



## Policy Dualism; Panacea to Small-Scale Farm Mechanization Challenges in Africa

By Dr. Patrick Ajwang'



The state of farm mechanization in many African countries is deplorable and it is one of the main reasons for food insecurity in many parts of the continent. Amongst small scale farmers, access to farm mechanization services is low because of the high cost of largely imported agricultural machinery and equipment. Yet, a good fraction of the food consumed in African households is produced by small-scale farmers. According to the Government of Kenya, over 65% of agricultural production in the country is from small-scale farmers with land holdings between 1.2-12 acres. These farms contribute over 66% of marketed agricultural produce in Kenya according to the Agricultural Sector Transformation and Growth Strategy (2019-2029). Private sector enterprise has been hailed as the ideal vehicle for agricultural development in many parts of the world, including Africa. This implies that land ownership is largely in the hands of individual farmers who can utilize land according to their individual aspirations while obtaining inputs, including farm mechanization services through the market systems approach.

### DEAR READER

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*A monthly Newsletter touching on topical issues affecting our environment.*

*KeSEBAE NEWS is a Newsletter of the Kenya Society of Environmental, Biological and Agricultural Engineers (KeSEBAE)*

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The goal of the market systems approach is to link small-scale farmers to the connected actors in the agricultural value chains in order to produce a lasting positive impact on the small-scale farmers. It is a commercial orientation to farming which employs modern technology and business concepts to link farmers to credit, markets, research and input supply sources.

The market systems approach can be contrasted with the government-led agricultural development strategies where the government is at the centre of agricultural development through the provision of inputs (fertilizer, irrigation, mechanization, seeds and crop protection), extension, processing facilities, aggregation centre and research services. In some instances, land owned by government agencies could also be involved in agricultural production to complement or supplement the efforts of private farmers.

For instance, in Kenya, the production of tea which is one of the major export earners, has for long been supplemented by the Nyayo Tea Zones Corporation, which is a government agency involved in large-scale tea production and processing. In the case of staple foods like rice and maize, there is considerable government involvement in the production, processing, aggregation, pricing and marketing of the produce.

When private enterprises are run parallel to public enterprises in the same value chain, then concept of policy dualism sets in. Policy dualism basically refers to conflicting parallel strategies used to direct any critical sector of a single economic entity or political unit. In a dual policy framework, the public (government) and private sectors are meant to work in tandem to achieve the development aspirations of the population but against a contradictory regulatory regime. This phenomenon is rampant in the education, housing, health, agriculture, transport and energy sectors in some developing countries like Kenya. Thus, apart from providing the policy and infrastructure for privately owned enterprise, the government has significant portfolio and investments in commercial activities in the value chains in these sectors.

Yet it is known that government involvement in commercial enterprises can distort wages, prices

and even smother out competitors. But it is also apparent, the government involvement in commerce alongside the private actors, can trigger public-private competition and result in net benefits to the society.

For instance, there has been increased private sector participation in the provision of higher education in many African countries, whereby universities founded by private sector entities, including churches, have been allowed to offer degree courses. Whereas the wages in the public universities are determined by the state, the private sector universities can in principle set their own wages depending on their surpluses. This dualist policy perspective has triggered public-private competition whereby universities compete for students based on the reputation and quality of programmes and graduates.

This development is in line with the privatization and economic liberalization mantra that was vigorously promoted by the Bretton Woods institutions in the early nineties. In a nutshell, the economic think-tanks thought that it was absolutely unnecessary for any government to be involved in any profit-oriented commercial or economic activity, except perhaps in the defence industry.

The market-oriented and demand-driven development paradigm led to the demise of government-run farm mechanization and extension services that were hitherto the responsibility of the government. However, it is important to note today, that despite the clamour for private enterprise and its much-vaunted viability based on economic rationality, governments in many parts of the world are in many instances still forced to make interventions in the value chains, in the cases of essential commodities like fuel, food, energy and shelter.

With the challenges facing small-scale farmers in many parts of rural Africa, it is still apt to question whether policy dualism could be a panacea to their production and input provision challenges. Should government have state farms? Should the government provide farm mechanization services alongside private sector actors? Or could it be suicidal for private enterprises to compete with

government in the farm mechanization services? Well, there is no simple and straight answer to these questions. But in the current government set-up in Kenya, for instance, the provision of subsidized fertilizer, seeds, farm machinery, equipment and extension services has been the hallmark of the bottom-up strategy of the government.

Today, many agree that the only way to banish extreme hunger from the African landscape is to make the small-scale farmer effectively use his piece of land. Some state enterprises will continue to exist alongside private enterprises in order to kick-start production activities, provide a buffer in

the market and protect the interest of consumers. Such interventions could occur at different locations of the agricultural value chain.

Whereas a free market economy has been hailed as the panacea to our development challenges, there is considerable evidence that government investments in different segments of the agricultural value chains is vital and necessary in many developing countries. The provision of farm mechanization services for small-scale farmers is vital, even if it takes the shape of public-private competition or partnership. Thus, policy dualism must be considered as a farm mechanization strategy in market-oriented economics in Africa, and indeed the world.<sup>1</sup>

## KeSEBAE Webinar Series

KeSEBAE, in collaboration with the Royal Academy of Engineering, UK, South African Institute of Agricultural Engineers, Pan-African Society of Agricultural Engineers and the Institution of Agricultural Engineers held two webinars in *Mental Health Management for Engineering Professionals on Friday, 7 June 2024, from 11:00am, EAT* and *Impacts of Floods in Kenya and Flood Disaster Management Plans on Thursday 27 June 2024 from 11:00am, EAT*.

Under *Mental Health Management for Engineering Professionals*; the presenter highlighted the significance of mental health, especially for engineers. Minet's 2018 research identified physical inactivity as the leading cause of 15 chronic diseases, including mental health disorders, followed by poor diet. The discussion underscored the impact of inactivity on mental and physical well-being, broadening to address stress and mental health as key risk factors. Mental health was defined as the capacity to live a fulfilling life despite challenges. A framework of eight dimensions—health and well-being, activity and exercise, substance abuse, financial stability,

personal development, love and belonging, spirituality, and rest—was introduced, and participants assessed their mental health across these facets. Common mental health issues such as stress, burnout, depression, anxiety, and maladaptive behaviors were discussed. The webinar concluded with a call to action, emphasizing movement, proper diet, and effective coping mechanisms.

The webinar on *Impacts of Floods in Kenya and Flood Disaster Management Plans* focused on the increasing frequency and severity of floods in Kenya and the various flood disaster management plans implemented. Notable flood events occurred in 1961, 1963/4, 1968, 1997/98, 2002/3, and 2024, affecting areas like the Kano Plains, Nyatike, Budalangi, and the lower Tana River. Floods, caused by heavy rainfall, high river flow rates, and other factors, include types such as flash, coastal, river, urban, and lake flooding. The impacts of floods include loss of life, property and infrastructure damage, service disruption, health risks, economic impacts, and changes in river channels. The 2024 floods, attributed to the Indian

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<sup>1</sup> Dr. Patrick Ajwang' teaches Agricultural and Biosystems Engineering at JKUAT. He is a Fellow of

the Kenya Society of Environmental, Biological and Agricultural Engineers.

Ocean Dipole (IOD), caused significant displacement, numerous deaths, injuries, and extensive agricultural losses. Urbanization and land use changes, such as deforestation and poor urban planning, exacerbated flood risks. Effective flood management combines structural measures

like dykes and dams with non-structural measures like flood forecasting and community-based disaster management. Areas around Lake Victoria and the Tana River are particularly vulnerable due to their high river flow potential.

**KeSEBAE**  
Upcoming Webinar

3 EBK PDUs

**Impacts of floods in Kenya and flood disaster management plans**  
by  
**Eng. John Nyaguti**

Thursday 27 June 2024  
11:00am- 1:00pm

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## Training of Clerks of Works on Contract Management and Registration as Professional Engineers

The Ministry of Agriculture and Livestock Development (MoA&LD), State Department for Crop Development, under the Build Resilience for Food and Nutrition Security (BREFONS) project and Small-Scale Irrigation and Value Addition Project (SIVAP), engaged over fifty (50) Graduate Engineers (GE) as clerks of works (CoW) to support the Project Coordination Unit (PCU) in overseeing various infrastructure contracts across counties.

These CoWs are recent graduates eager to advance their engineering careers following the completion of their Bachelor's degrees. Recognizing the importance of their role, the Ministry organized a comprehensive training session facilitated by the Kenya Society of Environmental, Biological, and Agricultural Engineers (KeSEBAE) on contract management and professional engineering registration. The training took place from 17 to 21 June 2024 at Burch's Resort Naivasha.

The objective of the training was to:

- i. Equip the trainees with the necessary knowledge and skills to enable them conduct infrastructure projects and to prepare them for registration as professional engineers in the future.

- ii. Develop Continuing Professional Development (CPD) courses in fulfilment of our collaborative agreement with Royal Academy of Engineering, UK, South African Institute of Agricultural Engineers, Pan-African Society of Agricultural Engineers and the Institution of Agricultural Engineers to develop a CPD training portfolio and library for capacity development in industry.

A total of six courses were developed and delivered. The courses were:

- a. Engineering practice in Kenya
- b. Project management for Engineering Projects
- c. Contract administration
- d. Site organization and management
- e. Economic and financial analysis of construction projects, and,
- f. Environmental health and safety considerations in engineering construction.

The training also covered case studies of projects such as the Mwea Irrigation project to provide trainees with practical experience. The training included not only engineering courses but also general knowledge and day to day issues, such as food etiquette and discussions on how the Agricultural Professionals Registration and Licensing Bill could impact our profession.

The training methodology employed a combination of expert presentations, group discussions, assignments, Q&A sessions, and feedback sessions to enhance learning and engagement.

While the training provided valuable insights into engineering practices and legal compliance, it became evident that ongoing mentoring and follow-up sessions would be essential to further develop the GEs and adequately prepare them for the demanding responsibilities ahead.

### **Photo Gallery for the Training of Clerks of Works on Contract Management and Registration as Professional Engineers**



*Chief Guest, Eng. Richard Kanui (Center) and Other Guests Eng. Kennedy Makudiuh, Eng. Shiribwa Mwamzali and Ezekiel Oranga Taking Group Photo with the Attendees of the Training.*



*Eng. Prof. Lawrence Gumbe, Presenter*



*Eng. Evans Lusigi, Presenter*



*Eng. Patrick Wambulwa, Presenter*



*Eng. Robert Ngari, Presenter*



*Hellen Mwai, Presenter*



*Eng. Nderitu Macharia, Presenter*



EARN 20 PDUs

## 2024 ANNUAL CONFERENCE

THEME: ENGINEERING CLIMATE CHANGE



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### SUB-THEMES

- Green Economy
- Carbon Trading
- Industrialization For Climate Change
- Agricultural Mechanization For Climate Change
- Waste Management For Climate Change
- Energy Systems For Climate Change
- Housing And Infrastructure For Climate Change
- Irrigation and Water Resources
- ICT Systems
- Engineering Education and Practice For Climate Change

### KEY DATES:

**Abstract Submission:** 30 SEPT 2024

**Paper Submission:** 13 OCT 2024

**Payment Deadline :** 07 NOV 2024

### CHARGES

**Members:** KES 15,000 ( \$150)

**Non Members :** KES 20,000 (\$200)

**Undergrad Students:** KES 2,000 (\$20)

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## JEAE

### *Journal of Engineering in Agriculture and the Environment*

The Journal of Engineering in Agriculture and the Environment (JEAE) is a Publication of the Kenya Society of Environmental, Biological and Agricultural Engineers (KeSEBAE) through which researchers in the fields of Environment, Agriculture and related fields share research information and findings with their peers from around the globe.

The JEAE Editorial Board wishes to invite interested researchers with complete work in any relevant topic, to submit their papers for publication in the next editions of the Journal.

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### Criteria for Article Selection

Priority in the selection of articles for publication is that the articles:

- a. Are written in the English language
- b. Are relevant to the application of engineering and technology in agriculture, the environment and biological systems
- c. Have not been previously published elsewhere, or, if previously published are supported by a copyright permission
- d. Deals with theoretical, practical and adoptable innovations applicable to engineering and technology in agriculture, the environment and biological systems
- e. Have a 150 to 250 words abstract, preceding the main body of the article
- f. The abstract should be followed by the list of 4 to 8 "Key Words"
- g. Manuscript should be single-spaced, under 4,000 words (approximately equivalent to 5-6 pages of A4-size paper)
- h. Should be submitted in both MS word (2010 or later versions) and pdf formats (i.e., authors submit the abstract and key words in MS Word and pdf after which author uploads the entire manuscript in MS word and pdf)
- i. Are supported by authentic sources, references or bibliography

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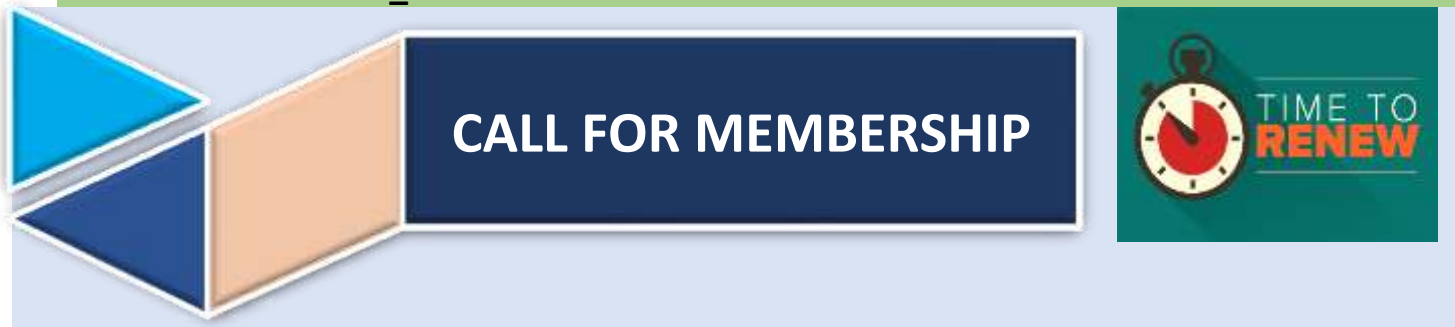
### CALL FOR ARTICLES TO KeSEBAE NEWS

**KeSEBAE NEWS Editorial** wishes to call for topical articles for publication in future editions of KeSEBAE NEWS.

Please transmit the same via Email: [info@kesebae.or.ke](mailto:info@kesebae.or.ke)

**NOTE:** A payment will be made to the author of each selected article





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Membership Category	Annual Subscription (KES)	Admission Fees (KES)	Reinstatement Fees (KES)
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<i>Member</i>	2,000	1,000	2,000
<i>Ass. Member</i>	1,000	1,000	2,000
<i>Aff. Member</i>	500	1,000	2,000
<i>Student</i>	300	100	-

### Membership Renewal

Members of all grades are requested to renew their 2024 membership as follows.

Membership Category	Annual Subscription Fee (KES)
<i>Fellow</i>	5,000
<i>Member</i>	2,000
<i>Ass. Member</i>	1,000
<i>Aff. Member</i>	500
<i>Student Member</i>	300

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