|
| on achieving targets | | |
| on stakeholder engagement | | |
| on gender actions | | |
| on safeguards | | |
| on delivering GEF Core Indicators | | |
| on delivering of PoW EA | | |
| on sustainability of results | | |
| others | | |

3.2 Rating of progress implementation towards delivery of outputs

| Outputs ⁶ | Expected delivery date ⁷ | Implementation status as of 30 June 2018 ⁸ | Implementation status as of 30 June 2019) | Progress rating justification (as much as possible, describe in terms of immediate gains to target groups, e.g. access to project deliverables, participation in receiving services; gains in knowledge, etc) | Progress rating ⁹ |
|--|-------------------------------------|---|---|---|------------------------------|
| Output 1a: collation of demonstration results comparing biochar with alternative management practices | | | | | |
| Activity 1a.1: Identification of demonstration sites | July 2016 | 100% | 100% | COMPLETED. | S |
| Activity 1a.2: Establishment of experiments in | March 2017 | 100% | 100% | COMPLETED. | S |

⁶ Outputs as described in the project logframe or in any updated project revision.

⁷ As per latest workplan (latest project revision)

⁸ Implementation may be assessed by qualitative assessments, percentage of delivery, and/or budget expenditure (planned and actually spent). The 2018 assessment should be copied from previous PIR.

⁹ To be provided by the UNEP Task Manager

| | | | | | |
|--|----------------|------|------|------------|----|
| demonstration sites | | | | | |
| Output 1.b: evaluation of 24 combinations of biochar formulations/rates/soil type/crop type | | | | | |
| Activity 1b.1: Soil sample collection and analysis | July 2017 | 100% | 100% | COMPLETED. | S |
| Activity 1b.2: Production and characterisation of biochars | June 2017 | 100% | 100% | COMPLETED. | S |
| Activity 1b.3: Preparation and application of biochar formulations to soil | August 2017 | 100% | 100% | COMPLETED. | S |
| Activity 1b.4: Analysis of different effects of biochar on different crops and interpretation of the results | June 2018 | 100% | 100% | COMPLETED. | S |
| Output 1.c: report of recommended practices for the use of biochar in SLM | | | | | |
| Activity 1c.1: compile the recommended practices in a draft report | September 2018 | 88% | 100% | COMPLETED. | MS |
| Activity 1c.2: review of the draft report by the scientific panel and steering committee, and submission of final report to UNEP | November 2018 | 50% | 100% | COMPLETED. | MS |
| Output 2.a: publication of the “B4SS good practice guide” in English and translation into the six country languages | | | | | |
| Activity 2a.1: compile recommendations and design the B4SS guide in English | September 2018 | 83% | 100% | COMPLETED. | MS |
| Activity 2a.2: review of the B4SS guide by the scientific panel and steering committee, and final amendments | October 2018 | 83% | 100% | COMPLETED. | MS |
| Activity 2a.3: translation of the B4SS guide into the country languages | October 2018 | 96% | 100% | COMPLETED. | MS |
| Output 2b: six networks of demonstration sites and farming groups | | | | | |
| Activity 2b.1: visits to the demonstration sites in all countries | May 2018 | 100% | 100% | COMPLETED. | S |
| Output 2c: ≥100 smallholders, farmers, resource managers, development agents, agricultural extension staff, researchers, B4SS project members, producers of biochar-making ovens, and university students trained in the production and use of biochar as soil amendment. | | | | | |
| Activity 2c.1: training on biochar production | June 2017 | 100% | 100% | COMPLETED. | S |

| | | | | | |
|---|---------------|------|------|------------|---|
| Activity 2c.2: training on biochar formulations and use | December 2017 | 100% | 100% | COMPLETED. | S |
|---|---------------|------|------|------------|---|

Overall project implementation progress ¹⁰ (*To be completed by UNEP GEF Task Manager.*):

| FY2018 rating [previous] | FY2019 rating [current] | Justification of the current rating and explanation of reasons for change (positive or negative) since previous reporting periods. |
|--------------------------|-------------------------|--|
| S | S | Nearly all outputs were delivered in time and in line with or even exceeding targets. Only some reporting issues are lagging slightly behind schedule. Output 1a contributed strongly to the overall very good success of the project, as it was able to establish 13 biochar demonstration sites instead of the envisaged 6; under output 1b, 34 different biochar formulations were evaluated, exceeding the end of project target of at least 24 formulations, and the related report on recommendable practices was completed with a slight delay (output 1c). The outputs under outcome 2 also mainly achieved highly successful ratings, as the number of guidelines produced was double the initial target (12 instead of 6 for output 2a); the project established 7 biochar networks, in line with the targeted 6 under output 2b and trained more than 660 smallholders, over 560 more than the originally targeted 100 smallholders (output 2c). |

Risks in implementation

This section should be completed by the Project Manager and summarize implementation risks (e.g. procurement delays, reputational risks etc). The first column should be completed by the Project Manager and the second column should summarize the recommendations that the Project Manager and Task Manager have agreed upon to address the problem/risk. This section should inform the risk rating in section 3.3.

| Problems/risks identified | Agreed recommended actions | By whom | When |
|---------------------------|----------------------------|---------|------|
| | | | |
| | | | |
| | | | |

3.3. Risk Rating

¹⁰ Use GEF Secretariat required six-point scale system: Highly Satisfactory (HS), Satisfactory (S), Marginally Satisfactory (MS), Marginally Unsatisfactory (MU), Unsatisfactory (U), and Highly Unsatisfactory (HU)

| Risk | Mitigation at CEO approval | Mitigation at implementation | Rank |
|--|---|------------------------------|---------------------------------------|
| 1. Establishment of demonstration sites delayed due to unfavorable weather conditions. | The project includes a wide range of sites across many locations, in different continents. This geographic distribution minimizes the risk that a significant number of sites will be affected. | | CEO: L-M TM: L-M PM: L-M |
| 2. Biochar is not found to be effective, and the project is criticized for using inappropriate formulations. | The project is advised by the world's leading biochar researchers, and thus has access to latest knowledge of effective use of biochar. Whether biochar is found to be effective or not, is useful information. Project builds on well-established baseline activities... strong leverage... | | CEO: L TM: L PM: L |
| 3. Miscommunication leads to activities not being implemented correctly | In-country project coordinators will have to follow up on activities implemented locally, keep in constant communication with the project director who will provide guidance when required. | | CEO: L TM: L PM: L |
| Inappropriate communication of challenges and uncertainties posed by the application of biochar over large areas leads to refusal of permission by local authorities in Kenya. | Participatory capacity building processes will need to be put in place at the beginning of the project to ensure the full understanding of challenges and uncertainties faced by the application of biochar over large areas. In-country project coordinators will facilitate the direct communication of project leaders with local leaders and government officials. Official permissions will be obtained if considered necessary. | | CEO: L-M TM: L PM: L |
| Raw materials and/or technologies for biochar production are not | Biochar will be produced from locally-available biomass feedstocks in each | | CEO: L TM: L |

| | | | |
|--|---|--|-----------------------------------|
| available | location. Furthermore, biochar production technologies are available in most locations through baseline activities and cover a range of scales from cookstove to large pyrolysis plants, including low-cost options. Therefore, availability and cost of technology will not limit the project. | | PM: L |
| Transaction costs for coordinating activities in six countries may mount up, especially if exchange rates fluctuate significantly, and limit the funding available for planned activities. | Transaction costs have been budgeted realistically. In-kind contributions from project collaborators will assist to cover transaction costs. Note that project management costs have been raised to 10% in recognition that transaction costs will be a relatively high proportion of the total project costs | | CEO: L-M TM: L PM: L |
| ESERN | | | |
| Overall Risk Rating Project Manager | | | L |
| Overall Risk Rating Task Manager | | | L |

| FY2018 rating [previous] | FY2019 rating [current] | Justification of the current risk rating and explanation of reasons for change (positive or negative) since previous reporting periods. |
|-----------------------------|----------------------------|--|
| L | L | Except for a few delays in reporting, due to inconclusive data sets caused by extreme weather and pests in one of the project countries, neither project implementation nor execution faced any major risk, leading to the project continuously exceeding its targets. |

High Risk (H): There is a probability of greater than 75% that **assumptions** may fail to hold or materialize, and/or the project may face high risks.
Substantial Risk (S): There is a probability of between 51% and 75% that **assumptions** may fail to hold and/or the project may face substantial risks.
Modest Risk (M): There is a probability of between 26% and 50% that **assumptions** may fail to hold or materialize, and/or the project may face only modest risks.
Low Risk (L): There is a probability of up to 25% that **assumptions** may fail to hold or materialize, and/or the project may face only modest risks.

Annexes and/or Links:

- Project Steering Committee Minutes of the year reported
- Risk Factor Table form previous template

Risks Factor Table

There are two tables to assess and address risk: the first “risk factor table” to describe and rate risk factors; the second “top risk mitigation plan” should indicate what measures/action will be taken with respect to risks rated **Substantial** or **High** and who is responsible to for it.

High Risk (H): There is a probability of greater than 75% that assumptions may fail to hold or materialize, and/or the project may face high risks.

Substantial Risk (S): There is a probability of between 51% and 75% that assumptions may fail to hold and/or the project may face substantial risks.

Modest Risk (M): There is a probability of between 26% and 50% that assumptions may fail to hold or materialize, and/or the project may face only modest risks.

Low Risk (L): There is a probability of up to 25% that assumptions may fail to hold or materialize, and/or the project may face only modest risks.

RISK FACTOR TABLE

*Project Managers will use this table to summarize risks identified in the **Project Document** and reflect also **any new risks** identified in the course of project implementation. The Notes column should be used to provide additional details concerning manifestation of the risk in your specific project, **as relevant**. The “Notes” column has one section for the Project Manager (**PM**) and one for the UNEP Task Manager (**TM**). If the generic risk factors and indicators in the table are not relevant to the project rows should be added. The **UNEP Task Manager** should provide ratings in the right hand column reflecting his/her own assessment of project risks.*

| Risk Factor | Indicator of Low Risk | Indicator of Medium Risk | Indicator of High Risk | Project Manager Rating | | | | | | Notes | Task Manager Rating | | | | | |
|----------------------|-----------------------|--------------------------|------------------------|------------------------|--------|-------------|------|----------------|------------------|-------|---------------------|--------|-------------|------|----------------|------------------|
| | | | | Low | Medium | Substantial | High | Not Applicable | To be determined | | Low | Medium | Substantial | High | Not Applicable | To be determined |
| INTERNAL RISK | | | | | | | | | | | | | | | | |
| Project management | | | | | | | | | | | | | | | | |

| Risk Factor | Indicator of Low Risk | Indicator of Medium Risk | Indicator of High Risk | Project Manager Rating | | | | | | Notes | Task Manager Rating | | | | | | | | |
|--|---|--|--|------------------------|--------|-------------|------|----------------|------------------|--|---------------------|--------|-------------|------|----------------|------------------|--|--|--|
| | | | | Low | Medium | Substantial | High | Not Applicable | To be determined | | Low | Medium | Substantial | High | Not Applicable | To be determined | | | |
| INTERNAL RISK | | | | | | | | | | | | | | | | | | | |
| Project management | | | | | | | | | | | | | | | | | | | |
| Management structure [Roles and responsibilities] | Stable with roles and responsibilities clearly defined and understood | Individuals understand their own role but are unsure of responsibilities of others | Unclear responsibilities or overlapping functions which lead to management problems | | | | | | | PM : | X | | | | | | | | |
| | | | | | | | | | | TM: Management structure in place and adequate | | | | | | | | | |
| Governance structure [oversight] | Steering Committee and/or other project bodies meet periodically and provide effective direction/inputs | Body(ies) meets periodically but guidance/input provided to project is inadequate. TOR unclear | Members lack commitment Committee/body does not fulfil its TOR | | | | | | | PM : | X | | | | | | | | |
| | | | | | | | | | | TM: SC in place and met regularly | | | | | | | | | |
| Internal communications | Fluid and cordial | Communication process deficient although relationships between team members are good | Lack of adequate communication between team members leading to deterioration of relationships and resentment | | | | | | | PM: | X | | | | | | | | |
| | | | | | | | | | | TM: good and fluid internal communications | | | | | | | | | |
| Work flow Budget | Project progressing according to | Some changes in project work plan but without | Major delays or changes in work plan or method | | | | | | | PM: | X | | | | | | | | |

| Risk Factor | Indicator of Low Risk | Indicator of Medium Risk | Indicator of High Risk | Project Manager Rating | | | | | | Notes | Task Manager Rating | | | | | |
|---------------------------|---|--|--|------------------------|--------|-------------|------|----------------|------------------|--|---------------------|--------|-------------|------|----------------|------------------|
| | | | | Low | Medium | Substantial | High | Not Applicable | To be determined | | Low | Medium | Substantial | High | Not Applicable | To be determined |
| INTERNAL RISK | | | | | | | | | | | | | | | | |
| Project management | | | | | | | | | | | | | | | | |
| | work plan | major effect on overall timetable | of implementation | | | | | | | TM: | | | | | | |
| Co-financing | Co-financing is secured and payments are received on time | Is secured but payments are slow and bureaucratic | A substantial part of pledged co-financing may not materialize | | | | | | | PM: | X | | | | | |
| | | | | | | | | | | TM: | | | | | | |
| Budget | Activities are progressing within planned budget | Minor budget reallocation needed | Reallocation between budget lines exceeding 30% of original budget | | | | | | | PM: | | X | | | | |
| | | | | | | | | | | TM: slight modifications required due to targeting different audiences for the knowledge sharing tools and reporting | | | | | | |
| Financial management | Funds are correctly managed and transparently accounted for | Financial reporting slow or deficient | Serious financial reporting problems or indication of mismanagement of funds | | | | | | | PM: | X | | | | | |
| | | | | | | | | | | TM: | | | | | | |
| Reporting | Substantive reports are presented in a timely manner and are complete and | Reports are complete and accurate but often delayed or lack critical analysis of | Serious concerns about quality and timeliness of project reporting | | | | | | | PM: | | X | | | | |

| Risk Factor | Indicator of Low Risk | Indicator of Medium Risk | Indicator of High Risk | Project Manager Rating | | | | | | Notes | Task Manager Rating | | | | | |
|---------------------------|--|---|---|------------------------|--------|-------------|------|----------------|------------------|---|---------------------|--------|-------------|------|----------------|------------------|
| | | | | Low | Medium | Substantial | High | Not Applicable | To be determined | | Low | Medium | Substantial | High | Not Applicable | To be determined |
| INTERNAL RISK | | | | | | | | | | | | | | | | |
| Project management | | | | | | | | | | | | | | | | |
| | accurate with a good analysis of project progress and implementation issues | progress and implementation issues | | | | | | | | TM: A few delays in delivering reports and knowledge management tools | | | | | | |
| Stakeholder engagement | Stakeholder analysis done and positive feedback from critical stakeholders and partners | Consultation and participation process seems strong but misses some groups or relevant partners | Symptoms of conflict with critical stakeholders or evidence of apathy and lack of interest from partners or other stakeholders | | | | | | | PM: | X | | | | | |
| | | | | | | | | | | TM: | | | | | | |
| External communications | Evidence that stakeholders, practitioners and/or the general public understand project and are regularly updated on progress | Communications efforts are taking place but not yet evidence that message is successfully transmitted | Project existence is not known beyond implementation partners or misunderstandings concerning objectives and activities evident | | | | | | | PM: | X | | | | | |
| | | | | | | | | | | TM: | | | | | | |

| Risk Factor | Indicator of Low Risk | Indicator of Medium Risk | Indicator of High Risk | Project Manager Rating | | | | | | Notes | Task Manager Rating | | | | | | |
|--|--|--|--|------------------------|--------|-------------|------|----------------|------------------|--------------------------------------|---------------------|--------|-------------|------|----------------|------------------|--|
| | | | | Low | Medium | Substantial | High | Not Applicable | To be determined | | Low | Medium | Substantial | High | Not Applicable | To be determined | |
| INTERNAL RISK | | | | | | | | | | | | | | | | | |
| Project management | | | | | | | | | | | | | | | | | |
| Short term/long term balance | Project is addressing short term needs and achieving results with a long term perspective, particularly sustainability and replicability | Project is interested in the short term with little understanding of or interest in the long term | Longer term issues are deliberately ignored or neglected | | | | | | | PM: | X | | | | | | |
| | | | | | | | | | | TM: | | | | | | | |
| Science and technological issues | Project based on sound science and well established technologies | Project testing approaches, methods or technologies but based on sound analysis of options and risks | Many scientific and /or technological uncertainties | | | | | | | PM: | X | | | | | | |
| | | | | | | | | | | TM: | | | | | | | |
| Political influences | Project decisions and choices are not particularly politically driven | Signs that some project decisions are politically motivated | Project is subject to a variety of political influences that may jeopardize project objectives | | | | | | | PM: | X | | | | | | |
| | | | | | | | | | | TM: no political influence was noted | | | | | | | |
| Other, please specify. Add rows as necessary | | | | | | | | | | PM: | | | | | | | |
| | | | | | | | | | | TM: | | | | | | | |

| Risk Factor | Indicator of Low Risk | Indicator of Medium Risk | Indicator of High Risk | Project Manager Rating | | | | | | Notes | Task Manager Rating | | | | | | |
|---------------------------------------|--|--|---|------------------------|--------|-------------|------|----------------|------------------|--|---------------------|--------|-------------|------|----------------|------------------|--|
| | | | | Low | Medium | Substantial | High | Not Applicable | To be determined | | Low | Medium | Substantial | High | Not Applicable | To be determined | |
| EXTERNAL RISK | | | | | | | | | | | | | | | | | |
| Project context | | | | | | | | | | | | | | | | | |
| Political stability | Political context is stable and safe | Political context is unstable but predictable and not a threat to project implementation | Very disruptive and volatile | | | | | | | PM: | X | | | | | | |
| | | | | | | | | | | TM: | | | | | | | |
| Environmental conditions | Project area is not affected by severe weather events or major environmental stress factors | Project area is subject to more or less predictable disasters or changes | Project area has very harsh environmental conditions | | | | | | | PM: | | X | | | | | |
| | | | | | | | | | | TM: Viet Nameese data in 2018 was regarded as inconclusive, due to the project area being affected by extreme weather, pest an disease. This was partly carried over into 2019 | | | | | | | |
| Social, cultural and economic factors | There are no evident social, cultural and/or economic issues that may affect project performance and results | Social or economic issues or changes pose challenges to project implementation but mitigation strategies have been developed | Project is highly sensitive to economic fluctuations, to social issues or cultural barriers | | | | | | | PM: | X | | | | | | |
| | | | | | | | | | | TM: | | | | | | | |
| Capacity issues | Sound technical and managerial capacity of | Weaknesses exist but have been identified | Capacity is very low at all levels and partners | | | | | | | PM: | X | | | | | | |
| | | | | | | | | | | | | | | | | | |

| Risk Factor | Indicator of Low Risk | Indicator of Medium Risk | Indicator of High Risk | Project Manager Rating | | | | | | Notes | Task Manager Rating | | | | | |
|------------------------|---|--|---|------------------------|--------|-------------|------|----------------|------------------|-------|---------------------|--------|-------------|------|----------------|------------------|
| | | | | Low | Medium | Substantial | High | Not Applicable | To be determined | | Low | Medium | Substantial | High | Not Applicable | To be determined |
| EXTERNAL RISK | | | | | | | | | | | | | | | | |
| Project context | | | | | | | | | | | | | | | | |
| | institutions and other project partners | and actions is taken to build the necessary capacity | require constant support and technical assistance | | | | | | | TM: | | | | | | |
| Others, please specify | | | | | | | | | | | | | | | | |

*If there is a significant (over 50% of risk factors) discrepancy between Project Manager and Task Manager rating, an explanation by the **Task Manager** should be provided below*

| TOP RISK MITIGATION PLAN | |
|--|--|
| Rank – importance of risk | |
| Risk Statement – potential problem (condition and consequence) | |
| Action to take – action planned/taken to handle the risk | |
| Who – person(s) responsible for the action | |
| Date – date by which action needs to be or was completed | |

| Rank | Risk Statement ¹¹ | | Action to Take | Who | Date |
|------|------------------------------|-------------|----------------|-----|------|
| | Condition | Consequence | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

Project overall risk rating (Low, Medium, Substantial or High) (*Please include PIR risk ratings for all prior periods, add columns as necessary*):

| FY2018 rating | FY2019 rating | Comments/narrative justifying the current FY rating and any changes (positive or negative) in the rating since the previous reporting period |
|---------------|---------------|---|
| L | L | Nearly all risks are rated as low, and none of the medium ones affects the aimed for outcomes |
| | | If a risk mitigation plan had been presented for a previous period or as a result of the Mid-Term Review/Evaluation please report on progress or results of its implementation |
| | | |

¹¹ Only for Substantial to High risk.