KENYA FORESTRY RESEARCH INSTITUTE (KEFRI)
LABORATORY MANAGEMENT PROCEDURES MANUAL
KEFRI/SOP/LAB/14

TABLE OF CONTENTS

PROCEDURE 1: LABORATORY MANAGEMENT PROCEDURE

1.0 Purpose

The purpose of this procedure is to ensure effective and efficient delivery of laboratory services to KEFRI and its stakeholders.

1.1 Scope

This procedure shall cover all laboratory activities within KEFRI.

1.2 Reference

a) KEFRI Strategic Plan 2013-2018
b) Current KEFRI annual performance contract
c) ISO 9001:2015 Standard
d) KEFRI Laboratory Safety Manual
e) Occupational Safety and Health Act, 2007

1.3 Terms, Definitions And Acronyms

a) Client- internal or external customers
b) DD-TSS- Deputy Director- Technical Support Services
c) GoK- Government of Kenya
d) LC- Laboratory Coordinator
e) LH-Laboratory Head
f) OSHA – Occupational Safety and Health Act
g) RD- Regional Director

1.4 Principal Responsibility

The DD-TSS and Laboratory Coordinator shall have the principal responsibility of ensuring that the procedure is implemented.

2.0 STEPS

2.1 General

2.1.1 The LC shall in quarter 4 direct all laboratory heads to prepare estimates of resources required to implement proposed laboratory activities for the next financial year.

2.1.2 Upon receipt, the LC shall compile the requirements into proposed work-plan and budget and submit to DDTSS.

2.1.3 The DD-TSS shall table the proposed work-plan and budget before the Consultative Meeting for review, recommendation and approval.

2.1.4 Upon approval of proposed work-plan and budget, the LC shall communicate to LHs the approved activities and budget for implementation.

2.2 Laboratory testing services

2.2.1 The LHs shall ensure any samples for testing received from clients are handled, stored, retained and disposed in a manner necessary to protect integrity of the sample item.

2.2.2 Upon receipt of test items the Laboratory staff shall verify and compare the test items submitted to the test method to ensure suitability.

2.2.3 All samples received shall be recorded on a sample receipt form and allocated a laboratory number.

2.2.4 Analysis shall be carried out as per requisite analysis protocols.

2.2.5 The LHs shall ensure that all test results are reported to the client accurately, unambiguous and objectively.

2.3 Calibration, verification, maintenance and repair of laboratory equipment.

2.3.1 Since the institute equipment require only calibration, the Regional Directors in consultation with Laboratory Heads and Supplies Section shall ensure that equipment are calibrated as per the calibration schedule.

2.3.2 For equipment that are broken down, the LHs shall fill the equipment repair form and forward it Supplies Section who shall then proceed to procure the repair services as per control of outsourced services procedure.

2.3.3 After repair of the broken down equipment, the LHs shall verify functional of the equipment as defined in Original Equipment Manufacturer (OEM) manual.

2.4 Laboratory Safety.

2.4.1 The LHs shall identify the required personal protective equipment and forward the request to Regional Directors for necessary action(s).

2.4.2 The LHs shall ensure that the Laboratory safety manual and EMS procedures for handling and disposal of waste, handling and disposal of effluent, emergency and response are adhered and their respective forms filled appropriately and records kept.

3.0 APPLICABLE RECORDS

a) Sample receipt form
b) Equipment repair forms
c) List of proposed activities and budget.

KEFRI/F/LAB/01

KEFRI LABORATORY SAMPLE RECEIPT FORM

Date Submitted: . . . . . .Name: . . . .

Company/Institute: .. . . . . Contact Address: .. . .

Phone: .. . .

Email: .. . .

Total No. of Samples: . . . . . .

Type of sample(s): Tick as appropriate

Water ☐ Soil ☐ Plant ☐Seeds ☐Woodcuttings/chippings ☐

Pest ☐ Others (Specify): . . . . . .

Sample identification/description	Date sampled	Analysis requested	Remarks

OFFICE USE ONLY

Laboratory Number: . . . . . .

Received by (Name). . . . . Signature: . . . . . Date: . . . .

Laboratory Head(Name) . . . . . Signature. . . . . Date: . . . .

Note: *This form must be submitted along with samples to be analyzed.*

KEFRI/F/LAB/02

KEFRI LABORATORY EQUIPMENT REPAIR REQUEST FORM

Centre: .....

Date of request.....

Equipment name: .....

Model: .....

Serial number: .....

Problem:

.....

.....

.....

Type of repair required:

.....

.....

.....

.....

Recommendations from service provider:

.....

.....

.....

Laboratory head: ..... Service provider name:.....

Laboratory head signature: .....Service provider signature:.....

PROCEDURE 2: HANDLING AND DISPOSAL OF EFFLUENT

1.1 Purpose

The purpose of this procedure is to ensure that the effluent generated at KEFRI facilities is safely discharged according to legal requirements.

1.2 Scope

This procedure will apply to all KEFRI facilities, which generate effluent.

1.3 References:

a) ISO 14001: 2015 standard
b) ISO 14004: 2016 standard
c) Environmental Management and Co-ordination (Amendment) Act, 2015
d) Environmental Management and Co-ordination (Water Quality Management) Regulations, 2006

1.4 Terms, Acronyms and Definitions:

a) Effluent – Waste water.
b) EMCA -Environmental Management and Coordination Act
c) EMS - Environmental Management System.
d) NEMA - National Environment Management Authority.

1.5 Responsibility

The Heads of Administration and Laboratory Heads shall have the principal responsibility of ensuring that this procedure is effectively implemented. The head of Supply Chain Management shall ensure that the waste is properly disposed

2.0 STEPS

2.1 The Heads of Administration shall ensure construction and maintenance of effluent receptacles in all KEFRI facilities where there is effluent generation.

2.2 The EMS team shall undertake to sensitize all staff to refrain from any act, which directly or indirectly causes, or may cause immediate or subsequent water pollution.

2.3 The Heads of Administration or their appointees will monitor quarterly the level of effluent discharge receptacles

2.4 The Laboratory Heads will monitor monthly pH of laboratory effluent.

2.5 The Heads of Supplies shall contract the services of licensed effluent disposal agents for exhaustion and disposal of effluent to designated sewage treatment plants in compliance to EMCA requirements.

3.0 APPLICABLE RECORDS

a) Effluent receptacle inspection form
b) Measurement and monitoring form

KEFRI/F/LAB/04

EFFLUENT RECEPTACLE INSPECTION FORM

CENTRE .....

DATE CHECKED	RECEPTACLE NO.	LEVEL (Low, medium, almost full, Full)	REMARKS	SIGNATURE OF INSPECTOR

KEFRI/F/LAB/03

EFFLUENT MEASUREMENT AND MONITORING FORM

CENTRE:.....

PARAMETER (E.g. pH) .....(NORMAL RANGE---(E.g. pH 6.5-8.5).....

DATE	**CURRENT READINGS**	**DEVIATION FROM NORMAL (Indicate "Above or Below Normal")**	**ACTION TAKEN**
Example:			
06/09/2012	6.4	Below	Corrected 7.0

PROCEDURE 3: HANDLING AND DISPOSAL OF HAZARDOUS WASTES

1.0 Purpose

To ensure compliance with legal requirements in handling of hazardous materials to avoid risk of environmental pollution

1.1 Scope

This procedure will apply to all KEFRI sections handling hazardous wastes

1.2 References

a) ISO 14001: 2015 Standard
b) ISO 14004: 2016 Environmental Management Systems - General guidelines on principles systems and support techniques
c) Environmental Management and Co-ordination (Waste Management) Regulations, 2006
d) Environmental Management and Co-ordination (Amendment) Act, 2015
e) Guidelines for E-waste management in Kenya 2010

1.3 Terms, Acronyms and Definitions

a) EMS – Environmental Management System
b) MR - Management Representative
c) EMCA -The Environmental Management and Co-ordination Act
d) Hazardous waste -Any waste specified in the Fourth Schedule or any waste having the characteristics defined in the Fifth Schedule of EMCA (Waste management) Regulations 2006.
e) Biomedical Waste **-** Any waste that falls in the categories provided under the Seventh Schedule of EMCA (Waste management) Regulations, 2006

1.4 Responsibility

Heads of Divisions shall be responsible for the effective implementation of this procedure in their respective Divisions. The head of Supply Chain Management shall ensure that the waste is properly disposed

2.0 STEPS

2.1 Environmental Impact Assessment and Audits

2.1.1 MR shall organize for Environmental Impact Assessments for sections initiating activities likely to generate hazardous wastes.

2.1.2 Section Heads shall implement and conform to the provisions of the Environmental Management and Co-ordination (Waste Management) Regulations, 2006 concerning toxic chemicals, biomedical and hazardous wastes.

2.2 Storage of hazardous wastes

2.2.1 Section Heads shall use work instruction for storage of hazardous and biomedical wastes and ensure that every container or package for storing such waste is secure and labeled in easily legible characters, written in English and Kiswahili as required by EMCA (Waste management) Regulations 2006 Section 24.

2.2.2 The Heads of Administration at KEFRI HQS and Regional Directors in consultation with the MR shall ensure that there are adequate storage facilities for hazardous wastes.

2.3 Disposal of hazardous wastes

2.3.1 Section Heads shall use work instructions for disposal of biomedical and hazardous wastes and ensure that every container or package for disposal of such waste is secure

and labeled in easily legible characters, written in English and Kiswahili as required by EMCA (Waste management) Regulations 2006 Section 24.

2.3.2 Section Heads shall develop or apply labels for warning or caution statements for hazardous wastes, which may include any of the following as appropriate:

a) The words **"WARNING"** or **"CAUTION"**;
b) The word **"POISON"** (marked indelibly in red on contrasting background
c) The words **"DANGER! KEEP AWAY FROM UNAUTHORIZED PERSONS"**
d) A pictogram of a skull and crossbones

2.3.3 Section Heads shall monitor the quantities of hazardous waste using the prescribed form

2.3.4 Section Heads shall liaise with the Laboratory Coordinator for disposal of toxic chemicals and hazardous wastes who will in turn forward them to the Supplies Division for subsequent disposal.

2.3.5 The Section Heads clinic and medical laboratory shall forward all packages containing biomedical wastes to the Supplies Division for subsequent disposal.

2.3.6 The Heads of Supplies shall conform to the requirements of the Environmental Management and Co-ordination (Waste Management) Regulations, 2006 during the disposal of the biomedical and hazardous wastes.

2.3.7 Heads of Supplies shall contract waste disposal agents for the disposal of biomedical and hazardous wastes.

2.3.8 In case of spills or accidental disposal of hazardous wastes follow steps in work instructions for emergency preparedness and response to chemical spills and hazardous materials to avoid environmental pollution.

3.0 APPLICABLE RECORDS

Hazardous waste measurement form

KEFRI/F/LAB/05

HAZARDOUS WASTE MEASUREMENT FORM

CENTRE: …… SECTION……

CATEGORY OF WASTE……

Date of packaging	**Unit of measurement** **(e.g. Kg, litres, bins, sacks)**	**Point of generation**	**Quantity**	**Section Head (sign)**	**Section Head (supplies)(sign)**	**Date of collection**

WORK INSTRUCTIONS 1: EMERGENCY PREPAREDNESS AND RESPONSE TO FOREST FIRES

Scope: This work instruction will cover all KEFRI forests

Preparedness:

1. The section head and Security and Safety Office in consultation with respective Regional Directors shall create awareness on environmental emergency preparedness and response to forest fires to all staff annually.
2. Regional Directors and section heads shall install and maintain fire hazard indicators in all forest sites.
3. MR and Deputy Director-Human Resources shall ensure that personnel working in KEFRI forest sites are trained in forest fire fighting techniques.
4. The section head in consultation with respective Regional Directors shall ensure forest firebreaks are kept clean during high fire seasons.
5. Security and Safety Office and Regional Directors shall ensure that all fire-fighting equipment are serviced and kept at easily accessible points.
6. The section heads in consultation with Security and Safety Office, and respective Regional Directors shall conduct forest fire drills at least once a year in each Centre.
7. The Regional Director and section heads shall maintain a fire duty rooster during the fire season.
8. The Regional Directors shall partner with relevant institutions to boost capacity to cope with forest fires.

Response in case of forest fires:

1. Raise alarm by shouting “FIRE, FIRE”
2. Inform the Regional Director, section head, security officer or any other KEFRI officer at the vicinity.
3. Use appropriate fire-fighting equipment to contain the fire.
4. In case fire gets out of hand call 911, or any fire-fighting brigade nearby using the numbers below;

Centre	**Tel**	**Centre**	**Tel**
Gede	Fire station 0720228050/04230635	Turbo	0722968638
Kitui	999 or 911	Nyeri	061301628- 0721211999
Muguga	Fire brigade 020 222181	Kibwezi	Police 0728364988
Karura	Fire brigade 020 222181	Kakamega	Police 020 3529027
Londiani	052202222-0721358999	Maseno	Police 020 3529027
Marigat	0202724154	Security officer	0722888907

5. Take a roll call of all staff after the fire incident.
6. In case of an injury from fire provide first aid as necessary.

Mitigation in case of forest fires:

In case a forest is destroyed by fire, the Regional Director shall re-establish / rehabilitate the affected forest or forest patches

WORK INSTRUCION 2: EMERGENCY PREPAREDNESS AND RESPONSE TO FUEL/GREASE/OIL/CHEMICAL SPILLS AND HAZARDOUS MATERIALS

Scope: This work instruction will cover all areas of KEFRI operations including:

a) Handle and store oil, grease and fuel, and disposal of their wastes to prevent leaks or spillages to the environment.
b) Handle and store chemicals, toxic and hazardous material such as laboratories and chemical stores to prevent spillage to the environment

Preparedness:

1. The section heads in consultation with respective Regional Director shall annually create awareness on environmental emergency preparedness.
2. The section heads shall install and maintain warning signage.
3. The section heads shall identify materials and equipment necessary to mitigate the effects of any chemical/oil spillage.
4. The KEFRI top management shall avail materials and equipment to mitigate the effects of any spillage.
5. The section heads to ensure spill containment are in good working condition.
6. Management Representative and Deputy Director-Human Resource shall ensure that personnel working in areas with potential of spills are trained on handling of spillage to minimize environmental pollution
7. The section heads in consultation with respective Regional Director shall ensure safe storage, handling and movement of chemical/oil within workstations to prevent spillage.
8. The section heads in consultation with respective Regional Directors and security and safety office shall conduct spillage drills at least once a year in each Centre

Response:

In case of an emergency from a spill of chemical, toxic and hazardous material:

1. Inform the relevant Section Head and Heads of administration, or a person in authority.
2. Wear appropriate protective clothing.
3. Evacuate personnel from spill/affected area.
4. Isolate and cordon spill/affected area.
5. Contain the spread of the spill by following instructions in the Material Safety Data Sheets (MSDS).
6. Carry out appropriate corrective measures as contained in the MSDS.
7. In case of an injury from spillage provide first aid as necessary.

In case an emergency from a spill of oil, grease and fuel:

1. Inform the Heads of administration at the centre and the relevant section head.
2. Isolate and cordon spill/affected area.
3. Contain the spread of the spill e.g. by pouring soil, sawdust, rags.
4. Scrub to clean the oil/fuel stains using powder laundry detergent or oil absorbent hydrocarbons with minimal amount of water.
5. Store any contaminated absorbent material(s) in the appropriate receptacle awaiting disposal.

Mitigation:

The Regional Directors and Heads of administration to restore the affected area(s)

WORK INSTRUCTION 3: STORAGE OF BIOMEDICAL AND HAZARDOUS WASTE

Scope: This work instruction shall cover all areas of KEFRI operations that store biomedical and hazardous wastes such as laboratories, clinic, stores and garages.

Preparedness:

To ensure appropriate disposal of biomedical and hazardous wastes and prevent environmental pollution, the section Heads shall:

1. Ensure staff handling biomedical and hazardous wastes are competent or trained
2. Provide appropriate labels for all biomedical and hazardous wastes.
3. Provide secure storage for biomedical and hazardous waste.

Instructions:

1. Follow procedure on handling and disposal of hazardous waste when storing Biomedical and hazardous wastes.
2. Ensure that every container or package for storing Biomedical and hazardous wastes is secure and labelled in easily legible characters.
3. Ensure labels are written in English and Kiswahili as required by EMCA.
4. Place all biomedical and hazardous wastes in the designated temporary storage facility and ensure they are securely stored prior to disposal.
5. Avoid any spillage of biomedical and hazardous wastes into the environment.
6. In case of an accidental chemical spill of biomedical or hazardous wastes follow the work instruction for emergency preparedness and response to chemical spills.

WORK INSTRUCTION 4: DISPOSAL OF BIOMEDICAL AND HAZARDOUS WASTE

Scope: This work instruction will cover all sections of KEFRI that are charged with the disposal of Biomedical and hazardous wastes such as laboratories, clinic, stores and garages.

Preparedness:

To ensure appropriate disposal of Biomedical and hazardous wastes and prevent environmental pollution, the Section Heads in laboratories, clinic, stores and garages will put in place the following:

1. Ensure all biomedical and hazardous wastes are labeled as per procedure on handling and disposal of harzardous waste.
2. Ensure availability of appropriate disposal containers for biomedical and hazardous wastes.

Instructions:

1. Ensure that every container or package for disposal of biomedical and hazardous wastes is secure and labeled in easily legible characters, written in English and Kiswahili as the words "**WARNING**" or "**CAUTION**"; the word "POISON" (marked indelibly in red on a contrasting background; and the words "**DANGER! KEEP AWAY FROM UNAUTHORIZED PERSONS**"; and a pictogram of a skull and crossbones.
2. The Section Heads shall monitor the quantities of hazardous waste using hazardous waste measurement form
3. Section Heads in laboratories, clinic, stores and garages shall forward all packages containing disposable biomedical and hazardous wastes to Supplies Division for subsequent disposal.
4. The Head of Supplies Division shall dispose of the biomedical and hazardous wastes through contacting a NEMA licensed disposal agent.
5. In case of spills or accidental disposal of hazardous wastes follow steps in work instruction 2: emergency preparedness and response to fuel/grease/oil/chemical spills and hazardous materials to avoid environmental pollution.

PROCEDURE 4: 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:

a) Water pollution
b) Air pollution and noise
c) Biodiversity loss
d) Waste management and disposal
e) Contamination of land,
f) Natural resources use and depletion
g) Applicable laws and regulations and
h) Environmental impacts.

2.3.4 To identify quality risks, the following factors shall be considered where relevant:

a) Timeliness
b) Consistency in service delivery
c) Customer satisfaction
d) Business sustainability and continuity
e) Applicable product standard requirements and statutory regulations
f) 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**	**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
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

KEFRI/F/MR/15

RISK REGISTER

Process	Activity	Risk	Likelihood	Impact	Risk rating	Risk category	Control	Opportunity

PROCEDURE 5: 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 Responsibilitiy

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 accidence 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 OCURRENCES

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/20

FIRST AID KIT INVENTORY FORM

Centre: .....

Section: .....

Item	Quantity	Used	Not used	Expiry date

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 areas 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 areas for improvement.
6. List of personnel who participated in the drill:

Signature:_____

KEFRI/F/ADM/24

FIRE-FIGHTING EQUIPMENT MAINTENANCE SCHEDULE

Centre:_____

Section:_____

Year: _____

Fire-fighting equipment	**Maintenance date**	**Next maintenance due date**

PROCEDURE 6: 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 chairman of Health and Safety committee for necessary action(s).

3 APPLICABLE RECORDS

3.1 Health and Safety Committee Minutes
3.2 Inspection Reports
3.3 Incident form
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 7: 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 8: 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

KEFRI/F/ADM/15

SOLID WASTE MEASUREMENT FORM

CENTRE: .....

CATEGORY OF WASTE: .....

DATE	RECEPTACLE NO.	CURRENT WEIGHT	REMARKS/ SIGNATURE

KEFRI/F/SM/14

NON-VIABLE SEED DISPOSAL FORM

Category of seed: ..... **Centre:** .....

Species name	Germination capacity	Quantity for disposal	Remarks

Approved By:

Ben E.N. Chikamai (PhD)

Director KEFRI

Signature  Date: 12th February 2018

RISK REGISTER
LABORATORY

S/NO	Risks	Opportunity	Impact	Likelihood	Risk Rating	Risk Category	Controls	Responsibility	Time Frame
1	Low level of staff skill and competence	None	3	1	3	medium	training, staff redeployment and employment	lab co-ordinator	continuous
2	Level of awareness among staff on institutes mandate and strategic objectives	None	3	1	3	medium	proper induction during employment, mentorship, sensitization awareness	lab co-ordinator	continuous
3	Resistance to change	None	2	2	4	medium	staff redeployment, change management training, setting performance targets, Culture management programs	lab co-ordinator	continuous
4	Staff apathy / demoralization	None	2	2	4	medium	changing of working groups, setting performance targets, Culture management programs	lab co-ordinator	continuous
5	Lack of adequate allocation of financial resources	None	3	3	9	high	resource mobilization, austerity measures, prioritizing needs, Financial management Risk management	lab co-ordinator	continuous
6	Lack top management	None	3	3	9	high	involvement of management in all	lab co-ordinator	continuous

	support						activities,		
7	Weak organizational sturcture	None	2	2	4	medium	management improvement	lab co-ordinator	continuous
8	Waste minimization techniques: recycling, reusing and reducing	None	1	3	(+3)	medium	continual use and improvement	lab co-ordinator	continuous
9	Technological issues such as ICT	None	2	3	6	high	adequate allocation of resources i.e financial and human, improve on ICT infrastructure,	lab co-ordinator	continuous
10	unique institute mandate	None	3	3	(+9)	high, opportunity	continual use and improvement	lab co-ordinator	continuous
11	Institute cultural factors	None	2	2	4	medium	Culture management programs	lab co-ordinator	continuous
12	Weak capacity in production and marketing of KEFRI products and services	None	2	2	4	medium	Benchmarking Innovation Quality improvement	lab co-ordinator	continuous
13	Active contribution to formulation and legislation of government policies	None	3	3	(+9)	high, opportunity	continual use and improvement	lab co-ordinator	continuous
14	vested interest	None	1	3	3	medium	staff redeployment and signing of conflict of interest forms	lab co-ordinator	continuous
15	Lack of competence suppliers	None	2	3	6	high	verification of suppliers, evaluation of suppliers performance,	lab co-ordinator	continuous

16	Lack of sensitization/ awareness among stakeholders	None	2	2	4	medium	Benchmarking, sensitization awareness among stakeholders, Quality improvement Community engagement, CSR management	lab co-ordinator	continuous
17	Change of government policies and tenureship	None	2	2	4	medium	Determination of applicability of changed legislation and make provisions for adoption and implementation, Implementation of - controls	lab co-ordinator	continuous
18	Lack of clear framework of collaboration / cooperation with stakeholders	None	2	2	4	medium	Benchmarking, sensitization awareness among stakeholders, Quality improvement Community engagement, CSR management	lab co-ordinator	continuous
19	Institutional differences	None	2	2	4	medium	Benchmarking Innovation Quality improvement	lab co-ordinator	continuous
20	Statutory and regulatory issues, conflict between regulations nad constitution	None	2	2	4	medium	Determination of - applicability Implementation of - controls	lab co-ordinator	continuous
21	International obligations	None	3	2	6	high	Benchmarking Innovation Quality improvement	lab co-ordinator	continuous
22	Inadequate resources from NT	None	3	2	6	high	resource mobilization, austerity measures, prioritizing needs, Financial management Risk management	lab co-ordinator	continuous

23	Ecological changes e.g climate change	None	3	3	(+9)	opportunity	improve on mitigation and adaptation forest technologies	lab co-ordinator	continuous
24	Poor corporate image	None	3	1	3	medium	Benchmarking Innovation Quality improvement	lab co-ordinator	continuous
25	Costly emerging technological advances	None	2	2	4	medium	Benchmarking Innovation Quality improvement	lab co-ordinator	continuous
26	Increasing demand for forest products and services	None	3	3	(+9)	opportunity	continuous improvement	lab co-ordinator	continuous
27	Weak enforcement of environmental legislations	None	2	2	4	medium	advocating for enforcement/ change/ revision of environmental laws,	lab co-ordinator	continuous
28	Increasing use of trees/forests for mitigation and adaptation to climate change	None	3	3	(+9)	opportunity	continuous improvement	lab co-ordinator	continuous
29	Corruption	None	1	2	2	Low	CSR Management, risk management, institutionalize anti-corruption committees	lab co-ordinator	continuous

RISK ASSESMENT MATRIX

Impact		**Likelihood**			
		1	**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

ENVIRONMENTAL ASPECTS REGISTER

LABORATORY

Process	Activity	Aspects	Impact	Likelihood	Significance	Environmetal impact	Controls	Responsibility	Timeframe
Laboratory coordination Planning	Preparation of the annual budget and work plans	Use of electric energy	1	3	3	Depletion of energy resources	switching off power after use, use of make hibernation features on the computers	lab co-ordinator	continuous
	Presentation of annual budget and work plans	Use of electric energy	1	3	3	Depletion of energy resource and conservation of resources (papers)	switching off power after use, use of make hibernation features on the computers	lab co-ordinator	continuous
	Making any amendments raised during the consultative meeting	Use of electric energy	1	3	3	Depletion of energy resources and conservation of resources (papers)	switching off power after use, use of make hibernation features on the computers	lab co-ordinator	continuous
	Communicate approved budgets to the laboratory heads for regional activities	Use of electric energy and papers	1	3	3	Depletion of resources	switching off power after use, make use of hibernation features on the computers, printing documents on both sides	lab co-ordinator	continuous
Laboratory analysis	Sample collection	Use of motor vehicle, fuel and oil	1	3	3	Depletion of natural resources, air pollution	pooling resources	lab co-ordinator	continuous

	Sample preparation and analysis	Electricity consumption	1	3	3	Financial depletion, depletion of natural resources	switching off power after use	lab co-ordinator	continuous
		Water consumption	1	3	3	Financial depletion, depletion of natural resources	turn off water source after use	lab co-ordinator	continuous
		Use of chemicals and reagents	2	3	6	Financial depletion, depletion of natural resources, land and water pollution	use of personal protective equipment (PPE), proper use of material safety Data Sheet (MSDS), use procedures that mimimise chemicals usage, use of engineering controls such as fume hoods and mechanical extractors/ ventilators, purchase chemicals from certified manufacturers/ suppliers, use of inventories to monitor quantities to avoid excess purchases, substitution with less hazardous chemicals	lab co-ordinator	continuous
	Use of laboratory equipment	Electricity consumption	1	3	3	Financial depletion, depletion of natural resources	switching off power after use, use of modern equipment that consume less energy, use of multipurpose equipment	lab co-ordinator	continuous

		Water consumption	1	3	3	Financial depletion, depletion of natural resources	turn off water source after use, use procedures that mimimise water usage, use of equipment that require no sample prepation	lab co-ordinator	continuous
		Use of gases i.e LPG (butane) , Helium, Argon, acetylene, nitrous oxide	1	3	3	Financial depletion, depletion of natural resources	inspection of the gas lines and cylinders with soapy water, use of gas leak detectors, utilise controlled combustion of gases, segregation of gases in external secured cages.	lab co-ordinator	continuous
	Use of organic solvents	Volatile Organic Compounds emission	2	3	6	Reduction in air quality	use of personal protective equipment (PPE), proper use of material safety Data Sheet (MSDS), use of engineering controls such as fume hoods and mechanical extractors/ ventilators,	lab co-ordinator	continuous
		Volatile Organic Compounds recovery	3	3	(+9)	Conservation of natural resources, reduction of costs	positive so encourage continual use	lab co-ordinator	continuous
	Data management	Use of computers, statistical softwares	1	3	3	Financial depletion, depletion of natural resources	switching off power after use, use of make hibernation features on the computers	lab co-ordinator	continuous

		Research outputs, developed technologies	3	3	(+9)	Customer satisfaction, conservation of natural resources, improvement of livelihoods,	positive so encourage continual use	lab co-ordinator	continuous
		Adopt developed technologies	3	3	(+9)	Customer satisfaction, conservation of natural resources, improvement of livelihoods,	positive so encourage continual use	lab co-ordinator	continuous
	Reporting	Use of computers, printers and papers	1	3	3	Financial depletion, depletion of natural resources, land pollution	switching off power after use, use of make hibernation features on the computers	lab co-ordinator	continuous
	Disposal of laboratory waste	Laboratory waste	2	3	6	Land, water and air pollution, financial depletion	segrating of waste , minimize waste generation, encourage recyling, use of NEMA approved waste disposal agents	lab co-ordinator	continuous
		Laboratory effluent	1	3	3	Land, water and air pollution, financial depletion	segrating of eflluent , monitoring of the effluent parameters before disposal to the environment,	lab co-ordinator	continuous

	Trainings on development of forest products	Knowledge / skills transfer	3	3	(+9)	adopted technologies, customer satisfaction, conservation of natural resources, improvement of livelihoods,	positive so encourage continual use	lab co-ordinator	continuous
		Training materials	1	2	2	Financial depletion, depletion of natural resources, land pollution	risk rating is low, the risk shall be acceptable and tolerated	lab co-ordinator	continuous
		Water consumption	1	3	3	Financial depletion, depletion of natural resources	turn off water source after use	lab co-ordinator	continuous
		Electricity consumption	1	3	3	Financial depletion, depletion of natural resources	switching off power after use	lab co-ordinator	continuous
Equipment management		reuse of training materials	2	2	(+4)		positive so encourage continual use	lab co-ordinator	continuous
	Maintenance, calibration and repair of equipment	Electricity consumption	1	3	3	Financial depletion, depletion of natural resources		lab co-ordinator	continuous
Execution of laboratory	Preparation of M and E programs	Use of electric energy	1	3	3	Depletion of energy resources	switching off power after use, use of make hibernation features on the computers	lab co-ordinator	continuous

coordination M and E	Travel to centre	Use of fuel	1	3	3	Air pollution, Depletion of energy resources	pooling resources	lab co-ordinator	continuous
	Undertake M and E	Use of electric energy and papers	1	3	3	Depletion of resources	switching off power after use, use of make hibernation features on the computers, printing documents on both sides	lab co-ordinator	continuous
	Reporting	Use of electric energy and papers	1	3	3	Financial depletion, depletion of natural resources, land pollution	switching off power after use, use of make hibernation features on the computers, printing documents on both sides	lab co-ordinator	continuous

REGISTER OF INTERESTED PARTIES

LABORATORY

S/NO	Interested Parties	Category	Needs/ Expectations
1	Kenya Forest Service	External	Quality technologies, products and services; Innovative and appropriate technologies, products and services; efficient and effective service delivery; outreach training;
2	Kenya Wildlife Service	External	Quality technologies, products and services; Innovative and appropriate technologies, products and services; efficient and effective service delivery; outreach training;
3	Ministry of Environment and Natural resources	External	Quality technologies, products and services; Innovative and appropriate technologies, products and services; efficient and effective service delivery; outreach training; development of foresry research policies and guidelines
4	Farmers	External	Quality technologies, products and services; Innovative and appropriate technologies, products and services; efficient and effective service delivery; outreach training;
5	Community Forest Associations (CFAs)	External	Quality technologies, products and services; Innovative and appropriate technologies, products and services; efficient and effective service delivery; outreach training; acess to high quality planting material
6	Institutes of Higher Learning	External	Quality technologies, products and services; Innovative and appropriate technologies, products and services; efficient and effective service delivery; outreach training; internship opportunities/ student on attachment
7	Kenya Water Towers Agency	External	Quality technologies, products and services; Innovative and appropriate technologies, products and services; efficient and effective service delivery; outreach training;
8	County govenments	External	Quality technologies, products and services; Innovative and appropriate technologies, products and services; efficient and effective service delivery; outreach training;
9	Kefri employees	Internal	Fair terms and condition; trainings; remenuration; clear job descriptions; upward mobility/ growth
10	National research institutes	External	Up to date and accurate information; internship opportunities/ student on attachment ; partnership and collaboration; acess to high quality planting material; outreach training

11	other research institutes	External	Up to date and accurate information; internship opportunities/ student on attachment ; partnership and collaboration; acess to high quality planting material; outreach training
12	United nations agencies	External	Up to date and accurate information; internship opportunities/ student on attachment ; partnership and collaboration; acess to high quality planting material; outreach training
13	primary and secondary schools	External	Up to date and accurate information; internship opportunities/ student on attachment ; outreach training
14	seed stockits	External	Up to date and accurate information; internship opportunities/ student on attachment ; partnership and collaboration; acess to high quality planting material; outreach training
15	Development partners	External	Good govenance tranparency and accountability; proffesionalism; innovative and appropriate technologies; effient and effective service delivery; value addition in managenet protocols; timely implementation of activities
16	Regulatory bodies	External	Good govenance tranparency and accountability; proffesionalism; innovative and appropriate technologies; effient and effective service delivery; value addition in managenet protocols; timely implementation of activities
17	National treasury		Good govenance tranparency and accountability; proffesionalism; effient and effective service delivery; timely implementation of activities
18	Suppliers	External	Timely payment of goods and services
19	CBOs and NGOs	External	Good govenance tranparency and accountability; proffesionalism; innovative and appropriate technologies; effient and effective service delivery; value addition in managenet protocols; timely implementation of activities

REGISTER OF INTERNAL AND EXTERNAL ISSUES

LABORATORY

S/No	Internal Issues	External Issues
1	Level of staff skill and competence	Lack of competence suppliers
2	Level of awareness among staff on institutes mandate and strategic objectives	Lack of sensitization/ awareness among stakeholders
3	Resistance to change	Change of government policies and tenureship
4	Staff apathy	Lack of clear framework of collaboration / cooperation with stakeholders
5	Lack of dequate allocation of financial resources	Institutional differences
6	Top management support	Statutory and regulatory issues, conflict between regulations nad constitution
7	Weak organizational sturcture for efficient research outputs and dissemination	International obligations
8	Waste recycling	Inadequate resources from NT
9	Technological issues such as ICT	Ecological changes e.g climate change
10	Demoralization	Acts of God / natural disasters
11	Institute cultural factors	Uncertain political environment
12	Weak capacity in production and marketing of KEFRI products and services	Poor corporate image
13	Active contribution to formulation and legislation of government policies	Costly emerging technological advances
14	Vested interest	Increasing demand for forest products and services
15	Reducing costs	Weak enforcement of environmnetal legislations
16		Increasing use of trees/forests for mitigation and adaptation to climate change
17		Corruption