

STAP guidelines for screening GEF projects

Part I: Project Information	Response
GEF ID	10528
Project Title	Achieving land degradation neutrality targets through restoration and sustainable management of degraded land in Northern Jordan
Date of Screening	May 12, 2020
STAP member screener	Graciela Metternicht
STAP secretariat screener	Guadalupe Duron
STAP Overall Assessment and Rating	<p>Minor issues to be considered during project design.</p> <p>STAP acknowledges FAO’s project “Achieving land degradation neutrality (LDN) targets through restoration and sustainable management of degraded land in Northern Jordan”. The project will support Jordan’s efforts to implement its LDN targets through integrated land use planning, including the strengthening of the enabling environment for planning and monitoring. As a result of improved land management practices, the project aims to rehabilitate and strengthen the productivity of rangelands and bare land in Ajloun, Mafraq, and Irbid Governorates.</p> <p>STAP is pleased the project team will apply the LDN response hierarchy of avoid, reduce, and reverse land degradation to achieve global environmental outcomes on land management and carbon sequestration. As the project is designed, STAP welcomes the team plans to apply the technical guidelines on LDN (released in April 2020), which are on the STAP website. Applying the guidelines will facilitate establishing the LDN baseline; complement the earth observation estimates of the area of expected losses that must be counterbalanced to achieve neutrality; as well as assist with defining a monitoring plan.</p> <p>Additionally, the guidelines cover how to lay the foundations necessary to achieve LDN through a preparatory land assessment. STAP highly encourages the project developers to assess the <i>potential of the land</i> to be</p>

able to sustain the planned land uses, generate, and maintain the expected ecosystem services (e.g. soil formation and retention, water regulation). To reduce the risk of land degradation, land uses need to be consistent with the land potential.

STAP welcomes the project’s initiative to achieve multiple benefits resulting from LDN. During the project design and implementation, STAP recommends acknowledging that trade-offs will occur when the project targets its multiple objectives on: reducing land degradation, improving rangeland management; sequestering carbon; and, contributing to climate adaptation and biodiversity conservation. The technical LDN guidelines offer practical advice on how to manage trade-offs between benefits.

Additionally, STAP recommends developing a systems-based theory of change that explores options for addressing uncertainty brought on by unforeseen changes, and risks to the project (e.g. climate change, limited interest in land and water technologies, limited policy capacity, possible environment conflict due to increased pressure on natural resources from population growth and refugee inflow). The theory of change can assist with monitoring short-term outcomes, and to anticipate external factors that may impact on them, all necessary to achieve the project’s LDN outcomes.

STAP encourages the project team to contribute to the evidence base on integrating water harvesting practices in Jordanian agricultural systems. There appears to be gaps in the literature on water harvesting innovations to transition Jordanian agriculture towards more sustainable water usage. In this regard, STAP welcomes FAO’s idea (included in the climate risk screening section) to “consider future studies on the relationship between irrigation water supply (including treated wastewater), net irrigation water requirements (considering climate change scenarios), and soil sensitivity towards the irrigation with treated wastewater.”

	<p>STAP also encourages the team to explore beyond Farmer field Schools as means to develop capacity. Many innovative and efficient ways are being reported in recent literature on ‘education and development’ that may fit with the local context. Furthermore, this literature suggests ways to build capacity, transfer technology and, achieve practices for SLM, including on water conservation practices. These novel ways benefit from ICT and in a post-COVID stage it is important these approaches be explored to overcome potential barriers of knowledge dissemination.</p> <p>Below, STAP offers recommendations on how to improve the project design, and a list of recent bibliography that it is recommended for the PPG component #3.</p>	
Part I: Project Information B. Indicative Project Description Summary	What STAP looks for	Response
Project Objective	Is the objective clearly defined, and consistently related to the problem diagnosis?	Yes, the objective is defined clearly, and consistently linked to the problem statement.
Project components	A brief description of the planned activities. Do these support the project’s objectives?	Yes, the activities support the project objective. For output 2.1.1 STAP recommends that tools beyond LADA (which is not a tool), and WOCAT are explored. More to the point, LDA/WOCAT are not the tools that will enable to undertake ‘participatory integrated land use plans with involvement of local community (as said in pg 34).
Outcomes	A description of the expected short-term and medium-term effects of an intervention. Do the planned outcomes encompass important global environmental benefits?	Yes, the outcomes focus on global environmental outcomes.
	Are the global environmental benefits/adaptation benefits likely to be generated?	The benefits are likely to be generated with careful monitoring.
Outputs	A description of the products and services which are expected to result from the project. Is the sum of the outputs likely to contribute to the outcomes?	Yes, outputs are likely to contribute to outcomes. STAP recommends that tools beyond the usual WOCAT / LADA are considered, and that innovative tools for capacity building are

		<p>considered. A list of relevant bibliography that reports on how ICT is being used in Africa to develop capacity efficiently and at low cost is included at the end of this screening.</p> <p>STAP suggest revising the current outputs and against the named targets. It is not clear how some targets will be achieved with the outputs and current components.</p>
Part II: Project justification	A simple narrative explaining the project's logic, i.e. a theory of change.	
1. Project description. Briefly describe: 1) the global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description)	Is the problem statement well-defined?	Yes, the problem is well defined. The drivers of degradation are identified for each of the agro-ecological zones where the project will be implemented. The problem analysis also includes a description of the underlying drivers (e.g. population pressure, inflow of refugees, land tenure, climate change) and their effects on land degradation.
	Are the barriers and threats well described, and substantiated by data and references?	Yes, the PIF describes the barriers. STAP recommends identifying and validating the assumptions in a theory of change, which includes an analysis of the barriers, and enablers, to achieve the short-term outcomes.
	For multiple focal area projects: does the problem statement and analysis identify the drivers of environmental degradation which need to be addressed through multiple focal areas; and is the objective well-defined, and can it only be supported by integrating two, or more focal areas objectives or programs?	Does not apply.
2) the baseline scenario or any associated baseline projects	Is the baseline identified clearly?	Yes, the PIF includes a narrative baseline, describing on-going, future, and past initiatives on land management, rangeland management, ecosystem and climate resilience, which this project will build on.
	Does it provide a feasible basis for quantifying the project's benefits?	Core indicators will be assigned during the project design.
	Is the baseline sufficiently robust to support the incremental (additional cost) reasoning for the project?	Yes, the baseline is sufficiently robust at this stage.

	For multiple focal area projects:	
	are the multiple baseline analyses presented (supported by data and references), and the multiple benefits specified, including the proposed indicators;	Does not apply.
	are the lessons learned from similar or related past GEF and non-GEF interventions described; and	Yes, several lessons are identified in the baseline projects, which will inform the design of this project. This includes lessons from sustainable land and water management practices and technologies to enhance land productivity and restoration.
	how did these lessons inform the design of this project?	The PIF identifies one project that will serve particularly as a strong baseline for this project: “Enhancing resilient livelihoods and food security of host communities and Syrian refugees in Jordan and Lebanon through the promotion of sustainable agricultural development” The PIF describes lessons that resulted from this project on agri-food enterprises and improved land management, which will serve in the design of this project.
3) the proposed alternative scenario with a brief description of expected outcomes and components of the project	What is the theory of change?	A preliminary theory of change for the project is: “The project will support the national efforts to implement LDN national targets (1, 2, 3, and 5) through SLM and contribute to implementation of SDGs 15.2 and 15.3. Under the LDN framework, land degradation can be avoided, reduced, and reversed at scales from individual farms to entire watersheds; it provides cost effective, immediate, and long-term benefits to communities and support several SDGs with co-benefits for climate change adaptation and mitigation, and biodiversity conservation. The project will therefore promote SLM and landscapes restoration for achieving LDN commitments of Jordan. Moreover, using the landscape approach to integration across sectors and scales increases the chance of maximizing co-benefits and minimizing trade-offs. The project

		will follow STAP's guidelines for the application of the Scientific Conceptual Framework for LDN and take a phased approach through the proposed three components.”
	What is the sequence of events (required or expected) that will lead to the desired outcomes?	STAP recommends developing a theory of change that describes the causal links between outputs and outcomes.
	What is the set of linked activities, outputs, and outcomes to address the project's objectives?	See above.
	Are the mechanisms of change plausible, and is there a well-informed identification of the underlying assumptions?	STAP recommends for the final project document to include a theory of change narrative and figure, explaining the causal link between the outputs and outcomes. STAP also recommends defining the assumptions, which includes a barrier analysis (and identifying enablers of change). STAP's theory of change primer: https://www.stapgef.org/theory-change-primer
	Is there a recognition of what adaptations may be required during project implementation to respond to changing conditions in pursuit of the targeted outcomes?	Yes. The project acknowledges that adaptive management may be needed to reach the project objective. Component 3 on monitoring, evaluation and learning will focus on adaptations. However, STAP also encourages the development of a theory of change to assist with this task.
5) incremental/additional cost reasoning and expected contributions from the baseline, the GEF trust fund, LDCF, SCCF, and co-financing	GEF trust fund: will the proposed incremental activities lead to the delivery of global environmental benefits?	Yes, with careful monitoring and a good theory of change.
	LDCF/SCCF: will the proposed incremental activities lead to adaptation which reduces vulnerability, builds adaptive capacity, and increases resilience to climate change?	Does not apply.
6) global environmental benefits (GEF trust fund) and/or adaptation benefits (LDCF/SCCF)	Are the benefits truly global environmental benefits/adaptation benefits, and are they measurable?	Yes, the global environmental benefits are articulated clearly. Indicators will be provided in the final project document. When designing the project, assessing for suitable land management and restoration practices, and managing trade-offs between benefits, STAP

		<p>recommends applying its LDN technical guidelines released in April 2020, which are more detailed than earlier versions of the guidelines. The technical guidelines can be found at: https://stapgef.org/sites/default/files/publications/LDN%20Technical%20Report_web%20version.pdf</p> <p>The project will pursue adaptive management through component 3. In addition to the monitoring and knowledge management activities described in the PIF, STAP recommends developing a theory of change, and linking it to component 3. A theory of change will test whether changes in short-term outcomes lead to the proposed long-term outcomes, which component 3 will primarily focus on.</p> <p>When developing the project, STAP also recommends paying close attention to the barriers, and enablers, of adopting water conservation approaches, or technologies. The PIF described lack of policies, uncertainty over land tenure, and lack of institutional frameworks, as significant barriers – all of which can diminish the intended impact of transitioning towards water harvesting, water conservation, and other land management practices.</p> <p>STAP also encourages the project team to contribute to the evidence base on integrating water harvesting practices in Jordanian agricultural systems. There appears to be gaps in the literature on: i) “water harvesting innovation systems to transition Jordanian agriculture towards more sustainable water usage; and 2) on the broader debate on sustainability transitions in developing countries.” Refer to Sixt, Gregory N., Laurens Klerkx, and Timothy S. Griffin. "Transitions in water harvesting practices in</p>
--	--	---

		Jordan's rainfed agricultural systems: Systemic problems and blocking mechanisms in an emerging technological innovation system." Environmental Science & Policy 84 (2018): 235-249. http://dx.doi.org/10.1016/j.envsci.2017.08.010
	Is the scale of projected benefits both plausible and compelling in relation to the proposed investment?	Unclear. Suggest identifying the barriers and enablers to scaling in the theory of change.
	Are the global environmental benefits/adaptation benefits explicitly defined?	Yes, global environmental benefits are defined.
	Are indicators, or methodologies, provided to demonstrate how the global environmental benefits/adaptation benefits will be measured and monitored during project implementation?	In addition to listing the GEF core indicators related to sustainable land management (hectares of land restored, hectares of production land under improved practices), and carbon sequestration benefits, STAP suggests identifying indicators to monitor and track progress of the causal links in the theory of change. These indicators will test the validity of the causal pathway, which requires the theory of change to be explicit about assumptions (e.g. indicators that validate the multi-dimensionality of forest restoration), barriers, and enablers of change.
	What activities will be implemented to increase the project's resilience to climate change?	The climate risk analysis identified several options to increase the project's resilience to climate change. These included: "soil water conservation to increase available water to crop; selection of drought tolerant genotypes with shorter growing seasons; consider future studies on the relationship between irrigation water supply (including treated wastewater), net irrigation water requirements (considering climate change scenarios), and soil sensitivity towards the irrigation with treated wastewater.
7) innovative, sustainability and potential for scaling-up	Is the project innovative, for example, in its design, method of financing, technology, business model, policy, monitoring and evaluation, or learning?	The project is innovative in applying land degradation neutrality practices in Northern Jordan. The project is potentially innovative in generating learning from the application of LDN, and pursuing integrated land and water management in the target sites. STAP

		<p>recommends to explore innovative ways to develop capacity, beyond the traditional FFS widely adopted within FAO projects.</p> <p>STAP is pleased its primer on LDN was referenced in the PIF, and recommends for the project team to apply its technical LDN guidelines developed in April 2020, which is closely aligned with UNCCD's Scientific Conceptual Framework for LDN: https://stapgef.org/sites/default/files/publications/LDN%20Technical%20Report_web%20version.pdf</p> <p>As mentioned above, the assumption is that applying LDN, and integrating water harvesting technologies in agricultural systems, will generate the knowledge and institutional conditions to scale deep (i.e. influence social systems) across temporal and spatial scales. STAP would like to see these assumptions identified and tested in a theory of change, and for the necessary adaptive management to take place based on this learning. STAP recommends its paper on durability and theory of change - where it lists principles that need attention to achieve scaling: https://www.stapgef.org/achieving-enduring-outcomes-gef-investment; https://www.stapgef.org/theory-change-primer</p>
	<p>Is there a clearly-articulated vision of how the innovation will be scaled-up, for example, over time, across geographies, among institutional actors?</p>	<p>The project states it will focus on scaling out, scaling up, and scaling deep. To facilitate these actions, STAP recommends its theory of change primer, and RAPTA: https://research.csiro.au/eap/rapta/</p>
	<p>Will incremental adaptation be required, or more fundamental transformational change to achieve long term sustainability?</p>	<p>It is possible that both adaptation and transformational change will be required due to the arid conditions and irregular rainfall experienced in the target sites. STAP encourages the project team to consider uncertainty to cope with the level of change (desired and un-desired)</p>

		that may take place. This requires considering systematically time scales and spatial scales when planning the interventions. A systems-based theory of change can do this as it targets how a social-ecological systems functions across scales. Refer to STAP's theory of change primer, which is a good resource for developing a theory of change based on systems analysis: https://www.stapgef.org/theory-change-primer
1b. Project Map and Coordinates. Please provide geo-referenced information and map where the project interventions will take place.		A map of the target sites is provided, depicting land productivity, and the presence of soil organic carbon,. When designing the project, STAP recommends its guidance on earth observation systems, which provides advice on how to provide high-quality georeferenced information (see page 64): https://stapgef.org/sites/default/files/publications/GEF%20EO%20Mainstreaming%20March2020%20Final%2020200331-v3.0.pdf
2. Stakeholders. Select the stakeholders that have participated in consultations during the project identification phase: Indigenous people and local communities; Civil society organizations; Private sector entities. If none of the above, please explain why. In addition, provide indicative information on how stakeholders, including civil society and indigenous peoples, will be engaged in the project preparation, and their respective roles and means of engagement.	Have all the key relevant stakeholders been identified to cover the complexity of the problem, and project implementation barriers?	Yes, the PIF lists a variety of stakeholders which are essential to addressing the barriers and solving the problem. The role of stakeholders in the project is specified vaguely.
	What are the stakeholders' roles, and how will their combined roles contribute to robust project design, to	Preparing the PIF involved consultations with key stakeholders. STAP encourages the project team

	<p>achieving global environmental outcomes, and to lessons learned and knowledge?</p>	<p>to develop a stakeholder engagement plan, and identify who will be affected by the interventions; and who needs to be involved in the design and implementation of the project. Who is involved may change depending on the learning and adaptation, or transformations, that take place during project implementation.</p> <p>Attention to stakeholders' values, governance arrangements (formal and informal), agents of change (individuals who can catalyze change), and other issues that enable social innovation and drive action towards the project objective.</p>
<p>3. Gender Equality and Women's Empowerment. Please briefly include below any gender dimensions relevant to the project, and any plans to address gender in project design (e.g. gender analysis). Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment? Yes/no/tbd. If possible, indicate in which results area(s) the project is expected to contribute to gender equality: access to and control over resources; participation and decision-making; and/or economic benefits or services. Will the project's results framework or logical framework include gender-</p>	<p>Have gender differentiated risks and opportunities been identified, and were preliminary response measures described that would address these differences?</p>	<p>The project will develop interventions based on a gender analysis (e.g. component 2 and 3). The project will reflect gender differentiated components in the logical framework, and will include gender indicators. Additionally, STAP recommends considering whether the full participation of an important stakeholder group is hindered as a result of the gender analysis, and describing how will the project address these obstacles.</p> <p>STAP recommends consulting recent literature of the UNCCD and UN Women on gender-responsive LDN:</p> <p>UN WOMEN, GLOBAL MECHANISM OF THE UNCCD AND IUCN (2019). A Manual for Gender-Responsive Land Degradation Neutrality Transformative Projects and Programmes http://catalogue.unccd.int/1223_Gender_Manual.pdf</p> <p>Global Mechanism of the UNCCD. 2019. Land Degradation Neutrality Interventions to Foster Gender Equality. Bonn, Germany http://catalogue.unccd.int/1222_UNCCD_gender_briefing_note.pdf</p>

sensitive indicators? yes/no /td		
	Do gender considerations hinder full participation of an important stakeholder group (or groups)? If so, how will these obstacles be addressed?	Unsure as the gender analysis will be done during the project design. STAP recommended (above) to give due consideration of how a gender analysis may hinder the full participation of an important stakeholder group.
<p>5. Risks. Indicate risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the project design</p>	<p>Are the identified risks valid and comprehensive? Are the risks specifically for things outside the project's control? Are there social and environmental risks which could affect the project?</p> <p>For climate risk, and climate resilience measures:</p> <ul style="list-style-type: none"> ● How will the project's objectives or outputs be affected by climate risks over the period 2020 to 2050, and have the impact of these risks been addressed adequately? ● Has the sensitivity to climate change, and its impacts, been assessed? ● Have resilience practices and measures to address projected climate risks and impacts been considered? How will these be dealt with? ● What technical and institutional capacity, and information, will be needed to address climate risks and resilience enhancement measures? 	<p>The PIF summarizes the risks the project may face, including climate risks, limited interest in land and water technologies, limited policy capacity, possible environment conflict due to increased pressure on natural resources from population growth and refugee inflow, among other risks. STAP recommends detailing the assumptions that underlie the causal links, and these risks, into the theory of change. These risks relate to the project's ability to innovate and achieve LDN.</p> <p>In addition to the climate risks identified in the PIF, STAP recommends addressing the climate resilience measures described to the left. STAP also encourages the project developers to continually test causal links, assumptions, and risks in the theory of change. This process will enable the project team to assess for the resilience of the system – identify how, and where, the system is weak, or strong, in its capacity to deal with disturbances.</p> <p>Additionally, the project team may find it useful to look at the following resources: STAP's screening guidelines: https://www.stapgef.org/sites/default/files/documents/GEF%20AGENCY%20RETREAT%20Mar-Apr%202020.pdf World Bank Climate Change</p>

		<p>Knowledge Portal: https://climateknowledgeportal.worldbank.org/ U.S. Agency for International Development Climate Risk Screening and Management Tools: https://www.climatelinks.org/resources/climate-risk-screening-management-tool</p> <p>STAP also recommends reviewing relevant reports of the SPI UNCCD and the GM-UNCCD:</p> <p>Global Mechanism of the UNCCD. 2019. Land Degradation Neutrality Target Setting: Initial findings and lessons learned. Bonn, Germany.</p> <p>A. Reichhuber, N. Gerber, A. Mirzabaev, M. Svoboda, A. López Santos, V. Graw, R. Stefanski, J. Davies, A. Vuković, M.A. Fernández García, C. Fiati and X. Jia. 2019. The Land-Drought Nexus: Enhancing the Role of Land-Based Interventions in Drought Mitigation and Risk Management. A Report of the Science-Policy Interface. United Nations Convention to Combat Desertification (UNCCD), Bonn, Germany.</p>
6. Coordination. Outline the coordination with other relevant GEF-financed and other related initiatives	Are the project proponents tapping into relevant knowledge and learning generated by other projects, including GEF projects?	Yes, the project will build on the knowledge of other projects based on the baseline projects listed in the PIF, and described in the coordination section.
	Is there adequate recognition of previous projects and the learning derived from them?	See above.
	Have specific lessons learned from previous projects been cited?	Yes, lessons from other projects will be used to develop this proposal.
	How have these lessons informed the project's formulation?	See above.
	Is there an adequate mechanism to feed the lessons learned from earlier projects into this project, and to share lessons learned from it into future projects?	Yes, the project includes a component on monitoring (component 3). STAP recommends linking the theory of change (i.e. monitoring of short-term outcomes) to the monitoring component (i.e. monitoring of long-term outcomes).

<p>8. Knowledge management. Outline the “Knowledge Management Approach” for the project, and how it will contribute to the project’s overall impact, including plans to learn from relevant projects, initiatives and evaluations.</p>	<p>What overall approach will be taken, and what knowledge management indicators and metrics will be used?</p>	<p>The knowledge strategy aims to share the results of the project through regional and global platforms on pastoral and agricultural systems. It also will invest in learning and scaling up lessons during the project implementation. STAP recommends building this iterative learning into the theory of change, and linking this process to component 3 on monitoring. STAP recommends considering knowledge management metrics, and specifying further how the knowledge generated will influence scaling of results.</p>
	<p>What plans are proposed for sharing, disseminating and scaling-up results, lessons and experience?</p>	<p>The project describes several methods to disseminate results and lessons on LDN and sustainable land management. A communication strategy will be developed to support monitoring and learning. STAP recommends the use of platforms other than those of FAO for dissemination of results and sharing of lessons; for instance, much could be gained from reaching out to the UNCCD Secretariat and coordinate that lessons and best practice are also uploaded in the UNCCD Knowledge Hub.</p>

BIBLIOGRAPHY STAP recommends be reviewed by the PPG team:

Davies, Jonathan, Claire Ogali, Peter Laban, and Graciela Metternicht. "Homing in on the range: enabling investments for sustainable land management." *Technical brief* 29, no. 01 (2015): 2015. With case studies of Jordan
https://www.iucn.org/backup_iucn/cmsdata.iucn.org/downloads/investing_in_drylands_latest_comprehensive_ver_2_.pdf

P.H. Verburg, G. Metternicht, C. Allen, N. Debonne, M. Akhtar-Schuster, M. Inácio da Cunha, Z. Karim, A. Pilon, O. Raja, M. Sánchez Santivañez, and A. Şenyaz. 2019. *Creating an Enabling Environment for Land Degradation Neutrality and its Potential Contribution to Enhancing Well-being, Livelihoods and the Environment*. A Report of the Science-Policy Interface. United Nations Convention to Combat Desertification (UNCCD), Bonn, Germany.
http://catalogue.unccd.int/1210_UNCCD_SPI_2019_Report_1.2.pdf

Continued on next page

On learnings of FFSs, including limitations.

- Tomlinson, J. and Rhiney, K., 2018. Assessing the role of farmer field schools in promoting pro-adaptive behaviour towards climate change among Jamaican farmers. *Journal of Environmental Studies and Sciences*, 8(1), pp.86-98.
- Pezo, Danilo, Jorge Cruz, and Maricel Piniero. "Livestock Farmers Field Schools: A strategy for promoting the rehabilitation and diversification of farms with degraded pastures." *Archivos Latinoamericanos de Producción Animal* 15, no. 5 (2020).
- Bonan, Jacopo, and Laura Pagani. "Junior farmer field schools, agricultural knowledge and spillover effects: Quasi-experimental evidence from Northern Uganda." *The Journal of Development Studies* 54, no. 11 (2018): 2007-2022.
- Assefa, Engdawork, and Bork Hans-Rudolf. "Farmers' perception of land degradation and traditional knowledge in Southern Ethiopia—Resilience and stability." *Land Degradation & Development* 27, no. 6 (2016): 1552-1561.
- Dallimer, Martin, Lindsay C. Stringer, Steven E. Orchard, Philip Osano, George Njoroge, Cheng Wen, and Patrick Gicheru. "Who uses sustainable land management practices and what are the costs and benefits? Insights from Kenya." *Land Degradation & Development* 29, no. 9 (2018): 2822-2835.

On capacity building tools and dissemination of knowledge:

- Tesfamariam, Yordanos, and Margot Hurlbert. "Gendered adaptation of Eritrean dryland farmers." *International Journal of Climate Change Strategies and Management* (2017).
- King, Elizabeth G., Ryan R. Unks, and Laura German. "Constraints and capacities for novel livelihood adaptation: lessons from agricultural adoption in an African dryland pastoralist system." *Regional Environmental Change* 18, no. 5 (2018): 1403-1410.
- Shalander, Kumar, A. M. Whitbread, and K. P. C. Rao. "Innovation platforms as vehicle to strengthen stakeholders capacity to innovate for improved livelihoods in drylands in Asia and Sub Saharan Africa." (2017).
- Oguge, N. O. (2019). Building resilience to drought among small-scale farmers in Eastern African drylands through rainwater harvesting: technological options and governance from a food–energy–water nexus perspective. In *Current Directions in Water Scarcity Research* (Vol. 2, pp. 265-276). Elsevier.
- Debesai, Menghistab Ghebreselassie, Tesfai Tsegai Kidane, Woldeselassie Ogbazghi, Woldeamlak Araia, Simon Measho, and Semere Amlesom. "Understanding Drought Coping Mechanisms in Smallholder Farm Households: Evidence from Dry Lands of Eritrea." *Journal of Agricultural Economics* 5, no. 1 (2019): 548-554.
- Kpadonou, Rivaldo A. Baba, Tom Owiyo, Bruno Barbier, Fatima Denton, Franck Rutabingwa, and Andre Kiema. "Advancing climate-smart-agriculture in developing drylands: Joint analysis of the adoption of multiple on-farm soil and water conservation technologies in West African Sahel." *Land Use Policy* 61 (2017): 196-207.

- Igharo, Amenawon, Sean Meriwether, and Lynnette Widder. "Using Technological Innovation and Corporate Social Responsibility to Connect Africa's Smallholder Farmers to the Global Sustainable Agriculture Economy." (2018).
- Hartmann, G., Nduru, G. and Dannenberg, P., 2020. Digital connectivity at the upstream end of value chains: A dynamic perspective on smartphone adoption amongst horticultural smallholders in Kenya. *Competition & Change*, p.1024529420914483.
- Yusuf, Shahid, and Praveen Kumar. *Playing to strength: growth strategy for small agrarian economies in Africa*. The World Bank, 2018.
- Krell, N. T., S. A. Giroux, Z. Guido, C. Hannah, S. E. Lopus, K. K. Caylor, and T. P. Evans. "Smallholder farmers' use of mobile phone services in central Kenya." *Climate and Development* (2020): 1-13.
- Yaseen, Muhammad, Mujahid Karim, Muhammad Luqman, and Muhammad Umer Mehmood. "ROLE OF AGRICULTURAL JOURNALISM IN DIFFUSION OF FARMING TECHNOLOGIES." *J. Agric. Res* 57, no. 4 (2019): 289-294.
- Mutsvangwa-Sammie, Eness P., Emmanuel Manzungu, and Shephard Siziba. "Key attributes of agricultural innovations in semi-arid smallholder farming systems in south-west Zimbabwe." *Physics and Chemistry of the Earth, Parts A/B/C* 105 (2018): 125-135.

Notes

STAP advisory response	Brief explanation of advisory response and action proposed
1. Concur	STAP acknowledges that on scientific or technical grounds the concept has merit. The proponent is invited to approach STAP for advice at any time during the development of the project brief prior to submission for CEO endorsement.
	* In cases where the STAP acknowledges the project has merit on scientific and technical grounds, the STAP will recognize this in the screen by stating that <i>“STAP is satisfied with the scientific and technical quality of the proposal and encourages the proponent to develop it with same rigor. At any time during the development of the project, the proponent is invited to approach STAP to consult on the design.”</i>
2. Minor issues to be considered during project design	STAP has identified specific scientific /technical suggestions or opportunities that should be discussed with the project proponent as early as possible during development of the project brief. The proponent may wish to:
	(i) Open a dialogue with STAP regarding the technical and/or scientific issues raised;
	(ii) Set a review point at an early stage during project development, and possibly agreeing to terms of reference for an independent expert to be appointed to conduct this review.
	The proponent should provide a report of the action agreed and taken, at the time of submission of the full project brief for CEO endorsement.

<p>3. Major issues to be considered during project design</p>	<p>STAP proposes significant improvements or has concerns on the grounds of specified major scientific/technical methodological issues, barriers, or omissions in the project concept. If STAP provides this advisory response, a full explanation would also be provided. The proponent is strongly encouraged to:</p>
	<p>(i) Open a dialogue with STAP regarding the technical and/or scientific issues raised; (ii) Set a review point at an early stage during project development including an independent expert as required. The proponent should provide a report of the action agreed and taken, at the time of submission of the full project brief for CEO endorsement.</p>