Title: Blending Forest Education and Research: Case of KEFRI Graduate Research School

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Introduction

Situation

- **Education** and **research** are imperatives for sustainable development.
- Both are useful in bringing out **abilities** and **ingenuity** to address the various challenges in sustainable management and conservation of **forests and allied natural resources**.
- It is increasingly recognised that **new graduates** lack the **requisite exposure** to tackle practical issues in forestry and allied natural resources in Kenya.

Why KEFRI Graduate Research School (KGRS)

This is attributed to:

- Inadequate **practical skills**, low focus on **priority research**, **minimal collaboration** and low levels of **investment** in research to provide information and innovations.
- Sustain institutional momentum by having **professionals prepared beyond academic domain** for advancement /growth.
- Provide **shared space** for scientists, scholars and young graduates **to translate ideas into actions and impact.**
- Mobilise internal and external **partnerships and networks.**

Opportunities and Merits

Opportunities

The opportunities are Immense given:

- The number of relevant institutions of higher learning in Kenya and beyond.
- The interface of education, training and research in line with National Forestry Programme (NFP) 2016-2030, the Big 4 Agenda and Vision 2030.
- Need to link research to practice and industry/ job market.
- Need to complement academic proficiency
- Need to provide research support in achieving all KEFRI's four (4) mandates.
- Untapped economic opportunities.

Merits

- These are strategic, transformational, and skills-oriented aimed at:
  - Informing policy
  - Providing evidence based solutions to continuous forestry development in Kenya and beyond.
- Embracing KGRS would progressively lead to:
  - Mutual scientific advancement
  - Accelerated response to forestry and allied natural resources research issues in Kenya.
- A deliberate policy intervention to enhance KEFRI's:
  - Research potential (basic efficiency ratio - BER) and platform.
  - Strategic collaboration
  - Visibility (more papers in high impact journals, BER) .
  - Performance and impact in forestry and allied natural resources.

What has Worked Elsewhere

KGRS is **not entirely a new concept**. It is deliberate policy intervention that is embraced by a number of institutions to **unlock their research potential and efficiency** in Kenya and rest of the world.

Kenya

- The Kenya Medical Research Institute (KEMRI) - Wellcome Trust Research Programme funding KEMRI's biomedical research since 1992.
- Egerton University's Centre for Excellence in Sustainable Agriculture and Agribusiness Management (CESAAM).
- ICIPE Capacity Building Centre's M.Sc., Ph. D and Post-doctoral training programmes.
- Capacity Building Unit of the International Livestock Research Institute (ILRI).

Other countries

- Institute of Commercial Forestry Research (ICFR) in South Africa offering a number of post-graduate study opportunities in forest management, risk mitigation, site potential and hardwood breeding since 2016.
- Edith Cowan University in Australia spearheading the Good Practice Framework for Research Training in Australia.
- Forestry Research Institute of Ghana training students at masters level.
- Japan Society for the Promotion of Science (JSPS) Programme for Improving Graduate School Education in Japan's national, public and private universities since 1932.

KGRS Vision, Mission and Philosophy

KGRS Vision

- A centre of excellence in **delivering high-quality personnel** in forestry and allied natural resources for sustainable development.

KGRS Mission

- To **provide a platform** for strategic, transformational and practical skills-oriented solutions through research in forestry and allied natural resources for socio-economic development.

KGRS Philosophy

- **Working effectively** at the **interface** of Education, Training and Research.

Name, Location, and Academic Character

The Name

- KEFRI Graduate Research School (KGRS)

Location

- **Coordinated** at KEFRI headquarters.
- Activities are conducted in appropriate KEFRI Eco-regions.

Sponsor

- GoK through KEFRI
- On a **competitive basis** and approved annual budget
- Extended opportunity for direct contributions or sponsorships

Research/ Academic Programmes (2)

- Masters
- Doctorate
- Limited to **research component** of the university academic programme
- **Award** of degree is by **University of registration**

KGRS Aim and Objectives

Aim

- KGRS is expected to **enhance the momentum** and **link research** of strategic institutional and national importance **with appropriate scientific responses** that would **provide sustainable measures to address felt-needs** and emerging concerns in forestry and allied natural resources.

Broad Objective

- To enhance institutional forestry research output through **building and linking practical experience and competency of stakeholders to industry**.

Specific Objectives

1. Support for research initiative.
2. Propel institutional transformation linking education, research experience and industry.
3. Build capacity of the future and potential research scientists.
4. Promote scientific outreach.
5. Enhance collaboration with partner institutions.

Strategies for the Objectives

- Identify and provide **research area needs** based on the KEFRI core thematic areas.
- Provide and invest in **requisite research-related resources** to apply and demonstrate knowledge of research protocols and practice.
- Identify and **award appropriate grants to eligible graduate research students** on a **competitive basis**.
- Set aside 1-2 % **internal research fund** or **recurrent budget** for sustainability of the KGRS initiative.
- Identify and diversify **opportunities for funding** with other partners for sustainability of the KGRS initiative.
- **Support publication** of students' research results **in peer journals** and demonstrate the technologies through established KEFRI dissemination avenues.
- Establish and maintain **structured collaboration opportunities** with institutions of higher learning in forestry and allied natural resources.

Academic Character and Delivery Process

Academic Character

- Collaborating institutions of higher learning are **accredited** with the Commission for University Education (CUE) or relevant regulatory entities.
- Eligible post-graduate students shall have **registered and complied with requirements of the degree** in relevant institutions of higher learning in Kenya and beyond.
- Collaboration is **formalised** through MoUs.

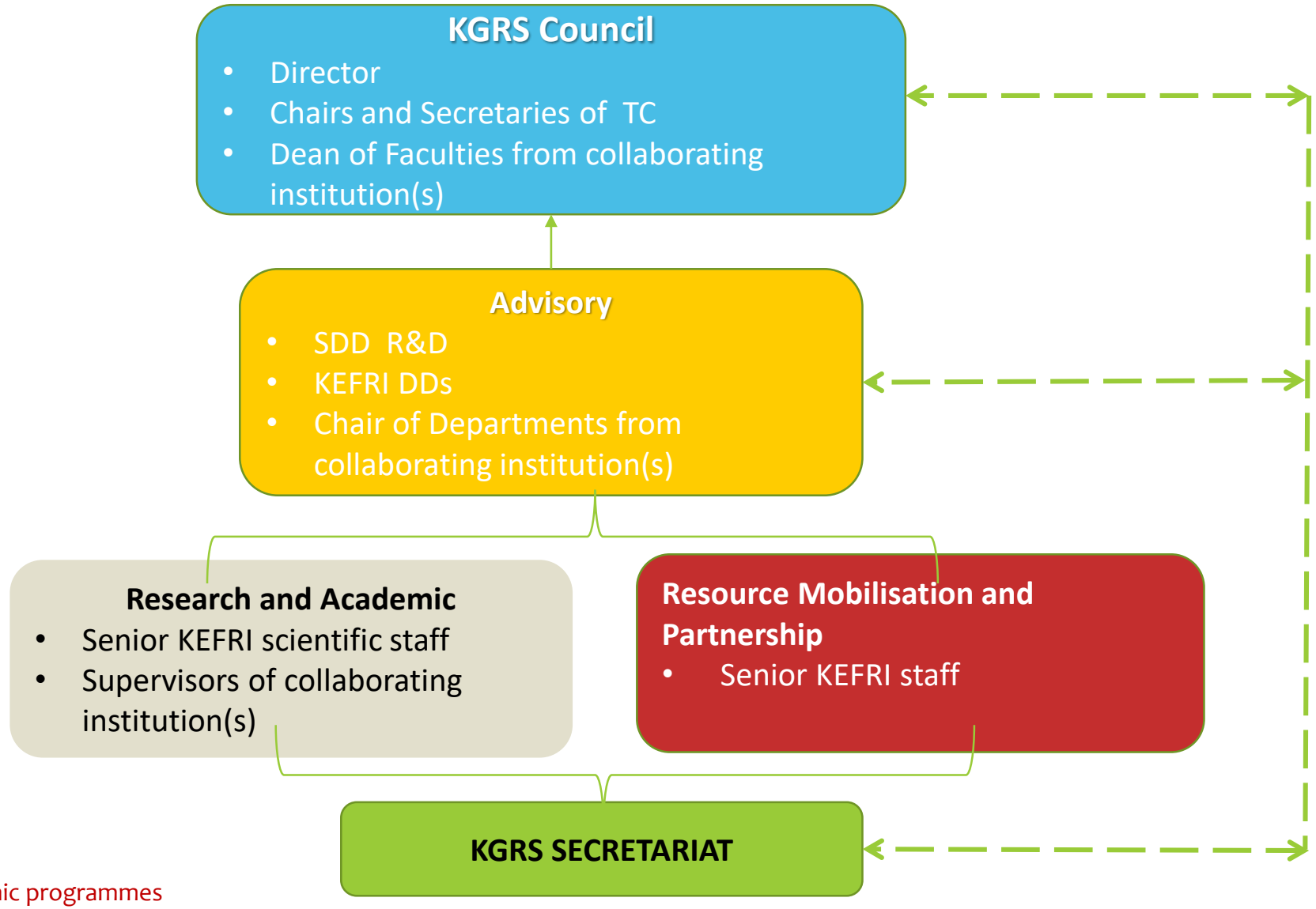
Delivery Process

This is integrated, participatory, **comprehensive** and involve:

- Development of an annual **implementation plan**
- Provision of an **enabling research environment**
- Identification of **joint** research and academic **supervisors**
- **Joint review** and **concurrence** on the proposal content
- Adoption of **appropriate research protocol**
- Determination of **resource needs** (in-house, laboratory, field, library and internet access, among others)
- Review and concurrence on **budget estimates**
- Establishing **timeframe** for accomplishment, which should be within the GoK Financial Year and for a **period not exceeding nine (9) months**
- Adherence to **assessment protocol**

Governance and Academic Organisation/Implementation Structure

KGRS Technical Committees (TC)



TCs are expected to:

- **Inform and guide** KGRS Council
- **Inform and guide** KGRS research and academic programmes
- Inform and guide KGRS resource mobilisation and partnerships

Research and Academic Programmes

- Research and academic programmes draw broadly from KEFRI's **Thematic areas** as outlined in the current Strategic plan.

- **Specific areas** will include studies in:
  - tree breeding
  - silviculture (soft and hardwoods)
  - forest resources inventory
  - climate change
  - forest ecology
  - forest management
  - dryland forestry technologies
  - forest entomology
  - forest pathology
  - forest economics, marketing and trade
  - wood and non-wood forest products
  - forest hydrology
  - forest certification
  - tree seed science
  - forest restoration
  - forestry extension (adoption of technologies)
  - forest socio-economics, policy and governance
  - forest and woodland fires
  - Forest soil health

Research Needs and Priority Study Area

No.	Theme/ Programme	Strategic objectives	Study area/topic
1	Forest Productivity and Improvement (FPI)	Enhance production of superior germplasm for priority tree species for different agro-ecological zones Generate technologies for establishing and managing plantation forests and trees on farm	• Studies on germplasm production, collection and quality control • Studies on enhancing production of high quality germplasm to enhance tree performance in high rainfall, dryland and other areas of Kenya • Studies on enhancing tree breeding • Studies to enhance silviculture of plantations, trees on farm (agroforestry), and indigenous forests • Studies on forest resource assessment • Studies on entomology to improve tree and forest health • Studies on aerial seeding
2	Forest Biodiversity and Environment Management (FBEM)	Generate technologies for sustainable forest landscapes, wetlands and riparian ecosystems	• Studies on restoration ecology • Studies on climate change mitigation and adaptation • Studies on management of water catchments and wetlands ecosystems • Biodiversity monitoring and management • Studies on management of invasive species
3	Forest Products Development (FPD)	Develop technologies for efficient processing and utilisation of wood and non-wood forest products	• Enhancing efficiency in production, harvesting and utilisation of non-timber forest products • Improving efficiency in production, harvesting, processing and utilisation of timber • Improving efficiency in biomass energy processing and utilisation • Enhancing bio-prospecting and use of indigenous knowledge on natural products
4	Socio-economics, Policy and Governance (SPG)	Formulate policies for improved livelihoods and sustainable forest management	• Contributing to improved forest governance • Enhancing access to information on forest sector finance and investment • Valuating of forest and allied resources • Evaluating effectiveness of forest extension methods • Research on forest product markets and trade • Studies on forest economics, tree property rights and land tenure
5	Forest Research Support Services (FRSS)	Disseminate forestry research technologies and enhance research capacity	• Enhancing forest information management and dissemination • Building capacity of stakeholders • Enhancing laboratory management and operations • Enhancing knowledge management • Strengthening biometrics and GIS • Enhancing application of Information Communication Technology

Research and Academic Resources

Human Resources

- Well endowed scientists (108), technicians (95) and foresters (25)
- 30 PhDs in diverse fields assigned as KGRS Supervisors

Financial Resources

- Presently limited to GoK allocation for research and development
- Partnerships and Self-sponsorship

Physical Facilities and Equipment

- Well endowed physical facilities, laboratories (12), assorted modern technology equipment, experimental fields
- Embraced ICT and e-library

Immediate Measures

- Sustained enabling environment
- Enhanced pedagogical skills

- Addressing deficit of at least Ksh 14.6 million per year through strategic partnerships

- Upgrading
- Effective maintenance of contracts

Achievements

- KGRS Strategy Paper of July 2019 as per CUE format of establishing a Special Degree Awarding Institution (SDAI) developed
- KGRS Secretariat and 4 Technical Committees (KC, AC, RAC, RMPC) established
- KGRS standards and guidelines developed and reviewed
- 38 KEFRI research scientists on study leave mainstreamed into KGRS system
- An initial student establishment of 42 (18 PhD; 24 MSc). Of the 42 students, KGRS admitted 4 external students from for different universities in Kenya
- To-date 5 students have graduated (3 PhD; 2 MSc)
- KGRS Supervisors Engagement with Students Procedures developed
- System, type and quantity of electronic and print information resources from KEFRI e-Library supporting KGRS established
- Diverse types of laboratories, equipment and KEFRI field research sites supporting KGRS established and exists.
- KGRS Web portal within KEFRI Website developed (www.kefri.org /e-mail: kgrs@kefri.org)
- Benchmarked with ICIPE and Karatina University for best practices
- 2 proposals to source funds for KGRS developed and submitted
  - National Treasury through MEF (Ksh 1.65 billion), funding opportunities to sustain and build KGRS capacity.
  - Government of Japan (JICA) through MEF and National Treasury (Ksh 4.0 billion) for KGRS infrastructure and equipment

Sustainability and Way Forward

- Provide an enabling **institutional framework** to **harmonise implementation**.
- **Invest in priority research issues** in forestry and allied natural resources while maintaining **competency** and **academic excellence**.
- Identify and **establish strategic partnerships** and **collaborations** with institutions of higher learning and industry.
- Provide an **enabling environment** that will **retain the experienced** and **best intellectual capital**.
- Invest in **a robust ICT infrastructure**.
- **Embrace** progressive and **articulated development** phases and systems of at least 3 years, each.
- Seek **strategic partnerships** that will complement KEFRI's **declining training budget** and **upscale** as recommended by Public Service Commission of 1-2% of **total recurrent budget** for training and development.

Thank you