



Norway's International
Climate and Forest Initiative
(NICFI)

Mid-Term Review Report

February 2020

PLANNING

Mid-Term Review Report

PROVISION OF ADEQUATE TREE SEED PORTFOLIOS (PATSP0)



Dr P. Smith & Dr W. Tadesse

February 2020

Contents

	Acronyms	Page 3
	Executive summary	4
1.	Introduction	5
2.	PATSPO Mid-Term Review Methodology	5
3.	Relevance of the PATSPO Project	6
3.1.	Main findings – relevance	6
3.2.	Recommendations – relevance	11
4.	Effectiveness of the PATSPO Project	11
4.1.	Output 1 Tree seed sector developed	11
4.1.1.	Output 1 main findings	11
4.1.2.	Output 1 recommendations	12
4.2.	Output 2: Tree seed and seedling knowledge and information systems	12
4.2.1.	Output 2 main findings	12
4.2.2.	Output 2 recommendations	13
4.3.	Output 3: Existing seed sources upgraded, and new seed sources established	13
4.3.1.	Output 3 main findings	13
4.3.2.	Output 3 recommendations	14
4.4.	Output 4: Capacity in management of tree genetic resources improved	14
4.4.1.	Output 4 main findings	15
4.4.2.	Output 4 recommendations	15
4.5.	Summary of PATSPO Project effectiveness findings and conclusions	17
5.	Efficiency of the PATSPO Project	22
5.1.	Main findings – efficiency	22
5.2.	Recommendations – efficiency	22
6.	Possibility of PATSPO Project impact	22
6.1.	Main findings – possibility of impact	23
6.2.	Recommendations – possibility of impact	25
7.	Project sustainability and stakeholder collaboration	25
7.1.	Main findings – sustainability and stakeholder collaboration	26
7.2.	Recommendations – sustainability and stakeholder collaboration	27
8.	Project risk management	28
8.1.	Main findings – risk management	28
8.2.	Recommendations – risk management	28
9.	Conclusions and summary recommendations	29
9.1.	Summary conclusions	29
9.2.	Summary recommendations	31
	Annex 1: Methodology employed by the Mid-Term Review	34
	Annex 2: Documents referenced during the Mid-Term Review desk study	42
	Annex 3: List of people and institutions visited during the Mid-Term Review	44

Acronyms

AFE	Amhara Forest Enterprise
BSO	Breeding Seed Orchard
CRGE	Climate Resilient Green Economy
CEE-FRC	Central Ethiopia Environment and Forest Research Center
EFCCC	Environment Forest and Climate Change Commission
EEFRI	Ethiopian Environment and Forest Research Institute
FLR	Forest Landscape Restoration
GoE	Government of Ethiopia
HQ	Headquarters
ICRAF	International Centre for Research in Agroforestry (also known as World Agroforestry Center)
ILRI	International Livestock Research Institute
MFA	(Norwegian) Ministry of Foreign Affairs
MTR	Mid Term Review
NDC	Nationally Determined Contribution
NICFI	Norway's International Climate and Forest Initiative
Norad	The Norwegian Agency for Development Cooperation
OFWE	Oromia Forest and Wildlife Enterprise
PATSPo	Provision of Adequate Tree Seed Portfolios
REDD+	Reducing Emissions from Deforestation and Forest Degradation, forest conservation, sustainable forest management and forest carbon stock enhancement through afforestation and reforestation
RTSCs	Regional Tree Seed Centres
RNE	Royal Norwegian Embassy
SSO	Seedling Seed Orchard
TSCs	Tree Seed Centres

Executive summary

The PATSPO project is a four year project (2017-2020) financed by the Norwegian International Climate and Forest Initiative (NICFI) through the Royal Norwegian Embassy in Ethiopia (RNE) to the World Agroforestry Centre (the International Centre for Research in Agroforestry – ICRAF). ICRAF is responsible for the implementation of the project, in full coordination with the Ethiopian Environment, Forest and Climate Change Commission (EFCCC), the Ethiopian Environment and Forest Research Institute (EEFRI) and NICFI/RNE. The PATSPO project is designed to ensure access to high quality seeds of the most important tree species used for forest landscape restoration and all other tree planting activities in Ethiopia. PATSPO is therefore one among the necessary pre-requisites to achieve the ambitious restoration targets of Ethiopia's Climate-Resilient Green Economy Strategy (CRGE 2011).

The purpose of this Mid-Term Review (MTR) of the Project is to assess the project's progress and provide recommendations on how performance issues and challenges encountered so far could be addressed to deliver the desired outcomes and for the continuation of implementation of the project. The review also looks into the complementarity of the PATSPO project with other NICFI funded programs/projects, particularly the REDD+ Investment Program, and provides recommendations on how to create synergies with those projects/programs. The scope of the MTR mission focuses on the subjects of relevance, effectiveness, efficiency, potential impact, sustainability, and risk management, including cross-cutting issues.

The MTR methodology comprises a combination of desk review, collection of primary data through meetings and semi- structured interviews with project stakeholders, and field visits to the implementation sites.

Overall, the MTR team's findings were that the PATSPO Project is broadly on track to deliver its outcome and objectives. It is highly relevant to Ethiopia's tree planting and forestry initiatives and has been effective in the delivery of most of its outputs. To date the project has been delivered efficiently and the potential for impact is considerable. Stakeholder engagement has been good, and all of the stakeholders interviewed, were enthusiastic and supportive of the project. Ultimately its impact and sustainability will be dependent on key stakeholders, notably the various relevant branches of Government, drafting and implementing policies and procurement regulations that create a demand for high quality tree seed across the taxonomic array.

The MTR authors make 14 key recommendations that, if accepted and implemented, will help to ensure better outcomes for the PATSPO Project. Most of the technical recommendations are within the Project's control and will reinforce the capacity building elements of the Project. However, the policy-focused recommendations and the recommendations designed to consolidate the relevance, impact and sustainability of PATSPO place the onus on the main project stakeholders – particularly the Government of Ethiopia.

1. Introduction

The PATSPO project is a four year project (2017-2020) financed by the Norwegian International Climate and Forest Initiative (NICFI) through the Royal Norwegian Embassy in Ethiopia (RNE) to the World Agroforestry Centre (the International Centre for Research in Agroforestry – ICRAF). ICRAF is responsible for the implementation of the project, in full coordination with the Ethiopian Environment, Forest and Climate Change Commission (EEFCCC), the Ethiopian Environment and Forest Research Institute (EEFRI) and NICFI/RNE. The PATSPO project is designed to ensure access to high quality seeds of the most important tree species used for forest landscape restoration and all other tree planting activities in Ethiopia. PATSPO is therefore one among the necessary pre-requisites to achieve the ambitious restoration targets of Ethiopia's Climate-Resilient Green Economy Strategy (CRGE 2011). Further details are to be found in the project document (PATSPO 2017).

The **Project Impact** (development goal) is: "Ethiopia's national forest restoration targets for the next 20 years and beyond are reached."

The **Project Outcome** (project purpose) is: "Tree seed sector in Ethiopia enabled to provide high quality tree seeds of priority species for large-scale restoration plantings."

The **Project Outputs** are:

Output 1. Tree seed sector developed, including delivery systems,

Output 2. Tree seed and seedling knowledge and information systems in place,

Output 3. Existing seed sources upgraded, and new seed sources established,

Output 4. Capacity of the national institutions in management of tree genetic resources improved.

ICRAF and the Norwegian Ministry of Foreign Affairs (MFA), represented by the RNE, entered into a Grant Agreement in May 2017 for the implementation of the PATSPO Project (ETH-16/0018), for the support period 2017 - 2020, based on a project document submitted to MFA dated March 2017. The Grant amounts to approximately NOK 70,000,000 (Seventy Million Norwegian Kroner).

As per the grant agreement, a mid-term review focusing on progress to date was carried out, and this report is the mid-term review's main output.

2. PATSPO Mid-Term Review Methodology

A detailed terms of reference and methodology for the mid-term review is provided in **Annex 1: PATSPO Mid-Term Review Inception Report**. Documents referenced during the desk study are listed in **Annex 2**. A list of people and institutions interviewed is provided in **Annex 3**.

The **purpose** of the MTR is to assess the project's progress and provide recommendations on how performance issues and challenges encountered so far could be addressed to deliver the desired outcomes and for the continuation of implementation of the project. The review also looked into the complementarity of the PATSPO project with other NICFI funded

programs/projects, particularly the REDD+ Investment Program, and provides recommendations on how to create synergies with those projects/programs.

The MTR supports NICFI/RNE, the Ethiopian Environment Forest and Climate Change Commission (EFCCC), ICRAF and other major stakeholders in assessing whether PATSPO is proceeding according to plan and focuses on operational aspects of the project, its progress and results compared to the plans, and it provides inputs for all parties for possible improvements of the implementation of PATSPO. Lastly, as the current REDD+ Partnership Agreement between Norway and Ethiopia runs until the end of 2020, the MTR also provides recommendations on how the REDD+ Partnership should be shaped in the next phase of the Partnership.

The **scope** of the MTR mission includes the following main criteria (following the Norad Development Cooperation Manual, 2005), focusing on the subjects of **relevance, effectiveness, efficiency, potential impact, sustainability, and risk management**, including cross-cutting issues.

3. Relevance of the PATSPO Project

Relevance: Relevance is the extent to which the objectives of a programme are consistent with beneficiaries' requirements, country needs, global priorities and partners' and donors' priorities. The tasks of the MTR are to:

- Assess the relevance of PATSPO in contributing to the 15 Million hectares of restoration pledge of Ethiopia as part of the Bonn challenge and New York declaration on forests,
- Assess to what extent PATSPO is still relevant for contributing to the overarching goals of the Norwegian Climate and Forest Initiative, the REDD+ Partnership Agreement between Ethiopia and Norway and Ethiopia's CRGE strategy, including elements like the NDC,
- Assess whether the current set-up of the PATSPO project fits together with and complements the other initiatives funded under the REDD+ Partnership Agreement.
- Assess the relevance of the project to the direct and indirect needs of local beneficiaries (local communities, local seed suppliers, etc...).

3.1. Main findings– relevance

PATSPO's main focus is on supporting the Tree Seed Centres (TSCs) (i.e. the formal seed sector) where improvements in seed quality can be most effectively implemented, controlled and measured. Seed supply systems in Ethiopia (GO, NGO and Private) are largely market driven, and respond to a high demand for mainly exotic species. The Government of Ethiopia is the main customer of the TSCs.

The MTR team findings suggest that the PATSPO project is currently optimized for supply of exotic tree seed to support the plantation and agroforestry components of Forest Landscape Restoration (FLR) and the Bonn Challenge. It is sub-optimal for provision of indigenous seed for enrichment planting of natural forest for the following reasons:

Firstly, the TSCs through which the project primarily works currently have a limited portfolio of indigenous species available for supply to natural forest restoration initiatives (see **Table 1**). Of the 64 species for which seed was supplied by the TSCs in 2018, 30 species were exotics and 34 were indigenous species. In total, Ethiopia has 613 indigenous tree species, so currently the TSCs are capable of providing seed from only 5.5% of Ethiopia's indigenous tree species. Similarly the BSOs under the PATSPO project comprise only 8 indigenous species (which are included in the 34 species above). In terms of seed numbers, taking Bahir Dar (the most productive TSC in 2018/19) as an example, numbers of exotic seeds supplied in 2018 were around 2.28 billion compared to just 285 million indigenous seeds (see **Table 1**).

Secondly, TSC seed procurement is based on demand from the Government of Ethiopia (GoE), farmers and other customers, and there is low demand for indigenous seed because:

1. Enrichment planting and natural forest regeneration are currently relatively small components of the Government of Ethiopia's FLR portfolio compared to plantation and agroforestry actions.
2. Farmers prefer fast-growing, cash crop exotic species to indigenous species for agroforestry and plantation forestry.
3. The GoE has not increased its seed procurement from TSCs over the past three years (**Table 2**) or created a market for indigenous species despite its Bonn Challenge pledges (see **Sustainability** for more details).



Typical short rotation farmer's stand of *Eucalyptus globulus*, Amhara Region

For these reasons, PATSPO is most relevant to, and will have the greatest impact on seed supply systems, in the following order:

1. Provision of high quality *exotic* and *indigenous* seed and tools to support production and agroforestry initiatives such as Ethiopia's CRGE strategy aimed at improving livelihoods and stimulating Ethiopia's green economy.
2. Provision of high quality *exotic* and *indigenous* seed and tools to support REDD+ avoided deforestation by providing alternatives to cutting of natural forest through Participatory Forest Management agreements with communities.
3. Provision of high quality seed of *indigenous* species and tools for the assisted natural forest restoration component of FLR, the Bonn Challenge, NICFI and the REDD+ partnership.

Table 1: Example of portfolio of species and seed supplied Bahir Dar RTSC, 2018/19

Species	Exotic/Native	Kg distributed 2018/19	No. of seeds distributed 2018/19
<i>Acacia decurrens</i>	E	3725.5	330,861,456
<i>Acacia melanoxylon</i>	E	60	4,285,714
<i>Acacia saligna</i>	E	1073.5	63,520,710
<i>Azadirachta indica</i>	E	50	207,468
<i>Cajanus cajan</i>	E	1120.5	12,879,310
<i>Casuarina equisetifolia</i>	E	204.5	51,125,000
<i>Chamaecytisus palmensis</i>	E	1783.7	575,387,096
<i>Cupressus lusitanica</i>	E	888	161,454,545
<i>Delonix regia</i>	E	147.5	370,603
<i>Eucalyptus camaldulensis</i>	E	1577.5	71,7045,454
<i>Eucalyptus citriodora</i>	E	35	5,833,333
<i>Eucalyptus globulus</i>	E	1559.75	278,526,785
<i>Eucalyptus grandis</i>	E	2.2	1,833,333
<i>Eucalyptus saligna</i>	E	1.5	1,875,000
<i>Grevillea robusta</i>	E	326.95	16,347,500
<i>Leucaena leucocephala</i>	E	129	4,300,000
<i>Pinus patula</i>	E	95	9,500,000
<i>Schinus molle</i>	E	1314	43,800,000
<i>Acacia abyssinica</i>	N	263	3,811,594
<i>Acacia nilotica</i>	N	79.5	668,067
<i>Acacia polyacantha</i>	N	1045	13,177,805
<i>Acacia Senegal</i>	N	418.5	5,894,366
<i>Albizia gummifera</i>	N	300.5	4,485,074
<i>Balanites aegyptiaca</i>	N	1	726
<i>Cordia Africana</i>	N	4812.77	14,763,098
<i>Croton macrostachyus</i>	N	18	295,081
<i>Faidherbia albida</i>	N	942.5	10,026,595
<i>Juniperus procera</i>	N	178	6,592,592
<i>Millettia ferruginea</i>	N	62.5	312,500
<i>Moringa stenopetala</i>	N	740	1,436,893
<i>Olea Africana</i>	N	1771	20,545,243
<i>Podocarpus falcatus</i>	N	11	25,882
<i>Rhamnus prinoides</i>	N	645	28,043,478

<i>Sesbania sesban</i>	N	1733.1	173,310,000
<i>Ziziphus spina-christi</i>	N	30	53,003
<i>Oxytenanthera abyssinica</i>	N	38	1,652,173
Totals		27.183 tons	2.564 billion seeds
Exotic species			2.279 billion seeds (88.9 %)
Native species			285.1 million seeds (11.1 %)

Table 2: Kg per annum of seed procured and supplied by Tree Seed Centres 2016-2019

Tree Seed Centre	Procured 2016/2017 (Kg)	Distributed 2016/2017 (Kg)	Procured 2017/2018 (Kg)	Distributed 2017/2018 (Kg)	Procured 2018/2019 (Kg)	Distributed 2018/2019 (Kg)	Mean supplied
CEE-FRC	5855	3220.07	5295	1195.99	3794.5	2796.89	2404.32
Dima	50,167.50	25,961.32	17,203.50	21,922.00	14,320.50	15,662.98	21182.1
Bahir Dar	26864.26	14862.525	13190.016	34561.67	36164.13	27183.47	25535.9
Hawassa	30567	18657	12110	5775.8	8557	8336	10922.9
Mekele	0	0	0	0	3064	2331.88	2331.9
Totals	113453.8	62700.92	47798.52	63455.46	65900.13	56311.22	62377.1

PATSPPO will result in higher quality seed being supplied by the TSCs through improved seed sourcing and handling (outputs 3 and 4) but currently this will have a relatively small impact on programmes providing indigenous seed for assisted natural forest restoration for the reasons given above.

It is important to note that species selection is outside PATSPPO's control and mandate. The Government of Ethiopia, as the main customer of the Tree Seed Centres (see **Table 3**), creates the market for tree seed from the formal sector, and any shift towards producing more indigenous species for assisted natural forest regeneration will need to be driven by Government agencies. For example, there is no point in PATSPPO establishing more indigenous species BSOs if there is no market for those species. **Table 3**, customer data from other centres and our discussions with the TSC managers indicate that the TSCs are used as a primary source of seed for REDD+ and other Government led afforestation/reforestation programmes. However, the portfolio of species and the ratio between indigenous and exotic species is not in the control of either PATSPPO or the TSCs.

PATSPPO is highly relevant to the following beneficiaries:

- 1) Direct beneficiaries are regional enterprises (OFWE, AFE, Bureau of Agriculture etc.), TSCs and their staff, contractors and private seed collectors who supply seed to the TSCs. All have benefitted from PATSPPO through training, provision of equipment, establishment of BSOs etc.
- 2) Indirect beneficiaries are the customers and end users of the TSCs (see **Table 3**), including GOs, NGOs, private seed buyers and co-operatives involved in afforestation projects and supply chains. End users will primarily benefit from increases in seed quality brought about by PATSPPO's interventions.

Although currently it is estimated that the TSCs provide 20-30% of seed in Ethiopia, all TSCs have indicated their ability to scale up significantly as a result of PATSPO's support.

Table 3: Example of Tree Seed Centre customer List. Amhara Tree Seed Centre

List of customer organisations	GO/NGO/Private/Co-operative
Yalem and Misganaw Cooperative	Cooperative
Dereje and his friends Cooperative	Cooperative
Amhara regional agricultural office	GO
Tigray regional office	GO
Amhara Agricultural Research Institute (ARARI)	GO
Ethiopian Environment & Forest Research Institute (Bahar Dar)	GO
ORDA	GO
Desie 'zuriya' forest sector	GO
Bhar Dar University	GO
Gondar University	GO
Debre-Tabor University	GO
Debre-Markos University	GO
Wollo University	GO
Debre-Birhan University	GO
Enjibara Zone	GO
Gonder Zone	GO
South Gondar Zone	GO
Guragie Zone	GO
North Shewa zone	GO
Ditricks: Habiru, Legambo, Libokemkem, Lasta, Mekdela, Meket, Machakel, Sedi, Sekota, Senan, Shebel-Berenta, Bahar Dar, Baso Liben, Tenta, Delanta, Sourh Achefer, Dembecha, Amhara Sayint, Ankober, Enesiesarmidir, Adarkay, Estie, Enarji Enawga, Anedid, Enemay, bilala, kutaber, Wereelu, Wogndie, Wadila, Zigem, Dabat, Jabi Tena, Dangila, Dehana, Jan Amora, Guba Lafto, Guagusa Shigudad, Bishrabie, Ginde Woyne, Gonder Zuriya, Gonji Kolela, Tagedie, Tarma Ber, Fogera	GOs
Blue Nile Watershed Institute	NGO
GIZ	NGO
One acre fund	NGO
REDD Plus	NGO
Lorfta	NGO
" Sewoch le Sewoch "	NGO
KFW	NGO
MululamShumet	Private seed buyer
EsubalewEngda	Private seed buyer

3.2. Recommendations - relevance

In summary, the PATSPO project is currently most closely aligned with the Government of Ethiopia's CRGE objectives, supporting green development in the production forest and agroforestry sectors. In order to increase the relevance of PATSPO to the assisted natural forest regeneration component of FLR, which uses native species, we recommend that:

1. The Government of Ethiopia could consider, with the assistance of the PATSPO team (PATSPO output 1.2.3), to finalize the Tree Seed Proclamation under preparation at present (including procurement policies) that create a demand for high quality, diverse species seed to support REDD+ and natural forest restoration programmes. See also Potential for Impact (partially beyond PATSPO's control).
2. REDD+ and restoration programmes could consider increasingly sourcing their seeds from the TSCs to benefit from PATSPO driven improvements in seed quality (beyond PATSPO's control).
3. REDD+ and restoration programmes could consider scaling up seed procurement and broadening their portfolio of indigenous species for enrichment planting to include, for example, framework species (beyond PATSPO's control).

4. Effectiveness of the PATSPO Project

Effectiveness: Effectiveness is the extent to which the programme's objectives were achieved or are expected to be achieved. The tasks of the MTR are to:

- Review the PATSPO performance to date with regard to achievement of outcomes and outputs, and the corresponding planning of project activities so far.
- Identify – if any – new activities deemed necessary for fulfilling the outcomes of the projects,
- Assess and verify PATSPO's achievements related to planned outputs,
- Determine the major factors influencing the achievement or non-achievement of the objectives,
- Assess the relevance, adequacy and timing of PATSPO inputs (funds, material, staff), and identify – if any – needs for further inputs,
- Assess the result framework and implementation of the planning/reporting framework of PATSPO.

4.1. Output 1: Tree seed sector developed

Output 1 of the PATSPO project is 'Tree seed sector developed, including delivery systems'.

4.1.1. Output 1 main findings

PATSPO has effectively responded to the findings of the research that it has commissioned on the Ethiopian Seed Sector by:

- Working closely with the TSCs and other stakeholders to identify strengths, weaknesses, opportunities and challenges, including through the development of a Tree Seed Network, which comprises a wide range of stakeholders.
- Designing and implementing appropriate interventions and support mechanisms to improve the delivery of high quality, genetically diverse seed (e.g. the BSOs, training etc.).
- Adaptive management, e.g. seed cleaning (but see Output 4).

A key finding from output 1 is that ca. 70% of seed in Ethiopia is supplied by the private, informal sector, which is unregulated and has high complexity in terms of a wide range of stakeholders and mechanisms for collecting, exchanging and selling seeds. For these reasons, PATSPO has primarily concentrated its efforts on improving seed quality in the formal sector through the TSCs but has sought ways to engage the private sector wherever possible. This has primarily been achieved by strengthening capacity where the formal tree seed sector interacts with the private sector. For example, hundreds of private seed collectors have been trained in the collection and processing of high quality tree seed, and the private seed sector has also been engaged through the Tree Seed Network established by PATSPO (see Sections 4.4 and 6.1).

In summary, Output 1 is being effectively delivered by PATSPO, and has provided useful baseline data, methods and mechanisms for improving tree seed quality and delivery in Ethiopia.

4.1.2. Output 1 recommendations

1. In order to maximise the potential of PATSPO's interventions and to create incentives for all seed sectors to improve the quality of seed supplied, the Government of Ethiopia could consider:
 - Finalising a National Tree Seed Proclamation and Strategy that incentivises suppliers to produce, verified high quality, diverse seed (beyond PATSPO's control).
 - Developing Government procurement regulations that require the use of verified, high quality seed in all of its projects and programmes (beyond PATSPO's control).

4.2. Output 2: Tree seed and seedling knowledge and information systems

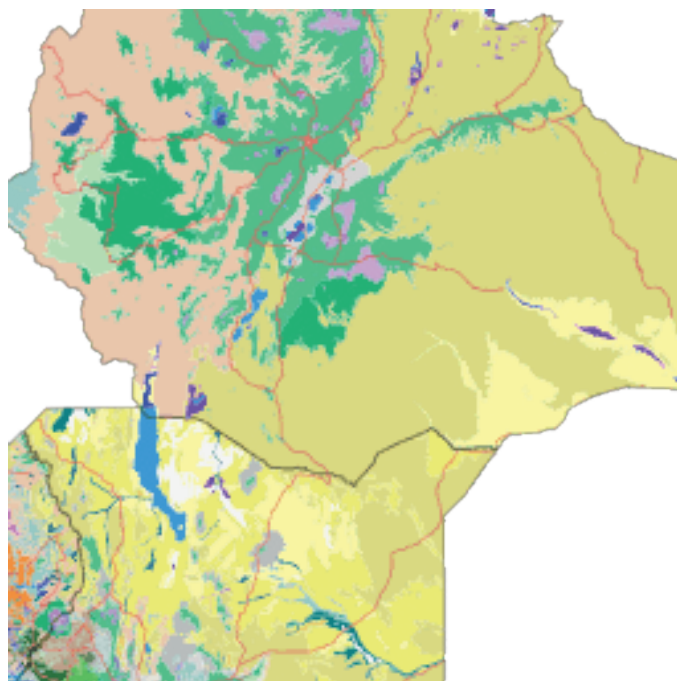
Output 2 of the PATSPO project is 'Tree seed and seedling knowledge and information systems in place.'

4.2.1. Output 2 main findings

Some useful progress has been made with **Outputs 2. 1** and **2.2**, including:

- Identification of priority species using a variety of data sources and criteria
- Compilation of data on distribution of the priority tree species
- Production of distribution maps for a limited number of priority species
- Study published on seed development and breeding plans for selected priority species

Limited progress has been made to date with **Outputs 2.3** (genomic studies) and **Output 2.4** (decision support system and interactive information portal).



The development of a seed supply portal and data tool to provide guidance on which species to plant where is a key PATSPO output.

4.2.2. Output 2 recommendations

1. Delivery of Output 2.4, the interactive seed information portal, should be a priority. Ideally, this portal will include:
 - Tools providing guidance on which species to plant where
 - A platform for seed suppliers from all sectors to advertise/sell seed
 - Independently verified seed quality ratings for all vendors advertising or selling seed through the platform (see **Output 4**)

4.3. Output 3: Existing seed sources upgraded, and new seed sources established

Output 3 of the PATSPO project is 'Existing seed sources upgraded, and new seed sources established'.

4.3.1. Output 3 main findings

Very good progress has been made with regard to the delivery of Output 3, including:

- Design of a national breeding programme for 25 species, and breeding plans developed for 15 species based on establishment of BSOs (Output 3.1).
- Identification of 8 sites for 27 BSOs/SSOs for 15 species, and seed procured (national collections from plus trees and imports of single tree- and provenance collections) for all BSOs/SSOs (Output 3.2).

- 14 BSOs of 7 species established, with a further 13 of 8 species under development (Output 3.3).
- AFE, OFWE and EEFRI trained, supervised and assisted in the establishment of BSOs (Output 3.3).
- 80 existing seed sources under the four RTSCs and CEE-FRC described and registered for seed collection by the RTSCs.

Output 3 is being effectively delivered by the PATSPO team, and in our opinion, the establishment of BSOs for key priority species across Ethiopia have the potential to transform the seed sector in this country.

4.3.2. Output 3 recommendations

1. Given the timeframes associated with establishing BSOs, **Output 3.4** (*Assess, manage and use the BSOs for research, breeding and seed procurement*) should be a primary focus of any project extension or phase 2 (see **Sustainability**). Of particular importance in a second phase is technical support to BSO owners in BSO management (e.g. thinning and pruning) to maximise BSO productivity.



PATSPO *Cordia africana* Breeding Seed Orchard, Amhara Region

4.4. Output 4: Capacity in management of tree genetic resources improved

Output 4 of the PATSPO project is ‘Capacity of the national institutions in management of tree genetic resources improved’.

4.4.1. Output 4 main findings

Excellent progress has been made with regard to the delivery of Output 4, including:

- Rehabilitation, upgrading and maintenance of key facilities at CEE-FRC/TSC, Amhara RTSC, Mekele RTSC, Hawassa RTSC and Dima (Sebeta) RTSC (**Output 4.1**).
- Training of TSC technical staff and managers in a range of technical disciplines, and management techniques, and follow up assessment of effectiveness of training (**Output 4.2**).
- Training of (private sector) seed collectors who supply seed to the TSCs in disciplines such as tree selection, collecting techniques and seed cleaning (**Output 4.2**)
- Preparation, publishing and distribution of training, extension and information material (**Output 4.3**).

Output 4 is being effectively delivered by the PATSPO team, and in our opinion, the improvement in methodologies and skills will potentially have a significant, positive impact on seed quality supplied by the TSCs. We found that new procedures for seed processing and testing are largely being followed by TSC technical staff (but see **Recommendations**).



Improved laboratory facilities have been provided to all Tree Seed Centres by the PATSPO project

4.4.2. Output 4 recommendations

Seed collection and cleaning

1. Seed collectors should be trained in field-based quality assessments, such as the cut test and using shade drying (within PATSPO's control).
2. PATSPO should support training in seed cleaning at the TSCs, and ensure these are used. Use of seed blowers and other gravity separation equipment is an important step in seed cleaning to assure high quality seed and purity, and as seed collectors do

not have access to this equipment, this should be carried out by the TSCs (within PATSPO's control).

3. Feedback should be given to seed collectors on the quality of their collections, based on testing, and further training should be offered where necessary (within PATSPO's control).

Seed testing

1. The PATSPO team could work with the GoE to rationalise seed testing in the tree seed proclamation under preparation at present. Currently seed testing is carried out by all of the TSCs and, in Amhara, also by the Plant Quarantine authorities (partially beyond PATSPO control).
2. Regardless of whether seed testing is centralised (e.g. at CEE-FRC) or shared amongst all TSCs, methodologies should be standardised. Ideally, seed testing should be duplicated in at least two different facilities, and average figures used (within PATSPO control).
3. Current seed testing standards are based on Ethiopian Standards Agency standards, which are not designated for all species tested in the TSCs. These should be reviewed and benchmarked against international standards (within PATSPO control).

Seed storage

There is currently over-reliance on cold stores for short term storage in the TSCs. Short term storage for most of the species supplied by the TSCs can be safely carried out in ambient conditions. We recommend that:

1. As already recommended by PATSPO, storage of collections should be rationalised based on seed behaviour. Short-lived or recalcitrant seeds should be stored at 4°C, and long-lived seeds should be stored in ambient conditions (within PATSPO's control).
2. Much more emphasis should be placed on keeping seeds dry. For orthodox seeds (i.e. most seeds supplied by the TSCs), moisture content is more important than temperature (within PATSPO's control).

Seed documentation and data management

1. All of the TSCs use paper-based seed documentation and most also use Excel to record data. We recommend that PATSPO considers acquiring and training the TSCs in the use of specific genebank software, such as BRAHMS, which is used widely in African NTSCs. Use of hard copies as a back up should continue (within PATSPO's control).
2. Optimal germination protocols, seed behaviour, seed weight and other data are not currently available to the TSCs for many indigenous species. Standard tools such as Seed Compendia and Kew's Seed Information Database (<https://data.kew.org/sid/>) should be promoted (within PATSPO's control).

Planning and implementation of best practice processes and procedures

1. We recommend that PATSPO works with the national and regional TSC owners and major customers to develop management plans for scaling up seed collection, processing, testing and supply in order to anticipate and meet current and future demand. Clear targets should be set for each TSC, and activities should ideally be co-ordinated across the country (within PATSPO's control).

2. We recommend that PATSPO continues to provide management training and support to help to ensure implementation of the above plans, and develops an indicator that measures uptake of best practice (within PATSPO's control).



Seed storage under ambient conditions is appropriate for the majority of species supplied by the TSCs

4.5. Summary of PATSPO Project effectiveness findings and conclusions

After a slow start associated with project design, recruitments and procurement, project outputs and activities have largely been effectively delivered, albeit with some delays. The main challenges to project delivery relate to the late start of the project (September 2017); however, the project has now developed significant momentum, based on adaptive management which has proved to be effective. The logical framework-based planning/reporting framework of PATSPO is appropriate, and has proved to be robust.

In our opinion, the PATSPO project will certainly achieve the project **outcome**, which is: “Tree seed sector in Ethiopia enabled to provide high quality tree seeds of priority species for large-scale restoration plantings.” The scale at which this is achieved will depend on a number of factors which are discussed below.

The project design has not been significantly altered, and the project is on track to deliver most of its main **outputs** and **qualitative targets**. The most important of these are:

- Baseline surveys and critical analysis of the seed/supply/seed demand situation and the organisation of the tree seed sector in Ethiopia (Output 1).
- The establishment of a tree seed network of relevant stakeholders to cover the national seed demand with quality seed of priority species from appropriate seed sources (Output 1).
- Demand-supply scenarios developed for all tree species priority groups, based on which location and size of seed sources to be established can be determined, and quality material promoted through the most appropriate channels of supply (Output 1).

- Support preparation/finalisation of Ethiopia's Tree Seed Proclamation under preparation in EFCCC (Output 1).
- Compilation of data and maps for priority tree species (Output 2).
- Document important patterns of genetic differentiation (in growth, phenology, productivity and health) of selected indigenous species in experimental tests (Output 2).
- Introduce and use genomic studies as a supplement to field testing to clarify genotype by environment patterns and to provide recommendations for practical application of genomic tools for forest genetic resources management in face of climate change (Output 2).
- Develop and introduce a user-friendly decision support system and interactive information portal ("choosing your tree for planting"), allowing stakeholders to make informed choices regarding the best-suited tree species and their seed sources location (Output 2).
- Design a national breeding programme for more than 50 priority species, including identification of distribution and deployment zones - also considering climate change aspects (Output 3).
- Make range wide collections of plus tree families (from natural stands as well as possible landraces) complementing existing collections (Output 3).
- Design and establishment of breeding seedling orchards (BSOs – combined provenance/progeny testing and seed production/multiplication/conservation) in relevant deployment zones (Output 3).
- Assess, manage and use the BSOs for research, breeding and seed procurement (Output 3).
- Support rehabilitation and maintenance of existing key facilities of the major stakeholders in the tree seed sector (EEFRI and Provincial Seed Enterprises), to cover part of the national seed demand and promote good practices among other seed suppliers in the private sector (Output 4).
- Upgrade knowledge and capabilities of selected staff at relevant stakeholder institutions, including research, education and training in relevant methods and relevant technologies in tree seed procurement, as well as extension of knowledge target beneficiaries (Output 4).
- Prepare, publish and distribute of training, extension and information material in all aspects of a national tree seed procurement programme, - in large quantities (Output 4).

However, many of the project's **quantitative targets** may need to be adjusted or a project extension period granted in order to meet these targets (see **Table 4**). Most of the quantitative targets can be met with a two year project extension; however, a second phase would be required to fully achieve the following targets:

- Output 3: **75-150** BSOs/SSOs of priority tree species established
- Output 3: **400-500** seed sources identified and described in existing forests and plantations
- Output 4: **1000** staff members from stakeholder institutions in the tree seed sector trained

The Output 3 target ‘National tree breeding programme, incl. BSOs, for priority tree species covering **80-90%** of the seed demand for the species’ will not be met due to the fact that the formal seed supply sector, even with scaling up and increasing its interactions with the private seed sector, is likely to meet no more than **45%** of market demand (see **Potential for Impact**, below).

In our opinion, possible extension of PATSPO should not only be based on assessment of whether the quantitative deliverables have been or are likely to be achieved. The most important factor is whether the major collaborators/stakeholder have adopted the techniques brought in by PATSPO and their understanding of what constitutes an effective tree seed sector. Absolutely critical to this is the Government of Ethiopia continuing the development of the sector by implementing the policies and practices promoted by PATSPO (see our Government of Ethiopia recommendations under **Sustainability**).

In addition, not all training received from PATSPO (Output 4) is yet being implemented consistently across all TSCs, and we have made recommendations on how this training can be strengthened. For example, we found that some TSCs were not using incubators (with controlled temperature and light) and others were. Similarly, some routine tests (e.g. the cut test) were not always carried out. This is much more a cultural challenge than a technical challenge – associated with changing behaviours from ‘the way we have always done it’ to standardised best practice.

Finally, this Phase of the PATSPO project focuses on seed procurement combined with tree improvement (the BSO/SSO concept), whereas gene conservation is not emphasized, and will take longer to achieve. These elements of the tree seed sector in Ethiopia take much longer to establish due to the long regeneration time of trees, and should be included in a second 5 year phase of PATSPO no matter who funds or supports this.

For these reasons we recommend that the project be extended as far as practicably possible, and that training be continued, refined and that recipients of training be tested through spot checks and other control measures to make sure that new skills and approaches are being implemented (this should be measured via an output indicator – see Section **4.4.2**). In addition, a second phase of the project would considerably strengthen PATSPO outcomes, and positive impacts on the tree seed sector in Ethiopia (see **Sustainability**).

Table 4: PATSPO quantitative indicators, and expected delivery based on different timeframes (data and estimates provided by the PATSPO team)

Quantitative indicator	Achieved to date (end of 2019)	By end of 2020	By end of 2021 (1 yr no-cost extension)	By end of 2022 (2 yr ext. with additional funding)	By end of 2025 (5 yr ext. with additional funding)	Comments
Output 2: Maps and tree-planting recommendation domains in place for 150 species	Maps produced for 15 species	150 species	200 species	250 species	350 species	The species suitability / distribution atlas will be produced by the end of 2020
Output 3: National tree breeding programme, incl. BSOs, for priority tree species covering 80-90% of the seed demand for the species	Estimate: The species worked with will cover approx. 5-10 % of the demand.	Estimate: The species worked with will cover approx. 10- 15 % of the demand.	Estimate: The species worked with will cover approx. 15 % of the demand.	Estimate: The species worked with will cover approx. 15 - 20 % of the demand.	Estimate: The species worked with will cover approx. 45 % of the demand.	The existing seed sources registered / described together with the BSO/SSO established will potentially cover the percentages of the seed demand mentioned
Output 3: 75-150 BSOs/SSOs of priority tree species established	14 BSOs of 7 species established, with a further 13 of 8 species under development	27 BSOs/SSOs of 18 species.	41 BSOs/SSOs of 27 species.	55 BSOs/SSOs of 36 species,	120 BSOs/SSOs of 60 species	Assumes present momentum being maintained and more involvement of partner institutions owning the land where the BSOs/SSOs are being established
Output 3: 400-500 seed sources identified and described in existing forests and plantations throughout Ethiopia	80 existing seed sources under the four RTSCs and CEEFRC described and registered	130 existing seed sources under the four RTSCs and CEEFRC described and registered	190 existing seed sources under the four RTSCs and CEEFRC described and registered	250 existing seed sources under the four RTSCs and CEEFRC described and registered	500 existing seed sources under the four RTSCs and CEEFRC described and registered	
Output 3: Between 250-1000 tons of quality tree seed of priority species procured annually by the tree seed sector	60 tons of quality tree seed of priority species procured annually by the tree seed sector	110 tons of quality tree seed of priority species procured annually by the tree seed sector	180 tons of quality tree seed of priority species procured annually by the tree seed sector	250 tons of quality tree seed of priority species procured annually by the tree seed sector	1000 tons of quality tree seed of priority species procured annually by the tree seed sector	Estimates based on actual procurement levels of the RTSCs and CEEFRC and the presumption that private seed dealer get access to collect seed from seed

Quantitative indicator	Achieved to date (end of 2019)	By end of 2020	By end of 2021 (1 yr no-cost extension)	By end of 2022 (2 yr ext. with additional funding)	By end of 2025 (5 yr ext. with additional funding)	Comments
						sources under the RTCs and CEEFRC
Output 4: 1000 staff members from stakeholder institutions in the tree seed sector trained through 10 annual training courses with 25 participants per course.	300 staff members from stakeholder institutions in the tree seed sector trained	450 staff members from stakeholder institutions in the tree seed sector trained	625 staff members from stakeholder institutions in the tree seed sector trained	800 staff members from stakeholder institutions in the tree seed sector trained	1300 staff members from stakeholder institutions in the tree seed sector trained	
Output 4: 4000 user group members reached through extension activities, - 10 extension events per year with min. 100 attendants per event.	500 user group members reached through extension activities	2000 user group members reached through extension activities	3500 user group members reached through extension activities	5000 user group members reached through extension activities	9000 user group members reached through extension activities	
Output 4: 10-25 technical guidelines/notes and 20-30 extension briefs/leaflets produces annually, - in total 150 - 200 publications during the project period.	150 guidelines, notes, leaflets, posters, news, publications, etc.	200 guidelines, notes, leaflets, posters, news, publications, etc.	250 guidelines, notes, leaflets, posters, news, publications, etc.	300 guidelines, notes, leaflets, posters, news, publications, etc.	400 guidelines, notes, leaflets, posters, news, publications, etc.	
Probability of PATSPO-activities being sustainable continued by GoE, i.e. techniques being adapted, additional BSOs being established/maintained, the tree seed sector developing according to the PATSPO strategy)	0 %	0 %	10 %	25 %	70 %	The percentages are “guesstimates” based on 30 + years of working with national tree seed projects in more than 20 countries.

5. Efficiency of the PATSPO Project

Efficiency: Efficiency is a measure of how economically resources/inputs (funds, expertise, time, etc.) are converted to outputs. The tasks of the MTR are to:

- Assess whether the operation of the PATSPO cost-efficiently converts funds to activities and outputs,
- Review if activities and outputs are being delivered according to plans and on time,
- Review PATSPO's strategic, financial and administrative procedures in supporting the management of the project,
- Assess the PATSPO/ICRAF audit modality at project level, country level, and ICRAF HQ-level (Nairobi)
- Assess PATSPO's budget planning and expenditure control, including financial flows from the donor to ICRAF HQ to PATSPO Office in Ethiopia,
- Assess if PATSPO's expenditures are justifiable when compared to the plans, progress and outputs of the project,
- Assess options for improving the cost-efficiency of PATSPO.

5.1. Main findings - efficiency

The project deviated from budget in 2017 due to a six month delay in the commencement of the project and knock on effects in recruitment, procurement etc. However, for project years 2018 and 2019 the project been cost-efficient in converting funds to activities and outputs. In these years there has been very little deviation from agreed annual budgets, outputs and activities. The project is now back on track with significant momentum, and no major project design alterations have been necessary or have been made.

PATSPO's strategic, financial and administrative procedures been effective in supporting the management of the project, and are based on well-established (e.g. ICRAF, Norad), robust procedures. The PATSPO/ICRAF audit modality at project level, country level, and ICRAF HQ-level (Nairobi) has been appropriate and effective, and PATSPO's budget planning and expenditure control, including financial flows from the donor to ICRAF HQ to PATSPO Office in Ethiopia, are well-trying, appropriate, robust and effective.

In our opinion, PATSPO's expenditures have been justifiable when compared to the plans, progress and outputs of the project, as testified to in the two auditor's reports to date.

5.2. Recommendations – efficiency

We have no recommendations for improving efficiency.

6. Possibility of PATSPO Project impact

Possibility of **impact:** Impact refers to positive and negative, primary and secondary, long-term effects produced by a development programme, directly or indirectly, intended or unintended. Given the short period of operation of the programme (mid 2017 to end 2019) it is still too early to assess real impact. The tasks of the MTR are to:

- Assess if PATSPO is likely to become successful in assisting Ethiopia in achieving its national forest restoration targets for the next 20 years and beyond as described in the CRGE strategy,
- Assess any identified positive or negative unintended effects of the programme.

6.1. Main findings – possibility of impact

As indicated in **Relevance** (above), PATSPO's main potential impact will be in supporting production forestry and small-holder agroforestry through provision of *high quality* seed for a limited range of primarily exotic species. The BSOs, in particular, have the potential to transform the formal seed sector in Ethiopia.

Improvements in seed quality are being achieved by PATSPO in two main ways:

- Physical quality of seed is being improved by provision of training and practice in collecting and processing seed. For example, training seed collectors in identifying mother trees that produce high quality seed, improving seed processing to remove infested or empty seed and keeping seed cool and dry will result in highly significant (25-40%) increases in germinability of seed.
- Genetic quality of seed is being improved through the establishment and identification of BSOs and SSOs, including plus trees and well-adapted mother trees. Improvements in genetic quality will have significant positive impacts on seedling survival and tree productivity/yield.

In addition, development of PATSPO's portal, which will provide information on which species to plant in which place (and where to source appropriate seed), and its publications on tree care have the potential to greatly improve tree survival and reduce the negative impacts of planting the wrong trees in the wrong place.

Given the short timeframe and budget available to PATSPO, the scale of the project's achievements is impressive. It will be up to the TSCs, regional enterprises and the GoE to scale up successful operations and outputs (see **Sustainability**) in order to increase the magnitude of impact of the PATSPO project.

For example, over the past three years for which we have TSC procurement and supply data (see **Section 3.1, Table 2**), seed procurement requests from the TSC's main customer – the Government of Ethiopia – have been more or less flat, and the portfolio of species requested has not changed significantly. This despite the GoE's increasing tree planting commitments, and increased emphasis on natural forest regeneration. All of the Government stakeholders we interviewed (OFWE, AFE and Bureau of Agriculture), indicated that they were scaling up demand for tree seed. To date, this has not been communicated to the TSCs, and the required budget has not been made available.

Furthermore, seed collection, processing and supply is part of a larger production chain that should include elements such as seed procurement policy, research into opportunities and threats, land use planning, seedling production, tree management and monitoring and evaluation. Currently, some elements of this production chain are missing or not joined up,

which will create risks and missed opportunities. For example, without Government of Ethiopia seed procurement policies that prioritise high quality seed above seed price, there will be no incentive for suppliers to provide high quality seed. Similarly, without research feeding information on new species into practice and supply chains, opportunities for new products will be missed. Conversely, threats associated with potentially invasive species, for example, will not be identified if monitoring and evaluation research is neglected.

In addition, for scaling up the impacts of PATSPO, it is essential that improvements in seed quality provided by PATSPO to the TSCs are expanded to include the private seed supply sector. It is clear from the minutes of the seed sector analysis workshop and the Tree Seed Network meeting, that private seed suppliers can benefit from the PATSPO project and that they wish to do so.

In our meeting with Eden Field Seeds, they told us that their biggest challenge was being undercut in price by seed suppliers who supply poor quality seed. Eden Field Seeds produces around 6 tons of tree seed per annum (equivalent to some of the TSCs), they test their seed and have the infrastructures and mechanisms in place to ensure high quality. In addition, the Government of Ethiopia is their most important customer. However, they believe that Government regulations and procurement rules do not currently place quality above price, making Eden Field's seeds uncompetitive.



Eden Field Seeds processed seed store, Addis Ababa

One way in which PATSPO's impact can be extended to private seed suppliers is by extending seed testing services to the customers of private seed suppliers, so that poor quality seed is

identified, and results are fed back to the customer (often Government) and the suppliers. Where private seed suppliers advertise their seed on the PATSPO portal, those suppliers can be rated according to the quality of the seed they supply (see **4.2.2**). Highly rated suppliers should be preferred customers of the Government of Ethiopia. This does depend on the government of Ethiopia developing (and implementing) procurement regulations that place quality above price (see recommendations).

No unintended negative impacts of PATSPO were identified in our study but see caveats above.

6.2. Recommendations – possibility of impact

1. The Government of Ethiopia could consider, with the assistance of the PATSPO team (PATSPO output 1.2.3), to finalize the Tree Seed Proclamation under preparation at present (including procurement policies) that create a demand for high quality, diverse species seed to support REDD+ and natural forest restoration programmes. See also Potential for Impact (partially beyond PATSPO's control). See also **Relevance** (partially beyond PATSPO's control).
2. REDD+ and restoration programmes could consider increasingly sourcing their seeds from the TSCs to benefit from PATSPO driven improvements in seed quality (beyond PATSPO's control).
3. Government stakeholders could consider working with the TSCs and preferred private seed suppliers in planning seed procurement and supply targets for future years (see **section 4.4.2** – planning), and could consider making funding available to significantly scale up seed procurement and supply from the TSCs (beyond PATSPO's control).
4. Mechanisms and infrastructures for converting research into practice could be considered by the Government of Ethiopia in order to maximise opportunities associated with seed supply, e.g. through establishment of a Forestry Services division or other forestry extension mechanisms (beyond PATSPO's control).
5. Mechanisms for strengthening Monitoring and Evaluation research could be considered in order to minimise risks associated with the supply of seed, e.g. potentially invasive species, loss of indigenous mother trees (beyond PATSPO's control).
6. TSC seed lot testing could be extended to the customers of private seed suppliers, and seed suppliers advertising their seeds on the PATSPO portal should be rated according to the quality of the seed they provide (within PATSPO's control).

7. Project sustainability and stakeholder collaboration

Sustainability and stakeholder collaboration: Sustainability is the continuation of benefits from a programme after major development assistance has been completed, thus the probability of continued long-term benefits. As for impact, this is difficult to assess after the relatively short time of operation. The tasks of the MTR are to:

- Assess what's a realistic time line for the project to deliver its outputs, contribute to the outcomes and disburse the current budget,

- Given that the project officially ends by end of 2020, assess if the PATSPO activities can be sustained if the Norwegian support will be terminated or if there is a need for a second phase,
- Assess the GoE's financial contribution to the tree seed sector in the light of sustaining the PATSPO activities,
- Assess the 'absorption capacity' (human and financial) of the national institutions and major stakeholders collaborating with PATSPO,
- Assess the GoE coordination within the tree seed sector and how it affects the sustainability of PATSPO activities,
- Assess the exit strategy in terms of the sustainability of the project beyond the support period,
- Assess how the project collaborated with different stakeholders and contributed to establish a tree seed system network,
- Assess how the PATSPO project communicates with those projects/programs that needs its input.

7.1. Main findings – sustainability and stakeholder collaboration

The project has gathered impressive momentum after a slow start, and we anticipate that it will meet most of its objectives in the allocated timeframe. However, as indicated in **Section 4.5**, an extension and/or second phase is desirable to maximise project outputs and impacts in some areas. Ideally, further work would be supported by the Government of Norway in partnership with the Government of Ethiopia. It is essential, however, that the Government of Ethiopia plays an increasing role in supporting the objectives of PATSPO financially and through policy and practice.

The TSC's financial model appears to be sustainable, with either orders placed for seed by customers, and revenue for the TSCs generated from selling seeds to those customers or regional governments subsidising TSC seed procurement and supply. All of the TSCs we interviewed said that they were financially self-sustaining without PATSPO. As indicated in **Section 6.2**, however, Government stakeholders should work with the TSCs in planning seed procurement and supply targets for future years (see **section 4.4.2 – planning**), and should make funding available to significantly scale up seed procurement and supply from the TSCs. BSO's so far are established in AFE, OFWE and ILRI concession areas, and that helps to ensures sustainable management and utilization after PATSPO terminates its mission.

However, as indicated above, sustainability of the gains PATSPO has made in provision of high quality seed is largely dependent on the Government of Ethiopia creating a market for high quality, diverse seed through the development and finalisation of the Tree Seed Proclamation and procurement regulations (see **Section 6.2 Possibility of Impact**).

Long term technical backstopping is a potential risk to project sustainability. PATSPO is currently fulfilling an essential role in providing technical support either directly or indirectly through financing training courses and technical support. For the project to be truly sustainable, long term technical support needs to be available in Ethiopia and easily accessible to the TSCs and other stakeholders in the seed supply chain.

Stakeholder involvement has been very good. Stakeholder communication has been good, and all of the stakeholders we interviewed felt that there had been adequate consultation, and their views had been taken into account. All of the RTSCs said they could not identify any weaknesses with the project and, without exception, all of the stakeholders we met said the project was a good thing and that it should continue. The Steering Committee, Technical Committee, Tree Seed Network and bilateral meetings were all cited as being useful. Several members of the Technical Committee requested more frequent and lengthier meetings. The Technical Committee has only met twice so far, with the meetings 20 months apart and of short, half-day duration.

7.2. Recommendations - sustainability and stakeholder collaboration

1. The PATSPO team could work with the Government of Ethiopia (Project output 1.2.3) to finalize the Tree Seed Proclamation under preparation at present (including procurement policies), and create a demand for high quality, diverse species seed to support REDD+ and natural forest restoration programmes. See also **Relevance and Possibility of Impact** (partially beyond PATSPO's control).
2. REDD+ and restoration programmes could consider increasingly sourcing their seeds from the TSCs to benefit from PATSPO driven improvements in seed quality. See also **Relevance and Possibility of Impact** (beyond PATSPO's control).
3. Government stakeholders could consider working with the TSCs and preferred private seed suppliers in planning seed procurement and supply targets for future years (see **section 4.4.2** – planning), and could consider making funding available to significantly scale up seed procurement and supply from the TSCs (beyond PATSPO's control).
4. A PATSPO Project extension and/or second phase could/should be considered in order to strengthen and consolidate some project outputs and impacts (see effectiveness) (beyond PATSPO's control).
5. In the long term, Ethiopian stakeholders (TSCs, regional enterprises etc.) could replicate and scale up successful PATSPO operations, activities and outputs, e.g. BSOs (beyond PATSPO's control).
6. The Government of Ethiopia could consider options for long term technical backstopping and support of the TSCs, for example through the establishment of a Centre of Excellence for seed systems (beyond PATSPO's control).
7. PATSPO Technical Committee meetings should be more frequent (we suggest twice yearly, synchronised with annual planning and mid-year review) and of longer duration (at least a full day). We also suggest they should be co-chaired by PATSPO with clear, time-bound agenda items. Greater representation of REDD+ stakeholders is also recommended (within PATSPO's control).
8. The Tree Seed Network meetings are regarded as useful and informative by all stakeholders, and should continue. We recommend that this group could be consulted as a key stakeholder group in the finalisation of a National Tree Seed Strategy (within/beyond PATSPO's control).

8. Project risk management

Risk management: Risk management is a systematic approach to setting the best course of action under uncertainty by identifying, assessing, acting on and communicating risk issues. The task of the MTR is to:

- Review the PATSPO risk management framework, approach and its application during implementation of the project and propose changes if required.

8.1. Main findings – risk management

The PATSPO project risk assessment, as articulated in the project proposal, has proved to be broadly appropriate, albeit with some of the project's mitigating effects at the impact and outcome levels over-estimated (many of these risks are beyond the project's direct control). This is also the case for the Cross-cutting issues risk assessment (e.g. women's rights and gender equality).

The operational risk assessments from the Performance Measurement Framework are much more useful for adaptive management purposes.

Risks have generally been well managed, but they have not been systematically used as the basis for adaptive management (see example in **Table 4**).

Table 4: Example of traffic light risk register used for adaptive management

Rank	Type of risk	Risk	Impact	Rating				Present controls	Control gap	Responsibility	Date	Review
Highest risk equals lowest number	Governance, operational	An overview of the risk and its source and how it links to strategic aims	The impact of the risk	Impact	Likelihood	Score	Residual Risk	What we are doing at present to mitigate the risk	What more could be done and what is the priority for action, resource implications	Who will be responsible for dealing with the control gap	By when will the matter be resolved	Who will review this and how often
1	Governance	Loss of key staff: salary levels are not competitive, staff are over-committed etc.	Skills lost, Loss of contact base and corporate knowledge significantly impacts ability to operate	2	3	6	5	Length of notice periods reflect importance of position and/or skills required. Structured recruitment, training and induction processes, Appropriate remuneration.	Succession planning for key positions.	Board of Directors, CEO and senior staff	Ongoing review	Annual review

8.2. Recommendations – risk management

1. We recommend that risk management is more integrated with the Performance Measurement Framework, perhaps with the use of traffic light indicators of degree of initial and residual risk after mitigation.

9. Conclusions and summary recommendations

9.1. Summary conclusions

Overall, the MTR team's findings were that the PATSPO Project is broadly on track to deliver its outcome and main objectives. It is highly relevant to Ethiopia's tree planting and forestry initiatives and has been effective in the delivery of most of its outputs. To date the project has been delivered efficiently and the potential for impact is considerable. Stakeholder engagement has been good, and all of the stakeholders interviewed, were enthusiastic and supportive of the project. Ultimately its impact and sustainability will be dependent on key stakeholders, notably the various branches of Government, drafting and implementing policies and procurement regulations that create a demand for high quality tree seed across the taxonomic array. Specific findings are grouped under the relevant review headings below.

Relevance

PATSPO's main focus is on supporting the Tree Seed Centres (TSCs) (i.e. the formal seed sector) where improvements in seed quality can be most effectively implemented, controlled and measured. Seed supply systems in Ethiopia (GO, NGO and Private) are largely market driven, and respond to a high demand for exotic species. The MTR team findings suggest that the PATSPO project is not currently optimized for supply of indigenous seed to support natural forest restoration because the TSCs through which the project primarily works currently have a limited portfolio of indigenous species available for supply to natural forest restoration initiatives. In addition, TSC seed procurement is based on demand from the Government of Ethiopia (GoE), farmers and other customers, and there is low demand for indigenous seed because farmers prefer fast-growing, cash crop exotic species, and the GoE has not increased its seed procurement from TSCs over the past three years or created a market for indigenous species to support its Bonn Challenge pledges. For these reasons, PATSPO is most relevant to, and will have the greatest impact on seed supply systems, in the following order:

1. Provision of high quality *exotic* and *indigenous* seed and tools to support production and agroforestry initiatives such as Ethiopia's CRGE strategy aimed at improving livelihoods and stimulating Ethiopia's green economy.
2. Provision of high quality *exotic* and *indigenous* seed and tools to support REDD+ avoided deforestation and assisted natural regeneration initiatives by providing alternatives to cutting of natural forest through Participatory Forest Management agreements with communities.
3. Provision of high quality seed of *indigenous* species and tools to assist natural forest restoration components of FLR initiatives such as the Bonn Challenge, NICFI and the REDD+ partnership.

PATSPO is highly relevant to a wide range of direct beneficiaries, including regional enterprises (OFWE, AFE, Bureau of Agriculture etc.), TSCs and their staff, contractors and private seed collectors who supply seed to the TSCs. All have benefitted from PATSPO through training, provision of equipment, establishment of BSOs etc. PATSPO is also highly relevant to indirect beneficiaries, such as seed users, including nursery owners, farmers, NGOs and GOs

managing afforestation projects or part of their supply chains. End users will primarily benefit from increases in seed quality brought about by PATSPO's interventions.

Effectiveness

After a slow start associated with project design, recruitments and procurement, project outputs and activities have largely been effectively delivered, albeit with some delays. The main challenges to project delivery relate to the late start of the project (September 2017); however, the project has now developed significant momentum, based on adaptive management which has proved to be effective. The logical framework-based planning/reporting framework of PATSPO is appropriate, and has proved to be robust. The project is on track to deliver nearly all of its qualitative targets and its design has not been significantly altered. However, many of the project's quantitative targets may need to be adjusted or a project extension period granted in order to meet these targets. For some targets, a second phase will be required. The Output 3 target 'National tree breeding programme, incl. BSOs, for priority tree species covering 80-90% of the seed demand for the species' will not be met due to the fact that the formal seed supply sector, even with scaling up, is likely to meet no more than 45% of market demand (see Potential for Impact, below).

Efficiency

As indicated above, the project deviated from budget in 2017 due to a six month delay in the commencement of the project and knock on effects in recruitment, procurement etc. However, for project years 2018 and 2019 the project has been cost-efficient in converting funds to activities and outputs. In these years there has been very little deviation from agreed annual budgets, outputs and activities. The project is now back on track with significant momentum, and no major project design alterations have been necessary or have been made. PATSPO's strategic, financial and administrative procedures have been effective in supporting the management of the project, and are based on well-established (e.g. ICRAF, Norad), robust procedures. The PATSPO/ICRAF audit modality at project level, country level, and ICRAF HQ-level (Nairobi) has been appropriate and effective, and PATSPO's budget planning and expenditure control, including financial flows from the donor to ICRAF HQ to PATSPO Office in Ethiopia, are well-trying, appropriate, robust and effective. In our opinion, PATSPO's expenditures have been justifiable when compared to the plans, progress and outputs of the project, as testified to in the two auditor's reports to date.

Possibility of impact

As indicated in **Relevance** (above), PATSPO's main potential impact will be in supporting production forestry and small-holder agroforestry through provision of *high quality* seed for a limited range of primarily exotic species. The BSOs, in particular, have the potential to transform the formal seed sector in Ethiopia. Improvements in seed quality are being achieved by PATSPO in two main ways:

- Physical quality of seed is being improved by provision of training and practice in collecting and processing seed. For example, training seed collectors in identifying mother trees that produce high quality seed, improving seed processing to remove infested or empty seed and keeping seed cool and dry will result in highly significant (25-40%) increases in germinability of seed.
- Genetic quality of seed is being improved through the establishment and identification of BSOs and SSOs, including plus trees and well-adapted mother trees. Improvements

in genetic quality will have significant positive impacts on seedling survival and tree productivity/yield.

In addition, development of PATSPO's portal, which will provide information on which species to plant in which place (and where to source appropriate seed), and its publications on tree care have the potential to greatly improve tree survival and reduce the negative impacts of planting the wrong trees in the wrong place.

Project sustainability

The Tree Seed Centre financial model appears to be sustainable with either orders placed for seed by customers, and revenue for the TSCs generated from selling seeds to those customers, or regional governments subsidising TSC seed procurement and supply. All of the TSCs we interviewed said that they were financially self-sustaining without PATSPO. In addition, the BSO's so far are established in AFE, OFWE and ILRI concession areas, and that helps to ensure sustainable management and utilization after PATSPO terminates its mission. However, as indicated in Potential for impact, above, project sustainability is largely dependent on the Government of Ethiopia creating a market for high quality, diverse seed through the development of its Tree Seed Proclamation and procurement regulations. Government stakeholders could work with the TSCs in planning seed procurement and supply targets for future years and could consider making funding available to significantly scale up seed procurement and supply from the TSCs. Long term technical backstopping is a potential risk to project sustainability. PATSPO is currently fulfilling an essential role in providing technical support either directly or indirectly through financing training courses and technical support. For the project to be truly sustainable, long term technical support needs to be available in Ethiopia and easily accessible to the TSCs and other stakeholders in the seed supply chain.

Stakeholder collaboration

Stakeholder involvement has been good; all of the stakeholders we interviewed felt that there had been adequate consultation, and their views had been taken into account. All of the RTSCs said they could not identify any weaknesses with the project and, without exception, all of the stakeholders we met said the project was a good thing and that it should continue. The Steering Committee, Technical Committee, Tree Seed Network and bilateral meetings were all cited as being useful. Several members of the Technical Committee requested more frequent and lengthier meetings.

Risk management

The PATSPO project risk assessment, as articulated in the project proposal, has proved to be broadly appropriate, albeit with some of the project's mitigating effects at the impact and outcome levels over-estimated (many of these risks are beyond the project's direct control). This is also the case for the Cross-cutting issues risk assessment (e.g. women's rights and gender equality). The operational risk assessments from the Performance Measurement Framework are much more useful for adaptive management purposes. Risks have generally been well managed, but they have not been systematically used as the basis for adaptive management.

9.2. Summary recommendations

In order to increase the **effectiveness** and **risk management** of the PATSPO project, we recommend that:

1. The series of Output 4 technical recommendations we have made (pages 15-16) with regard to seed collection, processing, testing, storage and planning are carried out (within PATSPO's control).
2. Project risk management should be more integrated with the Performance Measurement Framework, perhaps with the use of traffic light indicators of degree of initial and residual risk after mitigation (within PATSPO's control).

In order to increase the **relevance**, **impact** and **sustainability** of the PATSPO project, we recommend that:

3. The PATSPO team could work with the Government of Ethiopia (Project output 1.2.3) to finalize the Tree Seed Proclamation under preparation at present (including procurement policies), and create a demand for high quality, diverse species seed to support REDD+ and natural forest restoration programmes. (partially beyond PATSPO's control).
4. REDD+ and restoration programmes could consider increasingly sourcing their seeds from the TSCs to benefit from PATSPO driven improvements in seed quality (beyond PATSPO's control).
5. Government stakeholders could consider working with the TSCs and preferred private seed suppliers in planning seed procurement and supply targets for future years, and could consider making funding available to significantly scale up seed procurement and supply from the TSCs (beyond PATSPO's control).
6. Mechanisms and infrastructures for converting research into practice could be considered by the Government of Ethiopia in order to maximise opportunities associated with seed supply, e.g. through establishment of a Forestry Services division or other forestry extension mechanisms (beyond PATSPO's control).
7. Mechanisms for strengthening Monitoring and Evaluation research could be considered in order to minimise risks associated with the supply of seed, e.g. potentially invasive species, loss of indigenous mother trees (beyond PATSPO's control).
8. TSC seed lot testing could be extended to the customers of private seed suppliers, and seed suppliers advertising their seeds on the PATSPO portal could be rated according to the quality of the seed they provide (within PATSPO's control).
9. The project should be extended as far as practicably possible, and training should be continued, refined and recipients of training be tested through spot checks, other control measures and an impact measure to make sure that new skills and approaches are being implemented (some elements within and others beyond PATSPO's control).
10. A second phase of the project could be seriously considered by the Government of Ethiopia and the funders as, in our opinion, this would considerably strengthen PATSPO outcomes, and positive impacts on the tree seed sector in Ethiopia (also see below).
11. In the long term, Ethiopian stakeholders (TSCs, regional enterprises etc.) could replicate and scale up successful PATSPO operations, activities and outputs, e.g. BSOs (beyond PATSPO's control).
12. The Government of Ethiopia could consider options for long term technical backstopping and support of the TSCs, for example through the establishment of a Centre of Excellence for seed systems (beyond PATSPO's control).

13. PATSPO Technical Committee meetings should be more frequent (we suggest twice yearly, synchronised with annual planning and mid-year review) and of longer duration (at least a full day). We also suggest they should be co-chaired by PATSPO with clear, time-bound agenda items. Greater representation of REDD+ stakeholders is also recommended (within PATSPO's control).
14. The Tree Seed Network meetings are regarded as useful and informative by all stakeholders, and should continue. We recommend that this group could be consulted as a key stakeholder group in the finalisation of the tree seed proclamation and strategy under preparation at present (within PATSPO's control).

Annex 1: Methodology employed by the Mid-Term Review

1. Evaluation purpose, scope and criteria

The **purpose** of the MTR is to assess the project's progress to date and provide recommendations on how performance issues and challenges encountered so far could be addressed to deliver the desired outcomes and for the continuation of implementation of the project. The review will also look into the complementarity of the PATSPO project with other NICFI funded programs/projects, particularly the REDD+ Investment Program, and provide recommendations on how to create synergies with those projects/programs. The review will focus on the scope and evaluation criteria as specified below. The MTR will assess PATSPO's continued relevance, its prospects of contributing to the desired impact and its likelihood of reaching sustainable results. PATSPO's approach to risk management will also be reviewed.

The MTR will support NICFI/RNE, the Ethiopian Environment Forest and Climate Change Commission (EEFCCC), ICRAF and major stakeholders to assess whether PATSPO is proceeding according to plan and focus on operational aspects of the project, its progress and results compared to the plans, and provide inputs for all parties for possible improvements of the implementation of PATSPO. Lastly, as the current REDD+ Partnership Agreement between Norway and Ethiopia runs until the end of 2020, the MTR should also provide inputs for how the REDD+ Partnership should be shaped in the next phase of the Partnership.

The **scope** of the MTR mission will include, but not necessarily be restricted to, the following main **criteria**(following the Norad Development Cooperation Manual, 2005,focusing on subjects of efficiency, effectiveness, relevance, impact (if the programme has been operating for some years), sustainability and risk management):

Efficiency: Efficiency is a measure of how economically resources/inputs (funds, expertise, time, etc.) are converted to outputs. The tasks of the MTR are to:

- Assess whether the operation of the PATSPO cost-efficiently converts funds to activities and outputs,
- Review if activities and outputs are being delivered according to plans and on time,
- Review PATSPO's strategic, financial and administrative procedures in supporting the management of the project,
- Assess the PATSPO/ICRAF audit modality at project level, country level, and ICRAF HQ-level (Nairobi)
- Assess PATSPO's budget planning and expenditure control, including financial flows from the donor to ICRAF HQ to PATSPO Office in Ethiopia,
- Assess if PATSPO's expenditures are justifiable when compared to the plans, progress and outputs of the project,
- Assess options for improving the cost-efficiency of PATSPO.

Effectiveness: Effectiveness is the extent to which the programme's objectives were achieved or are expected to be achieved. The tasks of the MTR are to:

- Review the PATSPO performance to date with regard to achievement of outcomes and outputs, and the corresponding planning of project activities so far.
- Identify – if any – new activities deemed necessary for fulfilling the outcomes of the projects,
- Assess and verify PATSPO's achievements related to planned outputs,
- Determine the major factors influencing the achievement or non-achievement of the objectives,

- Assess the relevance, adequacy and timing of PATSPO inputs (funds, material, staff), and identify – if any – needs for further inputs,
- Assess the result framework and implementation of the planning/reporting framework of PATSPO.

Relevance: Relevance is the extent to which the objectives of a programme are consistent with beneficiaries' requirements, country needs, global priorities and partners' and donors' priorities. The tasks of the MTR are to:

- Assess the relevance of PATSPO in contributing to the 15 Million hectares of restoration pledge of Ethiopia as part of the Bonn challenge and New York declaration on forests,
- Assess to what extent PATSPO is still relevant for contributing to the overarching goals of the Norwegian Climate and Forest Initiative, the REDD+ Partnership Agreement between Ethiopia and Norway and Ethiopia's CRGE strategy, including elements like the NDC,
- Assess whether the current set-up of the PATSPO project fits together with and complements the other initiatives funded under the REDD+ Partnership Agreement.
- Assess the relevance of the project to the needs of local beneficiaries (local communities, local seed suppliers, etc...).

Possibility of impact: Impact refers to positive and negative, primary and secondary, long-term effects produced by a development programme, directly or indirectly, intended or unintended. Given the short period of operation of the programme (mid 2017 to end 2019) it is still too early to assess real impact. The tasks of the MTR are to:

- Assess if PATSPO is likely to become successful in assisting Ethiopia in achieving its national forest restoration targets for the next 20 years and beyond as described in the CRGE strategy,
- Assess any identified positive or negative unintended effects of the programme.

Sustainability and stakeholder collaboration: Sustainability is the continuation of benefits from a programme after major development assistance has been completed, thus the probability of continued long-term benefits. As for impact this is difficult to assess after the relatively short time of operation. The tasks of the MTR are to:

- Assess what's a realistic time line for the project to deliver its outputs, contribute to the outcomes and disburse the current budget,
- Given that the project officially ends by end of 2020, assess if the PATSPO activities can be sustained if the Norwegian support will be terminated or if there is a need for a second phase,
- Assess the GoE's financial contribution to the tree seed sector in the light of sustaining the PATSPO activities,
- Assess the 'absorption capacity' (human and financial) of the national institutions and major stakeholders collaborating with PATSPO,
- Assess the GoE coordination within the tree seed sector and how it affects the sustainability of PATSPO activities,
- Assess the exit strategy in terms of the sustainability of the project beyond the support period,
- Assess how the project collaborated with different stakeholders and contributed to establish a tree seed system network,
- Assess how the PATSPO project communicates with those projects/programs that need its input.

Risk management: Risk management is a systematic approach to setting the best course of action under uncertainty by identifying, assessing, acting on and communicating risk issues. The task of the MTR is to:

- Review the PATSPO risk management framework, approach and its application during implementation of the project and propose changes if required.

2. Review timetable, methodology and questions

2.1. Review timetable

The review will be implemented by one international consultant and one Ethiopian consultant; each consultant will spend 30 working days (six weeks).

Broadly, the approach and methodology will be:

1. Conduct a desk review
2. Collect primary data through meetings and semi- structured interviews with project stakeholders
3. Field visit to the implementation sites

The review will be implemented from 6 January to 28 February 2020 following the schedule:

- 6 - 10 January: Desk review and preparation and submission of Inception Report to RNE in Addis Ababa (5 working days for each consultant).
- 15 - 30 January: See **Annex A** for detailed schedule for stay in Ethiopia (15 working days for each consultant).
- 3 – 14 February: Writing draft report and submit to RNE, EEFCCC and PATSPO/ICRAF for comments. Comments to be given to the consultants before 21 February. (10 working days for each consultant for writing draft and final report).
- 28 February: Submission of final report to RNE.

2.2. Desk review

The desk review component of the MTR will be carried out throughout the review process, and will comprise thorough reading and analysis of project documents, consultant's reports, meetings minutes and proceedings of stakeholder meetings. A full list of material consulted will be appended to the Final Report.

2.3. Collection of primary data through meetings and semi-structured interviews with project stakeholders

For a schedule of meetings and project stakeholders, see **Annex A**.

In broad terms, the interviews with project stakeholders will be structured in a way that enables stakeholders to identify perceived **strengths, weaknesses, opportunities** and **challenges** associated with the PATSPO project.

In addition, stakeholders will be encouraged to share their views on the **strategic** (impact and outcome) potential of PATSPO.

Finally, the consultants will have **specific** questions for specific stakeholders (see **Table 1**, below, for a preliminary list of questions).

In addition to seeking answers to specific questions, all meetings and interviews will be conducted in a way that encourages participants to discuss and explore issues.

Table 1: Preliminary questions for PATSPO stakeholders

Topic	Key stakeholders	Questions
General	All project stakeholders	In your opinion, what are PATSPO's main strengths, weaknesses, opportunities and challenges?
Relevance	PATSPO team, RNE/NICFE, EFCCC, local stakeholders including private seed providers, seed collectors etc.	<ul style="list-style-type: none"> • Which elements of Ethiopia's CRGE and national forest restoration targets is PATSPO <i>primarily</i> focusing on, i.e. forest protection and improvement; production systems; energy etc.? • Which elements of NICFI and the REDD+ Partnership Agreement between Ethiopia and Norway is PATSPO <i>primarily</i> focusing on, i.e. reductions in GHGs; conservation of natural forests and carbon stocks; poverty alleviation and SDGs? • Which planting interventions is PATSPO <i>primarily</i> focusing on, i.e. participatory forest management, assisted natural regeneration, plantations and woodlots, agroforestry? • Who are the primary direct and indirect local beneficiaries of the PATSPO project, and how do these local beneficiaries benefit from the project specifically? • Given the above, are the PATSPO and NICFI projects compatible or complementary at this stage of the project? If not, what steps are planned to address this?
Effectiveness	PATSPO team, EFCCC	<p>General</p> <ul style="list-style-type: none"> • What have been the main challenges to project delivery? • Have the project outputs and activities been effectively delivered, i.e. verification of reported outputs/activities. • Which adaptive management measures have been put in place, and are these proving effective? • Has the project design been significantly altered in response to new findings or realities? • How will any changes affect project delivery, outcome and impact? <p>Output 1</p> <ul style="list-style-type: none"> • Is the data presented in the tree seed sector assessment adequate to make recommendations? • Are the recommendations from the tree seed sector assessment appropriate? • How has PATSPO responded to these recommendations, i.e. has there been adaptive management of the project? • Are the main criteria for selecting species for inclusion in PATSPO consistent with the above? • Are the main partners in the project appropriate based on the above? • How will regulatory mechanisms be used to stimulate demand for high quality genetic stock?

		<p>Output 2</p> <ul style="list-style-type: none"> • Which species have been selected for mapping? • How were these selected, and are they consistent with the primary focus of PATSPO? <p>Output 3</p> <ul style="list-style-type: none"> • Which are the 50 species selected for inclusion in the breeding programme? • How were these selected, and are they consistent with the primary focus of PATSPO? • Were existing BSOs and the findings of the Consultant's report on the Status of tree improvement and gene conservation in Ethiopia taken into account? [For example, if Ethiopia already has extensive Seed Orchards for <i>Grevillea robusta</i> why was this species selected for BSO establishment under this project?] <p>Output 4</p> <ul style="list-style-type: none"> • What roles will the national institutions play in influencing other actors in the seed supply chain (i.e. NGOs and private sector?) • Is the equipment supplied to the NTSCs being used effectively? • Is new knowledge gained from PATSPO training being implemented? • Is seed data management improving as a result of PATSPO support? • Has the project contributed to strengthening research? • How will the project contribute to downstream activities, such as silviculture?
Possibility of impact	PATSPO team, EFCCC, RNE/NICFI	<ul style="list-style-type: none"> • Are the activities and outputs of PATSPO optimal to achieve the project's desired outcome and impact? • Will PATSPO's interventions be of sufficient scale to significantly affect the project's desired outcome and impact? • How might the project be adapted to increase the possibility of impact? • Are there likely to be any positive or negative unintended effects caused by PATSPO? • How are potentially negative effects being mitigated?
Efficiency	All project partners, particularly PATSPO team, including finance/admin staff	<ul style="list-style-type: none"> • Has the project been cost-efficient in converting funds to activities and outputs, and how could the cost-efficiency of PATSPO potentially be improved? • What have been the main challenges regarding project delivery? • Where has the project deviated from budget, to what extent and for what reasons? • Where has the project deviated from its initial timeline, to what extent and why? • Which adaptive management measures have been put in place, and are these proving effective?

		<ul style="list-style-type: none"> • Has the project design been significantly altered in response to new findings or realities? • How will any changes affect project delivery, outcome and impact? • Have PATSPO's strategic, financial and administrative procedures been effective in supporting the management of the project? • Has the PATSPO/ICRAF audit modality at project level, country level, and ICRAF HQ-level (Nairobi) been appropriate and effective? • Is PATSPO's budget planning and expenditure control, including financial flows from the donor to ICRAF HQ to PATSPO Office in Ethiopia appropriate and effective? • Have PATSPO's expenditures been justifiable when compared to the plans, progress and outputs of the project?
Sustainability	All project stakeholders	<ul style="list-style-type: none"> • Has the project engaged adequately with all stakeholders? • How has the project taken into account stakeholder's views, and adapted accordingly? • Has the project communicated effectively with its stakeholders? If so, how? • Are the estimates of required GoE financial input after the project ends realistic? • Are the project outputs, outcome and impact supported by GoE policies? • How will human resources and knowledge management be maintained by Ethiopian stakeholders after the project ends? • How will long term mentoring, monitoring and evaluation be carried out after the project ends?
Risk management	PATSPO Team	<p>Analysis of PATSPO Risk assessment framework</p> <ul style="list-style-type: none"> • Are the identified main risks to the project appropriate? • Are there additional risks to consider? • Are the mitigation measures that have been put in place by PATSPO effective? • Are the assessments of project mitigation/response realistic? • How has the project handled risks related to the climate and environment, gender equality, corruption and other financial mismanagement and human rights?

2.4. Field visits to implementing partners

For a schedule of meetings and project stakeholders, see **Annex A**.

The primary purpose of the field visits to implementing partners will be to assess the effectiveness of the project against its main outputs and activities and, if possible, to assess the potential impacts of the project. Interactions with project partners during field visits will comprise:

1. Meetings and semi-structured interviews designed to assess the effectiveness of the project (see 3.3, above).

2. Inspections of facilities to assess whether equipment delivered through the project has been installed and is in use.
3. Assessments of processes and procedures (e.g. seed processing, data management) instigated as a result of the PATSPO project.

3. Mid-Term Review deliverables

The MTR deliverables will be:

- Inception report.
- Briefing meeting with relevant stakeholders to present inception report.
- Incorporation of comments into the inception report from the briefing meeting.
- Debriefing note for debriefing meeting:
 - Executive summary that includes main findings and recommendations.
 - Informed analysis and assessment of all elements described in this TOR.
 - List of documents assessed.
 - List of stakeholders met/interviewed.
- Draft report for comments by RNE, EEFCCC, PATSPO/ICRAF.
- Final MTR Report.
 - The MTR Report will include an introduction summary with main conclusion on lessons learned and recommendations.
 - The report will be in English and follow the structure of the review topics in the TOR and instructions from EFCCC, RNE and ICRAF.
 - The report will be submitted in electronic form using Word and Excel software. The final report will be submitted both in word- and pdf-files, along with a written response matrix which shows how the reviewer has responded to each written comment received to the draft report.
 - The final report will be of maximum 30 pages and attached annexes of maximum 30 pages.

All reports will be written in English and made available to the PATSPOs legal and implementing partners.

Annex A: MTR Consultant's itinerary

16th January (Thursday) - Morning: Meeting at The Royal Norwegian Embassy (RNE) and *visit CEE-FRC (Central Ethiopia Environment and Forest Research Center)*.

17th January (Friday) –Morning: Meeting with PATSPO Team. Afternoon: Inception meeting at Environment, Forest and Climate Change Commission (EFCCC).

18th - 20th January (Saturday - Monday): Desk review (Monday, 20th January is national holiday, Ethiopian Epiphany).

21st January (Tuesday): meetings at EFCCC and EEFRI (Ethiopian Environment and Forest Research Institute),

22nd January (Wednesday): Visits Oromiya Forest seed center (Sebeta) and the BSO site (Menagesha Suba) and Oromiya Forest and Wildlife Enterprise (OFWE).

23rd - 24th January (Thursday-Friday): trip to Bahir Dar and meetings with Amhara Forest Enterprise (AFE), the seed center and visit BSO sites (Dembecha and Debre Markos).

25th-26th January (Saturday-Sunday): Travel to Addis and Desk review.

27th January (Monday): trip to Mekele and Meetings with Regional Bureaus of Agriculture and the Forest seed center. (Return on the same day).

28th January (Tuesday): Formal meeting with PATSPO Team, and follow up visit to EFCCC

29th January (Wednesday): Debriefing meeting at EFCCC and *Meetings with Private seed dealers*

Annex 2: Documents referenced during the Mid-Term Review desk study

Planning and reporting documents

- Project Document for PATSPO, May 2017
- Work plan and budget for the 6 months inception phase, July-December 2017, June 2017
- Progress and financial report for the 6 months inception phase, July-December 2017, 28 June 2018
- Proceedings PATSPO stakeholder workshop 23 May 2018, Hilton Hotel Addis Ababa.
- Annual Work Plan 2018, November 2017 (updated July 2018)
- Progress- and financial report for 2018, March 2019 (updated June 2019)
- Annual Work Plan 2019, 28 November 2018
- PATSPO Annual Work Plan 2020, 29 November 2019
- Minutes of the Annual Formal Meeting between RNE and ICRAF regarding ETH-16/0018 Provision of Adequate Tree Seed Portfolios (PATSPO), 22 May 2018
- Minutes of the Annual Formal Meeting between Royal Norwegian Embassy (RNE) and World Agroforestry (ICRAF) regarding ETH-16/0018 Provision of Adequate Tree Seed Portfolios (PATSPO), 31 May 2019
- Tree Seed Network Consultative Meeting minutes 09 December 2019
- Independent Auditors reports for 2017 and for 2018

Technical documents, consultancy reports and guidelines

- FAO Global Forest Assessment Ethiopia Country Report 2010
- Ethiopia's Climate-Resilient Green Economy Strategy 2011
- CRGE Facility Operations Manual 2012 (revised 2018)
- Gebreselassie et al. (2016). Economics of Land Degradation and Improvement in Ethiopia
- Albrektsen, J. (2019). MSc thesis. Value chain analysis of the tree seed sector in Southern Nation, Nationalities, And Peoples Region, Ethiopia
- National Forest Sector Development Programme Volume 1 Situation Analysis
- Consultancy report: Assessment of needs and preparation of plans for upgrading of physical facilities at CEE-FRC and the four RTSCs, Nov. 2018
- Consultancy report: Allocation of Technical Equipment, Installation and Training at CEE-FRC/TSC and the four Regional Tree Seed Centres. PATSPO, May 2019
- Consultancy report: Technical seed centre procedures and use of equipment at CEE-FRC/TSC and the four regional tree seed centres in Ethiopia, Nov. 2018
- Consultancy report: Training Needs Assessment, Feb. 2018
- Consultancy report: Coordination of training activities at PATSPO, Nov. 2018
- Consultancy report: Following-up on coordination and quality of Training Activities at PATSPO, Oct. 2019
- Consultancy report: Preparation for species distribution modelling, Jan. 2018
- Consultancy report: Seed source development and breeding plans for selected priority species in Ethiopia, Jan. 2018
- Consultancy report: Status of tree improvement and gene conservation in Ethiopia, PATSPO, Oct. 2018
- Consultancy report: Tree seed sub-sector assessment, October 2019

- Report of the farmers tree seed collection and handling training Dec 13 2019-Jan 3 2020.
- Status of the cold stores, January 2020
- Recommendations for the Performance of Heads and Staff Members at Regional Tree Seed Centres (RTSC) and the TSC under Central Ethiopian Environment and Forest Research Centre (CEEFRRC), 2018
- A Guide to “Application - Provision Strategy” for Training and Extension Activities, 2018
- A Guide to Seed Quality, 2019
- Guidelines for establishment of breeding seedling orchards (BSOs), 2019
- Guide and forms for tree seed source description, 2019
- Growing Jujube Trees: A Handbook for the Sahelian Horticulturist, 2019
- Growing Tamarind Trees: A handbook for the Sahelian Horticulturist, 2019
- Technical Note: Guidelines for ordering tree seed, 2018
- Technical Note: International transfer of tree seed, 2018
- Technical Note: Glossary of seed biology and technology, 2018
- Technical Note: Tree improvement glossary, 2019

Data

- Regional tree seed centers seed collection and distribution data for the last 3 years
- Amhara Regional Tree Seed Centre Customer list
- FRC Tree Seed Centre Customer list
- Oromia Regional Tree Seed Centre customer list
- Seed source descriptions_PATSPPO-RTSCs_V3
- BSO list_2018-2020
- Ethiopia tree checklist (GlobalTreeSearch)

Training and extension material

- Seed Leaflets (2 pages each) of 55 priority tree species of Ethiopia in ring binder, 2018
- Technical teaching posters (8) on aspects of tree seed procurement (1m x 1m), black/white, 2018
- Wall poster (5) on tree seed (A2) in Amharic and English, colour, 2018
- Extension / training flip-over with 32 sheets on aspect of tree seed (A3), colour, 2018
- Distribution posters for 10 Ethiopian priority tree species, 2019
- Booklet with 11 training posters for training of farmer in tree seed (A3) in Amharic, colour, 2019
- Booklet with 12 training notes (2 p. each) for training of farmers in tree seed in Amharic, 2019

PATSPPO homepage

<http://www.worldagroforestry.org/project/provision-adequate-tree-seed-portfolio-ethiopia>

Annex 3: List of people interviewed and institutions visited during the Mid-Term Review

No	Name	Institution	Responsibility
1	Tore Langhelle	Royal Norwegian Embassy	Counselor
2	Lulu Likassa	Royal Norwegian Embassy	Program officer
3	Mr. Kebede Yimam	EFCCC	Deputy commissioner
4	Mr. Tilaye Nigusse	EFCCC – FSTU	Director of FSTU
5	Wondwossen Gebretsadik	CEE-FRC	Center Director
6	Shimelis Tadesse	CEE-FRC	Head of seed section
7	Dr. Yitebitu Moges	EFCCC - REDD +	Coordinator
8	Dr. Tefera Mengistu	EFCCC – UNDP	Coordinator
9	Dr. Teshome Tamirat	EFCCC	Senior Forester
10	Dr. Adefris Worku	EFCCC – UNDP	Research and training officer
11	Dr. Agena Anjulo	EEFRI	Deputy Director General
12	Dr. Yigardu Mengesha	EEFRI	Director, Forest Seed
13	Alemayehu Hailesillasie	OFWE- Dima Regional Tree Seed Center	Head of the center
14	Dr Gemechu Wirtu	OFWE	Deputy Director General
15	Gedefa Negera	OFWE	Seed focal person
16	Shimelis Telila	OFWE	Suba-Sebeta Forest District Manager
17	Dr. Biadgling Shiferaw	AFE	Director of AFE
18	Yeshiwas Shibabaw	AFE	Coordinator, Forest management
19	Misganaw Tegegn	AFE	Deputy Director General
20	Alamirew Worke	AFE - Tree seed center	Lab. technician
21	Zerihun Wonde	Private seed cooperative	Head of the cooperative
22	Dessie Nega	Private seed collector	Member
23	Mueaz Hailu	Tigray Bureau of Agriculture & Natural Resources	Director, Forestry Development & Utilization
24	Ali Hadush	Tigray Regional Forest Seed Center	Head of the center
25	Tumcha Belguda	Eden Field Agri-Seed Enterprise	Advisor
With PATSPO team			
1	Kiros Hadgu	ICRAF Country Representative and Project Director	
2	Soren Moestrup	Senior Team Leader	
3	Girma Eshete	Tree Improvement Officer	
4	Abrham Abiyu	Seed Source Officer	
5	Kedra Mohammed	Seed Procurement Officer	
6	Mekdes Sime	Project Management & Outreach Officer	
7	Samuel Hailu	Project Accountant	
8	Tiglu Seboka	PATSPO - Oromiya/Sebeta	Regional coordinator
9	Yared Kebede	PATSPO - Amhara/Bahir Dar	Regional coordinator
10	Haile Tilahun	PATSPO – Tigray	Regional coordinator

Note for abbreviations:

EFCCC: Environment, Forest and Climate Change Commission

FSTU: Forest Transformation Unit

CEE-FRC: Central Ethiopia Environment and Forest Research Center

OFWE: Oromia Forest & Wild Life Enterprise

AFE: Amhara Forest Enterprise



PATSPPO/ICRAF Office
c/o ILRI Campus, Gurd
Shola, P.O. Box 5689,
Addis Ababa, Ethiopia

Phone: 251-116172000
ext. 2491
Email: K.Hadgu@cgiar.org

Website: <https://www.worldagroforestry.org/project/provision-adequate-tree-seed-portfolio-ethiopia>