

Investing in Agricultural Leadership for Sustainable Food Security Planning in Kenya: Historical Insights from *Josephonomics*

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Abstract

*Food insecurity and its indignity is still a persistent challenge in Kenya more than 50 years after independence. This paper opines that despite the country's status of water scarcity with only about 30% of land being arable; Kenya can be food secure by tapping into already proven technological innovations in the agricultural sector. What is lacking or deficient is people-centred agricultural leadership that would tap into available and practical innovations without having to re-invent the wheel and harness them into desired goods and services. Leadership in this context means ability to inspire people to deliver on their competences under their unique circumstances. This paper explores this dimension through lessons directly and indirectly derived from *Josephonomics*. This philosophy is based on how legendary Joseph saved ancient Egypt and the known world then from drought-driven starvation. Data was thus largely web-based and secondary in nature. Content analysis informed the narrative that was designed to point out agricultural leadership innovations that this nation urgently needs. This paper has tapped into these lessons and applied them along the entire agricultural value chain. It is hoped that the lessons discussed can be utilised at both National and County government levels to create agricultural food belts and food stocks that would eliminate food insecurity and its impacts on households at much less budgetary implications contrary to what high cost complex research has been unable to deliver to date.*

Key Words: Food Insecurity, Agricultural Leadership Innovations, Kenya

1. Introduction

The importance of food security, self-sufficiency and sovereignty in human and national development cannot be overemphasised (<http://www.globalagriculture.org/report-topics/food-sovereignty.html>). Inherent in food sovereignty is the right of peoples to healthy and culturally appropriate *food* produced through ecologically sound and sustainable methods, and their right to define their own *food* and agriculture systems. Nations have therefore an obligation to ensure that this right is met. According to Kenya's constitution, article 43 (1) (c) every person has the right to be free from hunger, and to have adequate food of acceptable quality (Republic of Kenya, 2010). Investing in food sovereignty based on basic and yet practical measures at the grassroots should be revisited without neglecting high tech-agriculture that seems to be more appropriate for resource-rich commercial producers. Food as a provisional ecosystem service is very critical in augmenting the human well-being component of having materially enough for a decent life (Millennium Ecosystem Assessment 2003). Sustainable Development Goal Number 2 focusses on ending hunger, achieving food security and improving nutrition and promoting sustainable agriculture (<https://sustainabledevelopment.un.org/>).

Unfortunately, the indignity of starvation and famine continues to be experienced in various parts of the world, and in particular Africa. Currently drought-driven famine is ravaging Somalia. According to the World Food Program 3.2 million people are currently at risk. Some 350,000 children are malnourished, including 70,000 severely malnourished(<https://www.voanews.com/a/famine-in-somalia-averted-for-now/3908196.html>).

Kenya too continues to incur political and social costs of inadequate food stocks. The debate on maize scarcity during the presidential election of 8th August 2017 attests to this. Although the building blocks of food production are availability of adequate arable land and good climate (rainfall and temperature), human and social capital have a major role to play in the quest for food security, sovereignty and self-reliance. Other factors that influence spatial intra and inter-generation food security are illustrated in the conceptual framework in figure 1. The relative importance of these factors is expected to vary across the country. Ultimately, however, poor leadership is the single most important gap that must be closed in order to harness food security drivers that have immense potential to enhance human well-being (HWB) and sustainable development (Figure 2).

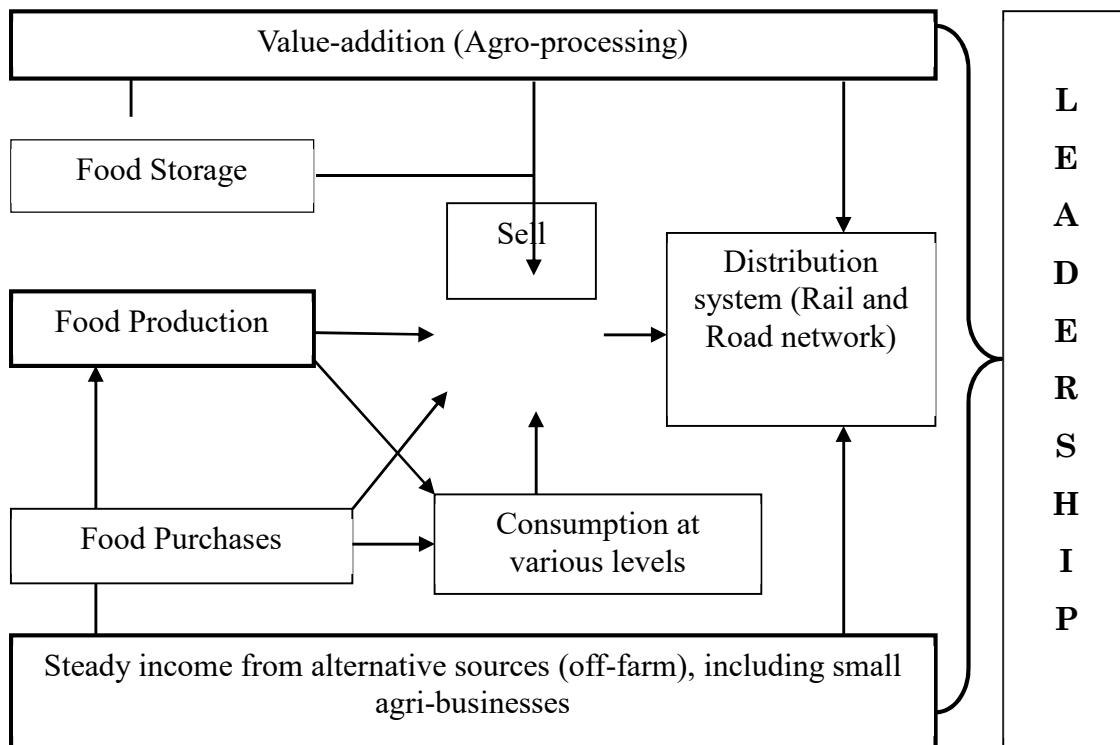


Figure 1. Modified from: Waswaet *al.*, 2014

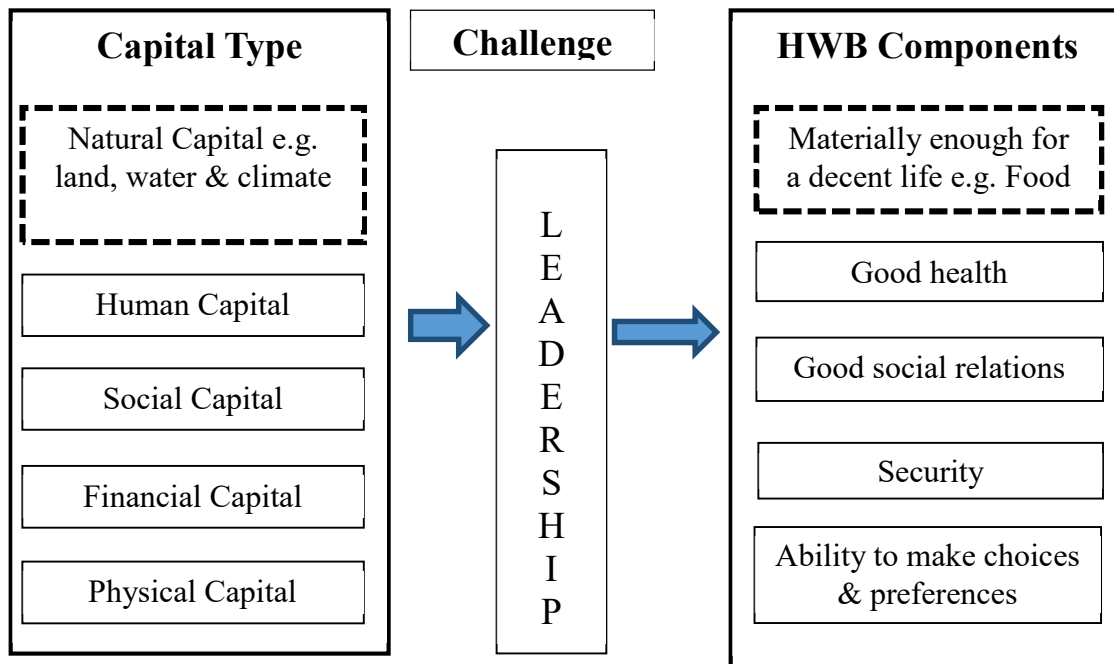


Figure 2: Agriculture-Capital Types-Human Well-Being Nexus

Self-sufficiency in food is hinged upon production of adequate quantities of quality food within a nation's borders. Often times this fails to work due to a myriad of limitations particularly scarcity of land and other crop husbandry challenges. To counter this challenge, food imports and food aid become necessary interventions, their negative impacts on recipient nations notwithstanding.

Where food security is undermined by food wastage, value-addition through various forms of agro-processing has proved very valuable. **Mbeine (2014) quoting a world bank report noted that** the value of Uganda's value added products in 2011 stood at \$3,870,911,000.00, Tanzania's stood at \$5,780,320,210, while Kenya had the highest agricultural value added, which stood at \$8,346,408,890.00. The potential of value-addition in Kenya is huge especially in regions where surplus food goes to waste due to lack of processing and physical infrastructure that are critical in value-addition and food marketing. Storage losses too are known to significantly undermine food self-sufficiency and security. For resource-poor farmers in semi-arid areas where annual rain-fed agricultural cannot be guaranteed, investment in off-farm livelihood initiatives and off-farm income sources has safe-guarded human well-being. With a steady flow of income households can purchase food rather than rely on production (Waswa, 2014). Sustainable consumption too has the

advantage of reducing food wastage and hence pressure on production. Ultimately all these interventions require the appropriate socio-economic and political environment, hence visionary political and agricultural leadership.

This opinion paper interrogates the apparent unending challenge of food insecurity in Kenya more than 50 years since independence. The hypothesis is made that persistent food insecurity is caused more by poor agricultural leadership (administrative and managerial) than shortages in human, social, natural, financial and physical capital. By virtue of its many training programmes in agriculture (Commission for University Education, 2016) Kenya rolls out qualified agricultural scientists, policy makers and technocrats, but their contribution to the food security agenda appears to be only miniature. In addition the country has more than enough land (arable and semi-arid) to raise crop and animal products (UNEP, 2009), yet food insecurity in most parts of the country remain a pressing challenge. Attempts to transform this vast territory into agricultural belts though experiencing some challenges are currently exemplified by the GalanaGulana irrigation scheme (National Irrigation Board, 2017). While scarcity of water can be a real challenge, Israel at number 24 on the list of most food secure countries in the world is among the countries that have succeeded to feed their people under water stressed and water scarcity conditions. In Africa, only South Africa at number 46 appears on the world's 50 most food secure countries in 2017 (The Economist Intelligence Unit, 2017). Rather than re-inventing the wheel, food insecure countries can learn from these countries and implement similar strategies at much reduced costs. Accordingly blaming food insecurity and its indignity on unreliable and erratic rainfall when success stories about nations experiencing similar natural constraints exist undermines the creativity, innovation and research excellence inherent in human beings.

2. Methodology

This paper has relied on secondary data derived from historical lessons branded *Josephonomics*, based on what legendary Joseph did to save ancient Egypt and the known world then from starvation. Additional secondary data on pertinent sectors in agriculture was gleaned from the internet sources of various agencies. Content analysis pointing out practical leadership lessons and potential research gaps to make Kenya food secure was the gist of the paper. The FAO definition of food security was adopted in this paper (<http://www.ifpri.org/topic/food-security>), while agricultural leadership was defined as pro-active ways to influence and drive positive performance and change among agricultural stakeholders in pursuit of a public good, in this case food security. The assumption is made that requirements for realising food security largely exist, but are not augmented by requisite leadership across all levels of the agricultural value chain. Without minimizing the role of technology-based innovation, this paper seeks to challenge policy makers to focus more on leadership innovations (managerial and administrative) in order to leverage on technology in pursuit of food security at both County and National levels in Kenya.

3. Results and Discussion

3.1 Empowering the Vision Carrier to Lead without political Interference

From a historical perspective, the political head of ancient Egypt – the *Pharaoh* had dreams that

disturbed him and wanted them interpreted (*Genesis 41:17-25*). By interpretation, Joseph made it known to the Pharaoh that after 7 years of bumper harvest Egypt would be hit by another 7 years of severe drought and famine. The nation needed to take advantage of the initial seven years of abundance and plan effectively for the next seven years of drought and scarcity, thus:

“Now therefore let Pharaoh look out a man discreet and wise, and set him over the land of Egypt. Let Pharaoh do this, and let him appoint officers over the land, and take up the fifth part of the land of Egypt in the seven plenteous years. And let them gather all the food of those good years that come, and lay up corn under the hand of Pharaoh, and let them keep food in the cities. And that food shall be for store to the land against the seven years of famine, which shall be in the land of Egypt; that the land perish not through the famine (Genesis 41:33-36)”.

Unlike most government technocrats and politicians, who tend to take the path of political correctness in such sensitive matters, Joseph gave the pharaoh sound advice and a blue print on how to manage the looming drought-driven food insecurity. As a mark of results-oriented leadership, the Pharaoh entrusted and empowered Joseph with the entire food security planning responsibility to save Egypt from looming disaster. Here-in is the first principle of good political leadership that empowers the vision carrier to build and lead a problem solving team without political interference. The vision carrier often has the capacity and competence to steer the implementation of their vision. The apparent mismatch of task and competence in appointments made by top political leadership is largely to blame for poor performance and persistent of solvable problems like food insecurity. Vision carriers exist along entire decision-making continuums within National to County hierarchies. They need to be identified and empowered to execute their mandate. As a lesson governments where food insecurity is a persistent challenge should audit their personnel and check out the capacities and competences of persons responsible for food security planning and policy implementation

3.2. Deploying Qualified Decision makers in Vision Implementation

Having been entrusted with the entire responsibility of food security planning, it is very likely that legendary Joseph too identified and deployed persons with relevant capacities and competences at various stages of the food security strategic plan. This principle can also apply along the crop or animal product value chain in any nation. In this context, it would be appropriate to audit the entire agricultural sector, including line ministries and support agencies with view of enhancing labour specialization and job evaluation. Such an audit is likely to eliminate waste of resources, duplication of roles and enhance resource use efficiency and agricultural productivity. A part from the Cabinet Secretary who is appointed by the President, the Public Service Commission should equally ensure that all officers with different responsibilities at various levels in the agricultural sector have the requisite competences and motivations to deliver on their mandate. In this way performance contracting, evaluation and accountability become relevant items.

3.3. Acting on Weather Forecasting and Early Warning Systems

Prediction of a seven year period when conditions for agriculture would be ideal (enough and regular rainfall) and another of 7 years of severe drought can be equated to intuitive weather forecasting. Today meteorological science has adequate technology that can fairly track weather changes and together with the extension service inform, educate and advise farmers when to till

and plant their crops. For Kenya, the challenge is to invest more in increasing accuracy in predicting hydrological events, and in particular provision of meteorological and climatological services to agriculture for the better exploitation and utilization of natural resources for national development as envisaged by the Kenya Meteorological Department (2015). Often times prediction of rainfall seasons have been inaccurate in the past resulting into poor planning by farmers and hence failure to meet their agricultural objectives.

3.4. Maximising Production when conditions are Favourable

When conditions are favourable, particularly rainfall, every effort needs to be made to maximise on production of a variety of foods with emphasis on non-perishables (cereals and pulses). Putting as much land as possible into crop and animal production should be a leadership priority. According to Feller (2015), only about 8 per cent of the total arable land available in Kenya is under cultivation. If Kenya expects to feed its own exploding population in future and also earn export revenue from agriculture, it is clear that much more arable land needs to be put into farming. Unfortunately much prime land remains idle and is locked up as institutional land, agency lands, ministry land and private land – all protected as such by political inertia and legal technicalities, the prevailing land tenure systems notwithstanding. Of these categories of land, public land remains at high risk of being grabbed in favour of non-agricultural uses such as real estate private businesses (Southall, 2005).

Leadership that is disturbed by the indignity of food insecurity and its impacts on the populace can make deliberate effort to transform much idle land and particularly land under the management of Kenya Agricultural and Livestock Research Organisation (KARLO), Agricultural Development Corporation (ADC), the National Youth Service (NYS) and the vast ASAL areas under community land tenure into “National Green Belts” (NGB) to grow food, without losing the prevailing tenure status. Leasing public land to able agricultural entrepreneurs and supporting them with seed capital to initiate farming would in addition to increasing food availability, also create employment to many youth who are graduating from Universities and cannot find white colour jobs. Similarly the law should demand that all idle private land in each of the 47 Counties in Kenya be put to use or the owners be fined sums equivalent to what such farms could optimally produce per year. Herein is the leadership call for the National Land Commission (NLC) working with the ministries of Agriculture at both National and County level.

3.5. Increasing Water availability for Irrigation Agriculture

While Joseph relied on rain-fed agriculture and perhaps traditional surface irrigation, Kenya being a water scarcity nation (UNEP, 2002) can tap into alternative water sources using available technology for enhanced farming in drylands. The Water Act of 2016 vests every water resource the State, subject to any rights of user granted by or under this Act or any other written law (Republic of Kenya, 2016). Moraa *et al.* (2012) observed that a range of technical solutions for water problems could work if governance structures in Kenya are good. However good governance structures alone without requisite people and environment centred leadership will not yield desired outcomes. Water governance in this context entails upholding of the policies, strategies and legislation where water service providers have to develop and manage water resources in an efficient and effective manner while being accountable to the recipients of the services.

Despite the effects of climate change, Kenya still has several perennial rivers which empty their precious fresh water into the Indian Ocean or Lake Victoria. Construction of a series of dams and reservoirs to harvest excess water during the rainy season would ease life during the drought seasons. Kenya may have lugged behind in irrigation agriculture because **dams were initially built for hydro-electric power generation** and not multiple functions including agriculture (<https://softkenya.com/kenya/dams-in-kenya/>). Water from rivers Tana and Athi in particular can be used to transform much of the vast semi-arid part of Kenya into agricultural belts. With 17% of the land considered to have medium to high *potential* for irrigation, less than 10% is utilized, which amounts to only about 2% of total arable land in Kenya (You et al., 2014). *Local statistics based on the country's main basins indicate that investment in irrigation agriculture is still very low despite available potential (Table 1). From a County level, most have irrigation projects are still in the planning stage but only covering a small % of their potential* (<https://www.nib.or.ke/projects/irrigation-projects-per-county?id=160>)

<i>Basin</i>	<i>Potential (ha)</i>	<i>Development (ha)</i>	<i>Developed area (%)</i>
<i>Tana</i>	205,000	68,700	34
<i>Athi</i>	40,000	11,000	28
<i>Lake Victoria</i>	200,000	10,700	5
<i>Kerio Valley</i>	64,000	5,400	8
<i>EwasoNgiro</i>	30,000	10,000	33
Total	539,000	105,800	20

Source: <http://www.waterfund.go.ke/watersource/Irrigation%20Status.pdf>

Table 1: Irrigation Potential and Development by Basin

According to Kenya's vision 2030, the ASAL development irrigation projects aims to increase the area of ASAL land under irrigation to about 1 million hectares (Republic of Kenya, 2007). That the Israel-driven *GalanaKulalu* irrigation scheme has been attempted with little success is indicative of the impacts of poor agricultural governance and not lack of technology and human capital. As far as harnessing Lake Victoria water for irrigation agriculture in the food insecure Nyanza region is concerned, the historical River Nile treaty that appears to have granted Egypt significant advantage against the riparian countries (Kimenyi and Mbaku, 2015) should be expeditiously concluded based on mutual gains approach to negotiations.

As each of the 47 County headquarters continues urbanising, the potential for reclaiming domestic sewage for peri-urban irrigation agriculture should not escape the eyes of planners. County governments should deliberately plan their sewage plants to accommodate tertiary purification as has been demonstrated elsewhere in the world. For instance treated sewage water provides close to a quarter of Israel's demand for water (Harris, 2015). The potential for desalinating huge amounts of ocean water to support agricultural development in the Coast region should equally remain in focus. A limiting factor globally, which is the focus of research remains the cost involved. According to By Bienkowski (2015), it takes most reverse osmosis plants about 3-10 kilowatt-hours of energy to produce one cubic meter of freshwater from seawater. Traditional drinking water treatment plants typically use well under 1 kWh per cubic meter. At the appropriate time, Kenya

could take advantage of this technology.

3.6 Strategic Storage and Food Saving Culture

Sustainable consumption patterns cannot be divorced from eating a determined portion of the harvest and storing another portion for lean times. The quantities to be stored can be worked out along the same principles of financial household budgeting. *Josephonomics* settled on a 5th of the harvest for storage (Genesis 41:34-35). A part from storage at the household, Joseph emphasised the need for government managed decentralised food storage facilities. In Kenya County government would complement the National Cereals and Produce Board (NCPB) by creating County Cereals and Produce Boards (CCPBs) to manage food storage in the 47 Counties in the country. The concept of eating and saving a portion should also be inculcated at the household levels and mainstreamed in primary schooling in order to develop a generation that gets offended when food is wasted along the crop value chain and in particular at the dining table.

3.7. Value-addition and Elimination of Food Wastage

Josephonomics is silent on this aspect. However, according to FAO, roughly one third of the food produced in the world for human consumption every year gets lost or wasted. Further, in developing countries food waste and losses occur mainly at early stages of the food value chain (i.e. during food production). About 40% of losses occur at post-harvest and processing levels while in industrialized countries more than 40% of losses happen at retail and consumer levels. This inevitably means that huge amounts of the resources used in food production are used in vain (<http://www.fao.org/save-food/resources/keyfindings/en/>). To avoid food waste at both the farm and kitchen levels, farmers need to invest in value-addition to preserve the food and increase the shelf-life. Although Koigi (2015) observed that Kenyan farmers seem to have made good progress in this area, cases of food going bad on farms still abound during bumper harvests in various places in the country. Leadership in this case calls for making value-addition infrastructure readily affordable and accessible to farmers.

3.8. Mitigating and Coping with Drought Events

When the 7 years of plenty ended and the 7 years of drought started, households in ancient Egypt reverted to their storages. Upon exhausting these home-based reserves, citizens accessed government-managed reserves at a cost and not as relief food (Genesis 41:55-57). As a principle, where people have no money to buy food, a work for food policy can be invoked. Relief food should not be an option as it encourages dependency syndrome. Monitoring food stocks and rationing in moments of drought should be the norm and not the exception. *Since drought significantly restricts rain-fed agriculture, farmers should have the attitude of making strategic shifts to off-the farm livelihood strategies as need may arise. In this context, investment in apiculture and small to medium scale agri-businesses remain particularly potent. A part from guaranteeing farmers regular income, apiculture reduces pressure on land and does not require much family labour. Agricultural leadership should consider providing requisite incentives for farmers to invest and maximise on hive products in much of the semi-arid lands of Kenya.*

3.9. Food Marketing and Imports

While *Josephonomics* may not have explored the dimension of food exports and imports, it is common in Kenya for resource poor farmers to sell their crop products at throw-away process to brokers, only to re-buy the same food (now as dried maize) at exorbitant prices. While this behaviour of distress sales is expected in free market capitalistic systems, good leadership should step in to protect and cushion such vulnerable farmers. Some policy initiatives can be put in place to regulate the popular distress sale of food, particularly maize, bananas, sweet potatoes, pulses, onions and tomatoes from the maize belt and Meru region. Through farmers associations, prices and quantities to be sold can be fixed by farmers themselves and enforcement guaranteed through County government measures. This way brokers that often take advantage of such financially-marginalised farmers will be deterred. Where agricultural leadership in a country is progressive, food imports should be diminishing with time in favour of exports with added value. Although food security encompasses production and or purchases from elsewhere, importation of maize, sugar, wheat, rice, eggs and chicken into Kenya communicates existence of serious gaps in local production policies. Unless inevitable, importation should be restricted to what is not grown locally in order to ensure value for money. Spatial agricultural suitability for Kenya is sufficiently described in various handbooks that are available to planners (Jaetzold, *et al.*, 2005).

3.10. Elimination of Poverty-enhancing Cash Crops

Debate needs to be initiated on whether food security or export cash crops including cut flowers should take up much of the country's prime land and fresh water resources. For instance, sugarcane in particular is directly associated with poverty in Western Kenya (Waswaet *al.*, 2009). After realising that returns from coffee are not meeting their needs, some farmers in coffee zones have also diversified from this once essential crop (Kanyiri and Waswa, 2017). But even more tragic, much prime land once under coffee is now being converted into real estate in the peri-urban areas of Nairobi like Kiambu County. Research can also establish whether Tea and Sisal are poverty enhancing crops in Kericho and Taita respectively. Similarly though a staple food crop, circumstances under which maize is a poverty trap in UasinGishu County needs attention. For the sake of future generations, County governments need to protect and preserve their prime land for food production. This calls for progressive land use policies that restrict urbanisation to marginal land.

3.11. Transport Networks to link farmers to Markets

A nation may not be described as food secure when people in one part of it have excess food rotting on their farms, while others in another part are starving. Such scenarios are common in Kenya and are often caused by lack of or poor road networks that prevent food from getting to various markets. Investing in feeder roads and easing transportation guidelines is critical in food security planning. With visionary leadership in the newly established Kenya Highways Authority and the Rural Roads Authority, the future can only be positive. Having successfully commissioned the Standard Rail Gauge transport infrastructure, the focus should shift to investing into feeder roads to link farmers to markets. This should be manageable on the part of government.

3.12 Fiscal and Monetary Policy Framework

Make it easier for local farmers to invest in agriculture and create wealth there from. Tax reliefs on items that would trigger rapid improvement in the food security sector are essential. Further, reduction of red tapes in decision-making that affects farmers needs urgent consideration at both national and county governments.

4. Conclusions and Recommendations

As has been said, there is really nothing new under the sun. What is has been and shall be again in future. History thus has many lessons that could help current generations avoid mistakes that can be very expensive. By maximising on managerial innovation legendry Joseph implemented a strategy that saved ancient Egypt and the entire known world then from a catastrophic drought-driven famine. Today with the advantage of advanced technology, no nation should suffer the impacts of food insecurity. What can be done and how to do it already exists. Therefore re-inventing the wheel through massive investment in high-tech agricultural research should now be viewed as secondary to providing the leadership needed to implement existing, simple and practical measures of being food secure. Leadership in this context should be understood to mean visionary decision-making that inspires people at various stages of a product value-chain to spontaneously perform their duties in pursuit of a shared vision – in this context achieving food security for Kenya.

Priority indicator for such leadership would be having and empowering the right professionals at the right placements in the agricultural value chain. An audit of personnel would weed out workers who are more of liabilities than assets to the sector.

There is need to put every idle yet productive land under appropriate agriculture without offending the prevailing tenure systems. Kenya has vast quantities of such land. The national and county governments need to work with the national land commission to rebrand such prime idle land as national or county green belts for food production. The required labour is available in the many unemployed agricultural and entrepreneurial graduates. These youth could be supported with seed capital upon qualifying based on vetted agri-business plans.

In terms of water availability, each of the 47 County headquarters should invest into domestic sewage plants that culminate at tertiary purification as has been demonstrated elsewhere in the world and the treated water harnessed for urban and peri-urban irrigation agriculture. As global research attempts to reduce the costs of desalination, harnessing the huge amounts of ocean water should not escape the eyes of policy formulation in future agricultural governance.

Most importantly, every effort should be made to maximise production when natural conditions are favourable. Food waste too needs to be aggressively prevented through strategic and devolved food saving and storage mechanisms including investment in value-addition especially at the post-harvest stage. These proven measures call more for re-invigorating agricultural leadership at both national, county and farm levels than investing in totally new technical research.

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