



KEFRI GRADUATE RESEARCH SCHOOL

Annex 1: Priority Research Themes and Study area/Topic

Priority research and study topics for FY 2022-2023 are drawn from KEFRI Strategic Plan's themes and strategies as tabulated and include but not limited to:

Research study areas/Topic

No	Thematic area	Strategies	Study area/Topic
1	Forest Productivity and Improvement (FPI)	<ul style="list-style-type: none"> -Enhance silviculture of forest plantation and trees on farm - Enhance health of trees and forests through studies on entomology, pathology and associated environmental factors - Undertake forest resource assessment - Enhance seed research and quality control 	<ul style="list-style-type: none"> • Studies on tree physiology on tree, water and soil interaction • Studies on monitor shifts in pest and host species relationships • Studies on fire prediction models and control procedures • Studies on monitoring the introduction, spread and impacts of alien invasive plant species and development of management options • Studies on monitoring the introduction, spread and impacts of plant parasites and development of management options • Studies on development of systems for monitoring hazards, vulnerability and level of exposure of plantation and trees on farm to diverse biotic and abiotic agents • Studies on forest mensuration and modelling • Studies on integrated national forest assessment monitoring and reporting system • Studies on aerial seeding • Studies on seed science • Studies on molecular markets studies for finger printing priority tree species • Studies on tissue culture protocols for mass production of selected high priority tree species
2	Forest Biodiversity and Environment Management (FBEM)	<ul style="list-style-type: none"> -Develop technologies for rehabilitation /restoration of forests and allied natural resources -Develop climate change adaptation technologies 	<ul style="list-style-type: none"> • Studies on restoration of various forest types to secure a broad range of goods and environmental services • Studies on quantifying impact of animal damage on forest ecosystems in both high potential areas and ASALS • Studies on development of scenario models for different species in regard to climate change in the woodlands and natural forest • Studies on development of methods and procedures for monitoring and estimating carbon stocks (MRVS) for various forest types • Studies on development of technologies for mitigating climate change shock • Studies on development of technologies for mitigating climate change impacts



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		<ul style="list-style-type: none"> - Develop technologies for conservation of water catchments and wetland ecosystems management - Biodiversity monitoring and management - Develop technologies for management of alien invasive species 	<ul style="list-style-type: none"> • Studies on forest soils and roles of trees in nutrient cycling • Long-term hydrological studies on riparian, wetland and coastal ecosystems • Studies on hydrological processes and watershed management • Studies assessing extinction threats of endangered tree species • Studies Identifying potential invasive species in forest ecosystems and their spread • Studies on the effects invasive species on biodiversity
3	Forest Products Development (FPD)	<ul style="list-style-type: none"> - Develop technologies for efficient processing and utilisation of wood and non-wood forest products 	<ul style="list-style-type: none"> • Studies on composite development using bamboo and agricultural by-products based fibre • Studies on development of energy briquettes using wood and agricultural waste • Documentation of indigenous uses of natural products by different Kenyan communities-(food, medicines, dyes, fibre) • Studies on Biophysical characterisation of natural products of high value from various eco-regions in Kenya
4	Socio-economics, Policy and Governance (SPG)	<ul style="list-style-type: none"> - Improve forest governance - Enhance forest investment opportunities including Public Private Partnerships - Strengthen Forest and Allied Resources valuation and Build a business case for Payment for Ecosystem Services -Undertake economics studies on forest enterprises 	<ul style="list-style-type: none"> • Studies evaluating opportunities for sustainable forest recreation and ecotourism • Studies evaluating the potential of urban forestry for safe, resilient and sustainable cities • Studies on gender and forest value chains • Studies on the potential role of public private partnerships (PPPs) in forest development • Studies evaluating viable concessions, leaseholds and permitting models for public and community forest • Studies evaluating the performance of PES schemes • Studies on incentives for sustainable land management for enhanced flow of ecosystem services • Comparative studies and cost benefit analysis of forest based enterprises • Studies on the influence of forest land tenure and property rights on forest development
5	Forest Research Support Services (FRSS)	<ul style="list-style-type: none"> -Strengthen biometrics and GIS 	<ul style="list-style-type: none"> • Studies on development of GIS and RS based model to predict forest degradation in terms of areas and species