



**KENYA FORESTRY RESEARCH INSTITUTE (KEFRI)
RESEARCH AND DEVELOPMENT PROCEDURES MANUAL
KEFRI/SOP/R&D/04**

TABLE OF CONTENTS

PROCEDURE 1: RESEARCH AND DEVELOPMENT OF FOREST TECHNOLOGIES	3
PROCEDURE 2: PRODUCTION AND SUPPLY OF SUPERIOR TREE GERMPLASM	10
PROCEDURE 3: MANAGING INTRODUCTIONS OF ALIEN SPECIES	13
PROCEDURE 4: NURSERY MANAGEMENT.....	17
PROCEDURE 5: RESOURCE MOBILIZATION AND PARTNERSHIPS	19
PROCEDURE 6: BIOMETRICS AND GIS.....	21
PROCEDURE 7: PRODUCTION AND SUPPLY OF SUPERIOR TREE SEEDS.....	24
PROCEDURE 8: IDENTIFICATION AND ASSESSMENT OF QUALITY RISKS AND ENVIRONMENTAL ASPECTS	32
PROCEDURE 9: EMERGENCY PREPAREDNESS AND RESPONSE PROCEDURE.....	37
PROCEDURE 10: OCCUPATIONAL HEALTH AND SAFETY PROCEDURE.....	46
PROCEDURE 11: COMPLIANCE TO LEGAL AND OTHER REQUIREMENTS	52
PROCEDURE 12: HANDLING AND DISPOSAL OF NON-HAZARDOUS SOLID WASTE	54

PROCEDURE 1: RESEARCH AND DEVELOPMENT OF FOREST TECHNOLOGIES**1.0 Purpose**

The purpose of this procedure is to ensure effective and efficient development of forest technologies.

1.1 Scope

This procedure shall cover all KEFRI research activities that are geared towards development of forest technologies for sustainable forest management.

1.2 Reference

- a) KEFRI Strategic Plan
- b) Eco-Regional Strategic Plan
- c) KEFRI annual performance contracts
- d) ISO 9001:2015 Standard
- e) ISO 14001:2015 Standard
- f) Standards Act Cap 496 (Rev 2012)
- g) Forest Conservation and Management Act 2016
- h) Science, Technology and Innovation Act, 2013

1.3 Terms, definitions and acronyms

- a) BOM- Board of Management
- b) CRAC- Centre Research Advisory Committee
- c) SDD-R&D-Senior Deputy Director Research and Development
- d) DD- Deputy Director
- e) DD-TSS- Deputy Director Technical Support Services
- f) NITF- Nairobi International Trade Fair
- g) PI- Principal Investigator
- h) RDs- Regional Directors
- i) DRDs- Deputy Regional Directors
- j) OiCs - Officers In Charge
- k) ASK - Agricultural Society of Kenya
- l) MR - Management Representative
- m) PC - Performance Contract
- n) Pre - consultative committee meeting: is a KEFRI management meeting convened by the Director and held annually at the fourth (4th) quarter of every financial year to review performance of the current year and set targets for the next financial year.
- o) Consultative committee meeting: is a KEFRI management meeting convened by the Director and held annually at the end of every financial year to review project proposals and allocate budgets for the next financial year.

1.4 Principal Responsibility

SDD-R&D, DDs, RDs shall ensure adherence to this procedure.

2.0 STEPS

2.1 General

- 2.1.1 SDD-R&D through the DD(s) of the respective thematic research and development areas shall within the 3rd quarter of every year call for submission of stakeholders' needs in the various thematic areas.
- 2.1.2 Upon receipt of the request to submit the needs, the RD(s) shall constitute Pre-CRAC to review existing projects, concepts and proposals, stakeholders' needs assessment reports and evaluate new proposals
- 2.1.3 The RD(s) shall send the Pre-CRAC outcome/ reports to the DDs and SDD-R&D for review, evaluation and recommendation within a month.
- 2.1.4 Upon receipt of the feedback, the RDs shall constitute the CRAC considering the potential support areas identified by the DDs. The stakeholder feedback shall be obtained using the Research Proposal Feedback form.
- 2.1.5 The RDs with respective centre/regional scientists shall formulate the concepts for potential projects.
- 2.1.6 During the CRAC scientists present results from existing projects, new concepts for potential projects recommended by the DDs and SDD-R&D. Stakeholders shall also submit their inputs/ideas.
- 2.1.7 The RDs, through research scientists shall ensure that stakeholder needs assessments are incorporated into the research projects.
- 2.1.8 After the CRAC scientists shall proceed with full proposal development in consultation with Biometrician to include methodology, protocols for implementation in accordance with work instruction for research protocol, and data management plan.
- 2.1.9 The PIs shall submit the concepts/proposals to the DD(s) through RDs for consolidation into multidisciplinary research projects.
- 2.1.10 The Director shall convene Pre-consultative meeting to review the progress in research implementation of the current financial year.
- 2.1.11 The Pre-consultative committee shall set performance contract targets and cascade to RDs for incorporation in the subsequent financial year targets.
- 2.1.12 Upon consolidation of research proposals, the DD(s) shall table them to the Consultative Meeting for review and further recommendation.
- 2.1.13 The SDD-R&D shall ensure the DD(s) of the respective thematic research and development areas address any issues raised in the consultative meeting.
- 2.1.14 After the consultative meeting, the SDD-R&D shall through the Director table the proposed research projects to the Board of Management for approval and funding. In the event of any issues raised by the Board of Management, the Director shall ensure that these issues are addressed.
- 2.1.15 On approval by the Board, the SDD-R&D shall ensure the research projects are incorporated into the subsequent performance contract for implementation.
- 2.1.16 The SDD-R&D shall ensure the decisions of the Board of Management are communicated to research teams for implementation as per communication procedure.
- 2.1.17 The SDD-R&D shall through the respective DD(s) ensure facilitation of the Research teams with requisite resources to undertake the research projects under the various thematic research and development areas.

2.2 Execution of Research

- 2.2.1 The SDD-R&D shall sign performance contract including the work plans with the Director and cascade to DDs and RDs for signing.
- 2.2.2 The RDs shall sign PCs with DRDs and OICs. The Research Scientists shall sign PCs with DRDs. Technical staff shall sign PCs with the Research Scientist they immediately report to.
- 2.2.3 The PIs of projects in liaison with the respective RD(s) shall coordinate the research team in implementing the research.
- 2.2.4 During implementation, the research team shall review the work plan in line with the available resources and assign roles.
- 2.2.5 Based on the protocols the PIs shall set up trials / tests/experiments/studies to answer the research question.
- 2.2.6 The PIs shall design the experiment and develop appropriate data collection tools in consultation with the Biometrician.
- 2.2.7 A pre-test of the data collection tools shall be carried out, from which the PIs shall as applicable, adjust their trials /test/experiments/studies and data collection tools.
- 2.2.8 An experimental register shall be opened and relevant files opened to document experiments/ trials/ tests at RDs and DDs offices.
- 2.2.9 For each research plot, the register shall detail the date of establishment and silvicultural operations and emerging issues shall be maintained for each demonstration plot.
- 2.2.10 The PIs shall develop an operational work plans and budget for approval and apply for funds to proceed to the field for data collection.
- 2.2.11 The PIs shall enter data and consult the Biometrician to analyze the data collected using the appropriate statistical tools.
- 2.2.12 The PIs shall as per annual work plan develop and submit quarterly progress reports to the respective DDs through the RDs.
- 2.2.13 Research involving laboratories testing shall be done as per the laboratory management procedures.
- 2.2.14 At the end of the financial year, the PIs shall prepare a technical report highlighting the findings, challenges and recommendations for further research.
- 2.2.15 The PIs shall document the research findings and outputs in appropriate publications. These shall include; technical reports, technical & research notes, guidelines, journal papers, book chapters and Policy briefs.
- 2.2.16 In the case of policy briefs, the DDs shall liaise with relevant stakeholders for further discussion and policy formulation.
- 2.2.17 In case of new technologies developed, the PIs shall liaise with relevant agencies/stakeholders/partners to validate the technologies/innovations/technology incubation.
- 2.2.18 The PIs shall liaise with management for the applicable; Intellectual Property Rights registration and subsequent internal commercialization and dissemination as per the knowledge management procedure.

2.3 Demonstration of Tree Planting Technologies

- 2.3.1 The appropriate tree species for demonstration shall be prioritized in the CRAC meeting.

2.3.2 Demonstration plots shall be established in secured public and private lands according to the respective Technical orders for the species.

2.3.3 All existing demonstration plots shall be maintained appropriately through weeding, slashing, pruning and thinning for best practices.

2.4 Dissemination of Forestry Technologies

2.4.1 All research findings shall be documented in appropriate publications.

2.4.2 DD-TSS and DDs shall facilitate the said documentation. These shall include; technical reports, technical & research notes, guidelines, journal papers, book chapters and Policy briefs.

2.4.3 Scientists shall participate in both local and international scientific conferences, workshops and seminars.

2.4.4 Colloquiums shall be held at least twice a year at the regional centers for continued information dissemination among scientists and technical staff.

2.4.5 RDs shall coordinate and facilitate Open days, Farmers field days, County ASK shows, NITF. These shall be channels used for outreach and dissemination to stakeholders.

2.4.6 All correspondence shall be collected through a Stakeholder Feedback Form

2.5 Monitoring and Evaluation for Research and Development Procedures

2.5.1 Quarterly progress reports shall be prepared for all research activities and submitted to the respective DDs through the RDs.

2.5.2 Technical reports shall be prepared annually and submitted to the respective DDs, PC Secretariat and Knowledge Management office.

2.5.3 Peer reviewed journals, Technical/research notes or guidelines shall be prepared at the end once the research has been concluded.

3.0 APPLICABLE RECORDS

- a) Research Proposal Feedback Form
- b) Concepts and proposals
- c) Respective Project Work plans
- d) List of Technologies developed
- e) List of technical reports & publications
- f) CRAC Stakeholders Feedback Form
- g) Performance Contract
- h) Quarterly



Research Concept Note/Proposal Template

1. KEFRI logo:- Every report MUST have KEFRI logo and dated
2. Title: -Every report Must have activity Title corresponding to the PC planned activity.
3. Introduction/Background Information
4. Problem Statement
5. Objective/ purpose:- The report Must have small introduction, purpose or objective why it was undertaken
6. Justification
7. Literature Review
8. Methodology/ sites/ scope :- A report Must have methodology(scientific), sites and scope in other administrative reports or surveys undertaken
9. Budget and Workplan
10. Recommendations or way forward
11. Reference

KEFRI/F/R&D/02

**CRAC STAKEHOLDER FEEDBACK FORM**

Thank you for visiting KEFRI Regional Centre.....

This form is meant to capture whether we achieved the purpose of our meeting. We value our stakeholder's feedback.

Date:..... State your occupation:.....

1. Were you satisfied with the presentations?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
------------------------------	-----------------------------

Please explain:_____

2. How would you rate your satisfaction with the following aspects of the presentations?

	Very satisfied	Satisfied	Unsatisfied	Very unsatisfied
Quality of presentations				
Relevance of presentations				
Professionalism of staff				
Time management				

3. Were there issues you wanted addressed that were not captured?

<input type="checkbox"/> Yes	<input type="checkbox"/> No
------------------------------	-----------------------------

If no, please list them

4. Do you have any complaints/compliments or suggestions?_____

Contact information: Tel: +254 724259781/2, email: director@kefri.org, website: www.kefri.org

PROCEDURE 2: PRODUCTION AND SUPPLY OF SUPERIOR TREE GERMPLASM**1.0 Purpose**

This procedure is to ensure production and supply of superior tree germplasm for afforestation, reforestation and rehabilitation programmes nation-wide.

1.1 Scope

This procedure shall apply to establishment and management of all seed orchards, seed stands and tree nurseries in KEFRI

1.2 References

- a) ISO 14001: 2015 Standard
- b) Forest Conservation and Management Act 2016
- c) Plant protection Act Cap 324 1979
- d) The Seed and Plant Varieties Act 2012
- e) Tree Seed Hand Book of Kenya (2nd Edition)
- f) Occupational Safety and Health Act, 2007

1.3 Terms, Acronyms and Definitions

- a) KEFRI – Kenya Forestry Research Institute
- b) DD-FPI-Deputy Director Forest Productivity and Improvement
- c) RD – Regional Director
- d) Ramet – The individual member of a clone
- e) Scion -The aerial plant part, often a branchlet that is grafted onto the root-bearing part (stock, root-stock) of another plant.
- f) Clone - A population of genetically identical individuals obtained by asexual/vegetative reproduction.
- g) Root stock -The lower portion of the graft that develops into the root system of the grafted plant. It may be a seedling, a rooted cutting or a layered plant.
- h) Seed stand – A group of trees that has been identified or set aside specifically as a seed source. The stand consists of selected trees with desirable characters.
- i) Seed orchard- An area where superior pheno-types or genotypes are established and managed intensively and entirely for seed production.
- j) Seedling seed orchard- Seed orchard raised from seedlings produced from selected parents through natural or controlled pollination.
- k) Clonal seed orchard- Seed orchard raised from selected clones propagated by grafting, cutting, air-layering or tissue culture
- l) Germplasm- reproductive or vegetative propagating material of plants.
- m) Mother tree- tree used as a of high quality seed
- n) Conservation stand- are trees that are threatened or endangered and require preservation against extinction

1.4 Responsibilities

- 1.4.1 The RDs shall have the responsibility for ensuring this procedure is followed
- 1.4.2 The DD-FPI shall have the principal responsibility of establishment of superior tree seed sources

2.0 STEPS

2.1 Establishment of seed stands and seed orchards

- 2.1.1 The basic material for the establishment of the seed orchard shall be derived from selected stands, selected single mother trees, and progeny trials or from other seed orchards whose superior quality and genetic variation have been tested.
- 2.1.2 The ecological conditions of the provenance or origin of the basic material should be known and documented.
- 2.1.3 The site for establishment should be where the species seeds best. Conditions of the site of establishment shall be conducive for a uniform pollination of all trees.
- 2.1.4 Seed orchards shall have a minimum distance of at least 100 m from trees of the same species or from trees of a species which can form hybrids with the species in question.
- 2.1.5 Seedlings seed orchards shall be established from seeds collected from at least 15 preferably 30 mother trees of the target species.
- 2.1.6 Such seedling orchards should occupy at least 2 ha.
- 2.1.7 The initial spacing shall be as the requirements of the target species and Eco region.
- 2.1.8 The design will be such that the seedlings are randomly distributed. The treatment shall be as specified in the experimental files.
- 2.1.9 Clonal seed orchards shall be established with a minimum number of at least 15 or preferably 30 clones with at least 20 ramets each.
- 2.1.10 The distribution of clones in the area of establishment shall take into account future thinning measures necessary for good crown development.
- 2.1.11 At least 90% of the clones with an equal number of ramets shall be represented at all stages of the seed orchard.
- 2.1.12 The clones shall be clearly marked so that their identification shall be possible during all ages of the orchard.
- 2.1.13 Seeds could also be collected from conservation stands. These are trees that are threatened or endangered and require preservation against extinction.

2.2 Maintenance and Management of Seed sources

- 2.2.1 The maintenance of seed sources shall include weeding, removal of harmful agents and protection against fires. Later, slashing shall be done to facilitate access and seed collection.
- 2.2.2 Thinning of seed sources other than seed orchards can be done either selectively or systematically.
- 2.2.3 Systematic thinning aims at reducing the number of trees per hectare, to stimulate the general development and to facilitate future silvicultural measures. Selective thinning aims at reducing the number of undesirable phenotypes and/or promoting the good phenotypes by removing competitors.
- 2.2.4 Management of seed sources shall aim at improving the quality, quantity and ease of collection of the seed produced.

3.0 APPLICABLE RECORDS

- a) Experimental registers
- b) Seed stands and seed orchards registers

- c) Silvicultural treatments
- d) Records of material used to establish seed source
- e) Seed sources registers
- f) Nursery performance records of the grafts
- g) Seed orchard and seed conservation stands

PROCEDURE 3: MANAGING INTRODUCTIONS OF ALIEN SPECIES**1.0 Purpose**

The purpose of this procedure is to manage introduction(s) of alien species to avoid invasion of the ecosystems.

1.1 Scope

This procedure shall apply to all KEFRI activities involving introduction(s) of alien species in Kenya.

1.3 References

- a) Seed and Plant Varieties Act CAP 326
- b) Suppression of Noxious Weeds Act CAP 325
- c) Plant Protection Act, 1979 CAP 324
- d) ISO 14001: 2015 Standard
- e) Environmental Management and Co-Ordination Act EMCA 2015 Part VI and VII (Environmental impact assessments, Audits and Monitoring)
- f) International Plant Protection Convention (IPPC)
- g) Agreement on Sanitary and Phyto-sanitary Measures – WTO Agreement
- h) East African Community protocol on Sanitary and Phyto-sanitary measures (2015)

1.4 Terms, Acronyms and Definitions:

- a) KSTCIE - Kenya Standing Technical Committee on Import and Export
- b) Quarantine – A requirement for total isolation while a matter is under scientific investigation
- c) KEPHIS – Kenya Plant Health Inspectorate Services
- d) IPPC - International Plant Protection Convention
- e) PI - Principal Investigators
- f) SEA - Strategic Environmental Assessment
- g) Alien species – refers to species/hybrid that has not been introduced to Kenya before.

1.5 Responsibility

Respective Principal Investigators shall ensure that this procedure is adhered to.

2.0 STEPS

- 2.1 The Principal Investigators shall inform the Director on the necessity of introducing alien species.
- 2.2 The Director shall submit an application to KSTCIE with supporting documentation justifying the necessity and safety of the importation.
- 2.3 KSTCIE will respond to the application with specific conditions on importation.
- 2.4 The Director shall present KSTCIE report to KEPHIS to facilitate provision of import permit.

- 2.5 Upon approval, KEFRI will import the alien species in compliance with set conditions of the importation permit.
- 2.6 Upon the species arrival at KEFRI the PI shall take the species into an open or closed quarantine facility for observation and further research and shall submit copies of compliances to KEPHIS on the condition of the quarantined species.
- 2.7 The Director shall commission the PI to conduct pilot trials/multiplication/breeding/testing of the alien species as may be necessary in containment.
- 2.8 The Director shall seek release permit from KSTCIE and upon receipt of a release permit may release the alien species into the field.
- 2.9 The Director shall commission a Strategic Environmental Assessment (SEA) to monitor and evaluate performance of the new species as required by EMCA 2015

3.0. APPLICABLE RECORDS

- a) Application to KSTCIE with accompanying documentation justifying the necessity and safety of the importation
- b) Response of KSTCIE
- c) Import permit from KEPHIS
- d) Closed Quarantine facility monitoring form
- e) Open Quarantine facility monitoring form
- f) Alien species performance report and recommendations
- g) Request by KEFRI for release of alien species
- h) Release permit from KEPHIS

PROCEDURE 4: NURSERY MANAGEMENT**1.0 Purpose**

To provide quality tree seedlings for important tree species for research, conservation and plantations/ woodlots.

1.1 Scope

This procedure shall apply to all nursery operations for KEFRI tree nurseries.

1.2 References

- a) ISO 14001:2015 Standard
- b) ISO 9001:2015 Standard
- c) KEFRI Strategic Plan
- d) Tree seed hand book (2nd Edition)

1.3 Terms, Acronyms and Definitions

- a) DD-FPI- Deputy Director Forest Productivity and Improvement
- b) RD – Regional Director

1.4 Responsibility

The RDs shall have the principal responsibility for the production of quality seedlings in KEFRI tree nurseries

2.0. STEPS

- 2.1 The DD-FPI and RDs in consultation with Enterprise Manager, shall determine and prioritize desirable tree species to propagate in KEFRI nurseries for research and production for commercial purposes.
- 2.2 Research on difficult to propagate tree species shall be carried out to identify the mechanisms impeding successful propagation and records of the experiments maintained.
- 2.3 The successful protocols shall be recommended for mass production of seedlings/cuttings/plantlets of the species.
- 2.4 The following nursery operations shall be carried out at appropriate times of the year: cleaning and sanitizing nursery, collection of forest soils, sand and manure; potting and preparation of Swaziland beds; seed sowing, pricking out, pest and disease monitoring and control; weeding, watering, sorting and root pruning.
- 2.5. The forester in charge of the nursery shall ensure there is proper use of alternatives to plastics while undertaking potting activities. These alternatives may include but not limited to: Swaziland beds, Unigro trays, root trainers
- 2.6 The raised planting materials shall be transplanted and/or availed to stakeholders.

3.0 APPLICABLE RECORDS

- a) Tree Nursery Seedling Production Form

PROCEDURE 5: RESOURCE MOBILIZATION AND PARTNERSHIPS**1.0 Purpose**

To foster sustainable mobilization of resources and strategic partnerships for KEFRI Research & Development

1.1 Scope

This procedure shall be applicable to resource mobilization and partnerships activities within KEFRI.

1.2 Reference

- a) Current KEFRI Strategic Plan
- b) Current KEFRI Resource Mobilization Strategy
- c) Partnership Guidelines
- d) Current Performance Contract

1.3 Terms, Definitions And Acronyms

- a) KEFRI: Kenya Forestry Research Institute
- b) DD-TSS:- Deputy Director Technical Support Services
- c) PRMO: Partnerships & Resource Mobilization Officer
- d) RD:- Regional Director
- e) MOU: Memorandum of Understanding
- f) MOA: Memorandum of Agreement
- g) Heads of thematic areas—Deputy Directors in charge of program areas
- h) Regional Directors: Heads of research Eco regional program areas.
- i) PI: Principal Investigator / Implementer
- j) Development partners: Entails partners; currently funding KEFRI, with potential to fund, and with donation capacities.
- k) Collaborating partners: partners in research and development though MOUs or mutual agreements
- l) Business partners: organizations/companies that seek KEFRI consultancy services at a cost.

1.4 Responsibility

The PRMO shall ensure the principal responsibility of implementing this procedure

2.0 STEPS**2.1 Resource Mobilization**

- 2.1.1 The PRMO shall prepare annual work plan and budget and submit to DD-TSS
- 2.1.2 The PRMO shall prepare and sign annual performance contract with DD-TSS
- 2.1.3 The PRMO shall sign annual performance contracts with other staff in the PRM division
- 2.1.4 PRMO shall identify potential funding and consultancy opportunities and share with research scientists through SDD-R&D

- 2.1.5 PRMO in liaison with the Heads of thematic areas, RDs and PIs shall co-ordinate formulation of funding and consultancy proposals
- 2.1.6 PRMO in liaison with Heads of thematic areas, RDs and PIs shall submit funding and consultancy proposals to relevant development and business partners
- 2.1.7 For successful proposals, PRMO, in liaison with Heads of thematic areas, RDs and PIs shall undertake periodical monitoring and evaluation to ensure compliance with funding/consultancy contracts.

2.2 Partnerships

- 2.2.1 PRMO in liaison with Heads of thematic areas, RDs and focal researchers shall review and update database of funders/partners annually and share within KEFRI
- 2.2.2 PRMO in liaison with Heads of thematic areas, RDs and focal researchers shall co-ordinate establishment of partnerships through MOUs/MOAs
- 2.2.3 PRMO in liaison with Heads of thematic areas, RDs and focal researchers shall operationalize the MOAs, MOUs through joint work plans and activities.
- 2.2.4 PRMO in liaison with DD TSS shall undertake periodical monitoring and evaluation of partnership activities

3.0 APPLICABLE RECORDS

- a) Partnership database
- b) Fund-raising proposals
- c) KEFRI donor funds trend sheet
- d) Annual work plans
- e) Performance contract

PROCEDURE 6: BIOMETRICS AND GIS**1.0 Purpose**

To ensure effectiveness, timeliness and consistency in undertaking end user support and handling of Biometrics and GIS Support Services

1.1 Scope

This procedure shall apply to provision of end user support on BGIS activities within KEFRI

1.2 Reference

- a) KEFRI current Strategic Plan
- b) The Statistics Act, 2006
- c) ISO 9001:2015 Standard
- d) ISO 14001:2015 Standard

1.3 Terms, Definitions & Acronyms

- a) DD TSS – Deputy Director Technical Support Service
- b) H-BGIS – Head of Biometrics and GIS/RS
- c) BGIS - Biometrics and GIS
- d) GIS – Geographical Information System
- e) RS – Remote Sensing
- f) KEFRI – Kenya Forestry Research Institute
- g) End-user- refers to an individual, centres, division, section or unit using Institute’s Biometrics, GIS and RS resources.

1.4 Responsibility

The H-BGIS shall ensure this procedure is adhered to.

2.0 STEPS

- 2.1 This procedure shall start with H-BGIS/BGIS regional representative receiving a request from end using BGIS service request form.
- 2.2 Upon receipt, the H-BGIS/ BGIS regional representative shall assign the request to the appropriate BGIS technical staff.
- 2.3 The BGIS technical staff shall discuss with the end user on his/her needs, timelines, and, the most appropriate methodology and prepare a needs assessment report.
- 2.4 The BGIS technical staff shall forward the report to the H-BGIS and end user for discussion, amendments and approval.
- 2.5 Upon approval of needs assessment report, the BGIS technical staff shall support the user giving guidance on possible solutions to the request and where necessary train the user.
- 2.6 Upon completion of the assignment, the BGIS technical staff shall forward a completion report to the H-BGIS.

3.0 APPLICABLE RECORDS

- a) Request form
- b) Needs Assessment Report
- c) Completion report

KEFRI/F/R&D/06



KEFRI BGIS SERVICE REQUEST FORM

Instructions: This form is to be completed by end users before initiation of any BGIS support. All sections completed should be based on information that is currently available.

1. Contact Information for the end User	
Name:	
Title:	
Department/Section	
Eco-Region/Center	
Work Phone:	
Mobile Phone:	
Email address:	
2. Background.	
Provide a brief description of the project:	
3. Timeline	
Enter timeline	
4. Scope of Work (To be filled by Technical BGIS staff together with the end user):	

5. Approach and Methodology (To be filled by Technical BGIS staff together with the end user):

Provide a brief description e.g.: software and analysis techniques to be employed:

6. Deliverables

Tick all that apply:

- Data collection tool
 Data entry template
 Data set
 Data Analysis Plan

- Data Analysis results
 Data Analysis Report
 Map/ Maps

7. Budget

Provide a brief description e.g.: Amount and associated Cost Center

8. Revision and Document Approval History

Name	Designation	Signature	Date

PROCEDURE 7: PRODUCTION AND SUPPLY OF SUPERIOR TREE SEEDS

1.0 Purpose

To ensure that KEFRI shall produce superior tree seeds for afforestation programmes nationwide.

1.1 Scope

This procedure shall apply to all KEFRI staff working in seed collection and management at the Headquarter and Regional programmes.

1.2 References

- a) Forest Conservation and Management Act 2016
- b) Plant protection Act Cap 324 1979
- c) The Seed and Plant Varieties Act Cap326
- d) Tree seed Hand book (2nd Edition)
- e) ISTA manual
- f) Tree seed collection and handling: reference manual for extension agents and farmers
- g) Approved seed sources list

1.3 Terms, Acronyms and Definitions

- a) KEFRI – Kenya Forestry Research Institute
- b) DD-FPI-Deputy Director Forest Productivity and Improvement
- c) RD – Regional Director
- d) ISO - International Organization for Standardization
- e) ISTA- International Seed Testing Association
- f) KFSC- Kenya Forestry Seed Centre
- g) CHERP- Central Highlands Eco region Research Programme

1.4 Responsibilities

- 1.4.1 The DD-FPI shall coordinate tree seed production, target setting and quality control in consultation with RDs, Seed Center Manager and Enterprise Manager.
- 1.4.2 The Seed Centre Manager together with RDs, shall manage seed collection, processing, testing and handling operations. The Manager shall be in charge of procurement, maintenance, repair and calibration of seed collection and analytical equipment.
- 1.4.3 The seed Enterprise Manager shall have the principal responsibility of storage, distribution and marketing of tree seeds.

2.0 STEPS

2.1 Production of superior tree seeds

The DD-FPI in liaison with Seed Centre Manager shall identify, document and register superior tree seed sources.

2.2 Seed collection

- 2.2.1 This shall start with the Manager of seed production holding consultative forum with all foresters within KEFRI to review achievements for previous year activities and set target for the following financial year
- 2.2.2 Foresters shall then prepare work plan based on the agreed activities for their respective regional centers for approval by DD-FPI, The manager in liaison with foresters shall ensure that seeds are collected from identified and approved sources only
- 2.2.3 Seed production manager and Seed enterprise manager shall ensure planning for seed collection, permits issuance for seed sources on private land or in wildlife areas are obtained from the relevant authorities
- 2.2.4 The Forester in charge of seed collection shall ensure seed collection and safety equipment are in good condition
- 2.2.5 The forester shall conduct a cutting test before every seed collection to determine the seed maturity and any infection and record the test results in seed collection report form
- 2.2.6 Based on the cutting test results the forester shall collect seeds from at least 30 plus trees to minimize dangers of narrowing down the genetic variation and maintaining genetic diversity
- 2.2.7 Seed collection forms shall be filled in the field during seed collection and seeds labeled appropriately.
- 2.2.8 All collected seeds shall be kept in a temporary store which should be well ventilated to avoid deterioration.
- 2.2.9 All collected and partially processed seeds from the regional programmes with appropriate documentation shall be dispatched to KEFRI seed centre for further processing, quality control monitoring and storage.
- 2.2.10 The seed receiving clerk at KEFRI seed centre shall ensure that all incoming seeds are weighed and entered in the seed register.
- 2.2.11 The receiving clerk shall further ensure that all such seeds are subjected to quick moisture determination and cutting test before any further seed processing.

2.3 Seed processing

- 2.3.1 The manager seed production in liaison with the forester shall ensure that seeds are processed immediately after collection and dried to avoid seed deterioration.
- 2.3.2 Seed processing shall include the following stages;

2.4 Seed extraction

- 2.4.1 The collected seeds shall be extracted according to species requirements as per tree seed handbook
- 2.4.2 Seeds shall be dried according to the species requirements as per tree seed hand book

- 2.4.3 Seed testing for germination capacity and quality shall be done before and periodically during storage, to ensure only clean and pest and disease free seeds are stored as per tree seed handbook
- 2.4.4 All the process shall be recorded in a seed processing form
- 2.4.5 Seed dispatched from Centres shall be recorded in their respective seed registers

2.5 Seed storage

- 2.5.1 Processed seeds from the Eco Regions shall be forwarded to the Seed Center Manager with accompanying documentation on relevant tests undertaken.
- 2.5.2 The manager seed enterprise shall ensure that all incoming seeds are weighed to determine quantities
- 2.4.3 The seeds shall be sampled for quality control in the seed quality control laboratory as provided in the ISTA rules – Seed shall be tested for moisture content, weight determination, purity analysis and germination capacity.
- 2.4.4 The Seed Manager (Enterprise) shall be responsible for proper maintenance of seed storage facilities.

2.5 Seed quality Control

- 2.5.1 Seed quality control testing shall be undertaken at KFSC laboratory at CHERP.
- 2.5.2 The Seed laboratory manager shall ensure that seed samples are tested in compliance with International seed testing rules (ISTA) rules.
- 2.5.3 On quarterly basis the Seed Centre Manager shall submit seed quality reports to DD-FPI.
- 2.5.4 Seeds found not meeting viability and quality standards should be quarantined and a report submitted to seed distribution and disposal committee for appropriate advice and action.

2.6 Supply of superior tree seed

- 2.6.1 The General Manager Enterprise shall market and dispatch superior tree seeds to clients and keep associated records.
- 2.6.2 Seed dispatch shall follow procedures outlined in 2.7 and 2.8 below.

2.7 Seed sale to internal customers

- 2.7.1 Seed request form (S11) to obtain seeds from the central store shall be raised and approved by the Regional Director or his appointee where applicable
- 2.7.2 Upon receipt of the S11 and approval by the Seed Manager (Enterprise) the sales clerk shall raise SRO for the cashier to issue an invoice (in case of sale to RDs) and delivery note in case of seed for sale in the seed sales units.

2.8 Seed sale to external customers

- 2.8.1 Customer shall make an enquiry upon which a seed order and requisition form shall be populated via ACCPAC software where available and customer shall make payment via Mpesa and the order sent to the cashier for receipting.
- 2.8.2 The stores clerk shall then fill/generate seed store issue form.

2.8.3 Where ACCPAC system is not available, cash transactions and other modes of payments will be used as described in clause 2.9. Official receipts shall be issued for all payments. The stores clerk shall then fill/generate seed store issue form.

2.8.4 Gate pass shall be generated using the payment receipt number. The customer shall then collect the products and exit the Institute.

2.9 Payments

All payments for seeds and services may be made by:

- a) Mpesa paybill
- b) Direct bank pay in
- c) Bankers cheques
- d) Cash

2.10 Labelling of seeds

2.10.1 The Seed Manager (Enterprise) shall ensure that all seeds are labelled appropriately before leaving the institute premises.

2.10.2 The seed label shall bear the following information;

- a) KEFRI logo and contact
- b) Name of Species
- c) Provenance
- d) Quantity (Kg)
- e) Seed Batch Number
- f) Date of collection
- g) Estimated number of seedlings per kilogram
- h) Date of expiry

2.11 Seed Quality control laboratory analysis and measuring equipment

2.11.1 The seed quality control laboratory located at CHERP shall maintain a list of appropriate instruments such as the slow moisture content determination oven, moisture meters, precision balances, germination/growth chambers in line with both local and international standards of seed testing.

2.11.2 The frequency and evidence of last and next date of calibration of equipment and allowed limits should be indicated.

2.11.3 This procedure shall further apply to seed weighing scales.

3.0 APPLICABLE RECORDS

- a) Seed collection form
- b) Seed register
- c) Seed test results
- d) Seed catalogue
- e) Seed dispatch form
- f) List of equipment
- g) Calibration certificates

KEFRI/F/SM/05



KEFRI SEED DISPATCH FORM

Date Seed collected

Date of Dispatch.....

Tree Species	Provenance	Amount Dispatched (kg)		Amount received (Kg) at KFSC
		Unextracted	Extracted	

Dispatch Officer (Name).....

(Centre).....Sign..... Date.....

KFSC Receiving Officer (Name)

Sign..... Date.....

KEFRI/F/SM/12



KEFRI TREE SEED GERMINATION TEST FORM

Test Centre
 Test No Batch No
 Tree Species Provenance
 Date of collection
 Date of storage Facility where stored.....
 Storage temperature: Minimum..... Maximum.....
 Storage status of seed (e.g. bare seeds, storage medium, with pulp, with shell)

Cutting Test Results (%)

----- Sound
 ----- Empty
 ----- Not fully developed
 ----- Decayed/rotten

Germination test: method Medium
 Temperature

Pretreatment No of seeds tested.....

Date test started Date closed

Duration days

Germination results (% of fully germinated seeds).....

Remarks.....

Tested by Signed.....Date.....

Checked by.....Signed.....Date.....

KEFRI/F/SM/11

**KEFRI TREE SEED MOISTURE CONTENT FORM**

Test Centre

Test No Batch No

Tree Species..... Provenance

Date of collection Date of storage

Storage facilityType of Storage Container.....

Storage status of seed (e.g. bare seeds, with pericarp, with pulp, in pod)
.....

State of test samples: full/ cut into pieces/ in pod)

Date tested

Replicate	M1	M2	M3	MC (%)	Difference Between Replicates (%)
1					
2					
3					
Mean					

M1 = Weight of dish + lid

M2 = Weight of dish + lid + 'wet' seeds

M3 = Weight of dish + lid + 'dry' seeds

Calculations of $MC = \frac{M2 - M3}{M2 - M1} \times 100$

Remarks

.....

Tested by Signed.....Date.....

Checked

by.....Signed.....Date.....

KEFRI/F/SM/13

**KEFRI TREE SEED WEIGHT DETERMINATION FORM**

Test Centre

Test No: Batch No:

Tree species: Provenance:

Storage facility Type of Storage Container.....

Storage status of seed (e.g. bare seeds, with pericarp, with pulp, in pod)

State of test samples: full/ cut into pieces/ in pod)

Date tested

Replicate	1	2	3	4	5	6	7	8	Total sum (Σx)	Mean weight
X (g)										

Seed weight / Kg= No. of seeds weighed in 8 replicas X 1000 g =

Mean Weight

Tested by Signed.....Date.....

Checked by.....Signed.....Date.....

PROCEDURE 8: IDENTIFICATION AND ASSESSMENT OF QUALITY RISKS AND ENVIRONMENTAL ASPECTS

1.0 Purpose

To identify quality risks and environmental aspects associated with KEFRI's operations and assessment of their significance.

1.1 Scope

This procedure shall be applicable to KEFRI and to all operations covered by the Integrated Management System.

1.2 Reference

- a) ISO 9001:2015 Standard
- b) ISO 14001:2015 Standard
- c) ISO 31000:2009 Standard

1.3 Terms, Definitions & Acronyms

- a) IMS - Integrated Management System
- b) KEFRI - Kenya Forestry Research Institute.
- c) HODs - Head of Divisions
- d) RD - Regional Director
- e) Risk - Effect of uncertainty
- f) Aspect - Activities that interact or can interact with the environment
- g) Significant aspect - is one that has effect on the environmental
- h) Impact - Effect of an aspect to the environment
- i) Likelihood - chance of something happening
- j) MR – Management Representative

1.4 Responsibility

- a) MR shall ensure that this procedure is adhered to.
- b) Divisional heads shall be responsible for identifying and assessing their respective activities and associated risks.

2.0 STEPS

2.1 To conduct quality risks and environmental impacts assessment, the following steps are to be completed:

- a) Identification of operational departmental processes and activities
- b) Identify quality risks and environmental aspects associated with these activities
- c) Determine the impact, likelihood and risk rating

2.2 Identification of departmental processes and activities

- 2.2.1 Activities conducted at KEFRI shall be listed in order to ensure that all of them are assessed in the same manner
- 2.2.2 The activities are classified per division and maintained in a risk register

2.3 Identify quality risks and environmental aspects

- 2.3.1 Quality risks and environmental aspects associated with each of the activities in clause 2.2 shall be identified
- 2.3.2 Environmental aspects can be either positive or negative
- 2.3.3 To identify environmental aspects, the following factors shall be considered where relevant:
- Water pollution
 - Air pollution and noise
 - Biodiversity loss
 - Waste management and disposal
 - Contamination of land,
 - Natural resources use and depletion
 - Applicable laws and regulations and
 - Environmental impacts.
- 2.3.4 To identify quality risks, the following factors shall be considered where relevant:
- Timeliness
 - Consistency in service delivery
 - Customer satisfaction
 - Business sustainability and continuity
 - Applicable product standard requirements and statutory regulations
 - Accuracy, courtesy, completeness and accessibility in service delivery

2.4 Identify impacts, likelihood and risk rating

- 2.4.1 Once all quality risks and environmental aspects have been identified, the respective Heads of Divisions shall identify their impacts and likelihood of occurrence to determine risk rating (significance).
- 2.4.2 This risk assessment shall be based on:
- Impact (I)
 - Likelihood (L)
- 2.4.3 Risk rating (Significance) shall be obtained by the multiplication of Impact (I) with Likelihood (L) as shown in the equation below:

RISK RATING (significance) = IMPACT x LIKELIHOOD

- 2.4.4 Risks and aspects shall be assessed using the risk matrix below:

Impact	Likelihood		
		1	2
1	1	2	3
2	2	4	6
3	3	6	9

KEY**Likelihood**

- 1- Remote, likely to occur once in a year
- 2- Occasional, likely to occur once in a quarter
- 3- Frequent, likely to occur once in a week

Impact

- 1- Minor, unlikely to affect the environment or quality of service
- 2- Serious, very likely to affect the environment or quality of service
- 3- Critical, can have catastrophic effect to the environment or quality of service

Risk rating (significance)

- 1-2 Low risk**
- 3-5 Medium risk**
- 6-9 High risk**

2.5 Classification of risks

- 2.5.1 When the risk rating is low, the risk shall be acceptable and tolerated. This shall be classified as insignificant environmental aspects
- 2.5.2 When the risk rating is medium further controls and monitoring shall be required as per the risk register. This shall be classified as significant environmental aspects.
- 2.5.3 When the risk is high, immediate actions and more stringent controls shall be put in place to mitigate against the impact of such risks. This shall be classified as significant environmental aspects.

2.6 Review & control process

The quality risks and environmental aspects shall be reviewed every three years, or whenever there have been significant changes to KEFRI activities or services

3.0 Applicable records

- a) Risk register
- b) Aspect register

KEFRI/F/MR/14

**ASPECT REGISTER**

Process	Activity	Aspect	Likelihood	Significance	Effects	Controls

PROCEDURE 9: EMERGENCY PREPAREDNESS AND RESPONSE PROCEDURE**1.0 Purpose**

The Purpose of this procedure is to identify potential and actual emergency situations and accidents that can have an impact on the environment and how KEFRI will respond to them.

1.1 Scope

This procedure covers actual and potential environmental emergencies and accidents emanating from KEFRI activities.

1.2 References

- a) ISO 14001:2015 Environmental Management System
- b) ISO 14004:2016 Environmental Management System - General guidelines on principles system and support techniques
- c) Occupational Safety and Health Act - 2007
- d) Environmental Management and Co-ordination (Amendment) Act, 2015

1.3 Terms, Acronyms, and Definitions

- a) Environmental emergency and accidents – any unexpected occurrence that could be harmful to the environment.
- b) OSHA - Occupational Safety and Health Act.
- c) EMCA – Environmental Management and Coordination Act.
- d) EOSHEPRAP – Environmental and Occupational Safety and Health Emergency Preparedness Response Action Plans.
- e) DD-HR- Deputy Director Human Resource
- f) KEFRI- Kenya Forestry Research Institute
- g) DDA – Deputy Director Administration
- h) RD – Regional Director

1.4 Responsibility

The DDA/RD shall have the principal responsibility to ensure that this procedure is adhered to.

2.0 STEPS

- 2.1 The Heads of administration shall update the list of foreseeable incidences and emergencies with a potential to cause negative environmental impact.
- 2.2 The section heads in consultation with Regional Directors shall assess emergency preparedness competence for persons working in areas prone to incidences and accidents as per Training and Competence Procedure
- 2.3 The section heads will forward the environmental emergency preparedness training needs through respective Regional Directors to the DD-HR as per Training and Competence Procedure
- 2.4 The section heads shall conduct various drills to test the effectiveness of the work

instructions and response plans for forest fires and chemical spills and first aid and submit report to Regional Director for necessary action(s).

- 2.5 The respective section heads shall monitor and record occurrences of environmental accidents and emergencies in various workstations, recommend corrective measures using Environmental Emergencies and Accidents Occurrences form and submit to the MR through respective Regional Directors.
- 2.6 The section heads shall maintain an inventory of available personal protective equipment and first aid kits using the respective forms and advise the Management on the same.
- 2.7 DDA/RDs shall ensure that all fire-fighting equipment are serviced as per their schedule and kept at easily accessible points.
- 2.8 DDA/RSs/section heads shall maintain a fire duty rooster during the fire season
- 2.9 KEFRI shall annually review and where necessary revise its emergency preparedness and response procedure as need arises

3.0 Applicable records

- a) Environmental emergencies and accidents occurrences form
- b) Inventory of available personal protective equipment and first aid kits form
- c) Maintenance schedule of fire-fighting equipment form
- d) Fire duty rooster

KEFRI/F/ADM/19

**ENVIRONMENTAL EMERGENCIES AND ACCIDENTS OCURENCES**

Centre:

Incidences/accidents	Facility affected	Severity	Response	Remarks
Forest fire	Seed orchard	50%	Staff used fire beaters and water to control the fire	-Fire breaks should be cleaned before the fire season. -Conduct fire drills

KEFRI/F/ADM/18

**PERSONAL PROTECTIVE EQUIPMENT (PPE) INVENTORY FORM**

Centre:.....

Section:

Item of PPE	Type	Quantity	Stored Location
Head Protection			
Hearing Protection			
Eye Protection			
Respiratory Protective Equipment (RPE)			
Overalls			
Gloves			
Footwear			
Safety Harness			
Clothing			
Other (Specify)			

KEFRI/F/ADM/21



CHEMICAL/OIL SPILL DRILL REPORT

Submitted by:.....

Centre:

Drill conducted: date:.....

1. Identify any barriers that interfere with alerting people who would be affected by the spill.
2. Describe any problems that prevent Material Safety Data Sheets (MSDS) from being used effectively.
3. Specify any difficulties in selecting and using spill control materials (absorbents, etc.)
4. Identify any problems related to emergency phone numbers, eyewash stations, emergency showers, and first-aid kits.
5. Discuss any obstacles to ventilating the area of the spill.
6. List any difficulties in selecting and using appropriate personal protective equipment.
7. Describe any problems with equipment shut-off procedures.
8. List any goals for improvement.
9. List of personnel who participated in the drill:

Signature: _____

KEFRI/F/ADM/22



FIRE DRILL REPORT

- Submitted by:.....
Centre:.....
Drill conducted:..... date:.....
1. Were the Security and Fire Department notified? Yes () No ()
If no, provide detail.
 2. Was the Alarm heard in all areas? Yes () No ()
If no, which areas did not sound?
 3. Were the announcements clear and understood? Yes () No ()
If no, provide details.
 4. List any evacuation problems encountered.
 5. Did the alarm system reset properly after the drill? Yes () No ()
If no, provide details
 6. Corrective Actions required
 7. Approximate evacuation time from start of fire alarm until last person exited:
_____minutes
 8. List of personnel who participated in the drill:

Signature:_____

KEFRI/F/ADM/23



FIRST AID DRILL REPORT

Submitted by:.....

Centre:

Drill conducted:..... Date:

1. Identify any barriers that interfere with alerting people.
2. Identify any problems related to accessing and utilizing first-aid kits.
3. Discuss any obstacles to accessing the trained first aider at the Centre.
4. Approximate response time to the type of injury : _____minutes
5. List any goals for improvement.
6. List of personnel who participated in the drill:

Signature:_____

PROCEDURE 10: OCCUPATIONAL HEALTH AND SAFETY PROCEDURE**1.0 Purpose**

The Purpose of this procedure is to specify KEFRI process for identifying and preventing occupational health and safety incidences in execution of its activities.

1.1 Scope

This procedure is applicable to KEFRI in execution of the Quality and Environmental Management System. All employees, contractors, sub-contractors and other interested parties have to adhere to these specifications.

1.2 Reference

- a) ISO 9001:2015 Clause 7.1.3
- b) ISO 14001:2015 Clause 8.2
- c) Occupational Health and Safety Act, 2007
- d) Employment Act, 2007
- e) Work Injury Benefits Act, 2007
- f) Other legal requirements on work place safety.

1.3 Terms, Definitions & Acronyms

- a) IMS – Integrated Management System
- b) KEFRI - Kenya Forestry Research Institute.
- c) DDA - Deputy Director Administration
- d) RD - Regional Director
- e) OIC - Officer In Charge
- f) Workplace - A KEFRI Premise
- g) Workroom - Workstation or Office Space
- h) OSH – Occupational Safety and Health

1.4 Principal Responsibility

- 1.4.1 The DDA is responsible for ensuring compliance to the OSH requirements.
- 1.4.2 The RDs and OICs are responsible for compliance to the OSH requirements in the respective regions and sub centres.

2 STEPS

- 2.1 Every workplace shall have effective provision for sufficient and suitable Lighting.
- 2.2 Effective means shall be provided and maintained for draining off the wet floors in all premises.
- 2.3 Effective and suitable provision shall be made for securing and maintaining adequate ventilation of all workrooms.
- 2.4 The workplace shall not be so overcrowded as to cause risk of injury to the health

- of the persons employed therein.
- 2.5 The floor of every workroom shall be cleaned at least once in every week as per the procedure on janitorial services.
 - 2.6 Accumulations of dirt and refuse shall be removed from the floors and benches of workrooms, staircases and passages.
 - 2.7 All plant, machinery and equipment whether fixed or mobile shall only be used for work which they are designed for and be operated by a competent person.
 - 2.8 All chains, ropes and lifting tackle shall be of good construction, sound material, adequate strength and free from defect.
 - 2.9 Sufficient and suitable sanitary conveniences for the persons employed in the workplace shall be provided, maintained and kept clean.
 - 2.10 Every refrigeration plant capable of being entered by an employee shall have all control valves situated outside the cold storage room and have all doors of cold storage room capable of being opened easily and quickly from the inside and outside.
 - 2.11 In all KEFRI stores and warehouse, all goods, articles and substances shall be stored or stacked in such manner as will ensure their stability and prevent any interference with the adequate distribution of light, ventilation systems, the unobstructed use of passageways and unobstructed access to other fire extinguishing equipment.
 - 2.12 Machinery, equipment, personal protective equipment, appliances and hand tools used in all workplaces shall comply with the prescribed safety and health standards and be appropriately installed, maintained and safe guarded.
 - 2.13 All openings in floors shall be securely fenced.
 - 2.14 There shall be safe means of access to every place at which any person has to work.
 - 2.15 All highly inflammable substances shall be kept either in a fire-resisting store or in a safe place outside any occupied building.
 - 2.16 Every workplace shall be provided with adequate means of escape conspicuously marked by a notice printed in **RED LETTERS**, properly maintained and kept free from obstruction.
 - 2.17 All emergency exit doors shall be constructed to open outwards and shall not be locked or fastened.
 - 2.18 Material safety data sheets shall be provided for all chemicals and other hazardous substances in use at the premises.
 - 2.19 Adequate supply of drinking water at suitable points conveniently accessible to all persons employed.
 - 2.20 Every workplace shall provide and maintain a readily accessible first-aid box.
 - 2.21 There shall be a Safety and Health Committee whose chairperson and Secretary are duly appointed by the Director.
 - 2.22 The committee shall conduct quarterly workplace inspections on health and safety requirements and also meet at least once every three months.
 - 2.23 Inspection and testing of all firefighting appliances in every work place shall be carried out at least once every twelve months as per the emergency preparedness and response procure.

- 2.24 Every workplace shall have a fire assembly point which must be painted in green.
- 2.25 Every work place shall provide adequate and suitable facilities for washing which shall be conveniently accessible and shall be kept in a clean and orderly condition.
- 2.26 Every work place shall have suitable facilities for a person employed whose work is done standing.
- 2.27 Every work place shall provide and conspicuously display means for extinguishing fire which should be free from any obstruction and readily accessible.
- 2.28 The section heads shall record incidents or accidents using incident form or accident form and forward the to the chairman of Health and Safety committee for necessary action(s).

3 APPLICABLE RECORDS

- 3.3.1 Health and Safety Committee Minutes
- 3.3.2 Inspection Reports
- 3.3.3 Incident form
- 3.3.4 Accident form

KEFRI/F/ADM/16

Part A	Victims details
Name: _____ Personal number _____	
Department: : _____ Job title: _____	
Telephone number: _____ Accident Location: _____	
When did the accident happen?	
Date: _____ Time: _____	
What happened?	
Description: (Include details of any object, machine or substance involved)	
Was the accident/ work related? _____	
Declaration: The above report provides a true, accurate and complete account of the accident	
Name: _____ Date: _____ Sign: _____	
Part B	First aiders' comments
What first aid was administered to the victim?	
Name: _____ Date: _____ Sign: _____	

**ACCIDENT FORM**

KEFRI/F/ADM/17

**INCIDENT INVESTIGATION REPORT FORM**

This form is to be filled by health and safety representatives within 12 hours of any incident.

Date of Incident:	Time of Incident :
_____	_____
Place of Incident :	
Description of Incident (What happened?):	
What injury, if any, was caused:	
What property damage, if any, was caused:	
How was the incident arrested:	
Action taken to prevent recurrence:	
Name:	Signature:

KEFRI/F/ADM/17

**INCIDENT INVESTIGATION REPORT FORM**

This form is to be filled by health and safety representatives within 12 hours of any incident.

Date of Incident:	Time of Incident :
_____	_____
Place of Incident :	
Description of Incident (What happened?):	
What injury, if any, was caused:	
What property damage, if any, was caused:	
How was the incident arrested:	
Action taken to prevent recurrence:	
Name:	Signature:

PROCEDURE 11: COMPLIANCE TO LEGAL AND OTHER REQUIREMENTS**1.0 Purpose**

The Purpose of this procedure is to ensure proper identification and evaluation of applicable legal and others requirements relating to Integrated Management System.

1.1. Scope

This procedure shall be applicable to KEFRI and to all activities covered by the Integrated Management System.

1.2 Reference

- a) ISO 9001:2015 Standard
- b) ISO 14001:2015 Standard
- c) All legal requirements as identified in the Legal Compliance Register.

1.3 Terms, Definitions & Acronyms

- a) IMS – Integrated Management System
- b) KEFRI - Kenya Forestry Research Institute.
- c) MR - Management Representative
- d) RD – Regional Director

1.4. Principal Responsibility

- 1.4.1 The MR shall be responsible for identifying and updating of IMS legal and other requirements.
- 1.4.2 Shall ensure the identified legal and other requirements are complied with as applicable.

STEPS**2.1 General**

The MR shall manage compliance to applicable IMS legal and other requirements as detailed below:

2.1.1 Identification of Requirements

- 2.1.2 KEFRI through its MR shall identify applicable IMS legal and other requirements that the Institute subscribes to.
- 2.1.3 Applicable requirements shall be listed and tracked in the Legal Compliance register,

2.2 IMS Requirements Update

- 2.2.1 The MR shall ensure updates of applicable existing and emerging IMS legal and other requirements.
- 2.2.2 The MR shall tracks these updates in the Legal Compliance register.

2.3 Compliance Review

- 2.3.1 The MR shall be in charge of the compliance review to ensure that all KEFRI activities are undertaken in accordance to applicable IMS, legal and other requirements.
- 2.3.2 The review shall be done during internal audits as per the internal audit procedure.
- 2.3.3 The MR shall communicate as provided for in the Communications Procedure to concerned people pertinent IMS requirements based on the compliance review.

3 APPLICABLE RECORDS

- 3.1.1 Legal Compliance Register

PROCEDURE 12: HANDLING AND DISPOSAL OF NON-HAZARDOUS SOLID WASTE

1.0 Purpose

To ensure that non-hazardous waste generated from KEFRIs operations is properly handled, segregated and disposed in a manner that minimizes environmental pollution.

1.1 Scope

This procedure will apply to all KEFRI activities, which generate non-hazardous solid waste with significant environment impact.

1.2 References

- a) ISO 14001: 2015 Standard
- b) ISO 9001:2015 Standard
- c) EMCA 1999: 2015 Environmental Management and Coordination Act Regulations on Solid Wastes
- d) PPAD 2015: The Public Procurement and Asset Disposal Act, 2015

1.3 Terms, acronyms and definitions

- a) Waste receptacle – Temporary central waste holding facility within KEFRI premises.
- b) Re-use - Waste used with or without cleaning and/or repairing.
- c) ISO - International Organization for Standardization.
- d) GR – Goods Return
- e) DDA -Deputy Director Administration
- f) RD -Regional Director
- g) OiC – Officer in Charge
- h) HOD – Head of Division

1.4 Responsibility

- 1.4.1 The DDA, RDs and OiCs shall have the principal responsibility of constructing receptacles and providing colour coded bins.
- 1.4.2 HODs shall ensure this procedure is adhered to in their respective sections
- 1.4.3 DDSCM shall ensure that waste is properly disposed off.

2.0 STEPS

2.1 Categories of non-hazardous solid waste generated by KEFRI include plastics from seed packaging and from tree nursery potting operations, general plastics, used paper, glass ware and metal.

2.2 Waste Segregation

2.2.1 All KEFRI staff shall segregate solid wastes according to colour coded waste bins as per the table below:

Category of Waste	Colour Code
Paper	Blue
Plastic	Yellow
Glass	White
Electronics (e-waste)	Black
- Computers/printers/scanners/UPS - Cartridges, tonners - Electric bulbs and tubes - Calculators	Dedicated rooms with compartments for each waste
Rubber and tyres	Dedicated room
Ceramics	Dedicated room
Organic	Green
Metal /cans	Grey
Used cooking oil	Black drums
Oil filters & oily used Spare parts	Black drums
Sanitary waste and condoms	Sanitary bins

2.2.2 All colour coded waste bins shall meet the following requirements:

- a) They must be in sound condition.
- b) They must be constructed of an appropriate material to prevent leakage.
- c) They must be closed except when adding or emptying waste materials from the container.
- d) They must be kept clean of any spilled material.
- e) They are handled and stored so as not to cause rupture or leakage.

2.2.3 Janitors shall collect, weigh and dispose the segregated solid wastes into the respective designated waste receptacles.

2.2.4 The janitors shall record the waste measurements in solid waste measurement form.

2.2.5 Heads of Administration shall monitor the wastes levels and establish trend analysis on quarterly basis.

2.3 Waste management

2.3.1 Ceramic waste shall be crashed and buried in designated areas.

2.3.2 Sanitary waste shall be disposed off through contracted service providers as per the procurement procedure.

2.3.3 Cooking oil produced at various catering outlets shall be decanted into securely sealed drums and collected by an approved waste contractor as per procurement procedure.

2.3.4 Organic waste shall be composted in a compost pit.

2.3.5 Plant materials such as non-viable seeds shall be disposed on recommendation and approval of the seed disposal committee. The disposal method shall be by composting.

2.3.6 The Heads of supplies shall ensure the quantities of oil, grease and fuel stored at

any one time does not over expose the environment to risks (spills, fires, e.t.c) by ensuring that the stored quantities do not exceed the following amounts: Oil-20 litres, Petrol-100 litres, Diesel-180 litres, Parafin-15 litres, Grease-5 kg.

- 2.3.7 In case of oil or fuel leak or spills, emergency preparedness procedure shall apply.
- 2.3.8 Waste from the timber workshop shall be sold to interested parties as per the Enterprise procedure.
- 2.3.9 Workshop Manager in timber workshop shall minimize the wood waste generated by laminating waste timber pieces.
- 2.3.10 DDSCM shall contract waste disposal agents.

NOTE:

KEFRI staff shall not dispose off any waste on a public highway, street, road, and recreational area or in any public place except in designated public waste receptacles.

3.0 Applicable records

- a) Solid waste measurement form
- b) Non-viable seed disposal form

KENYA FORESTRY RESEARCH INSTITUTE

TITLE: RESEARCH AND DEVELOPMENT
PROCEDURES MANUAL

REF: KEFRI/SOP/R&D/04

ISSUE DATE:12/02/2018



RISKS REGISTER

RESEARCH AND DEVELOPMENT

Type of Risk	Opportunity	Control	Responsibility	Timeframe
Competition among researchers	Can be harnessed for improved performance	Selection of competent officers with passion and drive for research	DDHR, RDs	Every time recruitment is done
Injuries during work		Proper First Aid training and provision of PPEs	DDHR, RDs	Quarterly
Forest Fires	New Ecological outcomes e.g new species	Fire danger rating and awareness training to forest adjacent communities	Scientists, DD Administration	Quarterly
Chemical Spillage	None	1. Provision of PPEs	DDSCM, RDs	Quarterly
	None	2. Training and capacity building to handle such		
Delays in receiving lab supplies	None	Timely requisition and clear specifications to the supplies dept.	RD, respective User departments	Annually
Disposal of hazardous and non hazardous waste	None	Segregation of waste and timely disposal of waste	DDA and DDSCM	Quarterly

KENYA FORESTRY RESEARCH INSTITUTE

TITLE: RESEARCH AND DEVELOPMENT
PROCEDURES MANUAL

REF: KEFRI/SOP/R&D/04

ISSUE DATE:12/02/2018

Poor traceability plan for disposed items	None	Follow with buyers to find out how the materials are used or disposed e.g tyres	CEO and DDSCM	
Budget cuts	None	Consultations with the budgetting committee after revision of the budgets	Budgeting committee	Annually
Loss of previous research through staff turnover	None	Proper and effective knowledge management mechanism, mentorship, proper and timely succession planning	DDHR, RDs	Quarterly



ISSUES REGISTER

KENYA FORESTRY RESEARCH INSTITUTE

RESEARCH AND DEVELOPMENT

RESEARCH AND DEVELOPMENT
JRES MANUAL

REF: KEFRI/SOP/R&D/04

ISSUE DATE:12/02/2018

ISSUES	Risks	Impact	Rating	Likelihood	Control	Responsibility	Monitoring timelines
Inadequate mentorship and induction of new employees	Poor quality research	2	4	2	1.Establish and operationalize mentorship program 2. Proper recruitment and placement of staff	Chief and Principal and Senior Researchers,	Quarterly
Employee capacity to carry out quality research	Low quality research due to inadequate funds	2	2	1	1. long and short term training, 2. exchange programs, 3. Mentorship	DD-HR, SDD-RD, RD	Biannual

KENYA FORESTRY RESEARCH INSTITUTE

TITLE: RESEARCH AND DEVELOPMENT
PROCEDURES MANUAL

REF: KEFRI/SOP/R&D/04

ISSUE DATE:12/02/2018

Technological challenges e.g inaccessibility to internet	Inadequate dissemination of research findings, hindrance to partnership and collaboration	1	1	1	1. purchase of computers, 2. provide internet connections 3. decentralize the funds for procurement of internet services and service of equipment	DD-Finance and Admin, RDs	Annually
Resistance to change to new technology	Inadequate dissemination of findings	1	1	1	Mentorship	SDD R & D	
Level of employee awareness on IMS	Risk of non-conformities	3	3	1	1. Quarterly training and awareness creation, 2. regular communication from head of division	MR, RD, OiC	Annually
Budget constraints	Impediment to delivery of any research Outputs.	2	4	2	1. train researchers on resource mobilization, 2. encourage collaborative research, 3. encourage efficient and well prioritized resource	SDD-R&D, SDD-F&A, PRMO, RDs	Annually

KENYA FORESTRY RESEARCH INSTITUTE

TITLE: RESEARCH AND DEVELOPMENT
PROCEDURES MANUAL

REF: KEFRI/SOP/R&D/04

ISSUE DATE:12/02/2018

					allocation 4. develop forest based enterprises to support core mandate in KEFRI 5. incentivize resource mobilization		
Employees attitude and sense of inclusivity	delivery of research outputs	1	1	1	Awareness creation and capacity building on KEFRI core values	SDD- R&D, DDs,RDs OICs	Quarterly
Weak Organization al structure	Poor co- ordination of activities among departments	3	3	1	Proper coordination between DDs and RDs / change org. structure to allow mutidisciplina ry research	Top Managem ent, Board of Directors	After 5years
Inadequate research Infrastructur e in the Eco Regions	Hinderance to timely delivery of Research Outputs	2	4	2	seek development grants, development of proposals for donor funding	SDD- R&D,DDs, PRMO, RDs	Annually

KENYA FORESTRY RESEARCH INSTITUTE

TITLE: RESEARCH AND DEVELOPMENT
PROCEDURES MANUAL

REF: KEFRI/SOP/R&D/04

ISSUE DATE:12/02/2018

Staff turnover and brain drain	Reduced productivity	1	1	1	Improve terms and conditions of service and work environment	SDD-R&D, SDD-F&A	Annually
Low awareness of stakeholders on Institutes mandate and IMS	Low uptake of KEFRI technology, low publicity	1	2	2	Create awareness on KEFRI mandate. Signage of KEFRI experiments and demos. Upscale dissemination activities	DD-TSS, DD-SPG, RDs,OiCs, DD-CA&QA	Quarterly
Change of government policies and directives/change of Legal requirements and obligations	reduced productivity of Research outputs	3	3	1	timely adaptation to changed government policy	Top Management	Quarterly
weak synergies between KEFRI and organisations with similar mandates	Brain Drain, Inaccessibility to research funds. Inefficiency in delivery of research outputs	2	4	2	Capacity building of researchers, facilitation for publication peer reviewed journals, develop clear private public partnerships	SDD-RD, DD-Thematic areas	Quarterly

KENYA FORESTRY RESEARCH INSTITUTE

TITLE: RESEARCH AND DEVELOPMENT
PROCEDURES MANUAL

REF: KEFRI/SOP/R&D/04

ISSUE DATE:12/02/2018

Climate change and variability	Affects planning and implementation of research, changes in research implementation programs, reduced productivity of research outputs, low uptake of KEFRI technologies	2	4	2	Develop and promote policies that are responsive and enhance research on climate Change adaptation and mitigation	SDD-RD, DDs, RDs	Annually
Resource allocation priorities at the exchequer	Reduced research output	1	1	1	Resource mobilization from donors and efficient utilization of resources	SDD-RD, SDD-F&A	Annually
Lack of cooperation from KEFRI stakeholders /vested interests	Hinder delivery of research output	2	2	2	Build rapport and trust with stakeholders. Follow government policies and guidelines	Director	Annually
Land security	Hinder delivery of research output	2	4	2	Acquire enough land for experiments with titles. Follow government policies and guidelines.	Director	Annually

KENYA FORESTRY RESEARCH INSTITUTE

TITLE: RESEARCH AND DEVELOPMENT
PROCEDURES MANUAL

REF: KEFRI/SOP/R&D/04

ISSUE DATE:12/02/2018

Insecure experimental and demonstration plots or sites	Loss of experimental plots and seed sources, Loss of data .	2	4	2	Secure experimental plots and seed sources in all sites with fences, engage local communities and stakeholders to raise awareness on the importance of the plots.	RDs, OiCs	Annually
Forest Fires	Loss of experimental and demonstration plots	2	4	2	implement fire management plan, establish fire breaks around experimental plots ,	DDs, RDs, OiCs	Annually

RISK ASSESMENT MATRIX

Impact	Likelihood		
	1	2	3
1	1	2	3
2	2	4	6
3	3	6	9

KEY

Likelihood

- 1- Remote, likely to occur once in a year
- 2- Occasional, likely to occur once in a quarter
- 3- Frequent, likely to occur once in a week

Impact

- 1-Minor, unlikely to affect the environment or quality of service
- 2-Serious, very likely to affect the environment or quality of service
- 3-Critical, can have catastrophic effect to the environment or quality of service

Risk rating (significance)

1-2 Low risk/insignificant

aspect

3-5 Medium risk/significant

aspect

6-9 High risk/significant

aspect

KENYA FORESTRY RESEARCH INSTITUTE

TITLE: RESEARCH AND DEVELOPMENT
PROCEDURES MANUAL

REF: KEFRI/SOP/R&D/04

ISSUE DATE:12/02/2018

ENVIRONMENTAL ASPECTS REGISTER
RESEARCH AND DEVELOPMENT

Processes	Activity	Aspects	Likelihood	Severity	Rating	Aspect Category	Environmental Impacts	Controls	Responsibility	Timeframe
Stakeholder needs assessments	Stakeholder raise complaints and needs	Consumption of papers, consumption of fuel	1	1	1	Low	1. Depletion of natural resources e.g water 2. Reduction of air quality	1. Use ICT and paperless technology	DDs, RDs,	Quarterly
Concept development	Conduct literature review, hold open discussion fora, online consultations/discussions	Consumption of electricity, Consumption of paper	1	1	1	low	1. Depletion of natural resources e.g water	1. Use ICT and paperless technology	RD and Scientists	Annually

KENYA FORESTRY RESEARCH INSTITUTE

TITLE: RESEARCH AND DEVELOPMENT
PROCEDURES MANUAL

REF: KEFRI/SOP/R&D/04

ISSUE DATE:12/02/2018

Hold CRAC	Hold open discussion forum, Inhouse consultations and consultations with stakeholders	Consumption of electricity, Consumption of paper, Consumption of fuel	1	2	2	low	1. Depletion of natural resources 2. Reduction of air quality	1. Use ICT and paperless technology 2. pooling transport	RD and Scientists and stakeholders	Annually
Development of Proposals and submission of prioritized research problems	Scientists develop proposals for their research problems	Consumption of electricity, Consumption of paper, Consumption of fuel	1	1	1	low	1. Depletion of natural resources e.g water 2. Reduction of air quality	1. Use ICT and paperless technology 2. pooling transport	Respective scientists	Annually
Table the projects to the consultative meeting	Top management holds a Consultative meeting	Consumption of electricity, Consumption of paper, Consumption of fuel	1	1	1	Low	1. Depletion of natural resources e.g water 2. Reduction of air quality	1. Use ICT and paperless technology 2. pooling transport	Top Management	Annually

KENYA FORESTRY RESEARCH INSTITUTE

TITLE: RESEARCH AND DEVELOPMENT
PROCEDURES MANUAL

REF: KEFRI/SOP/R&D/04

ISSUE DATE:12/02/2018

Review, recommendation of thematic area workplans	1. The top management makes a case for the prioritized projects	Consumption of electricity, Consumption of paper, Consumption of fuel	1	1	1	Low	1. Depletion of natural resources e.g water 2. Reduction of air quality	1. Use ICT and paperless technology 2. pooling transport	RDs and DDs	Annually
	2. Recommendations are made on further refining and new priorities	consumption of electricity, Consumption of paper, Consumption of fuel	1	1	1	Low	1. Depletion of natural resources e.g water 2. Reduction of air quality	1. Use ICT and paperless technology 2. pooling transport	SDD(R &D)	
Final Projects tabled to the Board of Directors for approval	1. The Director and SDD-R&D presents the approved projects to the Board for approval 2. The Board approves the project and gives	consumption of electricity, Consumption of paper, Consumption of fuel	1	1	1	Low	1. Depletion of natural resources e.g water 2. Reduction of air quality	1. Use ICT and paperless technology	Board of Directors, Director and SDD(R &D)	Annually

KENYA FORESTRY RESEARCH INSTITUTE

TITLE: RESEARCH AND DEVELOPMENT
PROCEDURES MANUAL

REF: KEFRI/SOP/R&D/04

ISSUE DATE:12/02/2018

	recommen dations where necessary 3. Corrective measures followed through by the Director									
Incorporation of the approved projects into the institute's performance contract	The approved projects are used as performance targets for the institute	Consumption of electricity, Consumption of paper, Consumption of fuel	1	1	1	Low	1. Depletion of natural resources e.g water 2. Reduction of air quality	1.Use ICT and paperless technology 2. pooling transport	Director and SDD-R&D	Annually
Communication of final workplans for each thematic area	Workplans for each theme are communicated to the respective scientists through their RDs	Consumption of electricity, Consumption of paper	1	1	1	low	1. Depletion of natural resources e.g water 2. Reduction of air quality	1.Use ICT and paperless technology	DDs and RDs	Annually

KENYA FORESTRY RESEARCH INSTITUTE

TITLE: RESEARCH AND DEVELOPMENT
PROCEDURES MANUAL

REF: KEFRI/SOP/R&D/04

ISSUE DATE:12/02/2018

Facilitation of Research according to prepared protocols and budgets	1.Principals 1 Investigators of projects prepare protocols and methodology 2. RD provides the resources required for the work to be done.	Consumption of electricity, Consumption of paper, Consumption of fuel	2	2	4	medium	1. Depletion of natural resources e.g water 2. Reduction of air quality	1.Use ICT and paperless technology 2. pooling transport	DDs and RDs	Quarterly
--	--	---	---	---	---	--------	---	---	-------------	-----------

KENYA FORESTRY RESEARCH INSTITUTE

TITLE: RESEARCH AND DEVELOPMENT
PROCEDURES MANUAL

REF: KEFRI/SOP/R&D/04

ISSUE DATE:12/02/2018

**REGISTER OF INTERESTED PARTIES AND THEIR NEEDS
RESEARCH AND DEVELOPMENT**

Stakeholder	Needs
Tree Farmers	Technologies that meet their tree farming objectives and produce better yield and quality of their products
Local Communities	Community Social Responsibility, immediate Beneficiaries of Institute's work- job opportunities, social amenities, technical support to CFAs, outreach and trainings for community groups
Ministry of Environment and Natural Resources	Provides oversight, policy support, trainings and exchange
Development partners	Provide resources-funds and equipment, training opportunities for our staff, technical backstopping
Suppliers and service providers	Transparent procurement processes, timely payments
Customers- seeds, furniture, facilities	Quality goods and services, Good customer service and communication, continual improvement of our work,
Professional bodies	Set standards for our staff as members , competence measures, provide training opportunities

KENYA FORESTRY RESEARCH INSTITUTE

TITLE: RESEARCH AND DEVELOPMENT
PROCEDURES MANUAL

REF: KEFRI/SOP/R&D/04

ISSUE DATE:12/02/2018

Staff, Interns, Casuals	Salaries, motivation of staff, training opportunities, career development opportunities, job security, proper placement
Kenya Forest Service	Products, Services, Technologies
Other Government Institutions	Benefit from technologies developed, benchmarking for best practices
Regulatory bodies	Provide regulations for our activities, give guidelines on processes, legal obligations and policy restrictions
National Treasury/ Exchequer	Give us GoK funds can constrain our budgets, expect timely reports and efficient use of resources
Large sawmills/ timber producers	Advisory services, technologies for better yield, improved varieties of commercially important trees
Institutions of Higher learning	Collaboration on research projects, training through attachment and internships, shared knowledge
Collaborators	Efficient service delivery, transparent engagement, Knowledge exchange, efficient use of resources